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CONTENTS OF MARATHI PART - III

२२. शाहू महाराज आणि वैदोक प्रकरण

डॉ. श्रीकांत नरसिंह मोरबाळे
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प्रस्तावना

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भूगोलशास्त्र संशोधक

THE DECCAN GEOGRAPHICAL SOCIETY, PUNE

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भूगोलशास्त्र संशोधक

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(ISSN-0011-7269)

Geographical Assessment of Tourism Industry in Gadchiroli District

Dr. J. V. Davde

Abstract

Today in modern time the living standard of the common people has upgraded. In this din and bustle of busy daily life, people wish to enjoy the leisure by giving visit to the tourist places. In the present time, the term 'tourism' is entirely transformed into 'Tourism Industry'. For the tourism industry, it is necessary that the physical environment i.e. geographical features, historical and cultural aspects of that particular region must be favourable. We find the same favourable conditions in the Gadchiroli district in Maharashtra state. There are so many beautiful natural places in Gadchiroli district with famous seasonal and perennial rivers like Wainganga, Godawari, Pranhita, Indravati etc. and their spectacular confluences. In this district, we also have many temples and places of religious importance like Markanda, Kaleshwar, Tipagarh etc. There are well known historical forts like Vairagarh and Tipagarh while the welfare project 'Lokbiradari' run by the world famous Baba Amte's son Dr. PrakashAmte at Hemalkasa and the project 'Search' run by Dr. Abhay Bang and Dr. Rani Bang at Chatgaon are also among the noted features of Gadchiroli district. The culture and folk dance of Madiya and Gond tribes mesmerize the tourists. The physical, historical and cultural features of Gadchiroli district are important from the development of tourism point of view.

Introduction

In the present era, there has been a considerable improvement in the living standard of people and therefore they visit tourist places in the relaxed period to get rid of the routine responsibilities while some people go for tourism out of sheer curiosity. The people prefer to give visit to such tourist places which can fulfil their expectations and entertain them in the best possible ways. T. V. Singh has expressed his views about Tourism Geography in his article "Tourism and recreation". Tourism is related to various subjects. It is apt to study tourism from both the geographical and regional perspectives. He asserts that in tourism, there are main key aspects, that is, demand and supply. Thinking in terms of supply branch of Physical Geography is taken into consideration while the Human Geography Science is studied thinking in

terms of demand. Due to the fast transportation facilities, tourism has made great strides. As a matter of fact, tourism and transportation are complementary. Gadchiroli District, located in Maharashtra, is gifted with so many natural places which can provide basic support in terms of tourism to the people of district. Such places are highlighted in the present article. Gadchiroli is one of the important districts from tourism point of view because the basic things required for the development of tourism exists adequately in this district. There are three fundamental elements of tourism, namely places capable to attract tourists and availability of convenient transportation services to reach the tourist places and accommodation facilities at or on the way to tourist places.

Some basic elements of tourism can be stated here. They are essential for the development of tourism. 1) A suitable and pleasant season is required for tourism2) Natural Beauty Spots 3) Places with Historical and Cultural Background4) Easy Accessibility 5) Availability of Transportation and Accommodation facility. 6) Safety.

Study Region

Gadchiroli District: Gadchiroli and Chandrapur districts in Maharashtra are specially blessed by nature. The nature has freely conferred beauty on these districts (RTI Officer – Rao Saheb Mohole). Gadchiroli is known as a tribal district in Maharashtra. Gadchiroli is located in eastern corner of Maharashtra. Chandrapur was divided on 26th August, 1982 and the new district, namely Gadchiroli came into existence. Gadchiroli is the least populated district in Maharashtra. Geographically Gadchiroli district is situated between 180 410 and 200 500 north latitudes and 790 460 and 800 550 east longitudes. According to the census of 2001, this district has a population of 969960 of which 93.6% is a rural population. At present, there are 12 tehsil places in the district. Geographical area of Gadchiroli district is spread across 14915 sq/km there is considerable diversity in terms of the nature of land surface. North-East part of the district is hilly and covered by forest. The tribals largely reside in this region. The height of this mountainous region is below 300m from the sea level. Gadalgatta is the highest place in the central part of the Gadchiroli district and lies 968m from the sea level. The perennial rivers flow through the border line area of the district. The Vainganga river flows from the West-northern border while from the southern west part Pranhita river flows. There is Indravati river in the eastern border of the district while Godawari river is in the southern border line area. The district has five river-basins of which Sevnath river basin is the smallest one while the largest one is that of Wainganga river. There is a tree-shaped flow in the district.

Objectives

The present paper has attempted to analyses the fundamental geographical basis for the development the Gadchiroli district and to find out the attractive tourism places in Gadchiroli district.

Database and Research Methodology

Due to the lack of facilities of transportation and accommodation, the tourism in the district has not developed adequately despite having a strong geographical basis. The information and statistics required for writing this research paper is compiled from the various government publications. By giving personal visit to the most of the tourist place and gathering information from the tourists about some place, the stock of prevailing conditions of the said places is taken. Maps are used to analyse the information. Even in this modern age, the Gadchiroli district is far away from the development of roads and transportation but the researcher visited concerned places personally to collect the information.

The Fundamental Elements and Basis of Tourism in Gadchiroli District

Suitable and pleasant season. The district is characterised by the hot summer and mild winter. In rainy season, tourism does not have much scope because of heavy rainfall. In summer, temperature is very high and hence the tourists get attracted by highland places from the sea-level. As Gadchiroli district is devoid of such high places, the tourists turn back on it in both the rainy and summer seasons. All things considered, November to February is the best period for tourism purpose in the Gadchiroli district because after the rainy season, the rivers have abundant water which attracts tourists towards the confluences and water-falls. During this period entire surface of the earth becomes green. There are so many such beautiful places in Gadchiroli district which are described in detail as follows. In addition, after the rainy season the people of Gadchiroli district have leisure and so the tourists get an opportunity to witness the interesting conventions, customs, culture and the ways of living of the tribal community. Beauty Spots. The beauty spots in the Gadchiroli district can be divided into three categories as below. (A) Natural Beauty Spots (B) Places with Historical Attraction (C) Places with Cultural Attraction

(A) Natural Beauty Spots

The beauty spots in Gadchiroli district can be mentioned from different point of view. Natural beauty spots includes stunning sea beaches, mountain cliffs, river confluences, water falls, variety of trees, wild life, sunrise, sunset etc. although all these beauty spots do not exist in Gadchiroli district, river confluences, water falls,

trees and animals add to the beauty of the district. In Gadchiroli district there are number of river confluences of which the most beautiful one which can stun the tourists are as given below.

(i) Confluence of Indravati and Godawari rivers at Somnur

Being located near the borders of Andhra Pradesh, Chhattisgarh and Maharashtra, Somnur is the village which lies near this confluence and nearly 260 km away from Gadchiroli. This confluence is surrounded by the hills full of dense trees. The current of rivers become very fast here. There is a beautiful temple of god Someshwar with excellent artistic works.

(ii) Confluence of Pranhita, Godawari at Nagaramkaleshwar

Being located at the southern part of the district, Nagaram is the village which is near this confluence. The borders of Maharashtra and Andhra Pradesh touch each other at this place which is 200 km from Gadchiroli. At this spot Pranhita river flowing from north and Godawari river from west meet each other forming the confluence where these rivers appear like sea. Kaleshwar temple is situated near this confluence. The temple can be visited by going across the river in a boat.

(iii) Chaprala: The Confluence of Wainganga and Wardha

Chaprala is 60 km away from Gadchiroli. Here Wainganga river which flows from west border of Gadchiroli district towards the south and the Wardha river flowing from Chandrapur district meet each other. From this union, Pranhita comes into existence. Chaprala is known as a holy place in India. The confluence is surrounded by the dense forests. In this area the animals like tiger, deer, antelope, spotted deer etc. are found.

(iv) Confluence of Indravati-Parlkot, Pamula Goutam at Bhamaragarh:

Being located on the border of Andhra Pradesh and Chhattisgarh, Bhamaragarh is 200 km from Gadchiroli. At Bhamaragarh, Indravati river that flows from Chhattisgarh and the Parlkot and Pamula Goutam rivers flowing from the north meet each other. This is a place of faith form tribals. This confluence is girdled by hills with dense forests. The temple of goddess Bhamara is situated near the hills of Bhamaragarh. A beautiful sight of confluence can be enjoyed from the top of these hills.

(v) Markanda-Situated at the spot where Wainganga changes its direction

Markanda is a place which situated on the western border of Wainganga and here the river starts to flow northward. This place is 60 km from Gadchiroli. A big fair is

organized here every year on the occasion of Mahashivratri. There are exceptional works of art of ancient architecture. This place is also known as Vidarbha's Khajuraho.

(vi) Natural Trees-Van Vaibhav

There is beautiful ancient teak forests 110 km from Gadchiroli and 15 km from Alapalli. The teak trees found here are 7 to 8 cubic meter in girth and tall upto 40 m. A teakwood found here is regarded as the best in Asia. The nature-lover-tourists enjoy enormously these beautiful Van-Vaibhav forests full of natural beauty by coming to this place from the distant places. These sorts of forests' beauty exist at various places at Gadchiroli district and it delights the tourists. There are so many water fall in the course of river flowing in Gadchiroli district. However they are not enjoyable throughout the year because the rivers are seasonal. Indrawati is the only perennial river flowing through hilly area. Jitam water fall is on this river. It is 60ft wide and 50ft high. It sounds loudly and mesmerises the viewers. There is a forest of bamboo and teak trees near this water fall. Besides, there are some beautiful water falls in course of Binagunda river.

(B) Places of Historical Attraction

In historical times the kings used to construct the forts and edifices by keeping in mind the nature of the land surface. In the Gadchiroli district there are forts of ancient times in Tipagarh, Vairagarh and Surajgarh which attract the tourists. Nearly 100 km from Gadchiroli there is a fort of Tipagarh. 'Tipagarh' is a small village. In the mountainous area near this village the fort is in the expansion of 8 km. there is a deep pond on this hill having water all the year around. The fort is surrounded by dense forests. In the same way Vairagarh, which is 80 km from Gadchiroli is also having a fort. The Surajgarh fort is 130 km away from Gadchiroli. All these forts of Gadchiroli district are situated in dense forests.

Places with Cultural Attraction

Some places get extraordinary importance due to the remarkable works done by some people. By recognising the social value of such persons and works many tourists are attracted towards these places. Such places of remarkable works by extraordinary people are in Gadchiroli District. The 'Lokbiradar' Project of Universally recognised VikasAmte, son of Baba Amte at Hemalkasa. The 'Search' (Society for Education, Action & Research in Community Health" of Dr. Abhay Bang & Dr. Rani Bang. These two centres are specially remarkable in the Gadchiroli District. Tourists are attracted towards these places. Easy Accessibility (Transport Facility) For Tourism Industry Development the transport facility is very important.

To reach the tourist places the facilities of road, railways, etc. is very important. Even if there may not sufficient transport facility to reach these tourist places, there is scope for this factor to improve with the view of tourism industry development. Yearly repairing of these roads will decrease the distance making the traveling safe. Now the government should invest money in transport for the tourism business.

(4) Accommodation and other Facilities

Water Parks should be constructed in proper locations. Arrangements should be made for safe boating and safari in the forests along with trained guidance. Sometimes special arrangements are also required, e.g. Safari on Elephants or safe vehicle may be arranged. Similarly the facilities like Residence, Hotels, Guest Houses should also be provided. At the beginning of this business the private investors are not interested to invest money on Residential and travelling facilities because there are very less chances to profit. So, it is very necessary that the government should take initiative to provide all these facilities for the development to tourism business, at least for some years. Once this business is established, the private investors will automatically turn positively.

Conclusion

For the future development of the tourism business in Gadchiroli district the government should initiate two steps. (1) The nuisance of naxalites is the worst problem of the district, though this nuisance does not disturb the common people and the tourists. But without its accountability, the number of tourists will not increase drastically. So, the solution and eradication of the naxalite problem in the region is necessary. Also the information should be given to the tourists to visit the places fearlessly. (2) Gadchiroli district is a tribal district. So, how to place the traditions and culture of the tribals in a well-planned manner in front of the tourists should be thought over e.g. to show the village of these tribal an ideal village should be selected, which will become an attraction for them. Along with this their traditions, folk-songs and folk-dances should also be appropriately presented for tourist. Due to some strict rules of Forest Department, Dams cannot be constructed now-a-days. If these rules are relaxed them dams can be constructed which will facilitate irrigation. With the view of tourism development water parks can be constructed for the entertainment of the tourists. This will also be useful for the water for wild animals and also water conservation. The tourism business will be boosted and environment conservation will also be done. While developing the tourist places, it should be looked after in a planned manner that the environment and location should not be disrupted. It can be concluded that for developing the tourism industry, gadchiroli district has all the favorable geographical conditions.

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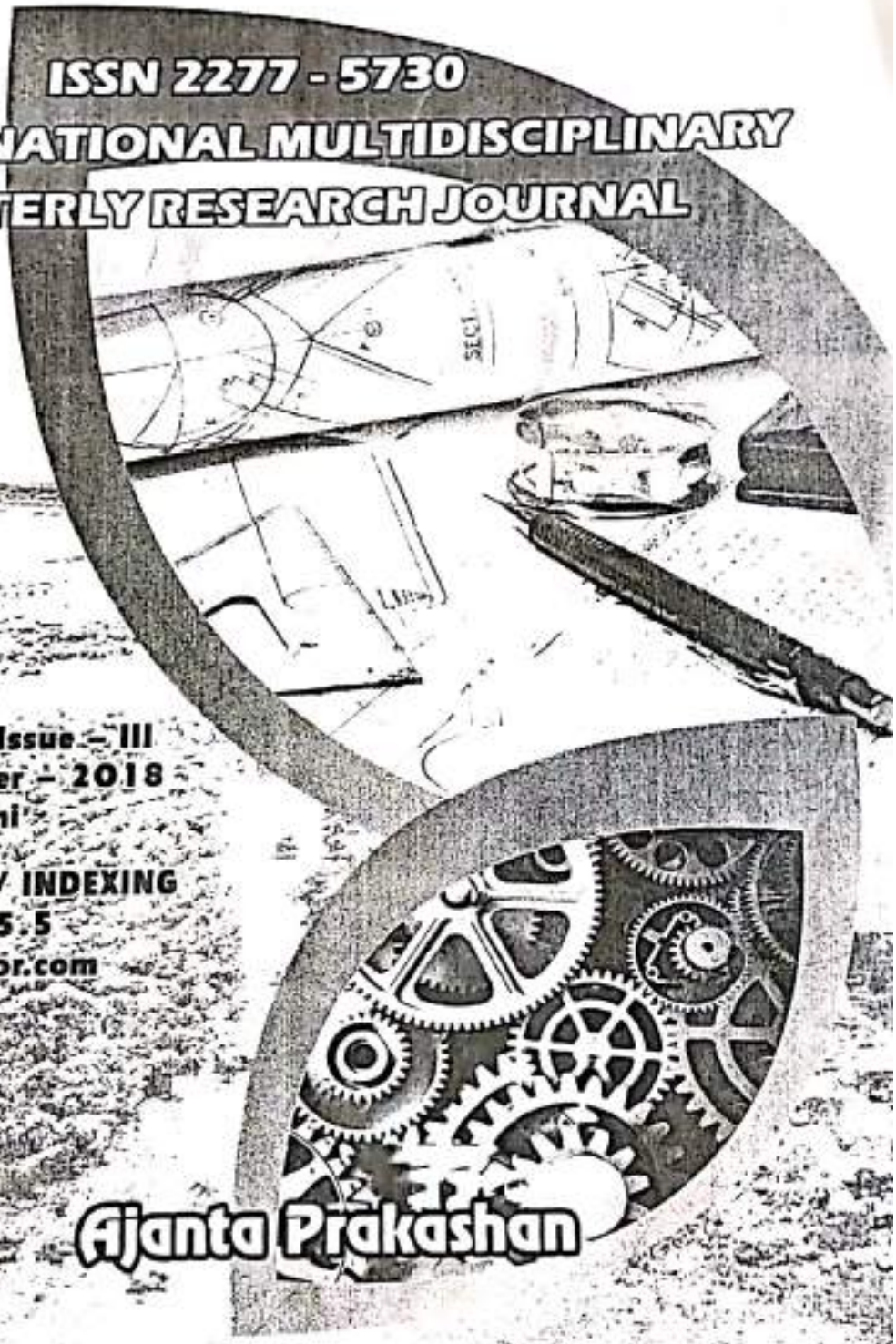

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CONTENTS OF MARATHI

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३६. भारताचे स्वातंत्र्य आणि संविधान (एक टिकात्मक परिक्षण)

प्रा. रिता आर. राऊत
वाणिज्य विभाग, सहायक प्राध्यापिका, यशवंतराव चव्हाण महाविद्यालय, लाखांदूर जि. भंडारा.
प्रा. डि. एस. कुरंजेकर
अर्थशास्त्र विभाग, सहयोगी प्राध्यापक, यशवंतराव चव्हाण महाविद्यालय, लाखांदूर जि. भंडारा.

सारांश

विसाव्या भातकाचे ठळक वैशिष्ट्ये म्हणजे संविधानाद्वारे समाजाची कल्पना करणे आणि विशिष्ट आदर्श या उद्दिष्ट समोर ठेऊन त्या दिशेने समाजाची निर्मिती करणे या विचाराने भारतीय राज्यघटना तयार होऊन आज 67 वर्षे पूर्ण झाली आहेत. राज्यघटना तयार करण्यासाठी एकूण 2 वर्ष 11 महिने 17दिवस लागली. घटना समितीमध्ये एकूण 299 सदस्य होते त्यापैकी स्त्रियांची संख्या 15 होती. राज्यघटनेत अधिकार, हक्क, कर्तव्ये दिसून येतात. यामुळे भारतीय नागरिकाला स्वतःचे अस्तित्व जाणून घेता येते आणि चांगले जिवन जगण्याची गुरूकिल्ली म्हणून संविधान हाती घेता येते. परंतु आज आरक्षणाच्या बाबीला टोकावर नेऊन सर्वीकडे नासधूस चालू आहे. संविधान जर नाश पावेल तर सर्वच समाजावर त्याचा प्रभाव होईल आणि भारतीय स्वातंत्र धोक्यात येऊन पुन्हा मनुस्मृती जागृत होईल. त्याकरिता संविधान वापरणे, चालविणे आणि ते टिकविणे ही काळाची गरज आहे. संविधानाची अवहेलना करणाऱ्यांसाठी पुन्हा एकदा संविधानाची जाणीव करून देण्याची गरज निर्माण झाली आहे.

प्रस्तावना

भारताचे संविधान हे राज्याचा कारभार सुरळीत चालविण्याचे दिशादर्शक आहे.भारतीय संविधान हे लिखीत स्वरूपात असून ती भारताची एक घटना आहे. परिस्थितीनुसार भारतीय राज्यघटनेत सुधारणा करता येतात. सध्या भारतात संविधान सुधारणेवर अधिक भर देण्याचे दिसून येते. जीएसटी कायदा आणण्याकरिता संविधानातील कर कायदा बदलला गेला.प्रत्येक पक्ष आपल्या हिताकरिता त्याचा वापर करतो आणि त्यात बदल करतो. ॲट्रॉसिटी बदलण्याविशयीचे प्रयत्न भाजप सरकार करित आहे. ब्रिटीश राजवटीतून भारत स्वातंत्र झाला तेव्हा एका लोकशाही स्वरूपाची आणि स्थिर कायद्याची भारताला गरज होती. त्या गरजेतूनच भारतीय संविधान अस्तित्वात आले. भारताला स्वातंत्र मिळाले पण त्या स्वातंत्र्याचा उपभोग कसा करावा त्याकरिता स्वतंत्र कायदे आणि अधिकार प्रदान करून देणारा दस्तऐवज तयार करण्यात आला तो म्हणजे भारतीय राज्यघटना होय. या संशोधनामध्येभारतीय नागरिकाला त्याचे हक्क, अधिकार आणि कर्त्तव्य यांची जाणीव करून देण्याच्या उद्देशाने संविधानाच्या वैशिष्ट्यावर आणि त्यावर केलेल्या टिकेवर प्रकाश टाकण्यात आले आहे.

बिजशब्द: संविधान निर्मितीचा इतिहास, वैशिष्ट्ये, आणि समालोचन

संविधान निर्मितीचा इतिहास

भारतात जसजशी राजकीय जागृती होऊ लागली तसतशी भारताची घटना भारतीयच तयार करतील ही मागणी जोर धरू लागली. मात्र 1919 पर्यंत काहीच प्रगती झाली नाही. कारण ब्रिटीशांनी आपली सत्ता भारतीयांना

हस्तांतरित केली नाही. सन 1928 मध्ये पं. मोतीलाल नेहरू यांच्या अध्यक्षतेखालच्या [illegible] केली. भारतीय जनतेद्वारे भारताचा राज्य कारभार कसा करावा हे दर्शविण्यासाठी एक [illegible] करण्यात यावी अशी मागणी 1934 मध्ये काँग्रेसने केली होती. ही मागणी पूर्ण करण्यासाठी [illegible] इंग्लंडच्या तीन मंत्र्यांनी भारतीय संविधान सभा निर्माण केली. भारतातील [illegible] नेतृत्वाखाली सुरू असलेली देशव्यापी आंदोलने व दुसऱ्या महायुद्धाचे संकट ही सर्व परिस्थिती लक्षात घेऊन [illegible] लॉर्ड लिनलिथगोने ऑगस्ट 1940 मध्ये घोषणा केली की, युद्ध समाप्तीनंतर घटना तयार करण्याची जबाबदारी भारतीयांची राहील. युद्धसमाप्तीनंतर मे 1946 मध्ये क्रिप्सी योजनेनुसार भारताच्या स्वातंत्र्याचा हक्क इंग्रजांनी मान्य केला आणि घटना परिषदेचे स्वरूप निश्चित करण्यात आले. त्यानुसार 10 लाख लोकसंख्येच्या पाठीमागे एक याप्रमाणे घटनापरिषदेचे सभासद प्रांतिक कायदेमंडळाच्या मार्फत निवडले गेले. शीख 4, मुस्लिम 78, सर्वसाधारण 210, कमिश्नरच्या प्रांतातून 4 असे एकूण 296 प्रतिनिधी ब्रिटीश भारतातून निवडले गेले. पैकी काँग्रेसने 211 व मुस्लिम लिगने 73 जागा जिंकल्या. हिंदी संस्थानीकांना दिलेल्या 93 जागा भरल्या गेल्या नाही. मुस्लिम लिग ने अंतरिम सरकार मध्ये भाग घेतला पण घटनापरिषदेत भाग घेतला नाही. 9 डिसेंबर 1946 रोजी संविधान सभेची पहिली बैठक झाली. या बैठकीस 207 प्रतिनिधी हजर राहिले. या संविधान सभेत प. नेहरू, सरदार पटेल, डॉ. राजेंद्रप्रसाद, डॉ.श्यामाप्रसाद मुखर्जी इ. पुढारी तसेच डॉ. बाबासाहेब आंबेडकर, डॉ. जयकरसारखे विद्वान होते. या संविधान सभेने ऑगस्ट 1947 मध्ये एक मसुदा समिती नेमली. तिचे अध्यक्ष डॉ. बाबासाहेब आंबेडकर हे होते. जगातील दे. शांचा संविधानाचा अभ्यास करून या समितीने संविधानाचा मसुदा बनविला. तो फेब्रुवारी 1948 मध्ये प्रकाशित करण्यात आला. त्यावर चर्चा झाली. त्याप्रमाणे 26 जानेवारी 1950 पासून भारताचे संविधान अमलात आले.

भारतीय राज्यघटनेची वैशिष्ट्ये

1. **व्यापक व लिखित घटना** – जगातील पहिली लिखित घटना ही अमेरिकेची आहे. भारतासुद्धा संघराज्य पद्धती असल्यामुळे भारताची राज्यघटनाही लिखित आहे. जगातील सर्वात विस्तृत संविधान म्हणजे भारतीय संविधान होय. यात 22 भाग, 395 कलमे आहेत. 26 जानेवारी 1950 अमलात आल्यापासून 2012 पर्यंत सुमारे 123 व्या घटना दुरुस्तीचा प्रयास चालू आहे.सोबतच केंद्र व राज्ये यांचे वर्णन, नीती निर्देशक तत्व, अस्पृश्य आणि मागासलेल्यांची विशेष व्यवस्था, आणीबाणीतील अधिकार, नागरिकता, राष्ट्रीय भाषा, क्षेत्रिय भाषा, निवडणूक, अभियोग, भारतातील व्यापार व व्यवहार यांचे सविस्तर वर्णन येथे करण्यात आले आहे.

2. **अंशतः परिवर्तनीय आणि जनतेचे सार्वभौमत्व** – इंग्लंडचे संविधान हे अत्यंत लवचिक असून अमेरिकेचे संविधान ताठर आहे. या दोन्ही संविधानांपासून भारताचे अंशतः संविधान तयार करण्यात आले.भारतीय घटना भारतीय जनतेने भारतीय जनतेसाठी तयार केलेली आहे. सत्तेचा वापर जनता अप्रत्यक्ष मार्गाने करते. निवडणुकीच्या मार्गाने सत्ताबदल केला जातो.

3. **स्वतंत्र न्यायपालिका, एकेरी नागरिकत्व, धर्मनिरपेक्षता, प्रौढ मताधिकार** – सरकारने किंवा संसदेने पगार कमी करण्याची धमकी देऊन न्यायपालिकेवर अनुचित दबाव टाकू नये म्हणून स्वतंत्र न्यायपालिकेची व्यवस्था करण्यात आली. भारतीय संविधानाने न्यायपालिकेला स्वतंत्र दर्जा दिलेला आहे. त्यामुळे न्यायपालिकेला संविधान विरोधी कायदा रद्द करणे, न्यायाधिशांची नियुक्ती करणे इ. कार्य करता येतात. भारतात एकेरी नागरिकता आहे.तसेच वेगवेगळ्या धर्मांच्या लोकांबद्दल भेदभाव करण्यात येणार नाही. प्रत्येक नागरिकाला आपल्या इच्छेप्रमाणे

आपल्या धर्माचे पालन व प्रचार करण्याचा हक्क आहे. धर्मनिरपेक्ष राज्य स्थापन करण्याचा मुख्य उद्देश म्हणजे सर्व नागरिकांची सामाजिक, राजकीय व आर्थिक उन्नती ही आहे. भारताच्या संविधानात स्वतंत्र मतदार संघाला अजीबात वाव नाही. येथे फक्त संयुक्त मतदार संघ प्रस्थापित करण्यात आले आहे. भारतातील 18 वर्षावरील सर्व नागरिकांना वंश, धर्म, जाती, स्त्री–पुरूष दिला आहे.

4. मूलभूत हक्क व मार्गदर्शक तत्त्वे, मागासलेल्या व वन्य जमातींना विशेष सवलती – मूलभूत हक्क हे लोकशाहीचे प्रमुख आधारस्तंभ आहे. संविधानाच्या भाग 3 मध्ये मौलीक अधिकारांची व्यवस्था करण्यात आली आहे. त्यात समता, स्वातंत्र, धार्मिक प्रचार व व्यवहार स्वातंत्र, शैक्षणिक व सांस्कृतिक, मालमत्ता बाळगणे, शिक्षणूकीचा विरोध इ. बाबतीत मूलभूत अधिकार देण्यात आले आहे. भारतीय संविधानातील तत्त्वे ही आयर्लंड च्या संविधानातून घेण्यात आली आहे. घटनेच्या 4 थ्या भागात तत्त्वांची मांडणी केलेली आहे. त्यात आर्थिक, सामाजिक आणि राजकिय दृष्टिने कोणती पाऊले उचलली जाणार आहेत याचे मार्गदर्शन करण्यात आले आहे. तसेच कलम 17 नुसार भारतात अस्पृश्यता पाळली जाणार नाही, परंतु मागासलेल्या जाती व वन्य जमातींना पुढे येण्याकरिता , त्यांना शिक्षण, नोकरी व अन्य क्षेत्रांत सवलती देऊ केल्या आहेत.

5. संघराज्य पद्धती, संसदीय भासन पद्धती, हिंदी राष्ट्रभाषेचा दर्जा – यांविषयी घटनेत स्वतंत्र अस्तित्वतयार केले आहे. भारताचे संविधान लोकतंत्रात्मक आहे. संविधान सभेने भारताची राज्यपद्धती ही संसदात्मक बनविली आहे.संसदेत लाकसभा आणि राज्यसभा असे दोन गृहे आहेत. लोकसभेचा कार्यकाल पाच वर्षाचा असून राज्यसभा ही स्थायी संस्था आहे. प्रत्येक राज्याला आपल्या प्रादेशिक भाशेत राज्य कारभार करण्याची स्वीकृती देण्यात आली.

भारतीय संविधानाचे समालोचन

भारताच्या संविधानावर अनेकांनी टिका केल्या होत्या त्या पुढीलप्रमाणे आहेत:–

1. मौलिकतेचा अभाव – टिकाकारांच्या मतांनुसार, भारतीय संविधानात मौलिकता दिसून येत नाही. काही कलमे 1935 च्या भारत सरकारच्या कायद्यातून शब्दश घेतलेली आहेत. तसेच काही कलमे इंग्लंड, अमेरिका, कॅनडा इ. देशातून गोळा केली आहेत.यात स्वदेशी असे काहीच नाही.यात भारताच्या प्राचीन काळातील 'सभा व समिती' मधून काहीच घेतलेले नाही. 'आचार्य चाणक्याच्या अर्थशास्त्रातून काहीच निवडले नाही. मध्यमकालीन भारतातील राजनीतीतूनही काहीच घेतलेले नाही.टिकात्मक उत्तर असे की, जर संविधानातून काहीच संकलित करता येत नसेल तर वर्तमानकाळातील वैधानिक आराखड्यात जुन्या काळातील तत्त्वे बरोबर जुळणार नाही.

2. केंद्राला जास्त अधिकार – भारतीय संविधानाने केंद्राला जास्त अधिकार दिलेले आहेत. तसेच प्रांताला स्थानिक स्वराज्य संस्थेचे रूप दिलेले आहेत. त्यामुळे प्रांतांना अधिकार कमी आहेत.टिकात्मक उत्तर असे की, भारताची एकता व एकात्मता ही सर्वोच्च असल्यामुळे केंद्राला सर्वोच्च अधिकार दिलेले आहेत. असे केले नसते तर प्रांतीय महत्त्व वाढून भारताच्या एकतेला धक्का बसला असता.

3. नीति–निर्देशक तत्त्वे अर्थहीन – कोणताही उद्देश न ठेवता ही तत्त्वे संविधानात अंतर्भूत केलेल आहेत. यांना कायदेशीर आधार नाही. सरकार वाटल्यास यांचा अंगिकार करू शकते किंवा धुळकावून लावू शकते. नीती–निर्देशक तत्त्वे ही केवळ नीती–वचने आहेत.टिकात्मक उत्तर असे की,जनतेच्या हाती दिलेली ही तत्त्वे

आज्ञा–पत्रा' प्रमाणे आहेत. जनता या तत्त्वांचा बाबतीत आंदोलने करून सरकारला नीती–निर्देशक तत्त्वाप्रमाणे व्यवहार करायला भाग पाडू शकते.

4. अधीन न्यायालयांची उपेक्षा – संविधानाने उच्चतम न्यायालय व उच्च न्यायालय यांच्या न्यायधीशांना त्यांच्या स्वतंत्रतेच्या संबंधात सुरक्षा प्रदान केली आहे. पण अधीन न्यायालयातील न्यायाधीशांना त्यांच्या स्वतंत्रतेच्या संबंधात सुरक्षा प्रदान केली नाही, याबद्दल न्यायाधीशांनी तकार केली आहे.

5. अध्यादेशाचा अधिकार अनावश्यक – संविधानाने भारताचा राष्ट्रपती, राज्यपाल व राजप्रमुख यास यटहुकूम काढण्याचा अधिकार दिला आहे. लोकशाही देशात याची गरज नाही. अशी व्यवस्था इंग्लंड मध्ये सुद्धा नाही. भारताच्या गुलामगिरीच्या अवस्थेतील संविधानातून घेतलेले हे कलम अनुचित व अनावश्यक आहे.

6. आणीबाणीचे विशेषाधिकार नको – राष्ट्रपतीला आणीबाणीच्या काळातील जे विशेष अधिकार दिले आहेत त्याचीही आलोचकांनी निंदा केली आहे.आलोचकांच्या मते राष्ट्रपती हा अशावेळी 'हुकूमशहा' होऊ शकतो.

ए.के.घोश यांच्या मते, राष्ट्रपतीच्या हाती आणीबाणीचे अधिकार दिल्यामुळे एक सामर्थ्यसंपन्न डिक्टेटर झालेला आहे.ए.सी. गुहा यांचे मत असे आहे की, राष्ट्रपतीच्या हाती दिलेले अधिकार हे जास्तच आहेत. हिटलर सत्तारूढझाला असताना जर्मनीच्या चांसलरच्या अधिकारासारखे या राष्ट्रपतीच्या अधिकारात दिसून पडतात.इ.स. 1949–50 मध्ये कॉंग्रेसचे अध्यक्ष **शंकररावदेव** यांचेही मत वरीलप्रमाणे आहे. त्यांच्या मते, जर्मनीच्या संविधानाप्रमाणे आमचे राष्ट्रपतीदेखील एक हुकूमशहा होऊ शकतात.पण वरील मते अजूनही खरी ठरलेली नाही.

7. संविधान फारच लांबलचक आहे. अमेरिकेच्या संविधानाप्रमाणे हे संक्षिप्त आणि सुटसुटीत असावयास हवे होते. आमच्या घटनाकारांनी 1935 च्या कायद्याला आदर्श न मानता अमेरिकन संविधानाला आदर्श मानले असते तर फार बरे झाले असते.पण घटनाकारांनी विविध संविधानांच्या व्यवहारात प्रगट झालेल्या उणिवांना टाळण्यासाठी हे संविधान बनविले असल्यामुळे हे लांबलचक झाले आहे. प्रत्येक मुद्दा जास्तीत जास्त स्पष्ट व्हावा व कोणतीच अस्पष्टता तिळमात्रही राहू नये याची काळजी घेतल्यामुळे हेसंविधान लांबलचक झाले आहे.

8. ईश्वराचा आशीर्वाद नाही. जगातील काही देशांच्या संविधानामध्ये ईश्वराचा आशीर्वाद व प्रार्थना यांचा उल्लेख केलेला आहे तसा भारताच्या संविधानात नाही. याकडे टीकाकारांनी लक्ष वेधले आहे.पण भारताला धर्मनिरपेक्ष राज्य करावयाचे असल्याने टीकाकारांनी या मुद्याला फाटा दिलेला असावा असे वाटते.

9. वकिलांनी वकिलांसाठी संविधान बनविले.

10. **जयप्रकाश नारायण** यांच्या मते, जे संविधान आत लागू होत आहे व ज्यामुळे लोकशाही अस्तित्वात येत आहे ते स्वतःच व्यक्तिगत स्वातंत्र्याला व सामाजिक न्यायाला एका धोक्याचा आधार आहे.

11. डॉ. जेनिंग्ज यांच्या मते, भारतीय संविधान हे पूर्णपणे इंग्रज राज्याची उत्पत्ती आहे.

भारतीय संविधान आणि आजची परिस्थिती

आज आरक्षण या मुद्याचा खूप मोठा इ यू झाल्याचे दिसून येते. त्याचा परिणाम म्हणजे नवी दिल्लीत लोकशाहीचे मंदिर असलेल्या संसदेच्या मार्गावर संविधानाच्या प्रति जाळल्या. अनुसूचित जाती आणि जमातिविरूद्ध समाजकंठकांनी घोशणाबाजी केली. 9 ऑगस्ट ला संसदेसमोर आरक्षणविरोधात संविधानप्रति जाळून मनुस्मृतीची मागणी केली. प्रकाश आंबेडकरांच्या मते. आजची परिस्थिती ही संविधान विरोधात असून खाजगीकरणावर भर देणारी

आहे. राहुल गांधी म्हणतात मनुवादी नेत्यांचे प्रमाण कॉंग्रेसमध्ये अधिक आहे. आज मराठा समाज आरक्षणासाठी हल्लाबोल करत आहेत. आज संविधान धोक्यात येऊन त्यामुळे बहुजनांचे अधिकार संपुष्टात येत आहे.

निष्कर्श आणि उपाययोजना

वरील संशोधनातील टिकात्मक परिस्थिती आणि चालू परिस्थितीतचे अध्ययन करून पुढील निष्कर्श आणि उपाययोजना काढण्यात आले आहे.

भारतीय संविधान हे लिखित स्वरूपाची न बदलता येणारी सनद आहे. त्यात सुधारणा मात्र करता येऊ शकतात. याआधारावर आज संविधान बदलविण्यावर सरकारचा जोर दिसून येत आहे.वरील टिकांचा अभ्यास केल्यास असे लक्षात येते की, संविधान हे स्वतंत्र भारताला अनुसरून असून स्वतंत्र लोकशाही निर्माण करण्याचे कार्य संविधानाने केले आहे. त्यात जुन्या विचारांना जागा नाही. उदा. हूकुमशाही, ई वरपुज्य सेवा, कठोर आणि बंधनकारक कायदे, मनुस्मृती इ.स्वातंत्र भारताला आज 71 वर्श पूर्ण होत असून आजही तरूण पिढीमध्ये, समाजामध्ये संविधानाची जाणीव जागृती नाही म्हणून पुन्हा आज संविधान वाचण्याची आणि ती समजून घेण्याची गरज निर्माण झाली आहे.आरक्षणाच्या नावावर जातीभेद पुन्हा वर तोंड उचलत आहे आणि राजकारण त्यात खतपाणी घालत आहे. यामुळे केवळ हाणीच होऊ शकते त्यापासून पर्याय निघू शकणार नाही.

आज भारतीय समाजाने एकत्रीत येऊन आपले स्वातंत्र, आपले अधिकार आणि कर्तव्ये समजून घेणे, संविधानानुसार वाटचाल करणे ही चाबी प्रत्येक नागरिकाने अंगिकारणे गरजेचे आहे.अन्यथा संविधान धोक्यात येईलच पण जनसामान्यांचे जीवनसुद्धा धोक्यात येईल याची सर्वांनी दखल घेणे काळाची व प्रत्येक मानवाची गरज आहे.

संदर्भ

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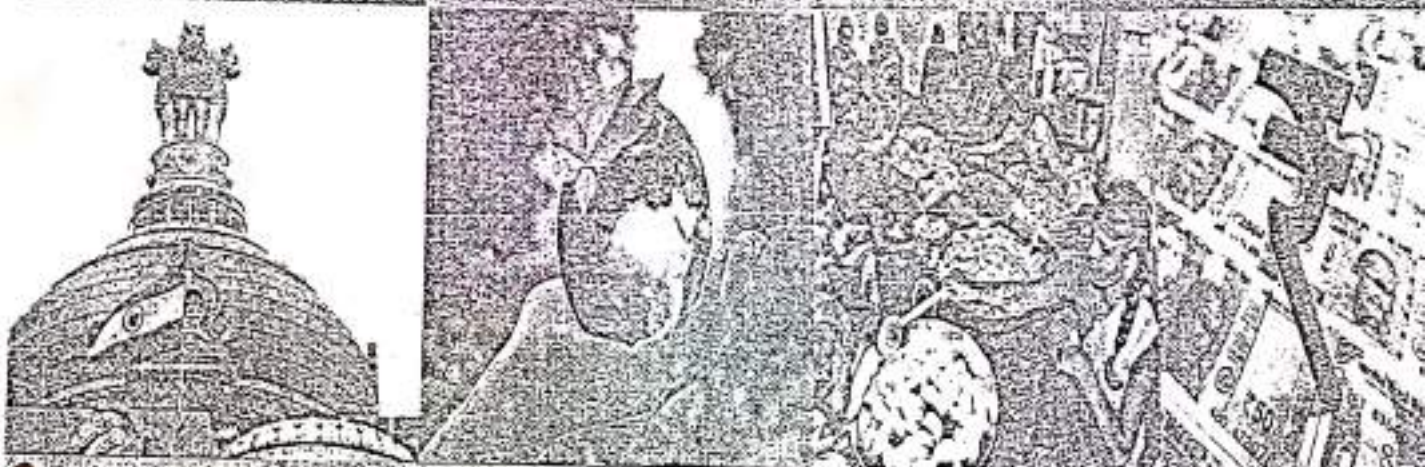

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भारतीय शिक्षणातील लिंगभेद : स्त्रियांच्या शिक्षणातील अडसर

प्रा. डॉ. महेन्द्र भाऊराव वासेकर
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प्रास्ताविक :

स्त्रियांना बहुतेक कुठलाही अधिकार सहजपणे मिळाला नाही. मतदानाचा हक्क, संमती विवाह ऐच्छिक घटस्फोट, अर्थार्जन इथपासून परिधानाचे म्हणजे पोशाख घालण्याचे स्वातंत्र्य देखील त्यांना झगडुन आणि समाजाविरुध्द बंड करुनच मिळवावे लागले. घरकाम, मुले सांभाळणे, जिण्याची चढउतार हे सर्व करावयाचे सुटसुटीत मोकळे कपडे वापरायला मिळणे हा स्त्रिच्या परिधान आणि निवड स्वतंत्राचा एक भाग होता. परंतु त्यासाठी तिला चळवळ करावी लागली. पॅटसदृश्य ब्लुमर घालणाऱ्या स्त्रियांना शिव्या, कुत्सीत बोलणे, दगडे, अंडयांचा वर्षाव झेलावा लागला, हे सारे घडले अमेरिकेत पुरूषप्रधान संस्कृतीच्या प्रभावातुन आणि वर्चस्वातुन निर्माण झालेले लिंगधिष्ठीत भेदभावाचे तत्व अद्यापही कमी—अधिक प्रमाणात जगात सर्वत्र पाळले जाते.

शिक्षणातील लिंगभेदभावाचा अर्थ :

शिक्षण घेण्याची संधी मुलांना देणे आणि मुलींना मात्र नाकारणे असा शिक्षणातील लिंगभेदभावाचा अर्थ आहे. जागतीक लोकसंख्येतील अर्धा भाग स्त्रिया आहेत. परंतु शिक्षण, उत्पन्न, मालमत्ताविषयक अधिकार, जिवनसाथीदाराची (विवाह साथीदाराची) निवड करण्याचे स्वातंत्र्य सारख्या अनेक बाबतीत पुरूषांच्या तुलनेत स्त्रिया मागारलेल्या आहेत. अशी स्थिती निर्माण होण्याचे प्रमुख कारण शिक्षणातील लिंगभेदभावाचे तत्व होय.

भारतीय शिक्षणातील लिंगाधिष्ठित भेदभावाबाबत सद्यस्थिती :

आधुनिक शिक्षणाबाबत संपुर्ण भारतीय समाजच माघारला होता हे साक्षरताबाबतच्या जणगणणा अहवालातील आकडेवारीवरून लक्षात येते. भारतात १९५१ मध्ये ५ वर्षपिक्षा अधिक वय असणाऱ्या लोकांमध्ये साक्षरतेचे प्रमाण १८.३३ टक्के होते. त्यात पुरूष साक्षरतेचे प्रमाण २१.१६ टक्के होते तर स्त्री साक्षरतेचे प्रमाण ८.८६ टक्के होते. स्त्री पुरूष साक्षरतेच्या प्रमाणात ११.३० टक्के एवढे अंतर १९५१ मध्ये होते, शिक्षणाबाबत लिंगधिष्ठित भेदभावाची हि स्थिती संपलेली नाही हे वर उल्लेखित १८.३० टक्के या फरकावरून स्पष्ट होते. १९०१ मधील स्थिती कशी असेल याची आपण कल्पना करू शकतो.

१९५१ पासुन २०११ पर्यंतच्या काळात भारताने साक्षरतेबाबत बरीच प्रगती केली आहे. २०११ मध्ये साक्षरतेचे प्रमाण ७४.०४ टक्के झाले आहे. त्यात पुरूष साक्षरतेचे प्रमाण ८२.१४ टक्के आहे. तर स्त्री साक्षरतेचे प्रमाण ६५.४६ टक्के आहे. २०११ मध्ये स्त्री पुरूष साक्षरतेमधील तफावत १६.६८ टक्के आहे. १९५१ हिच तफावत १८.३० टक्के होती. म्हणजे १९५१ पासुन ते २०११ पर्यंतच्या ६० वर्षाच्या कालखंडात स्त्रि पुरूष साक्षरतेमधील तफावत केवळ १.६२ टक्क्यांने कमी करणे आपल्याला शक्य झाले आहे.

घटकराज्ये आणि केंद्रशासीत प्रदेश यानुसार २०११ मधील स्त्री पुरूष साक्षरतेचा विचार केला तर भारतात स्त्री पुरूष साक्षरतेबाबत समानतेची स्थिती असणारे एकही घटकराज्य व केंद्रशासित प्रदेश नाही. संपुर्ण भारतात सर्वात जास्त म्हणजे ९२.०१ टक्का एवढा स्त्री साक्षरता दर असणारे केरळ राज्य आहे. (केरळमध्ये पुरूष साक्षरता ही ९६.०१ टक्के आहे) तर सर्वात कमी

म्हणजे ५१.५ टक्के एवढा स्त्री साक्षरता दर असणारे बिहार राज्य आहे. स्त्री साक्षरता दर ९२.१ टक्के असणारे राजस्थान हे बिहारपुर्वीचे खालुन दुसऱ्या क्रमांकावर असणारे घटक राज्य आहे.

साक्षरतेप्रमाणे दर हजारी स्त्री पुरूष प्रमाणाबाबतही आपली स्थिती समाधानकारक नाही. २०११ मधील जणगणना अहवालानुसार संपुर्ण भारतातील दरहजारी स्त्री पुरूष प्रमाण ९४३ आहे. केरळ हा घटकराज्य दर हजारी स्त्रीयांचे प्रमाण पुरूषापेक्षा जास्त म्हणजे १०८४ आहे. तर केरळनंतर दुसऱ्या क्रमांकावर पॉडेचेरी या केंद्रशासीत प्रदेशाचा लागतो. तेथे स्त्री पुरूष प्रमाण १०३८ आहे. १९५१ पासुन २०११ पर्यंतच्या सर्व जणगणना आहवालात केरळमध्ये स्त्री पुरूष प्रमाण१००० पेक्षा अधिक असल्याचे दिसुन येते. (१९५१ च्या जणगणना अहवालात बिहार, मणिपुर, मिझोराम, मेघालय, झारखंड, ओरीसा, छत्तीसगड, गोवा, लक्षव्दीप, तामिळनाडु आणि केरळ या राज्यामध्ये स्त्रीयांचे प्रमाण पुरूषापेक्षा जास्त असल्याचे दिसुन येते परंतु केरळ सोडुन अन्य कोणत्याही घटकराज्याला व केंद्रशासीत प्रदेशाला १९५१ मधील ही स्थिती टिकवुन ठेवणे शक्य झाली नाही) केरळ व पॉडेचेरीमध्ये स्त्रीयांचे प्रमाण पुरूषापेक्षा अधिक असले तरीही तेथे साक्षरतेमध्ये पुरूष साक्षरतेचे प्रमाण स्त्री साक्षरतेच्या प्रमाणापेक्षा अधिक आहे. केरळमध्ये पुरूष साक्षरता ९६.१ टक्के तर स्त्री साक्षरता ९२.१ टक्के आहे. पॉडेचेरीमध्ये पुरूष साक्षरता ९१.३ टक्के तर स्त्री साक्षरता ८०.६० टक्के आहे.

भारतीय शिक्षणातील लिंगभेदभावाची स्थिती समजुन घेण्याच्या दृष्टीने केरळ व पॉडेचेरी ही दोन आदर्श राज्य होत असे म्हणता येईल.

स्त्री शिक्षणाचे महत्व :

स्त्री शिक्षणाची आवश्यकता वादातीतपणे स्पष्ट झालेली आहे. स्त्रियांच्या शिक्षणाकडे केवळ एक सामाजीक गरज म्हणुन पाहणे संकुलीत होईल. ती आर्थीक विकासाची गरज तसेच ती राष्ट्र बांधणीची (National Building) गरज देखील आहे. देशाची अर्ध्या लोकसंख्या म्हणजे स्त्रीया अशिक्षीत राहील्या, अडाणी राहील्या, तर आपल्या देशाच्या उत्कर्ष होईल काय. देशातील अर्धी मानवसामुग्रीचा उपयोग न करणे म्हणजे साधनसामुग्रीचा अपव्यय होय. यावरून स्त्री शिक्षणाची आर्थीक गरज वादातीतपणे स्पष्ट होते.

चुल आणि मुल यापलीकडेही काही कार्यक्षेत्र स्त्रियांसाठी असु शकतात याचा विसर भारतीय समाजाला पडला आहे. 'अडाणी आई घर वाया जाई' तर 'शिकलेली आई घरादारापुढे नेई' हे वचन केवळ भारतीयांनीच नव्हे तर समस्त मानवजातीने लक्षात ठेवणे आवश्यक आहे.

स्त्रयांच्या शिक्षणातील अडसर

१) कुटुंब : मुलींना शिक्षणाची संधी मिळवुन देण्यामध्ये कुटुंब पुढाकार घेउ शकते. तसेच मुलींना शिक्षणाची संधी नाकारण्यामध्ये देखील कुटुंबाचाच पुढाकार असतो. कुटूंबानेच शिक्षणाची संधी नाकारली तर बहुतांश मुलीसाठी (स्त्रियांसाठी) शिक्षण घेण्याचे अन्य मार्ग जवळजवळ बंद होतात. मुलींना शिक्षणाची संधी देणे अथवा नाकारणे हे तिच्या आई—वडीलांच्या इच्छेवर अवलंबुन असते. विवाहानंतर शिक्षणाची अनुमती द्यायची किंवा नाही हे प्रामुख्याने तिच्या पतीच्या इच्छेवर अवलंबुन असते. कुटुंबातील पुरुषांची विशेषत: कुटुंबप्रमुखाची स्त्री शिक्षणाबाबत आणि स्त्रियांच्या भूमिकेबाबत मनोधारणा' कोणत्या प्रकारची आहे यावर स्त्रीयांना शिक्षणाची संधी मिळणे अवलंबुन असते असे म्हणता येईल.

२) विवाह : भारतीय समाजव्यवस्थेत मुलांमुलींचे विवाह करून देणे हे आपले कर्तव्य आहे, हि आपली जबाबदारी आहे असे बहुतांश पालक मानतात. या जबाबदारीतुन लवकरात लवकर मुक्त होण्याची घाई पालकांना असते. वेळप्रसंगी मुलीचे उच्च शिक्षण पुर्ण झालेले नसतांनाही मुलींचे

विवाह लावुन देणारे पालक आहेत. याउलट मुलींचे शिक्षण झाल्यानंतरच त्यांच्या विवाहाचा विचार देखील न करणारे पालक सुध्दा आहेत. पाश्चिमात्य समाजाच्या तुलनेत भारतात मुलींचे सरासरी विवाहवय कमी आहे. नागरी भागापेक्षा ग्रामिण भागात मुलींचे सरासरी वय कमी आहे. भारतात कायद्यानुसार मुलींचे विवाहवय १८ वर्षाचे असले तरीही बालविवाह पध्दतीचे पूर्णता उच्चाटन झालेले नाही. यावरून विवाह हा स्त्री शिक्षणाच्या मार्गातील अडसर आहे हे स्पष्ट होते.

३) स्त्रियांचे स्थान आणि भुमिकेबाबतचा दृष्टीकोन : कुटुंबात मुल आणि मुल या दोन गोष्टीपुरतीच स्त्रियांची भुमिका मर्यादीत आहे. या दोन गोष्टीपलीकडेचे आणि स्वतःचे असे वेगळे जग स्त्रियांना नसते. असे स्त्रियांच्या स्थान व भुमिकेबाबतच्या पारंपारीक दृष्टीकोनाचे म्हणणे आहे. हा दृष्टीकोनच स्त्री शिक्षणाच्या प्रसार व प्रचारातील एक प्रमुख अडसर आहे. केवळ पुरूषच नव्हे तर स्त्रियादेखील या दृष्टीकोनाच्या प्रभावाखाली असल्याचे दृश्य या भारतीय समाजात दिसुन येते. या दृष्टीकोनाचा त्याग करून स्त्रियांच्या स्थान आणि भुमिकेबाबतचा आधुनिक दृष्टीकोन मान्य केल्याशिवाय स्त्री शिक्षणाचा मार्ग मोकळा होउ शकत नाही.

४) मुलींच्या शिक्षणाच्या उपयुक्ततेच्याबाबत सांशकता : अल्पशिक्षीत आणि पारंपारीक दृष्टीकोनाचा प्रभाव असणाऱ्या पालकांना मुलींना आधुनिक शिक्षणाची फारशी गरज नाही असे वाटते. चुल आणी मुल या कर्तव्याची पुर्ती करण्यासाठी औपचारीक शिक्षणाची गरज काय असा त्यांचा प्रश्न आहे. फार झाले तर केवळ प्राथमिक शिक्षण प्राथमिक हे पर्याप्त (पुरेसे) आहे अशी त्यांची धारणा आहे.

५) मुलींसाठी स्वतंत्र शाळांचा अभाव : मुले—मुली यांच्या सहशिक्षणाच्या विरोधात काही पालक आहे शाळेतील पुरूष शिक्षक, अन्य कर्मचारी यांची भाषा, हावभाव आणि एकुण प्रवृत्ती यामधुन लिंगभेदभावाची भावना डोकावते. त्यामुळे मुलींच्या मनाते न्युनगंडाची भावना निर्माण होते. मुलींच्या शाळा स्वतंत्र असाव्यात. त्यात स्त्री शिक्षीका असाव्यात अशी त्यांची मागणी आहे. देशाच्या काही भागात मुलींसाठी स्वतंत्र शाळांचा अभाव हा भारतासारख्या परंपरावादी समाजातील एक अडसर आहे.

६) आत्मविश्वासाचा अभाव : काही मुलींमध्ये स्वतःच्या बौध्दीक क्षमतेबाबत आत्मविश्वास नसतो. विज्ञान, गणित, इंग्रजी यासारखे विषय शिकविण्यासाठी लागणारे बुध्दिसामर्थ्य मुलांपेक्षा मुलींना निसर्गनिच कमी दिले आहे. अशी त्यांची भ्रामक धारणा असते. अभ्यासाच्या ताणतणावाचा आपल्यावर विपरीत परिणाम होतो अशी अनेक मुलींची धारणा असते. आपल्या तारूण्याची जपणुक करण्यासाठी अभ्यासाचा ताणतणाव सहन न करणे हाच सर्वोत्तम मार्ग आहे असे काही मुलींना प्रामुख्याने नागरी भागातील काही मुलींना वाटते. त्यामुळे शिक्षणाच्या कोणत्यातरी स्तरावर त्या शिक्षणात माघारतात आणि अल्पावधीत शैक्षणिक गळतीमध्ये सामील होतात.

संदर्भ :—

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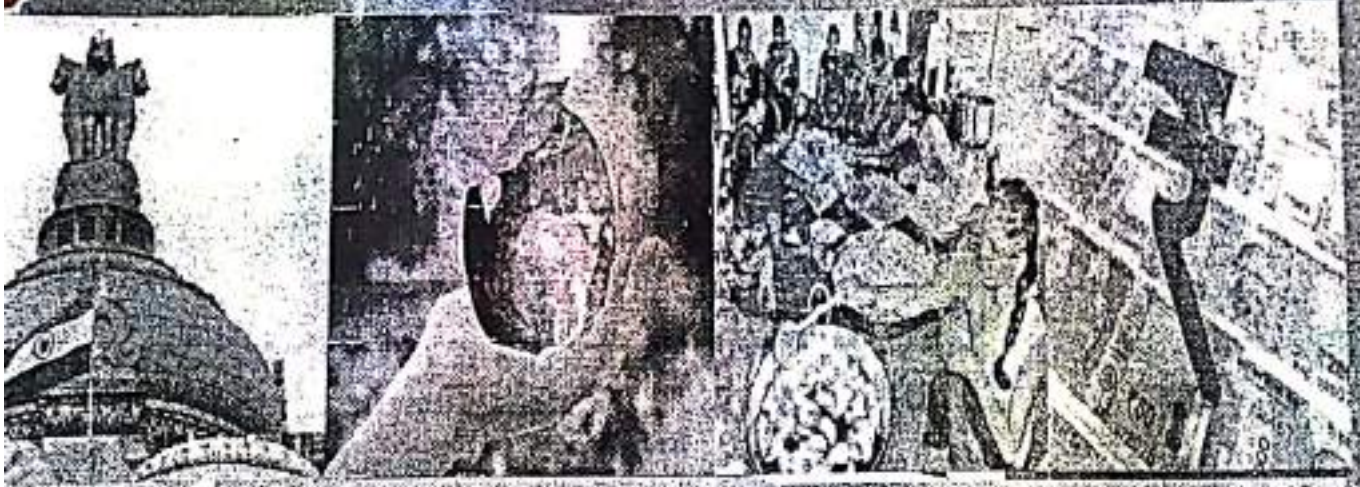

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वाणिज्य विभाग यशवंतराव चव्हाण महाविद्यालय लाखांदूर जिल्हा भंडारा ४४१८०३

प्रस्तावना

आपला भारत देश हा आर्थिकदृष्ट्या अजूनही विकसीत नाही. देशामध्ये कृषी शेतकऱ्यांचे प्रमाण अधिक असून शेती व्यवसाय बिनभरवशाचा असल्यामुळे निश्चितच उत्पन्नाचे प्रमाण कमी आहे आणि कर्जाने अनेकांचे बळी घेतलेले आहेत.भारतात शेकतरी आणि मजूर, कर्मचारी वर्गही आहेत त्यांची आर्थिक स्थिती बिकट आहे.तरीसुद्धा जेवढे पैसे मिळाले त्यात समाधानी राहून भविष्यासाठी काही वाचवून ठेवण्याची सवय आजही लोकांमध्ये दिसून येते. आपल्या नियमित कमाईमधून खर्च काढून जी बचत होते त्याला इंग्रजीमध्ये सेविंग (Savings) म्हणतात. या बचतीमधून मुलांचे शिक्षण, लग्न, नोकरी, वैद्यकिय खर्च इ. गरजा भागविल्या जातात. पन शेतकरी आणि मजुरांनी सरकारी योजनांवर अवलंबून न राहता तसेच व्यसनाच्या आहारी न जाता स्वतः गुंतवणुकीचा मार्ग स्विकारून आपली आर्थिक स्थिती बळकट बनवावी.या संशोधनातून गंतवणुकीची सवय लागावी आणि चांगला परतावा घ्यावा या उद्देशाने विविध गुंतवणूक आणि त्यावरील करपद्धती यांचे सविस्तर विश्लेषण या अभ्यासात करण्यात आले आहे.

विज्ञाब्द मुख्य धोरणे, विविध योजना, करपद्धती

संशोधनाचे उद्देश :-यात पुढील उद्देशांचा समावेश होतो.

१. गुंतवणुकीची सवय लागावी.२.बचत वाढवून आर्थिक स्थिती बळकट व्हावी. ३.बचत आणि गुंतवणूक सर्वसाधारण लोकांना समजावी. ४.गुंतवणुकीवरील कर आणि कर्जप्रणाली समजून घेणे.

गृहिते १. गुंतवणूकीच्या काही योजना करमुक्त आणि काही करयोग्य आहेत.२. भाग बाजारात गुंतवणुक करणाऱ्यांचे प्रमाण कमी आहे.३. गुतवणूकीचे स्वरूप काही अल्पकालीन, काही मध्यमकालीन तर काही दीर्घकालीन आहे.४. काही गुतवणूकी फायदेशीर आहेत.

गुंतवणूकीचे मुख्य मुद्दे आणि गुंतवणूकीचे धोरणे

बचत गुंतवणूकीचे मुख्य ध्येय असून बचतीमधूनच गुंतवणूक करावी, कर्ज काढू नये.आर्थिक परिस्थितीनुसार गुंतवणूक करावी. गुंतवणूक केल्यास नुकसान सहन करण्याची क्षमता असावयास हवी

गुंतवणूकीमध्ये धोका कमी अधिक असतो. त्यानुसार फायदाही मिळतो. रोख रक्कम मिळण्याची आणि बाजारात लगेच विकण्याची क्षमता गुंतवणूकीत असायला पाहिजे.काटकसर करून वेगवेगळ्या प्रतिभूतिंमध्ये गुंतवणूक करता येते आणि त्यासाठी प्रतिभूतिंवरील करांचा अभ्यास करणे गरजेचे आहे.

भारत सरकारची वित्तीय मंत्रालय दरवर्षी बजेटमध्ये उत्पन्नावरील कराच्या दरामध्ये आवश्यक फेरबदल करून संसदेच्या दोन्ही सभागृहात हा ठराव पास करून त्याची अमलबजावणी केली जाते. म्हणून गुंतवणूकदाराला कोणत्या गुंवणूकीत सरकारपासून किती नफा मिळेल यांची माहीती असणे जरूरी आहे त्याचबरोबर त्यांना शेअर बाजारात गुंतवणूक करण्यांच्या नियमाचे ज्ञान असणे जरूरी आहे.

१. सार्वजनिक भविष्यनिधी (Public Provident Fund) कराची बचत करण्यासाठी ही सर्वात लोकप्रिय योजना आहे. या योजनेत एका आर्थिक वर्षात ५०० रूपयांपासून ते १.५ लाखापर्यंत गुंतवणूक करता येते. ही पूर्ण करमुक्त योजना आहे. यावर सरकारने ठरविल्याप्रमाणे (१ जानेवारी २०१८ पासून) चालू वार्षिक चक्रव्याढ व्याज दर ७.६% ने आकारला जातो.

तीन वर्षानंतर लोन उचलता येते, पालक किंवा त्यांच्या अज्ञात मुलाच्या नावावर खाता उघडता येतो आणि पैसा सुरक्षित राहतो. करात सवलत मिळते यात जप्तीचा प्रश्न नसतो. पण १५ वर्ष योजनेची मुदत असून वयस्कांसाठी

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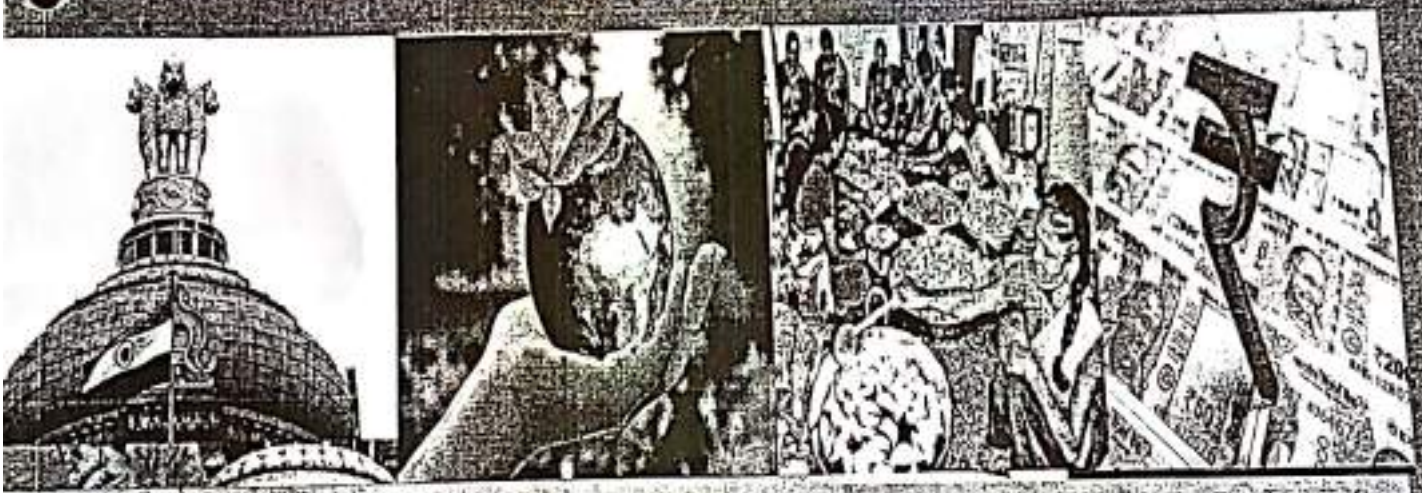

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भंडारा जिल्ह्यातील वसाहत प्रारूपांचे भौगोलिक अध्ययन

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मानव हा बुध्दीमान प्राणी आहे. त्याला लाभलेल्या निसर्गदत्त देणगीमुळेच तो इतर प्राण्यापेक्षा वेगळा ओळखला जातो. मानवाने आपल्या बुध्दीचातुर्याने व जिज्ञासु वृत्तीमुळेच नवनवीन शोध लावलेले आहेत. त्यामुळेच नवनविन संसाधने उदयास येत आहेत.

मानव अगदी सुरूवातीच्या काळात भटक्या अवस्थेत असून तो अन्नासाठी नेहमीच फिरत असे. जंगलातील कंदमुळे जमा करणे, शिकार या अवस्थेतून तो स्थलांतरीत शेती करू लागला. अनेक मानवी समुह एकत्र येवून बराच काळापर्यंत स्थिर राहील्याने कच्या झोपड्याची निर्मिती करून वस्त्यांची निर्मिती झाली. पुढे स्थायी शेती अस्तित्वात येवून घरांचे स्वरूप बदलून पक्की घरे अस्तित्वात आली यातूनच वसाहतीचे विविध प्रारूप अस्तित्वात आले. मानवाच्या या वसाहतीच्या प्रारूपावर स्थानिक भूपृष्ठरचना, भूगर्भरचना व उतार याचा प्रभाव पडून वसाहतीचे विविध प्रारूप तयार झाले. पर्वतीय किंवा डोंगराळ भागाच्या तुलनेत पठारी प्रदेशात, पठारी प्रदेशाच्या तुलनेत मैदानी प्रदेशात वसाहतीचे प्रारूप भिन्न-भिन्न प्रकारचे आढळून येते.

सर्वसाधारणपणे भंडारा जिल्ह्यातील प्राकृतिक घटकांचा व इतर सोयीचा ग्रामीण व नागरी वसाहतीच्या प्रारूपावर प्रभाव पडलेला दिसून येतो. त्यामुळे तयार झालेल्या अनेक वसाहतीचे प्रारूप अभ्यासण्यासाठी या विषयाची निवड केलेली आहे. प्राकृतिक घटकांतील विभिन्नता तसेच अंतर आणि वसाहतीचे वितरणामुळे वसाहतीचे विभिन्न प्रारूप तयार होत असतात.

वसाहतीच्या वितरणावर या प्रारूपांचा प्रभाव पडून त्या - त्या वैशिष्ट्यानुसार तो तो भूभाग ओळखला जातो. म्हणून विशिष्ट भागाचा सखोल अभ्यास करण्यासाठी त्या भागातील प्रारूपांचा अभ्यास करणे आवश्यक आहे. यावरून वसाहतीचे वितरण स्पष्ट होते.

संशोधनाचा उद्देश :

संशोधनाचा मुख्य उद्देश भंडारा जिल्ह्यातील विविध वसाहत वितरण प्रारूपांचा अभ्यास करणे हा आहे. तसेच वसाहतीमधील अंतर, लोकसंख्या अभ्यासणे याशिवाय वस्ती प्रारूपांचा अनुक्रम व प्राकृतिक विभागानुसार वसाहतीचे वितरण प्रारूप तपासणे हा आहे.

गृहितके / परिकल्पना :

जिल्ह्यातील ग्रामीण व नागरी वसाहतीच्या वितरणामुळे वसाहतीचे विभिन्न प्रारूप विकसित होतात. तसेच वसाहत भूपृष्ठरचनेशी निगडीत आहे. वसाहतीचे वितरण आणि प्रारूप यामध्ये सहसंबंध आहे. यातून वसाहतीच्या विभिन्न प्रारूपाची निर्मिती होत असते. अशी परिकल्पना करण्यात आलेली आहे.

अभ्यास क्षेत्र :

वस्ती प्रारूपांचा अभ्यास करण्याकरीता भंडारा जिल्ह्यातील ग्रामीण व नागरी भागाचा विचार करून भंडारा जिल्ह्याची निवड केली आहे.

महाराष्ट्राच्या उत्तरपूर्व सिमेवर भंडारा जिल्हा असून १ मे १९९९ या रोजी जिल्ह्याचे विभाजन होऊन स्वतंत्र भंडारा जिल्हा अस्तित्वात आला. भंडारा जिल्ह्याचे स्थान २०३° उत्तर ते २१° ४० उत्तर अक्षांश व ७०° २५ पूर्व रेखावृत्त ते ८०° १० पूर्व रेखावृत्त या दरम्यान आहे.

भंडारा जिल्ह्याच्या उत्तरेस मध्यप्रदेशातील बालाघाट जिल्हा पूर्वेस गोंदिया जिल्हा, दक्षिणेस गडचिरोली व चंद्रपूर जिल्हा आहे. भंडारा जिल्ह्याचे क्षेत्रफळ ४०८७ चौ.कि.मी (२०११ नुसार) असून महाराष्ट्र राज्याच्या क्षेत्रफळाच्या १.३% क्षेत्र व्यापलेले आहे.

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२०११ च्या जणगणनेनुसार भंडारा जिल्हयाची एकूण लोकसंख्या ११,३६,१४६ एवढी असून ५,७३,४४५ पूरूष लोकसंख्या तर ५,६२,७०१ स्त्रि लोकसंख्या आहे. जिल्हयात एकूण ८०४ ग्रामीण वसाहती व १५ शहरे आहेत. जिल्हयातील ८५% लोकसंख्या ग्रामीण भागात वास्तव्य करते, तर नागरी लोकसंख्येचे प्रमाण केवळ १५% एवढे आहे. जिल्हयात लिंग गुणोत्तर (दरहजारी) ९८१ एवढा आहे. सोबत जिल्हयातील वसाहतींचे वितरण दर्शविणारा नकाशा जोडलेला आहे. (आकृती)

भूपृष्ठरचना :

जिल्हयातील वस्ती प्रारूपावर प्रामुख्याने भूपृष्ठरचनेचा मोठा प्रभाव पडतो. भूपृष्ठाला अनुसरून वस्त्याची निर्मिती झालेली आढळते. जिल्हयाचा उत्तरेकडील भाग सातपूडा डोंगररांगांनी व्याप्त असून उंच सखल आहे. या भागात अंबागडचे डोंगर, गायमुख टेकड्या तुमसर तालुक्यात आहेत. तर पूर्व भागात साकोली तालुक्यात कोन्हा टेकड्या, गायखुरीचे डोंगर तर जिल्हयाच्या मध्य भागात भीमसेन टेकड्या पसरलेल्या आहेत. जिल्हयाच्या उत्तर पूर्व व पश्चिम-दक्षिण भागातून वैनगंगा नदी खोऱ्याचा भाग असून दक्षिणेस सखल मैदानी स्वरूपाचा भाग आहे. यालाच "चौरास पहा" असे म्हणतात. या भागात भूमीगत पाणीसाठे विपुल प्रमाणात असून सघन शेती केली जाते. या भागात वसाहती आकारानी मोठ्या आढळतात. याचा समावेश लाखनी, लाखांदूर व पवनी तालुक्यात होतो.

हवामान :

भंडारा जिल्हयात उन्हाळा, पावसाळा व हिवाळा असे तिन्ही ऋतु आढळून येतात. हा भाग समुद्रापासून दुर असल्याने हवामान विषम प्रकारचे आहे. येथे उन्हाळे उष्ण तर हिवाळे थंड आढळतात. उन्हाळ्याचे कमाल तापमान ४२.१° अंश शतांश असून किमान तापमान १३.१° अंश शतांश एवढे आढळून येते. तर पश्चिमी वाऱ्यामुळे ते ७° शतांश पर्यंत खाली उतरते. ९०% पाऊस पावसाळा या ऋतूत होतो. जिल्हयात ८७९.७ ml मी. पाऊस पडतो.

मृदा :

मृदा निर्मितीवर मुळ खडकांचा परिणाम होतो. यावर हवामान, भूरचना, वनस्पती यांचा परिणाम होतो. जिल्हयातील काही भागातील मृदा अग्निजन्यत रूपांतरीत खडकापासून तयार झाल्या असून त्यापासुन काळ्या मृदेची निर्मिती झालेली आहे. जिल्हयातील 'चौरास पट्टयात' (पवनी, लाखनी, लाखांदूर) पाण्याची मुबलक प्रमाणात उपलब्धता, सुपिक मृदा, सिंचनाची सुविधा यामुळे येथे शेती व्यवसायाचा विकास होऊन वस्त्या सघन (जवळ-जवळ) व आकारानी मोठ्या आढळतात. कन्हान नदी, वैनगंगा नदी खोरे व चुलबंद नदी खोरे येथे काळी मृदा आढळते. अशा मृदेच्या प्रदेशात मृदा कमी सुपिक व सिंचनाच्या फारशा सोयी उपलब्ध नसल्यामुळे वस्त्या विरळ व दुर-दुर अंतरावर आढळतात.

अभ्यास विषय :

वसाहतीमध्ये विभिन्न प्रारूपांच्या विश्लेषणाला महत्व असते. ग्रामीण वसाहतीच्या वितरण आकार, घनता, अंतर तसेच वितरण प्रारूपाचा समावेश होतो.

वसाहतीच्या वितरणाचा संबंध वसाहतीच्या वितरणाशी आहे म्हणजेच कोणत्या ठिकाणी सघन आहेत. या वितरण प्रारूपांचा अर्थ वसाहतीमधील सापेक्ष अंतराशी आहे. प्रारूप मापक घनतेपासून व वितरणात अभिव्यक्ती वैशिष्ट्ये सापेक्ष अंतराच्या माध्यमातून होत असते. एकाच वितरणात चतुष्कोणाच्या आधारे विभिन्न प्रारूप दिसून येतात.

वसाहतीचे वितरण हे विशेषत: भौगोलिक, सामाजिक आणि आर्थिक विविधतेने प्र प्राकृतिक घटक, लोकसंख्या आकार यानुसार भंडारा जिल्ह्यातील वसाहतीचे वितरण सांगितलेले आहे.

भंडारा जिल्ह्यातील घनतेनुसार वसाहत वितरण प्रारूप

सारणी क्र. १

अ.क्र.	तालुके	क्षेत्रफळ चौ.किमी	वस्ती संख्या	वस्ती घनता दर सौ. तरल	व
१	भंडारा	६४९.१६	१३८	०.२१	
२	मोहाडी	४८८.६१	१०१	०.२०	
३	तुमसर	८३७.५७	१३५	०.१६	
४	पवनी	६६२.१५	१३५	०.२०	
५	साकोली	६३३.७३	८५	०.१३	
६	लाखनी	३९१.०३	९४	०.२४	
७	लाखांदूर	४२४.७५	८३	०.१९	
जिल्हा		४०८७	७७१	०.१८	

स्त्रोत : भंडारा जिल्हा जनगणना पुस्तीका (C.D.) २०११

वरील सारणीवरून असे लक्षात येते की, भंडारा जिल्ह्यात वस्तीची घनता दर व असून एकूण वसाहती संख्या ७७१ एवढी आहे. येथे क्षेत्रफळाच्या मानाने वस्तीची घनता कमी दिसून येत विविध भागात ती कमी अधिक प्रमाणात दिसून येते.

१) भंडारा - भंडारा तालुक्यातील वस्तीची घनता ०.२१ इतकी असुन वस्तीची संख्या १३८ एवढी आ चौ.किमी एवढे आहे. भंडारा तालुका जिल्ह्याचे ठिकाण असुन ते मध्यवर्ती ठिकाणी आहे. परिणामी दिसुन येते.

२) मोहाडी - मोहाडी तालुक्याचे क्षेत्रफळ ४८८.६१ चौ.किमी असून वस्ती संख्या १०१ एवढी आहे व आहे. हा तालुका भंडारा जिल्ह्याच्या उत्तरेस असुन भंडारा शहर व जिल्ह्याचे ठिकाण जवळ अस आढळते.

३) तुमसर - तुमसर तालुक्याचे क्षेत्रफळ सर्वाधिक ८३७.५७ चौ. किमी असुन वसाहती संख्या १३५ घनता ०.१६ एवढी आहे. क्षेत्रफळाच्या दृष्टीने येथे वसाहती संख्या कमी आहे. या तालुक्याच्या पर्वतरांगानी व्यापत असुन जंगलाचे प्रमाण जास्त आहे म्हणून येथे वस्ती घनता कमी आढळते.

४) पवनी - पवनी तालुक्याचे क्षेत्रफळ ६६२.१५ चौ. किमी असुन वसाहती संख्या १३५ इतक्या आहे. कमी आहेत. म्हणून येथे वस्ती घनता ०.२० एवढी आहे. या तालुक्याचा पश्चिमेकडील भाग डोंगराळ वैनगंगा नदीचे खोरे आहे. त्यामुळे येथे वसाहतीची संख्या कमी आढळते.

५) साकोली - या तालुक्याचे क्षेत्रफळ ६३३.१३ चौ. किमी तर वसाहती संख्या केवळ ८५ एवढ्या अ एवढी आहे. जिल्ह्याचा बहुतांश भाग डोंगररांगानी व घनदाट जंगलानी व्यापत असुन नागझिरा अ वसाहती कमी आढळतात.

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६) लाखनी - लाखनी तालुक्याचे क्षेत्रफळ ३११.०३ असुन ९४ वस्त्या आहे. म्हणजेच येथे वस्ती घनता सर्वाधिक ०.२४ इतकी आहे. कारण तालुक्याचा बहुतांश भाग सपाट, सुपिक असुन शेती व्यवसायासाकरीता सिंचनाच्या सोयी उपलब्ध आहेत. त्यामुळे येथे वस्त्या सधन स्वरूपाच्या असुन वस्ती घनता संपूर्ण जिल्हयात या तालुक्याची सर्वाधिक दिसून येते.

७) लाखांदूर - या तालुक्याचे क्षेत्रफळ ४२४.७५ चौ. किमी असुन वस्त्यांची संख्या ८३ एवढी आहे. वस्ती घनता ०.१९ एवढी आहे म्हणजेच वस्ती घनता मध्यम प्रकारची आहे. हा तालुका जिल्हयापासून दुर असुन अनेक सोयी पासून वंचित आहे म्हणून येथे वस्ती घनता कमी दिसून येते.

एकंदरीत जिल्हयाचा उत्तर भाग सातपुडा पर्वत रांगानी व्याप्त आहे. पूर्व भाग सुध्दा घनदाट जंगलानी व उंचवट्यानी व्याप्त आहे. जिल्हयाचा वायव्ये भाग टेकड्यानी व जंगलांनी व्याप्त आहे. मध्य भाग उंचवटे व जंगलानी व्याप्त असल्यामुळे अशा भागात वस्ती घनता कमी आढळते. भंडारा तालुक्याच्या ठिकाणी अनेक सोयी उपलब्ध असुन शिक्षणाचे केंद्र आहे. लाखनी तालुक्याचा बहुतांश भाग सपाट व सुपिक आहे. जलसिंचनाच्या सोयी उपलब्ध आहे. याशिवाय राष्ट्रीय महामार्ग येथून गेलेले आहे. त्यामुळे परिवहन व्यवस्था सुलभ आहे त्यामुळे येथे वस्ती घनता जास्त आहे.

सारणी क्र. २

लोकसंख्या घनतेनुसार वसाहत वितरण प्रारूप

(सन २०११ नुसार)

अ.क्र.	तालुके	एकूण लोकसंख्या	क्षेत्रफळ चौ. कि.मी.	लोकसंख्येची घनता
१	भंडारा	२, ८०, ०३०	६४९.१६	४३१
२	मोहाडी	१, ५०, ६११	४८८.६१	३०८
३	तुमसर	२, २६, १०८	८३७.५७	२७०
४	पवनी	१, ५४, ५८८	६६२.१५	२३३
५	साकोली	१, ३६, ८७९	६३३.७३	२१६
६	लाखनी	१, २८, ५४५	३११.०३	३२९
७	लाखांदूर	१, २३, ५७३	४२४.७५	३९१
		१२, ७०, ३३४	४०८७	२९४

स्रोत : भंडारा जिल्हा जनगणना पुस्तिका (C.D.) २०११

वरील सारणीत जिल्हयाची लोकसंख्येची घनता दर चौ. कि. मी. २९४ एवढी आहे. ती जिल्हयाच्या विविध तालुक्यात कमी जास्त दिसुन येते. भंडारा तालुक्यात लोकसंख्येची घनता दर चौ.कि.मी. ला ४३१ एवढी असुन ही जिल्हयातील सर्वाधिक लोकसंख्येची घनता आहे. कारण भंडारा हा तालुका जिल्हयाचा मध्यवर्ती ठिकाण असुन अनेक प्रशासकीय, आरोग्यविषयक, शैक्षणिक सोयी उपलब्ध आहेत. त्यामुळे भंडारा तालुक्यात लोकसंख्येची घनता सर्वात कमी असून ती दर चौ. कि.मी. ला २१६ एवढी आहे. साकोली तालुक्याचा बहुतांश भाग डोंगराळ, उंचसखल व जंगलानी व्याप्त असुन यामुळेच लोकसंख्येची घनता कमी दिसुन येते. तर जिल्हयाच्या मोहाडी, लाखनी, लाखांदूर, तुमसर या भागात शेती व्यवसाय मोठ्या प्रमाणावर असुन येथे घनता मध्यम स्वरूपाची दिसून येते. तर पवनी तालुक्याचा नैऋत्य व पश्चिम भाग उंचवट्याचा व जंगलानी व बराच भाग वैनगंगा नदी खोऱ्यांनी व गोसेखुर्द जलाशयांनी व्याप्त असुन लोकसंख्येची घनता कमी दिसुन येते.

वसाहत अंतर प्रारूप :

वसाहतीचे अंतर एक मिश्रित तथ्य आहे. हे विविध भू-आर्थिक घटकांच्या परस्पर प्रभावामुळे होत असते. अंतर संबंधीत भौगोलिक विशेषता अंतराच्या क्षेत्रिय आयामामुळे होत असते.

एक वस्ती दुसऱ्या वस्तीपासून अनिश्चित अंतरावर वसलेली असते. कारण प्रत्येक वसाहत ही आपल्या वैशिष्ट्यपूर्ण कार्याने उदयास येत असली तरी ती स्वावलंबी नसल्यामुळे गरजा पुर्तीकरीता एकमेकांवर अवलंबून राहावे लागते. यातूनच दळणवळणाचा विकास होऊन वसाहती मधील अंतर ही संज्ञा अस्तित्वात आली. खाणकाम वस्त्या, वनग्राम, खनिजे संशोधनासाठी स्थापित करण्यात येतात, वाहतुक व दळणवळणाच्या सोयीमुळे वसाहतीमधील अंतरावर नियंत्रण ठेवून केंद्रिय स्थानाची निर्मिती करता येते.

राना पी. बी. सिंह :-

यांनी खालील सूत्राद्वारे वसाहतीमधील अंतराचे मापन केले आहे.

सूत्र : Spacing in settlements = १.०७६ x $\sqrt{\frac{\text{Area of settlement}}{\text{No. of settlement}}}$

सारणी क्र. ३

भंडारा जिल्ह्यातील तालुकानिहाय वसाहत अंतर प्रारूप

अ.क्र.	तालुके	क्षेत्रफळ चौ. कि. मी.	वस्ती संख्या	वसाहतीमधील अंतर कि.मी.
१	भंडारा	६४९.१६	१३८	२.३४
२	मोहाडी	४८८.६१	१०१	२.३६
३	तुमसर	८३७.५७	१३५	२.६७
४	पवनी	६६२.१५	१३५	२.३७
५	साकोली	६३३.७३	८५	२.९३
६	लाखनी	३९१.०३	९४	२.१९
७	लाखांदूर	४२४.७५	८३	२.४३
जिल्हा	एकूण	४०८७	७७१	

स्रोत : भंडारा जिल्हा जणगणना पुस्तिका २०११ (C.D.)

वरील सारणीवरून व निरीक्षणावरून लाखनी तालुक्यात दोन वसाहती मधील अंतर २.१९ किमी असून येथे वसाहती जवळ-जवळ अंतरावर वसलेल्या आहेत. येथे लाखनी तालुक्याचे क्षेत्रफळ ३९१.०३ चौ. कि.मी. असून वसाहतीची संख्या ९४ एवढी आहे. म्हणजेच येथे क्षेत्रफळाच्या मानाने वसाहतीची संख्या जास्त असल्याने वसाहतीमधील अंतर सर्वात कमी आढळते. येथे सुपिक जमिनिचे प्रमाण जास्त, बारमाही जलसिंचनाच्या सुविधा, बारमाही वाहतुकीच्या सोयी यामुळे येथे वसाहती कमी अंतरावर आढळतात. याउलट दोन वसाहती मधील जास्त अंतर २.९३ कि.मी. साकोली तालुक्यात दिसून येते. येथे क्षेत्रफळ ६३३.७३ चौ.कि.मी. असून वस्ती संख्या ८५ एवढी आहे. साकोली तालुक्याचा बराच भाग घनदाट अरण्यांनी व्याप्त व डोंगराळ स्वरूपाचा असून याकारणामुळे वसाहती दूर-दूर अंतरावर आढळतात. याशिवाय तुमसर तालुक्यात सुध्दा दोन वसाहती मधील अंतर २.६७ कि.मी. एवढे आहे. या तालुक्याचा बराच भाग सातपूडा पर्वत रांगानी व घनदाट जंगलानी व्याप्त असून दोन वसाहतीमध्ये अंतर बरेच दिसून येते. तर भंडारा, मोहाडी, पवनी, लाखांदूर येथिल दोन वसाहती मधील अंतर अनुक्रमे २.३४, २.३६, २.३७, २.४३ कि.मी. एवढे आहे. म्हणजेच दोन वसाहतीमध्ये अंतर मध्यम स्वरूपाचे दिसून येते.

वस्ती विखरणावर भूपृष्ठ रचनेचा, जलसिंचनाचा, शिक्षणाच्या सोयी, रोजगार इ. घटकांचा परिणाम होतो. अशा बाधित क्षेत्रात वसाहती कमी-जास्त अंतरावर आढळून येतात. म्हणजेच त्या विखुरलेल्या स्वरूपात असतात. अशाठिकाणी वसाहतीचे विखरण प्रारूप तयार होत असते. वसाहतीच्या विखुरलेल्या स्वरूपांमुळे वसाहतीचे Rn मूल्य कमी जास्त प्रमाण असते. यावरून वसाहती विखुरलेल्या असल्याचे आढळून येते. अशाप्रकारे विविध घटकांचा वसाहतीच्या प्रारूपावर प्रत्यक्ष व अप्रत्यक्षरित्या परिणाम होतो.

निष्कर्ष व उपाययोजना :

"भंडारा जिल्ह्यातील वसाहत प्रारूपांचे भौगोलिक अध्ययन" या विषयाच्या अभ्यासावरून असे दिसून येते की, जिल्ह्यातील वसाहत प्रारूपावर तेथिल भूपृष्ठरचना उतार, नैसर्गिक वनस्पती, रस्ते व दळणवळणाची साधने यासारख्या घटकांचा प्रभाव पडतो.

जिल्हयाचा उत्तर व पूर्व भाग डोंगराळ, उंचवटयाचा व जंगलानी व्याप्त असल्याने येथे वसाहत प्रारूप विखुरलेल्या आढळतात. तुमसर तालुक्याच्या उत्तरेस सातपूडा रांगेत, अंबागडचे डोंगर व गायखुरीचे डोंगर, साकोली तालुक्याच्या उत्तर - पूर्वेस कोका टेकडया व गायखुरीचे डोंगर असल्यामुळे येथे वसाहती विखुरलेल्या असुन एकमेकांपासून बऱ्याच अंतरावर आढळतात. तर जिल्हयातील मोहाडी, भंडारा, पवनी व लाखांदूर येथे सुपिक जमिनिचे क्षेत्र, त्यामुळे शेती व्यवसायाचा विकास, शैक्षणिक सोयी यामुळे वसाहती आकारानी मोठया व मध्यम अंतरावर आढळतात. तर लाखनी तालुक्यात दोन वसाहतीमध्ये अंतर सर्वात कमी २.१९ कि.मी. एवढे आहे. येथे सुपिक जमिन, जलसिंचन साधने, सपाट मैदानी क्षेत्र यामुळे येथे वसाहती जवळ जवळ कमी अंतरावर आढळतात. याच भागात वस्त्याचे केंद्रीकरण आढळते.

जिल्हयात वसाहतीचे वितरण अनियमित स्वरूपाचे आढळते. जेथे खनिजसंपदा, वनसंपदा विपुल प्रमाणात आहे, तेथे उद्योगधंद्याचा विकास घडवून आणल्यास येथे नविन वसाहती निर्माण करणे शक्य आहे. तसेच शेती क्षेत्राला मोठ्या प्रमाणात सिंचनाच्या सोयी उपलब्ध करून दिल्यास व वाहतुकीच्या सोयी, दळणवळणाची साधने विकसीत केल्यास वस्त्या विखुरल्या जाऊन वसाहत प्रारूपामध्ये बदल होईल. तसेच लोकांचा आर्थिक स्तर उंचावून उद्योगधंदे व शेती व्यवसायाला चालना मिळेल.

संदर्भ ग्रंथ :

१. डॉ. विठ्ठल घारपूरे "वस्ती भूगोल",पिंपळापूरे प्रकाशन, नागपूर
२. प्रा. तिवारी "अधिवास भूगोल"
३. भंडारा जिल्हा जणगणना (पुस्तिका C.D.) २०११
४. Bhandara.nic.in
५. NHRDF Center Nasik : Remote sensing. map.in Bhandara District

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Of.....यशवंतराव चव्हाण महा. लाखांदूर.....

has published a paper on.....भंडारा जिल्ह्यातील वसाहत प्रारूपांचे भौगोलिक अध्ययन.....

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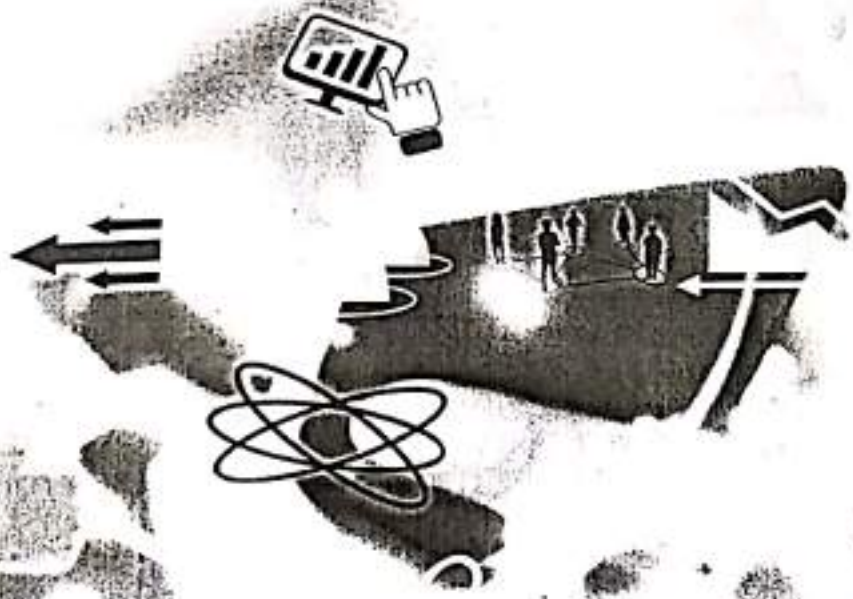

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१०. स्त्री सक्षमीकरणात महिला बचत गटाचे योगदान

प्रा. डॉ. सौ. अल्का दहिकर
गृहअर्थशास्त्र विभाग प्रमुख, यशवंतराव चव्हाण महाविद्यालय लाखांदूर, जिल्हा भंडारा.

महिला सक्षमीकरणाची एक व्यापक चळवळ म्हणून आज स्वयंसहाय्यता बचत गटाकडे [illegible] जाते. महिलांसाठी विकासात्मक कार्य करणारी चळवळ म्हणून ही महाराष्ट्रात मोठया जोमाने सुरु [illegible] आदिवासी ग्रामीण व नागरी समुदायात नवनविन बचत गटांची निर्मीती होऊन त्यामध्ये. दिवसेदिवस महिलांचा सहभाग वाढत आहे. व्यापार व व्यवस्थापनांच्या नवीन कार्य संस्कृतीला महिलांनी एकत्रीत करून [illegible] देण्याचा प्रयत्न अत्यंत जोमाने चालविलेला आहे. महाराष्ट्रात सहकारी चळवळीच्या पाऊलावर पाऊल [illegible] स्वयंसहाय्यता बचत गटाची चळवळ उत्तरोत्तर गतीमान होत आहे. महिला बचत गटाद्वारे आर्थीक स्वंयपुर्णतेच्या दिशेने होणारी महिलांची वाटचान ही अत्यंत स्फूर्तीदायक बाब आहे.

महाराष्ट्रात ग्रामीण विकास साधण्यासाठी लोकसंख्येत 45 % असलेल्या महिलांचा सहभाग दर्शविण्यासाठी 1995 मध्ये सर्वकष महिला धोरण जाहीर करून महिला सक्षमीकरणासाठी महिला स्वयंसहाय्यता बचत गटाची संकल्पना स्पष्ट करण्यात आली 1990 च्या दशकापर्यंत अर्थात स्वातंत्र्याच्या 45 वर्षाच्या काळात अनेक स्त्री चळवळी उभ्या राहील्यात, स्त्री सुधारणा कार्यक्रम अस्तीत्वात आले यात शासन व स्वंयसेवी संस्थाची महत्वाची भूमिका होती. तरी महिलांच्या स्थितीत पाहिजे तो बदल होऊ शकला नाही. परंतु 1990 नंतर बचत गटाच्या उदयामुळे आज महिलांच्या सर्वांगीण विकासात त्यांच्या सक्षमीकरणास [illegible] आयाम प्राप्त झालेला आहे. महिलां बचत गटाद्वारे महिलांचे परावलंबन कमी करून महिलांना सक्षम करून त्यांच्या विकासाच्या दिशा बदलासाठी महिला बचत गट ही एक चळवळ म्हणून पुढे आली आहे.

महिला सक्षमीकरण

व्याख्या :– 1987 मध्ये युनोने जागतिक महिला स्तरावरिल कार्यशाळेत व्हीसेना ग्रिफेनने केलेली व्याख्या, स्त्री सक्षमीकरण म्हणजे स्त्रीच्या अंगी निर्णय घेण्याची, नियंत्रण करण्याची, संघटीत करण्याची क्षमता, मतप्रदर्शन करणे, कृतीशिल कार्यक्रम घडवून आणने. लोकसंपर्क, जनसंपर्क, संस्थासंपर्क, आर्थिक व्यवहार इत्यादी करण्याची क्षमता व आवड निर्माण होणे.

महिला सक्षमीकरण ही एक सक्रीय अशी बहूआयामी प्रक्रीया आहे. ज्यामुळे सर्व क्षेत्रातील महिलांना [illegible] ओळख व सामर्थ्य यांची जाणिव करुन देते. ही क्षेत्र म्हणजे शिक्षण, आरोग्य आर्थिक, राजकिय सहभाग [illegible] आहेत.

बचत गटाची आवश्यकता

1. महिलांचे आर्थिक, सामाजिक, मानसिक सक्षमीकरण करणे.
2. बचत गटामुळे महिलांचा कौटुंबिक दर्जा वाढविने व दबाव गट निर्माण करणे.

3. बचत गटामार्फत महिलांना संघटीत करुन स्वअस्तीत्वाची जाणिव करुन देणे.
4. महिलांमध्ये आत्मसन्मान व आदर निर्माण करणे.
5. स्वंयरोजगार निर्मितिसाठी स्वंयसहाय्यता गटाद्वारे प्रशिक्षण देऊन उद्योजकता वृध्दींगत करणे.
6. बचत गटामुळे महिलांना ग्रामविकासात सहभाग वाढवून ग्रामनिर्णय व नेतृत्व वाढीस लावने.

सक्षमीकरणामध्ये पुढील घटकांचा समावेश होतो

1. स्वतः निर्णय घेण्याचे सामर्थ्य.
2. योग्य निर्णय घेण्यासाठी माहिती व इतर साधने उपलब्ध असणे.
3. निवड करण्यासाठी विस्तृत पर्याय असणे.
4. सामुहिक निर्णय घेतांना दृढ निर्णय घेण्याची योग्यता.
5. परिवर्तन घडवून आणण्याच्या योग्यतेबाबत सकारात्मक विचारसरणी.
6. वैयक्तिक किंवा सामुहिक सामर्थ्यामध्ये सुधारणा घडवण्याचे कौशल्य आत्मसात करण्याची योग्यता.
7. लोकशाही पध्दतीने इतरांचे दृष्टीकोण बदलण्याची योग्यता.
8. अखंड व स्वपुरस्कृत विकास प्रक्रिया तयार करणे व नकारात्मक गोष्टींवर ताबा मिळविने.

महिला सक्षमीकरणात बचत गटाचे कार्य

महिला सक्षमीकरण हा एखादा कार्यक्रम किवा प्रकल्प नसून ही एक प्रकिया आहे. या प्रकीयेत सामील होणारी महिला खऱ्या अर्थाने सक्षम झाली आहे, असे तेव्हांच म्हणता येईल, जेंव्हा सदर महिला स्वतःसाठी किंवा कूटूंबासाठी स्वतः नियोजन करून त्यानूसार निर्णय घेऊन त्यांची अंमलबजावणी करून तिला अपेक्षीत असलेले उद्दिष्ट साध्य करु शकेल.

महिला सक्षमीकरण्यात महिलांचे संघटन हे अत्यंत महत्वाची भूमिका बजावते. स्वतःच्या कष्टातुन काही बचत करणे व त्यामधुन एकमेकींना अडीअडचणीत आर्थिक मदत करणे व यातुनच पुढे छोटे–मोठे व्यवसाय करुन आर्थिक उन्नतीकडे वाटचाल करणे या सर्व प्रकीयेतुन महिला स्वतःच्या अस्तित्वाची व सत्वाची जाणीव होते.

त्याचबरोबर कुटुंब व गाव विकासाचाही त्या विचार करु लागतात व त्यात पुढाकार घेतात. म्हणूनच एकंदरीत महिलना सक्षमीकरणाच्या प्रकियेत स्वयंसहाय्य बचत गटाची भूमिका अत्यंत महत्वाची ठरते.

फायदे

1. बचत गटातम सहभाग घेतल्यापमुळे बचतीची सक्य लागली.
2. इतरांमध्ये मिसळण्याची, त्यांच्या अडचणी जाणुन घेण्याची वृत्ती निर्माण झाली.
3. सहकार्याची भावना वाढिस लागली
4. आत्मविश्वास वाढला आहे.
5. आर्थिक सक्षमीकरण झाले आहे.
6. एकोप्याची भावना वाढीस लागली.
7. महिलांना प्रोत्साहन मिळाले, त्यांचा उत्साह वाढला.
8. महिला आत्मनिर्भर बनल्या.

9. स्वकर्तुत्वावर ठामपणे स्वतःच्या पायावर उभ्या राहू शकल्या.

संशोधनाची उद्दीष्टे

1. महिलांच्या सक्षमीकरणात वेगवेगळ्या महिला बचत गटाची भुमिका अभ्यासणे.
2. महिला बचत गटाचे स्वरुप व प्रगती अभ्यासने
3. महिलांच्या आर्थिक प्रगतितील बदल अभ्यासने
4. महिलांच्या बचत गटामुळे महिलांच्या विकासात झालेल्या बदलांचा आढावा घेणे.

गृहीतके

1. बचत गटाच्या माध्यमातुन महिलांना आर्थिक विकासाची प्रेरणा प्राप्त होते.
2. बचत गटात चालविण्यात येणाऱ्या कार्यक्रमामुळे ग्रामिण महिला निर्णयक्षमतेत सक्षम होतात.
3. बचत गटामुळे ग्रामीण महिलांचे सक्षमीकरण घडून येते.

बचत गटाची चळवळ ही महिलांना सक्षम करणारी आणि खरोखरच अत्यंत यशस्वी ठरलेली अशी मोठी व्यापक चळवळ आहे. आर्थिकदृष्ट्या कमकुवत गटातील लघुव्यावसायीकांसाठी कर्ज पुरवठा होण्याचे बचत गट हे एक साधन आहे. एकत्रीतरित्या तयार असलेले गट, त्या गटांनी केलेली बचत, गटाअंतर्गत तारणासहीत कर्ज पुरवठा, वस्तुरुप तारणाऐवजी सामाजिक आणि समुहाचे तारण, महिलांचे असंख्य बचत गट हे महिलांच्या सक्षमीकरणाचे, गरीबी विरुध्द लढ्याचे आणि सावकारी पाशातुन मुक्ततेचे एक प्रभावी हत्यार आहे.

निष्कर्ष

बचत गटामुळे स्त्रियांना आत्मसम्मान मिळत आहे. 'चुल व मूल' यातून स्त्रिया बाहेर पडून विकासाच्या प्रवाहात शामील झाल्या आहेत. सर्व दृष्टीने महिलांचे सक्षमीकरण होत आहे. महिला बचत गटात येण्यापूर्वी कष्टाची कामे करीत होत्या व शेतमजुरी करीत होत्या. त्यांना सावकारी कर्ज काढावी लागत होते. तसेच सतत कौटूंबीक संघर्ष होत होते. आर्थिक टंचाई भासत होती. बचत गटात आल्यामुळे आर्थिक परिस्थिती सुधारली. गटामुळे धाडसीपणा, आत्मविश्वास, वक्तशिरपणा, निर्णयक्षमता असे गुण विकसित झाले. गटात आल्यानंतर उत्पन्न मिळू लागले. ग्रामसभेची माहिती मिळू लागली. गावाच्या कारभारात महिला सहभाग घेऊ लागल्या.

शिफारस

1. महिलांचा आर्थिक विकास होण्याच्या दृष्टीने शासनाने महिला सक्षमीकरणाची उद्दीष्टे डोळ्यासमोर ठेवून अर्थसंकल्पाची मांडणी करावी.
2. स्वंयसहायता बचत गटांना कर्जपुरवठा करतांना जे प्रमाण वापरले त्यामध्ये वाढ करण्यात यावी.
3. शासनामार्फत बचत गटाच्या माध्यमातुन राबविण्यात येणाऱ्या उद्योगांना अद्यावत साधन सामग्री व यंत्र सामग्रीचा पुरवठा सबसीडीवर करण्यात यावा.
4. ग्रामिण भागातील बऱ्याचशा लोकांना या योजनांची माहिती नाही. तो होण्याच्या दृष्टीने स्वंयसहाय्यता गटाचा अधिक प्रचार व प्रसार होणे गरजेचे आहे.
5. बँकामार्फत करण्यात येणारा कर्जपुरवठा विनाविलंब करण्यात यावा.

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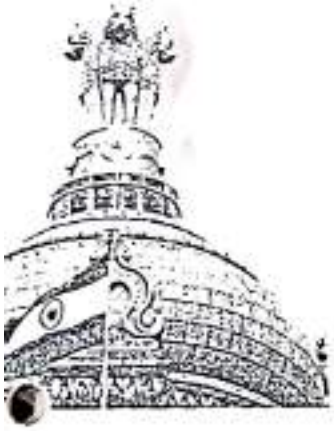

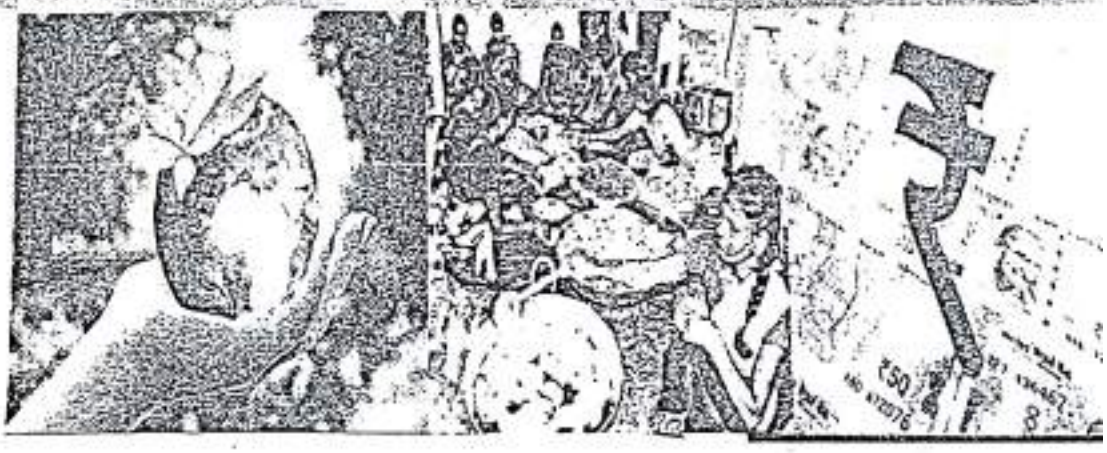

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वृध्दांच्या पालनपोषणात नवपिढीचे उत्तरदायित्व

प्रा. डॉ. महेन्द्र भाऊराव वासेकर
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प्रास्ताविक :—

भारतीय संस्कृतीत सदाचरण, मानवता, प्रेम, बंधुता, नैतिक मूल्ये या गोष्टीना महत्वाचे स्थान आहे. भारतीय संस्कृती ही जगातील सर्व संस्कृतीपेक्षा श्रेष्ठ आहे असे मानले जाते. अशा या भारतीय संस्कृतीत वृध्द मात्यापित्यांची सेवा करणे हे नवीन पीढीचे आद्यकर्तव्य आहे असे मानले जाते. परंतु असे असले तरी दिवसेंदिवस सामाजिक परिस्थिती बदलत चाललेली आहे. आज भारतामध्ये संयुक्त कुटुंबाचे विघटन होऊन त्यांची जागा विभक्त कुटूंब पध्दतीने घेतली आहे. आजच्या धकाधकीच्या जीवनामध्ये सर्वांना प्रश्न आहे तो उदारनिर्वाहाचा, नोकरीच्या निमित्ताने कुटुंबातील अनेक सदस्यांना शहराकडे धाव घ्यावी लागते परंतु याचा परिणाम असा होतो की नवीन पिढीचे वृध्द आई — वडिलांच्या पालन पोषणाकडे दुर्लक्ष होते. शहरात जागेची कमतरता असल्यामुळे मुलगा आपले सर्व कुटूंब शहरात नेऊन एकत्र राहु शकत नाही तर कधी कधी वृध्द लोक आपले गांव सोडून शहरात जायला तयार नसतात, तर कधी कधी आधुनिक विचारसरणीमुळे मुलगा आपल्या सोबत न्यायला तयार नसतो, तर कधी कधी आर्थिक अडचणीमुळे मुल आपल्या वृध्द आई वडीलांचा सांभाळ करण्यास तयार नसतात. परंतु वृध्द आई वडिलांचा साभांळ करणे हे नवीन पिढीचे कर्तव्य आहे याकडे दुर्लक्ष करून चालणार नाही.

शोध निबंधाची उदिदष्टे :—

१. विषयाची पार्श्वभूमी समजून घेणे.
२. वृध्दाच्या प्रमुख समस्यांवर प्रकाश टाकणे.
३. वृध्दांच्या पालनपोषणात नवीन पिढींची जबाबदारी अभ्यासणे.
४. भारतीय लोकसंख्येत वृध्दांचे प्रमाण तपासणे.
५. काही महत्वपूर्ण शिफारशी सूचविणे

तथ्य संकलन :—

प्रस्तूत शोध निबंधाकरिता तथ्यसंकलन हे लिखित साहित्याच्या आधारे केले आहे.

गृहितकृत्ये :—

प्रस्तूत शोध निबंधाकरिता खालील गृहितकृत्ये घेण्यात आलेली आहेत.

१. नवीन पिढींचा वृध्दाकडे पाहण्याचा दृष्टीकोन बदललेला आहे.
२. भारतात वृध्दांच्या अनेक समस्या आहेत.
३. भारतीय समाजात वृध्दांकडे दुर्लक्ष केले जाते.

वृध्दावस्थेचा अर्थ :—

वृध्द कोणास म्हणावे? या प्रश्नापासूनच वृध्दांच्या समस्येच्या अभ्यासाचा प्रारंभ केला पाहिजे. कारण शरीरप्रकृती चांगली असेल तर कोणतीही सर्वसामान्य व्यक्ती आपण 'म्हातारे' झालो आहोत हे मान्य करावयास तयार नसते तर काहि

व्यक्तींना ४० व्या वर्षीच आपण म्हातारे झालो आहोत असे वाटते तर वयाच्या साठीनंतरही काही व्यक्तींचा तरूणांना लाजवेल असा उत्साह असतो.

भारतात वृध्दावस्थेचा प्रारंभ वयाच्या कोणत्या वर्षी होतो हे समजून घेण्यासाठी आपण निवृत्ती वय या घटकाचा आधार घेऊ शकतो. भारतात सरकारी सेवेत ५८ वर्ष हे सेवानिवृत्तीचे वय आहे असे समजले जाते. प्राध्यापक, न्यायाधीश यांच्यासाठी निवृत्ती वयाची मर्यादा ६० वर्ष किंवा त्यापेक्षा अधिक आहे.हरियाना, उत्तरप्रदेश इ. घटक राज्यात निराधार वृध्दांना पेन्शन देण्याची योजना सुरु झाली आहे. या योजनेसाठी ६५ वर्षावरील पुरुष व ६० वर्षावरील स्त्रिया पेन्शन घेण्यासाठी पात्र आहेत असे समजले जाते. अशाप्रकारे सेवा निवृत्ती वयाबाबत भारतात समान स्थिती नाही.

थोडक्यात वृध्दावस्था म्हणजे व्यक्तीच्या जीवनातील अंतिम कालखंड होय. असे म्हणता येईल. प्रत्येक देशात वृध्दावस्थेचा प्रारंभ वयाच्या कोणत्या वर्षी होतो या बाबत अभ्यासकांमध्ये मतभेद आहेत. स्विडनमध्ये वृध्दापकाळाची सुरुवात ६७ वर्षानंतर होते असे समजले जाते. तर अमेरिकेत ६५ वर्षावरील व्यक्तींचा समावेश वृध्दांमध्ये होतो असे समजले जाते. भारतात वध्दावस्थेचे वय सामान्यपणे ५५ ते ६५ समजले जाते.

वृध्दांच्या कसोट्या :—

काट्स यांनी ADL टेस्ट व्दारे वृध्दत्वाच्या सहा कसोट्या सांगितल्या आहेत.

१) जो व्यक्ती स्वत: आंघोळ करु शकत नाही.
२) जो व्यक्ती स्वत: कपडे परिधान करु शकत नाही.
३) आंघोळ करतांना इतरांचा आधार घ्यावा लागतो.
४) आधाराविना फिरु शकत नाही.
५) स्वत:चे जेवण स्वत: करु शकत नाही.
६) दैनंदिन जीवनात उठता येणे, बसता येणे, झोपणे या क्रियास दुसऱ्यांची मदत घ्यावी लागते.

भारतातील वृध्दांची संख्या :—

वैद्यकीय क्षेत्रातील नवनवीन संशोधनामुळे मानवजातीला आपला मृत्यू काही काळासाठी पुढे ढकलने शक्य झाले आहे. सार्वजनिक आरोग्याच्या सोयी— सुविधांमधील वाढीमुळे स्वातंत्र्य प्राप्तीनंतरच्या ६० वर्षाच्या काळात भारताला सरासरी आयुर्मानात ६५ वर्षापर्यंत मजल गाठणे शक्य झाले आहे. संयुक्त राष्ट्र संघटनेच्या निर्देशानुसार देशाच्या एकूण लोकसंख्येत वृध्द लोकांचे प्रमाण ७ टक्के पेक्षा अधिक झाल्यास त्या देशात वृध्दांच्या समस्या निर्माण झाल्यात असे समजावे. २०११ च्या जनगणना अहवालानुसार भारतात ६० वर्षपिक्षा अधिक वय असणाऱ्या पुरुषांचे प्रमाण ७.७ टक्के आहे. तर स्त्रियांचे प्रमाण ८.४ टक्के आहे. या प्रमाणात दिवसेंदिवस वाढ होईल. असा तज्ञांचा अंदाज आहे.

वृध्दांच्या समस्या :—

भारतातील समाजात ६५ वर्षपिक्षा अधिक वय असणाऱ्या वृध्दांची संख्या ही जवळपास ६ कोटी आहे. येत्या काही वर्षात ही संख्या १० कोटीच्या वर जाईल असा

अंदाज आहे. वृध्दांच्या या प्रचंड प्रमाणामुळे भारतीय समाजात वृध्दांच्या अनेक समस्या निर्माण झाल्या आहेत. त्या पुढीलप्रमाणे —

१) शारीरिक दुर्बलता २) आर्थिक समस्या ३) सामाजिक समस्या
४) मानसिक समस्या ५) कौटूंबिक समस्या ६) परावलंबित्व

वृध्दांच्या पालनपोषणात अडचणी येण्याची कारणे:—

वृध्दावस्था ही प्रत्येक व्यक्तीच्या जीवनात येणारी एक अवस्था आहे. या अवस्थेत व्यक्ती परावलंबी होतो. कारण त्याचे स्वतःचे आर्थिक उत्पन्न कमी होते. तसेच त्याचे अवयव शिथिल होऊ लागतात. त्यामुळे त्यांची कार्यक्षमता कमी झालेली असते. शरीरात पाहिजे तेवढा त्राण नसतो. आपला कुटुंबाला व अन्य व्यक्तीला कोणताच उपयोग नाही अशी भावना त्याच्यामध्ये उत्पन्न होते. स्मरणशक्तीचा ऱ्हास होऊन विस्मरणात वाढ होते. आपल्याकडे कोणी लक्ष देत नाही, आपला सल्ला घेतला जात नाही, आपण घरामध्ये अडचण झालो आहोत अशी भावना वृध्द व्यक्तीमध्ये निर्माण होते.

आज वृध्द व्यक्ती आणि नवीन पिढी यांच्या विचारात फार मोठी दरी निर्माण झाली आहे. त्यामुळे ते एकमेकांसोबत जुळवून घेण्यास तयार नसतात. बरेचदा वृध्द व्यक्तीमुळे कुटूंबातील सभासदांचा परस्पर संबंधात ताण—तणाव निर्माण होतो परंतू भारतीय संस्कृतीत कर्तव्य भावनेला अधिक महत्व दिले जाते. या कर्तव्याच्या भावनेपोटीच वृध्दांच्या पालनपोषणाची जबाबदारी नवीन पिढीने घेणे आवश्यक आहे. कारण माता पित्याची सेवा ही सर्वश्रेष्ठ सेवा मानली जाते. त्यांच्या सेवेतच स्वर्ग सुखाचा आनंद प्राप्त होतो.

निष्कर्ष :—

प्रस्तूत संशोधन विषयाचे सखोल अध्ययन केल्यावर जे सर्वसामान्य निष्कर्ष मांडता येईल ते पुढीलप्रमाणे :—

१) वृध्द आणि नवीन पिढी यांच्या विचारात दरी निर्माण झाल्याचे दिसून आले.
२) वृध्दांच्या अनेक समस्या दिसून येतात.
३) भारतीय समाजात वृध्द लोकांची संख्या दिवसेंदिवस वाढत आहे.
४) वृध्दांच्या पालन पोषणात अनेक अडचणी असल्याचे दिसून येते.
५) वृध्दांचे पालन पोषण करण्यात नवीन पिढीची उत्सुकता कमी दिसून येते.

वृध्दांच्या समस्या निवारणार्थ काही शिफारशी :—

प्रस्तूत संशोधन विषयाचे अध्ययन केल्यानंतर संशोधकाला वृध्दां समस्या निवारणार्थ काही शिफारशी सुचवाव्याशा वाटतात. त्या पुढीलप्रमाणे —

१) नवीन पिढीने वृध्दांचा आदर करावा.
२) वृध्दांच्या भावनेची कदर करावी.
३) स्वयंसेवी संस्थांनी वृध्दांसाठी सर्व सोयीयुक्त दिनकेंद्रे उघडावी.
४) गैर सरकारी संघटनांनी पुढाकार घेऊन वृध्दांचे प्रश्न सोडवावे.
५) नवीन पिढीने वृध्दांसोबत समायोजनाची भूमिका ठेवावी.
६) ६० वर्षावरील वृध्द कामगारांना काम करण्यासाठी कायद्याने बंधन घालावे व शासनाने वृध्दांना उदरनिर्वाहासाठी मानधन देण्याची सोय निर्माण करावी.

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A Review Study of Women Empowerment through Self Help Group in India

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Abstract:

Empowerment of nation in a holistic manner is not possible without development of women. Empowerment means increased spiritual, political, social, gender or economic strength of individuals and communities. Empowering women puts the spotlight on equality in education, employment which is an essential element to sustainable development. The researcher found that the considerable changes in economic and social status of most respondents studied have been made after they became members of SHGs. Besides, women have started to play new roles in the family as well as community such as decision makers, partners, advocators of change and educator. As the result, the study found significant changes in the condition of family and the face of society where long existed issues have been removed and the progress has been step by step achieved. In the process, women have acquired new skills, confidence as well as the increase in self-esteem, which enabled them to make choices and act upon their wishes as well as interest.

Keywords: Women Empowerment, Self Help Group, Micro Finance, NABARD.

Introduction:

According to the 2011 Census, while 82.3 percent of women in rural India are engaged in agricultural activity or household industry, only 28.83 percent of them are cultivators. Moreover, almost 60% of women are outside the labour force and do not participate in any gainful economic activity, which is among the highest in the world. These numbers taken together are an indication of the limited economic opportunity available to women in the country, and bring into sharp focus issue of gender equality women's empowerment and livelihood creation.

Self Help Groups (SHG) in India started with the global emergence of micro-finance as the solutio for financial inclusion of rural and urban poor in developing nations. SHGs were developed along the lin of "Community Driven Development" with a focus on financial intermediation through micro-finar interventions. In 1991, Self-Help Groups rose to prominence with NABARD promoting SHGs on a la scale and RBI allowing them to open a savings account and have since, seen tremendous expansion.

WHAT IS EMPOWERMENT?

Empowerment is the process of increasing the assets and capabilities of individuals or groups to make purposive choices and to transform those choices into desired actions and outcomes (World Bank, 2002).

KEY ELEMENTS OF EMPOWERMENT

•**Access to Information:** Informed citizens are better equipped to take advantage of opportunities, access services, exercise their rights, negotiate effectively, and hold state and non-state actors accountable.

•**Inclusion and participation:** Inclusion of poor people and other traditionally excluded groups in priority setting and decision making is critical to ensure that limited public resources build on local knowledge and priorities, and to build commitment to change.

•**Accountability:** It refers to the ability to call public officials, private employers or service providers to account, requiring that they be answerable for their policies, actions and use of funds.

•**Local organizational capacity:** It refers to the ability of people to work together, organize themselves, and mobilize resources to solve problems of common interest. Often outside the reach of formal systems, poor people turn to each other for support and strength to solve their everyday problems.

SELF-HELP GROUPS

Women and SHGs in many parts of the country have achieved success in bringing the women to the main stream of decision making. The SHG in our country has become a source of inspiration for women's welfare formation of SHG is a viable alternative to achieve the objectives of rural development and to get community participation in all rural development programmes. SHG is also a viable organized set up to disburse micro credit to the rural women and encouraging them together into entrepreneurial activities. (Abdul, 2007). To alleviate the poverty and to empower the women, the micro-finance, Self-Help Groups (SHGs) and credit management groups have also started in India.

Self Help Group (SHG) is a small voluntary association to form a group. It is informal and homogenous group of not more than twenty members. SHGs consist of maximum 20 members because any group having more than 20 members has to be registered under Indian legal system. That is why, it is recommended to be informal to keep them away from bureaucracy, corruption, unnecessary administrative expenditure and profit motive. In fact, it is a home grown model for poverty reduction which simultaneously works to empower and shape the lives of its members in a better way. Groups are expected to be homogenous so that the members do not have conflicting interest and all the members can participate freely without any fear. Self-help groups (SHGs) movement has triggered off a silent revolution in the rural

credit delivery system in India. SHGs have proved as an effective medium for delivering credit to rural poor for their socioeconomic empowerment.

SHG AS AN EFFECTIVE APPROACH TO WOMEN EMPOWERMENT

One has to believe that the progress of any nation is inevitably linked with social and economical plight of women in that particular country. Empowerment by way of participation in SHG can bring enviable changes and enhancement in the living conditions of women in poor and developing nations. The underlying principle of SHG is to provide to the poorest of the poor and to achieve empowerment.

Self Help Group (SHG) is a process by which a large group of women (10 – 20), with common objectives are facilitated to come together voluntarily to participate in the development activities such as saving, credit and income generation thereby ensuring economic independence. SHG phenomenon definitely brings group consciousness among women, sense of belongingness, adequate self confidence. In fact, what she cannot achieve as an individual, can accomplish as a member of group with sufficient understanding about her own rights, roles, privileges and responsibilities as a dignified member of society in par with man. When she becomes a member of SHG, her sense of public participation, enlarged horizon of social activities, high self-esteem, self-respect and fulfillment in life expands and enhances the quality of status of women as participants, decision makers and beneficiaries in the democratic, economic social and cultural spheres of life. In other words, we can say that SHG is an effective instrument to empower women socially and economically which ultimately contributes in the overall development of the country like India wherein still large segment of women population are underprivileged, illiterate, exploited and deprived of basic rights of social and economic spectrum.

The experiences of SHGs in many countries have been proving great success as an effective strategy and approach in recent years. Group-oriented efforts in the form of Micro-credit groups in different countries of Latin America, Africa and Asia are examples of current self-help efforts. The grameen groups in Bangladesh, Local self-help development efforts - harambee in Kenya, Tontines or Hui with 10 to15 members involved in financial activities through cash or kind in Vietnam, self help efforts through credit unions, fishermen groups, village-based banks, irrigation groups etc in Indonesia, the self-help groups (SHGs) in countries like Thailand, Nepal, and Sri Lanka and India are successfully proving forms of micro-credit groups or SHGs. No doubt, The Fundamental Rights, The Directive principles o State Policy and Fundamental Duties etc virtually assure equal status to women and provide speci protection that leads to women development beyond the economic dimension and place emphasis on issu relating to equality, autonomy and self reliance at the individual level. As a group-oriented model, SHGs India is a mechanism for women's development to bring in individual and collective empowerment thro improvement in both "condition' and position' Þ of women. Now women in India are mobilized to pro

against domestic violence, rising prices, legal discrimination, rape, child marriage, domestic violence etc. In this way, it aims to empower women with various forms of power.

Several factors and strategies have been provided by the SHGs that have made a positive contribution to the empowerment of women. These are full support and timely advice for balancing family and business responsibilities, leadership, experience in decision making and discussions on social issues. As a result, the numbers of SHGs have been increasing day by day.

Conclusion:

Most of the studies show that Self-help group women have gained self confidence. They got an opportunity to improve their hidden talents after joining the self help groups. They can speak freely in front of large groups of people. In fact they have become modern leaders in the village, Panchayat and local bodies more than before. Women's empowerment through Self- Help Groups (SHGs) plays a pivotal role in the advancement of women in order to help the rural poor tribal, particularly women in securing inspirational and supportive services from within and outside such groups. The SHG movement in India has been working in the right direction, but it is necessary to empower more and more women in social, cultural, economic, political and legal matters, for the betterment of the nation.

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AN OVERVIEW ON STRUCTURAL AND MAGNETIC PROPERTIES OF CERTAIN SUBSTITUTIONS IN COBALT FERRITE

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ABSTRACT

Ferrites have become immensely important materials - technologically and commercially accounting for the bulk of global demand in manufacturing, processing and applications. The present paper focuses on the brief review of structural and magnetic properties of CoFe2O4 with permutations of Zn, Ni, Cu, Mg and some rare-earth (RE) metals. It is observed that the dopant concentration affects the particle size and by varying the degree of substitution, the magnetic properties of fine particles can be speckled due to influence of cationic distribution and their occupancy in specific sites. Over the last decades, the cobalt-RE-magnet alloys have emerged with high permanent magnetic properties. The different RE ions doped with small amount in CoFe2O4 increases porosity, coercivity, magnetization with decreased grain size. With aiming to investigate the effect of substitution, the overview may be fruitful for reconnoitering the newer tailor materials

Keywords: Ferrites, RE metals, structural and magnetic properties, porosity, coercivity

1. Introduction

Ferrites are mixed metal oxides with iron (III) oxide as main component it is a magnetic material exhibit in ferrimagnetic ordering and magnetism due to the super exchange interaction.[1]. Ferrites have wide range of applications depending upon their properties. Properties of ferrites are dependent upon several factors such as composition, method of preparation, substitution and doping of different cations, sintering temperature and time, sintered density, grain size and their distribution. The potential applications of ferrites in electronics, microwave and computer technologies have focused the attention of many research workers on these materials. Their physical properties themselves are dependent on a number of valence electrons of the divalent or trivalent metal ions of tetrahedral (A) and octahedral (B) sites. Several attempts have been made to enhance the qualities of ferrites by employing various methods. The most general method is the incorporation of same suitable nonmagnetic/diamagnetic impurities at the A or B sites. This method enables them to acquire improved electrical, magnetic and optical properties. [2,3]Ferrites can be divided into three groups based on their crystal structures: spinel ferrites, garnet ferrites and hexagonal ferrites. . An ideal spinel structure consists of a cubic close-packed (FCC) array of oxygen anions, where one eighth of the tetrahedral (A) sites and one half of the octahedral (B) sites are filled with cations. The general chemical formula for spinel ferrite is MFe_2O_4 where M is a divalent metal ion (like Mn, Zn, Fe, Ni, Mg, Co etc.). The cubic unit cell is formed by 56 atoms, 32 oxygen anions distributed in a cubic close packed structure, and 24 cations occupying 8 of the 64 available tetrahedral sites (A sites) and 16 of the 32 available octahedral sites (B sites). [4] Spinel ferrites are technologically important class of magnetic oxides because of their magnetic properties high electrical resistivity, and low eddy curren and dielectric loss. Ferrites are extensively use in microwave devices, computers, memo chips, magnetic recording media etc. [5, 6]T cobalt ferrite ($CoFe_2O_4$) possesses an inve

spinel structure. [7] Cobalt ferrite ($CoFe_2O_4$) nanoparticles are considered one of the most interesting metal-oxide materials because of their unique magnetic properties. From this reason, it has been successfully used in many applications such as high density magnetic recording, Ferro fluids technology, biomedical drug delivery, magnetic resonance imaging, data storage, biosensors, biocompatible magnetic nanoparticles for cancer treatment, and magneto-optical devices. Cobalt ferrite exhibits an inverse spinel structure with Co^{2+} in octahedral sites and Fe^{3+} equally distributed between tetrahedral and octahedral sites. Their physical properties depend on several factors such as method of preparation, chemical composition, sintering temperature and distribution of cations among the two sub-lattices: (A) tetrahedral and (B) octahedral.[8]

2. Improvement of Structural and Magnetic properties:

Structural and electromagnetic properties of the ferrite can be modified by divalent ions substitution. Generally, the divalent metal ions (M2+); Ni, Zn, Cu, Mg, Mn, Co or mixtures of these are substituted in different spinel ferrites. These substitutes have different sitting preferences for the two sites ('A' and 'B') in the spinel structure and can change many properties as an effect of modified cation distribution in the ferrite. On the basis of site distribution of M2+ ions and the strength of the exchange interaction among magnetic ions, the influence of M2+ substitutions on structural and magnetic properties can be explained.

2.1 Zn substitution

The magnetic property can be altered by the addition of the zinc. Zn2+ is used to improve electromagnetic properties as well as densification in the ferrite. It is substituted in spinel ferrite to improve magnetization. [9] Faheim AS et al.[10] synthesized nano-crystalline zinc-substituted cobalt ferrite powders, Co1-xZnxFe2O4 (X=0.0, 0.1, 0.3, 0.5, 0.7, 0.9 and 1.0) by the Co-precipitation method. X-ray analysis showed that the samples were cubic spinel. The increase in zinc concentration resulted in an increase in the lattice constant, X-ray density, ionic radii, the distance between the magnetic ions and bond lengths on tetrahedral sites and octahedral sites of cubic spinel structure. The HR-TEM and XRD shows that crystallite size within the range of 6–24 nm. The magnetic measurements showed that the saturation magnetization and coercivity decrease by increasing the zinc content. Furthermore, the results reveal that the sample with a chemical composition of Co0.3 Zn0.7Fe2O4 exhibits the super-paramagnetic behavior. El-Saacy et al. [11], showed by same using same preparation method that as the zinc content increases, the saturation magnetization and coercivity decrease and lead to the super-paramagnetic behavior. Substitution of Zn ions will cause migration of Fe3+ from A-site to B-site causing an overall change of the lattice. The XRD patterns revealed that the spinel cubic structure is formed for the synthesized materials. The growth of particles is obstructed by the presence of zinc so that the average particle size decreases from 24 nm to 6 nm as the concentration of zinc is increased from X=0 to X=1. By increasing the zinc content the lattice parameter is decreased as a result of the high ionic radius of Zn2+ and the decrease in grain size. As the zinc content increases the saturation magnetization, the coercivity decreased and the best composition is about Zn=0.7.

S. Nasrin et al. [12] reported the formation of single phase spinel cubical structure. . They found that the average grain size has been increase with the sintering temperature, while it decreases with the increase of zinc content. The lattice constant is found to increase from 8.42 Å to 8.58Å with increasing zinc content and sintering temperature. The lattice constant has been found to be increases after sintering the sample at 400°C. The saturation magnetization, remanent magnetization, coercivity and magnetic moment have been found to show a decreasing behavior with the increase of Zn content. Experimental data shows that Curie temperature has been influenced by the sintering temperature. It is also seen that the Curie temperature decreases with the increase of Zn content, while it is increases with the increase of sintering temperature.

Santosh S. Jadhav et al. [13] also confirmed the decrease in Curie temperature with increase in Zn concentration.

Coppola, P. et al. [14] found such structural and morphological changes. It shows that up to x= 0.5 zinc ions occupy preferably A-sites, above which Zn ions begin also a gradual occupancy of B-sites. TEM images show nanoparticles with different shapes varying from spheres,

cubes, to octahedrons. Hysteresis loop properties are studied at 300 and 5 K. These properties are strongly influenced by the Zn and Co proportion in the nanoparticle composition. At 300 K, only samples magnetization ratio (M R/ M S) and the coercivity (HC) suggest that nanoparticles with x with high Co content present hysteresis. At 5 K, the reduced remanent < 0.5 have cubic anisotropy.

Polina Yaseneva et al. [15] reported the effect of Zn substitution on the Curie temperature. They found that Zn substitution decreases the Curie temperature (Tc), from around 440 °C for the undoped sample to ~180 °C with x = 0.5. However, these values were also strongly affected by the pre-calcination temperature of the samples, thus TC shifts from ~275 °C for the x = 0.3 sample to ~296 °C after calcination at 500 °C and 800 °C respectively.G. Vaidyanathan et al. [16] studied the Co1−xZnxFe2O4 nanoparticles and showed that that the samples were cubic spinel. The average crystallite size of the particles precipitated was found to vary from 6.92 to 12.02 nm decreasing with the increase in zinc substitution. The lattice constant (ao) increased with the increase in zinc substitution. The magnetic parameters such as MS, Hc, and Mr were found to decrease with the increase in zinc substitution. M. T. Jamila et al. [17] studied the Zn content on the structural parameters. They confirmed the high degree of order and mono dispersity of nanoparticles single phase face center cubic structure (FCC). They revealed that the crystallite size were found in the range (30-70 nm) while lattice parameter, X-ray density decreases with the increase of Zn concentrations.

Swati Tapdiya et al. [18] investigated the increase of unit cell parameter 'a' increases linearly with increasing concentration of zinc due to larger ionic radii of Zn2+ ion and they also found the Saturation magnetization increases as Zn substitution due to the variation of exchange interaction between the tetrahedral abd the octahedral sites. Sonal Singhal et al. [19] synthesis nano particles of zinc substituted cobalt ferrite (Cox Zn 1-x Fe2 O4) where (x = 0, 0.2, 0.4, 0.6, 0.8, and 1.0) via sol-gel method and characterized using infrared spectroscopy (IR), transmission electron microscope (TEM), X-ray diffractometry (XRD) and magnetic measurements. It is observed that the lattice parameter 'a' increases linearly with increase in zinc concentration. An increasing growth of grain size is also observed with increasing annealing temperature. The lattice parameter and the X-ray density, increases with increasing Zn concentration. The saturation magnetization first increases from CoFe2O4 to Co0.6Zn0.4Fe2O4 and then shows a decreasing behavior till ZnFe2O4.

A. Hassadee et al. [20] suggested that the spinel structure of Co1-xZnxFe2O4 was modified by the substitute ions. In Co1-xZnxFe2O4 , Zn2+ commonly substituted for Co2+ in the crystal structure, resulting in an increase in the lattice parameter from 8.381 to 8.412 Å. Magnetization measurements indicated that Co1-xZnxFe2O4 samples with x = 0 – 0.5 showed ferrimagnetic behavior at room temperature. The decrease in the magnetization of the Co1-xZnxFe2O4 samples from 134 to 100 emu/g and the decrease in the coercivity of the Co1-xZnxFe2O4 samples from 140 to 4 Oe by increasing the zinc content from 0 to 0.5 can be attributed to the magnetic characteristic and the anisotropic nature of cobalt. I. C. Nlebedim et al. [21] studied the temperature dependence of structural and magnetic properties of zinc substituted cobalt ferrite from 50 to 300 K. They found no observable changes in the crystal structure. At all temperatures, magnetization increased with x indicating A-site Zn substitution. Maximum magnetization obtained at 4 MA/m which decreased continuously with temperature. An inverse relation was seen between magnetic susceptibility and coercive field while a direct relationship was seen between coercive field and magnetocrystalline anisotropy coefficient.

2.2 Ni Substitution

Sonal Singhal et al. [22] demonstrated, by preparing nano-size nickel-substituted cobalt ferrites using aerosol route, that the particle size of as obtained samples was found to be ~10 nm which increases upto ~80 nm on annealing at 1200 °C. The unit cell parameter 'a' decreases linearly with the nickel concentration due to smaller ionic radius of nickel.

Won-Ok Choi et al [23] used sol gel metho and investigated that when the nick substitution was increased, the lattice constan and the sizes of particles of the ferrite powd decreased. They also observe that the nic substitute cobalt ferrites show lower coerciv and saturation magnetization, than pure co

ferrite powders. These decreases are due to cation distribution, the magnetic moment, and the magneto crystalline anisotropy constant of the substituted ions. Mohd. Hashim et al. [24] observed that saturation magnetization (Ms) decreases with increase in nickel contents which is attributed to the substitution of magnetic Fe3+ ions of 5 μB by less magnetic Ni2+ ions of 2 μB. A decrease in saturation magnetization and in hyper- fine field suggests that the weakening in A and B interactions takes place due to Ni2+ substitution.

Mozaffari et al. [25] results show that a minimum calcination temperature of 500 °C is required to obtain single phase spinel structures for all the samples. It was observed that the lattice parameter of the samples decreases from 8.350 to 8.300 Å with increasing Ni content. Also mean particle sizes of the samples were obtained from FESEM images and there no relation between particle size and Ni content was found. They measured magnetic parameters carried out on cold pressed samples and found that magnetization decreases as x increases. Their results showed that Curie temperatures increases by increasing x values. They explained this change based on super exchange interactions between magnetic ions by substitution of Ni ions in Co ferrite. Also the coercive forces of the samples decreased with increasing x values which was explained by the changes in magneto crystalline anisotropy.

Nermin Kasapoglu et al [26] used the hydrothermal method at a relatively low temperature (160 ∘ C) to synthesize the Single-phase well-crystallized nano sized ferrites of Ni xCo1-xFe2O4 (x = 0, 0.2, 0.4, 0.6, 0.8, 1.0). XRD analysis revealed that these materials belonged to the family of mixed or partially inverse spinel ferrites. They reported the decrease in magnetization as the dopant concentration of Ni2+ increased.

Abdul Gaffoor et al. [27] Synthesized nanoparticles of the composition Ni1-xCoxFe2O4 (where x=0.0, 0.2, 0.4, 0.6, 0.80 and 1.0) were synthesized at a very low temperature (180°C) by Citrate-gel auto combustion method and sintered at 5000C. They confirmed the formation of cubic spinel structure of ferrites. The crystallite size was in the range of 20nm to 31 nm that are desirable for variety of applications like, in magnetic data storage and in etc. The lattice parameter is increased with the increase of Co substitution in Ni-Co ferrites.

N. B. Velhal et al. [28] reported the formation of cubic spinel phase using the low temperature auto combustion technique. The magnetic properties indicates that as Ni content increases the Ms, Mr, Hc and Mr/Ms decreases this is due the lower magnetic moment of nickel. Also magnetic properties show the temperature dependent behavior. The values of Ms, Mr, Hc and Mr/Ms decreases with temperature. Uday Bhasker Sontu et al. [28] also prepared nickel substituted cobalt ferrite using self-combustion method at low temperatures (200oC). They reported that nickel substitution into cobalt ferrite causes the magnetic and electric properties of the ferrite to tune from hard magnetic and lower resistivity cobalt ferrite to soft magnetic and high resistiveity nickel ferrite. Ajaypal Singh et al. [30] synthesized Nanoscale ferrite particles by using solution combustion method. X-ray diffraction studies reveal the formation of single phase spinel structure. Magnetic studies show variation of coercivity and saturation magnetization with cobalt substitution and show higher coercivity and saturation magnetization than pure nickel ferrites. P.P. Hankare et al. [31] also observed the single cubic spinel phase for all the samples. The decrease in lattice parameter and increase in crystallite size of the ferrispinel was observed with increasing nickel content. The nanosize of the synthesized material lie in between 20–25 nm.

2.3 Cu substitution

A. Samavati et al. [32] results show that the increasing Cu concentration causes decrease in the nanoparticle size from ~30 to ~20 nm. Specific saturation magnetization (Ms), remnant magnetization (Mr) and coercivity (Hc) of the spinel ferrites are diminished by the substitution of Cu2+ ions.

B. Chandra Sekhar et al. [33] synthesized Copper substituted cobalt ferrite nanoparticles, Co1−xCuxFe2O4 (x=0.00–0.25) by sol–gel auto combustion method. X-ray diffraction analysis on the samples was done to confirm the cubic spinel structures and Scherrer equation was used to estimate the mean crystallite size as 40 nm. Copper substituted cobalt ferrites have shown improved strain derivative values as compared to the pure cobalt ferrite and thus making them suitable for stress sensing

applications. The results have been explained on the basis of cationic distributions, strength of exchange interactions and net decreased anisotropic contributions due to the increased presence of Co2+ ions in B-sites as a result of Cu substitutions. N. Sanpo et al. [34] also reported the influence of copper substitution on the microstructure and crystal structure and particle diameter.

M. Margabandhu et al. [35] synthesized Cu2+ substituted cobalt ferrite (Co1-xCuxFe2O4, x=0, 0.3, 0.5, 0.7 and 1) magnetic nanoparticles via chemical co-precipitation method. The XRD results confirm the crystalline nature and presence of single phase cubic spinel structure of the obtained magnetic nanoparticles. The VSM results show that the magnetic parameters coercivity (Hc), retentivity (Mr) decrease with increase in Cu2+substitution and saturation magnetization (Ms) shows increment and decrement with Cu2+ substitution in CoFe2O4 magnetic nanoparticles.

Sampath KA et al. [36] prepared cobalt-copper mixed ferrite having the composition Co1-xCuxFe2O4 (x=2, 4, 6 and 8) by SHS. They have studied the sample Co0.2Cu0.8Fe2 O4 demonstrated the mixed spinel ferrite phase. They reported that the sample represented a very much closer linearity of the curve for the softest one. Therefore, it was found to be an appropriate soft ferrite for hyperthermia application.

Rakesh K. Singh et al. [37] synthesized copper substituted cobalt ferrite nanoparticles using citrate precursor method. The precursor was annealed at temperatures 700°C. They found that compound possess a cubic spinel structure. The lattice parameters of all the compounds are lying between the cell parameters of CuFe2O4 and CoFe2O4. Sharp changes were observed in particle size, lattice constant, magnetization and retentivity with the increasing Cu content. The values of coercive field and retentivity are found to be small. M-H curves could not get saturated up to 10 kOe.

2.4 Mg substitution

Vithal Vinayak et al. [38] synthesized the nanocrystalline Co1-xMgxFe2O4 (x = 0.0, 0.50 and 1.0) successfully synthesized by sol-gel auto combustion technique. The X-ray diffraction results for the samples of Co1-xMgxFe2O4 (x = 0.0, 0.50 and 1.0) showed the formation of single phase cubic spinel structure. The lattice constant is found to decrease with increasing Mg2+ concentration. The particle size of the samples calculated using the Debye Scherer's formula was obtained in the range of 11-24 nm. The tetrahedral bond length, octahedral bond length, tetrahedral edge and octahedral edges decrease as magnesium content x increases. Overall, the substitution of magnesium in cobalt ferrite influences the structural properties.

V. V. Dhole et al. [39] successfully synthesized the nanocrystalline Co1-xMgxFe2O4 (x = 0.0 and 0.25) by sol-gel auto combustion technique. The X-ray diffraction results showed the formation of single phase cubic spinel structure. The lattice constant is found to decrease with increasing Mg2+ concentration. The particle size of the samples calculated using the Debye Scherrer's formula was obtained in the range of 12-32 nm. The average grain size determined from scanning electron microscopy technique is of the order of 45 - 66 nm.

3. Inclusion of rare earth elements:

Recently, rare earth ions substituted spinel ferrite nanoparticles has emerged as a promising strategy to improve their physical properties. The rare earth substituted cobalt ferrites found an useful in high frequency devices and power supply due to high resistivity and low dielectric losses. Rare earth ion doped into cobalt ferrites has been reported to lead to structural distortion that induces strains in the material which indicate improved crystallinity of the sample and to affect the electrical and magnetic properties significantly. Here, we are limiting our studies to certain rare earth substitutions Sm, Yt, Gd and Nd.

3.1 Sm Substitution

Rashad et al. [40] reported a change in the magnetic properties of samarium doped cobalt ferrite nanoparticles synthesized by the citrate precursor route. The results found that due to increase in addition of Sm3+ in cobalt ferrite, the value of the saturation magnetization and coercivity decreases and it is increased by increasing the calcination temperatures from 400 to 800 °C.Sheena Xavier et al. [41] investigated samarium-substituted cobalt ferrites prepared by sol-gel method and reported the formation of single-phase spinel structure without any secondary phase. It is found that the substitution of samarium in cobalt ferrite

has resulted in an increase in lattice parameter and crystallite size. The saturation magnetization and coercivity decreased with an increase in samarium content. Decrease in saturation magnetization is attributed to the decrease in the net magnetic moment due to the substitution of nonmagnetic ion in the octahedral site. A larger grain size makes the motion of domain walls easier, and this may be the possible reason for decrease in coercivity with increase in samarium.

Ahmad SI et al. [42] synthesized Sm and Ce co-substituted nano crystalline cobalt ferrite, CoFe2-x-ySmxCeyO4 (x = y = 0.00, 0.5, 0.1, 0.12 and 0.25), by sol-gel combustion method and stated the spinel structure with a secondary phase of RE2O3 for higher molar concentration of rare earth ions. Increasing Sm and Ce concentrations leads to the decrease in the crystallite size and increase in specific surface area and Strain. With increase in doping of Sm and Ce, due to decrease in particle size and surface effect, Ms and Hc were found decreasing. A.K. Nikumbh et al. [43] also reported similar results when pure nanoparticles of the rare-earth substituted cobalt ferrites CoRExFe2-xO4 (where RE=Nd, Sm and Gd and x=0.1 and 0.2) were prepared by the chemical co-precipitation method. The lattice parameter increased with rare-earth content for x≤0.2. Increase in rare earth substitution in cobalt ferrite reduces the coercive force, saturation magnetization, ratio MR/MS and magnetic moments may be due to dilution of the magnetic interaction. L. Ben Tahar et al. [44] used forced hydrolysis in polyol method and prepared pure nanoparticles of cobalt ferrite doped with Gd and Sm. XRD reveals the increase in cell size with slight distortions in the spinel-like lattice indicating the entrance of RE3+ ions. A significant increase in the saturation magnetization is achieved by doping with magnetic Gd3+ and Sm3+ ions which is mainly attributed to the high magnetic moment of these cations and probably an inter-site rearrangement of the Co2+ ions.

3.2 Yt Substitution

Isaac Haïk Dunn et al. [45] investigated Yttrium-substituted cobalt ferrites prepared using the sol-gel combustion method. Decrease in the cell parameters with increasing Y 3+ has been observed. Substitution of Yttrium affect the inversion factor δ since yttrium enters the lattice in octahedral sites. Thus the samples are not perfectly inverse spinels. Both magnetization and Curie temperature decrease with the increase in doping of Y3+ content due to cation distribution and owing to a decrease in the number of Fe-Fe super-exchange interactions in the octahedral sublattice.

Swati Kumari et al. [46] have investigated structural and magnetic properties of CoFe2-x YxO4 (x = 0.0 and 0.05) compound synthesized by citrate precursor method. X-ray diffraction and Raman spectroscopy have confirmed the formation of single phase cubic spinel structure. Doping of small amount of Y3+ cation causes significant reduction in the particle size. Enhancement in coercivity and reduction in highest magnetization with the Y3+ substitution has been recorded. The enhancement of coercivity is attributed to the transition from multidomain to single domain state. The decrease of highest magnetization and magnetocrystalline anisotropy constant is ascribed to weakening of superexchange interaction and surface effect.Mossbauer spectroscopy reveals that on increasing the concentration of doped Y in cobalt ferrite, the hyperfine field strength and the isomer shift first increase and then decrease, whereas the quadrupole splitting continuously increases. [47]

M.K. Shobana et al. [48] prepared Y0.2CoFe1.8O4 nanocrystallites using a sol–gel combustion technique. The XRD peaks indicate the occurrence of pure spinel ferrite structure. Both the crystallite size and the degree of particle agglomeration increased with increasing calcination temperature, probably because of the disappearance of the polymer at high temperatures. D.M. Ghone et al. [49] reported a decrease in saturation magnetization with the increased in yttrium ions in cobalt ferrite, synthesized by chemical co-precipitation method. XRD reveals is formation of cubic spinel ferrite along with the secondary phase of YFeO3 in substituted cobalt ferrite as concentration of yttrium is increased. Magnetostriction coefficient also decreases due to interaction of nonmagnetic rare earth ion with transition metal ion.

3.3 Gd Substitution

Lin. et al. [50] prepared Co GdxFe2−xO4 (x = 0, 0.04, 0.08) by a sol-gel auto combustion method. The XRD patterns revels that the

samples are single phase, no impurity peak was detected and the Gd3+ added sample is larger due to the ionic radius of Gd3+ ions (0.938 ˚A) is greater than that of Fe3+ ions (0.645 ˚ A). The increasing gadolinium does not increase monotonously the lattice parameter due to the fact of larger radius in CoFe2O4 which produce the lattice distortion. Ishtiaq Ahmad et al. [51] reported that the Co Gd2x Fe2-2x O alloy mainly consists of cubic spinal structure. Initially, lattice constant 'a' have small increase but for higher values of x, 'a' decreases due to increase anti-parallel exchange coupling. With the increase in doping concentration X-Ray density, bulk density and Porosity increases. The Ms and Mr are found to increase with increasing Gd concentration while the corresponding Hc decreases.V. S. Puli et al.[52] found the inverse spinel cubic structure in gadolinium (Gd) substituted cobalt ferrites (CoFe2−xGdxO4; x = 0–0.3), synthesized by solid state reaction method. A considerable increase in the saturation magnetization has been observed upon the initial substitution of Gd (x = 0.1). The saturation magnetization drastically decreases at higher Gd content (x > 0.3). Increase in coercivity with increase in Gd3+ is content is attributed to magnetic anisotropy in the ceramics.

R.N. Panda et al. [53] studied of nano-crystalline CoMxFe2−xO4 (where M=Gd and Pr and x=0, 0.1 and 0.2) powders prepared by a citrate precursor technique. Saturation magnetization of the materials decreases with increasing doping concentration. Inclusion of rare-earth atoms in the crystal lattice cause increase in the grain growth and coercivity of the material. The improved coercivity compared with those for the pure cobalt ferrites is attributed to the contribution from the single ion anisotropy of the rare-earth ions present in the crystal lattice and the surface effects resulting in alteration of magnetic structures on the surface of nano-particles.R.S. Yadav et al. [54] investigated the influence of Gd3+ ion in cobalt ferrite nanoparticles on structural, magnetic, dielectric, electrical, impedance and modulus spectroscopic characteristics using sonochemical synthesis method. The average crystallite size decreases with the substitution of Gd3+ in cobalt ferrite nanoparticles. Saturation magnetization of Gd 3+ doped cobalt ferrite nanoparticles decreases with increase in Gd 3+ substitution. Pervaiz E. et al. [55] observed that Gd3+ substitution have tailored the magnetic properties of Co-ferrites due to influence on A-B exchange of electrons. Saturation magnetization, coercivity and remanance all decreases with increase in dopant concentration of Gd3+ in cobalt ferrite.

3.4 Nd Substitution

Xavier S. et al. [56] studied a series of neodymium doped cobalt ferrite samples (CoFe2-xNdxO4 with x=0.0, 0.05, 0.1, 0.15, 0.2, 0.25), prepared through the sol- gel technique. They confirmed the formation of spinel structure in all the samples. Increasing doping concentration of neodymium increases the lattice parameter and crystallite size of the samples. TEM observations revealed that nanoparticles were roughly spherical and slightly agglomerated. The saturation magnetization and coercivity decrease with increase in neodymium content which is attributed to the particle size dependence of magnetic properties in the multidomain regime.

L. Avazpour et al. [57] investigated magnetic properties of rare earth (RE) substituted cobalt ferrite Co1−xRExFe2O4; x = 0–0.2 in steps of 0.05 and RE is Nd and Eu using the sol–gel method at annealing temperatures 550° C. They found that the saturation magnetization of the ferrite materials at room temperature decreases with increase in RE inclusion. Coercivity of the rare earth substituted cobalt ferrite improved especially for 5% Neodymium substituted cobalt ferrite. This may be attributed to the fact that there is the contribution from the single ion anisotropy of the rare-earth ions present in the crystal lattice and also to the effects of a change in magnetic structures on the surface of the nanoparticles.

Yadav R et al. [58] reported the changes in magnetic properties of Nd3+ doped cobalt ferrite nanoparticles synthesized by starch-assisted sol–gel auto-combustion method. They reported that room temperature saturation magnetization and coercivity increase with addition of Nd3+ substitution in cobalt ferrite. Recently, Zhao et al. [59] observed Nd 3+ ions substituted cobalt ferrite prepared by the emulsion method. They observed the varying concentration of Nd 3+ ions increases coercivity in cobalt ferrite however, saturation magnetization decreases.

Conclusion:

The variations in the magnetic and structural properties of Cobalt ferrites were studied with increasing concentration of Ni, Zn, Cu and Mg and some rare earth metals (Sm, Yt, Gd and Nd) in the cobalt ferrite. CoFe2O4 which has got some peculiar properties like high saturation magnetization (Ms), high coercivity (Hc) and large anisotropy. Further the substitution of different divalent ions in this ferrite allows some tunable changes in its properties. It can be seen from above observation that the substitution of Zn2+, Ni2+, Cu2+, and Mg2+ and rare earth elements in Cobalt ferrite causes the modification in the structural and magnetic properties like lattice parameter, grain size, saturation magnetization, coercivity, Curie temperature etc. It is seen that increment or decrement in these properties depends on the dopant concentration, the type of dopant, sintering temperature and also on the method of preparation.

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CONTENTS OF MARATHI PART - I

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७. भंडारा जिल्ह्यातील पर्यटन व्यवसायाची संधी व भवितव्ये : एक भौगोलिक अभ्यास

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सारांश

मानव विरंगुळा घालविण्यासाठी जो प्रवास करतो, त्याला पर्यटन असे संबोधले जाते. आंतरराष्ट्रीय पातळीवर पर्यटनाला बराच वाव आहे.

पर्यटन उद्योग जगातील विकसीत व महत्वाचा उद्योग असला तरी यातून मालाचे उत्पादन न होता विविध प्रकारच्या सेवा व लोकांना रोजगार उपलब्ध होत असतो. पर्यटन स्थळे विकसीत झाल्यास त्या परिसरात बाजारपेठ, वाहतूक, हॉटेल, फोटो स्टुडिओ इ. घटकांचा विकास होऊन स्थानिक लोकांना रोजगार उपलब्ध होतो. त्यातूनच लोकांची आर्थिक स्थिती व जिवनमानाचा दर्जा उंचावण्यात मदत होते. तसेच राष्ट्राच्या आर्थिक उत्पादनात सुध्दा वाढ होते.

जिल्हयात विविध प्रकारचे पर्यटन स्थळे असून यात प्रामुख्याने गोसेखुर्द (इंदिरा सागर), रावणवाडी, आंबागड, चांदपूर देवस्थान व सरोवर, गायमुख देवस्थान, नरसिंह मंदीर, शिवनीबांध माता चांडेश्वरी देवस्थान (पोहरडी), कोका इत्यादी सांस्कृतिक, ऐतिहासिक व नैसर्गिक अशी पर्यटन स्थळे असून अजूनही अविकसित अवस्थेत आहेत. शासनाने पर्यटन स्थळांचा विकास करण्याकरीता, लोकप्रतिनिधी तसेच स्थानिक लोकांनी पाठपुरावा करणे गरजेचे आहे. यातूनच स्थानिकांना रोजगाराच्या बऱ्याच संधी उपलब्ध होतील. याकरिता प्रमाण बध्द रितीने पर्यटन स्थळांचा विकास घडवून आनने गरजेचे आहे.

प्रस्तावणा

भूगोल शास्त्राच्या अभ्यासात पर्यटनाला बरेच महत्व आहे. पर्यटन म्हणजे प्रवास करणे, ही जरी जूनी गोष्ट असली तरी, ती नवीन आहे. नवनवीन गोष्टीचा शोध घेण्यासाठी नवीन–नवीन ठिकाणे पाहण्यासाठी व आपल्या सभोवतालच्या वातावरणात बदल व्हावा म्हणून माणूस प्रवास करतो यालाच पर्यटन असे संबोधले जाते. आज आंतरराष्ट्रीय पातळीवर पर्यटनाला बराच वाव आहे.

पर्यटन उद्योग हा जगातील विकसीत व महत्वाचा उद्योग असला तरी यातून मालाचे उत्पादन होत नाही तर यात सेवा, रोजगार उपलब्ध होत असतो. म्हणून पर्यटन हा व्यवसाय इतर उद्योगापेक्षा एक वैशिष्ट्येपूर्ण असा व्यवसाय आहे. पर्यटनामूळे बाजारपेठ, वाहतूक, हॉटेल्स, फोटो स्टुडिओ, इ. नाविण्य पूर्ण घटकांचा विकास होवून स्थानिक लोकांना यातून मोठया प्रमाणात रोजगार प्राप्त होतो. पर्यटनामूळेच एखादया

स्थळाचा, प्रदेशाचा विकास होवून तो ठिकाण नाविण्यपूर्ण ठरतो तो जगाच्या नकाशावर प्रदर्शीत होतो. पर्यटन व्यवसायामुळेच रोजगाराच्या नवनवीन संधी उपलब्ध होणे, नवनवीन प्रदेशांची माहिती उपलब्ध होणे, त्या प्रदेशाचा विकास घडून येणे, अशा अनेक बाबतीत बदल होवून त्या प्रदेशाचा विकास साधण्यास मदत होते. हेच उद्दिष्टये समोर ठेवून भंडारा जिल्हयातील पर्यटन व्यवसायातील संधी व भविष्ये यांचा 'अभ्यास' भौगोलिक दृष्टीकोनातून करण्यात येत आहे.

अभ्यासाची उद्दिष्टये

भंडारा जिल्हयात वर्तमान स्थितीत कोणकोणती पर्यटन स्थळे आहेत. त्याचा आढावा घेणे व त्या स्थळांचा विकास करून व्यवसायाच्या कोणत्या संधी उपलब्ध होतील ही अभ्यासाची प्रमुख उद्दिष्टये आहेत. याशिवाय भंडारा जिल्हयातील पर्यटन व्यावसायात येणाऱ्या विविध समस्यांचा अभ्यास करणे व त्यावर उपाययोजना शोधणे हा सुध्दा या अभ्यासाचे उद्दिष्टये आहे.

परिकल्पना

भंडारा जिल्हयातील भौगोलिक, प्राकृतिक रचना पर्यटन व्यवसायाला अनुकूल असून जिल्हयातील पर्यटन स्थळांचा योग्य विकास न झाल्यामूळे जिल्हयात पर्यटन, व्यवसायाचा फारसा विकास झालेला दिसून येत नाही ही परिकल्पना समोर ठेवून हा अभ्यास करण्यात आलेला आहे.

अभ्यास प्रदेश

भंडारा जिल्हयाचा समावेश महाराष्ट्र राज्याच्या पूर्व भागात होत असून त्याचा समावेश दख्खनच्या पठारी भागात होतो. भंडारा जिल्हयाचा स्थान विस्तार २०°२९' उत्तर ते २१°३८' उत्तर अक्षवृत्ते व रेखावृत्तीय विस्तार ७९°२७' मिनिटे ते ८०°४२' पूर्व रेखावृत्त एवढा आहे. भौगोलिक दृष्टया हा जिल्हा सातपूडा पर्वताच्या पायथ्यालगतचा भाग असून येथे वाघ, वैनगंगा, बावनथडी, चूलबंद या प्रमुख नदया आहेत. जिल्हयाची प्राकृतिक रचना वैशिष्टयेपूर्ण असून उत्तरेकडील भागाचा समावेश सातपूडा डोंगररांगात होत असून त्यात भीमसेन व कोका हे प्रमुख डोंगर आहेत. याशिवाय पूर्वेला गायमुख, चांदपूर, अंबागड अशा टेकडया आहेत. तर जिल्हयाच्या मध्यवर्ती साकोली व भंडारा तालूक्यात नागझिरा गायखूरी डोंगर रांगा व भीमसेन डोंगररांगा तसेच जुन्या शिल्पकलांचे अवशेष आढळतात.

भूरचनेच्या उंच सखल स्वरूपावरून जिल्हयांचे दोन विभाग पडतात.

१. वैनगंगा नदीचा मैदानी प्रदेश

२. उंच व डोंगराळ प्रदेश

जिल्हयातील पश्चिमेकडील भागाचा समावेश वैनगंगा नदी मैदानी प्रदेशात समावेश होतो. यात भंडारा, मोहाडी, पवनी, लाखनी व लाखांदूर या तालूक्यांचा समावेश होतो. तर उंच व डोंगराळ भागा मोहाडी, तुमसर व साकोली, भंडारा या तालूक्याचा मध्यवर्ती भागाचा समावेश होतो.

जिल्हयाच्या अनेक भागात जंगलाचे प्रमाण जास्त आहे. यात चांदपूर, गायमूख व आंबागड डोंगराळ भागाचा समावेश होतो. येथील जंगलात विविध प्रकारचे वृक्ष व प्राणी जीवन आढळ वनविभागाकडून यांचे मोठया प्रमाणात संवर्धन केले जाते. जिल्हयातील नागझिरा व गोंदिया जिल्हया

नवेगाव बांध उभयरण्ये ही वनस्पती व प्राणी [illegible] म्हणाने आहेत तर अलीकडे 'बिन [illegible] म्हणून प्रसिध्दीस येत असलेल्या चांदपूर [illegible] म्हणून आशेने पाहिले जात आहे.

जिल्ह्यातील हवामान विषम स्वरूपाचे आहे. [illegible] सरासरी पर्जन्य पावसाळ्यात जून ते सप्टे महिन्यात ९० टक्के होतो. भरपूर सूर्यप्रकाश, आल्हादायक हवा, वनाचे मोठे क्षेत्र, भंडारा [illegible] वाहणारी वैनगंगा नदी, यामुळे पर्यटन आकर्षिले जातात. जिल्ह्यात कमाल तापमान मे महिन्यात ४२.९ शतांश तर किमान तापमान डिसेंबर महिन्यात १२.९° शतांश इतके आढळते. म्हणजेच जास्त तापमान मे–जून महिन्यात तर कमी तापमान डिसेंबर–जानेवारी या महिन्यात आढळते. एकंदरीत तापमान व आर्द्रतेच्या आधारावर जिल्ह्यात तीन ऋतू आढळतात. या तिनही ऋतूत जिल्ह्यात कमी अधिक प्रमाणात पर्यटनाच्या सोयी उपलब्ध होतात. तसेच प्राकृतिक रचनेच्या भिन्नतेमुळे पर्यटनास बराच वाव आहे.

अभ्यास विषय

भंडारा जिल्ह्यात आपल्याला निसर्गरम्य पर्यटन क्षेत्र आढळून येतात. त्यात कोकाजंगल, रावणवाडी. ऐतिहासिक पर्यटन स्थळात आबागड, पवनी किल्ला धार्मिक पर्यटनात चादपूर, गायमुख, नरसिंह मंदीर, सोनाडी तालुक्यातील माता नांदेश्वरी, कोरंबी, तर सांस्कृतीक पटकाट 'गोसेखुर्द' (इंदिरासागर) व शिवणीबांध [illegible] पर्यटन केंद्र आढळून येतात. या पर्यटन क्षेत्रात हॉटेल आधारीत व्यवसाय, पूजेची दुकाने, खेळण्याची दुकाने, चहा हॉटेल, इ. व्यवसाय केले जातात. भंडारा जिल्ह्यातील पर्यटन स्थळाचा विकास घडवून आणल्यास पर्यटनाच्या दृष्टीने ती आकर्षणाची केंद्र बनू शकतात. जिल्ह्यातील पर्यटन स्थळे पुढीलप्रमाणे आहेत (नकाशा)

१. गोमेखुर्द (इंदिरासागर)

हे स्थळ पवनी तालुक्याच्या आग्नेय बैजापूर [illegible] "इंदिरा सागर प्रकल्प" या नावाने ओळखले जाते. या धरणाची लांबी १.२० किमी असून उंची २८.५० मीटर इतकी आहे. या धरणातील पाणी सोडण्याकरीता ३३ [illegible] आहेत. धरणालगत क्षेत्र ३४,८५२ घन कि. मीटर असून. जलाशय पाणलोटाचा ३२२५८ हेक्टर क्षेत्रावर आहे. धरण पाणलोट क्षेत्रात आंधोरी, मोखाबर्डी, [illegible](वेरली), टेकेपार अशा उपमा जलाशयावर [illegible] आहेत.

या प्रकल्पामुळे अनेक गावे प्रभावित झालेले आहेत. येथिल जलाशयाचा व धरण क्षेत्र पर्यटकांना आकर्षणाचे केंद्र आहे. येथिल धरणातील पाणी दुरवरपर्यंत दिसत असल्यामुळे [illegible] येथिल [illegible] (मासेमारी) केला जातो. हे ठिकाण पवनी शहरापासून १२ किमी अंतरावर असून पर्यटकांना [illegible] करण्याकरीता जलाशय तालुक्याच्या क्षेत्रात व्यवसायाच्या मोठ्या संधी आहेत. यामुळे क्षेत्राचा [illegible] होत आहे. केंद्र सरकारने गोमेखुर्द (इंदिरा सागर) हे स्थळ राष्ट्रीय पर्यटन स्थळ म्हणून घोषित केल्यामुळे परिसरात [illegible] दळणवळण सुविधेमुळे तालुक्याच्या साधनाचा विकास घडून आलेला आहे. येथे पर्यटक [illegible] मोठ्या संख्येने येत असल्यामुळे परिसरात हॉटेल व्यवसायाच्या क्षेत्रात मोठ्या संधी सुद्धा उपलब्ध आहेत.

२. रावणवाडी

भंडारा तालुक्यात रावणवाडी गावाजवळ उंच टेकड्याच्या भागात दोन टेकड्याच्या मध्यभागी बांध घालून निसर्गरम्य तलावाची निर्मिती केलेली आहे. येथिल जलाशयाचा उपयोग परिसरातील शेती सिंचनाकरिता होतो.

या जलाशयाच्या जवळ टेकडीवर शिवमंदीर असून भाविकांची व निसर्गप्रेमीची येथे मोठ्या प्रमाणात [illegible] असते. या तलावात वर्षभर पाणी राहत असल्यामुळे नौकाविहारासाठी बोटीना व्यवसायाकरीता रोजगाराच्या संधी आहेत.

३. आंबागड

तुमसर तालुक्यात १२ किमी अंतरावर उत्तरेस आंबागड या टेकड्याच्या पायथ्याशी हे गाव वसलेले आहेत. या गावाच्या पायथ्येस आंबागडचा किल्ला असून गोंड राजांनी तो बांधलेला आहे. त्यामुळे या क्षेत्राला ऐतिहासिक पार्श्वभूमी लाभलेली आहे. आंबागड टेकडीची उंची ४८१ मीटर असुन तीव्र उताराची आहे. [illegible] परिसरात घनदाट जंगले असुन अशा प्राकृतिक रचनेने युक्त आहे. आंबागडपासून गायमुख हे महादेवाचे देवस्थान ६ किमी अंतरावर असुन पर्यटक व भाविक मोठ्या संख्येने येत असतात. हा परिसर सातपुडा [illegible] व्याप्त असुन योग्य व पक्क्या रस्त्यांचा अभाव आहे. येथिल लोकांचे राहणीमान व आर्थिक स्थिती कमकुवत असुन सोयीसुविधांचा अभाव दिसून येतो. येथिल पर्यटन क्षेत्राचा विकास केल्यास पर्यटक मोठ्या संख्येने येतील. स्थानिक लोकांना यामुळे रोजगाराच्या मोठ्या संधी आहेत.

४. नांदपूर देवस्थान व सरोवर

तुमसर शहरापासुन २२ किमी अंतरावर टेकडीवर नांदपूर देवस्थान आहे. येथे लिंबाच्या झाडाखाली दगडाची सुंदर मुखी हनुमानजीची मूर्ती आहे. याच पवित्र पावनीवर समर्थ रामदास स्वामी आले होते. मी

परिसराच्या खाली हिरव्यागार वनराईत चांदपूर सरोवर आहे. [illegible] शेतीस [illegible] मासेमारी करीत असतो. याच परिसरात १ किमी अंतरावर एक गुफा आहे. [illegible] या स्थळाला पर्यटन स्थळ म्हणून घोषित करण्यात आलेले आहे. या [illegible] यात्री, निवासस्थान, [illegible] यांची व्यवस्था केल्यास येथे पर्यटक आकर्षित [illegible] शकतात.

५. गायमुख देवस्थान

तुमसर शहरापासून १८ किमी अंतरावर डोंगरगावाजवळ गायमुख हे देवस्थान भाविकांचे श्रध्दास्थान म्हणून प्रसिध्द आहे. प्राचीनकाळी एका ऋषीनी येथे महादेवाची कठीण तपश्चर्या केली. येथे १५० वर्षापासून महाशिवरात्रीला मोठी यात्रा भरते. गायमुख येथे पंचमुखी शिवजी, हनुमान, मकरध्वज, अंबामाई, व गोरखनाथ हे मंदिर आहेत. या मंदिरापासून जवळच विश्वनाथ कैलाशी बाबाचे आश्रम व संतोषी मातेचे मंदीर आहेत. गाव पहाडीच्या आतुन झरणाचे पाणी सरळ गायमुखातून सतत टाकीत पडत असते. पहाडीवर चढल्यानंतर गौऱ्यागड नावाचे ठिकाण असुन हा परिसर निसर्गरम्य परिसरांनी नटलेल्या वनराई आहे. येथे हॉटेल्स, पुजेचे सामान, दुकान लावणे इ. वर आधारीत व्यवसाय मोठया प्रमाणात चालतात.

६. नरसिंह मंदीर

तुमसर पासुन १० किमी अंतरावर नागपूर–गोंदिया रेल्वे मार्गावर वैनगंगा नदीच्या मधोमध २०० फुट उंच टापू वर नरसिंह मंदिर आहे. येथे अन्नाणी महाराज यांचे आश्रम आहे. या देवस्थानात फाल्गुन पौर्णिमेपासुन अमावस्येपर्यंत १५ दिवस यात्रा भरते. येथिल गालधिरीचे मंदीर पर्यटकांचे आकर्षण व भाविकांचे श्रध्दा स्थान आहे.

७. शिवनीबांध

साकोली वरून दक्षिणेस १२ किलोमिटर अंतरावर लाखांदूर–साकोली महामार्गाच्या डाव्या बाजुस शिवणीबांध जलाशय आहे. येथिल निर्मळ पाणी, गर्द वनराई, व परिसरातील शेती असे हे स्थळ पर्यटकांचे डोळे टिपून टाकणारे आहे. येथे वर्षभर पाणी राहत असल्यामुळे येथे बोटीचा व्यवसाय, मनोरंजनाच्या साधनाचा विकास झाल्यास पर्यटकासाठी हे स्थळ आकर्षणाचे केंद्र आहे.

८. माता चांडेश्वरी देवस्थान (मोहाडी)

नदीकाठावर माता चांडेश्वरी देवीचे जागृत मंदिर आहे याला टेकडीच्या नावाने ओळखले जाते. पुर्वी हा भाग घनदाट जंगलाचा भाग असून, मंदिर ट्रस्टद्वारे या प्राचीन मंदिराचे प्रवेश द्वार फारच आकर्षक बनविलेले आहे.

या ठिकाणी चैत्र महिण्यात येणाऱ्या नवरात्रीला मोठी यात्रा भरते. तसेच आश्विन या मराठी महिण्यात मुख्य यात्रा भरते त्यावेळेस दुरवरून भाविक दर्शनाकरिता येतात. येथे बाराही महिने पुजेची दुकाने, चहापान यामुळे लोकांना रोजगार प्राप्त झालेला आहे.

९. कोका

न्यु नागझिरा व्याघ्र प्रकल्पाला लागून कोका अभयारण्याची निर्मिती करण्यात आली. हे ठिकाण तुमसर–करडी–साकोली या राज्यमार्ग २७२ वर लागुन आहे. या अभयारण्यामुळे स्थानिक लोकांच्या मजुरीत वाढ झालेली आहे. कोका अभयारण्य या संपूर्ण परिसर घनदाट जंगलानी व्याप्त असून येथे अनेक

जगली प्राणी पर्यटकांचे लक्ष वेधून घेत आहेत. भविष्यात याचा निश्चित नक्कीच फायदा येथे पर्यटन व्यवसायाच्या बऱ्याच संधी उपलब्ध होवू शकतात.

निष्कर्ष व उपाययोजना

जिल्हयातील पर्यटन स्थळांकडे स्थानिक व लोक प्रतिनिधीने दुर्लक्ष असून, बऱ्याच पर्यटन स्थळी सोयी सुविधांचा अभाव दिसून येतो. पर्यटन स्थळी जाण्याकरिता वाहतूकीच्या अपूऱ्या सोयी आहेत. तसेच पर्यटनाच्या बहुतेक स्थळी निवासाच्या सोयी नाहीत. पर्यटन क्षेत्रात बाजार पेठांचा अभाव असुन, मनोरंजनाच्या सोईचा अभाव आढळून येतो. जिल्हयात ऐतिहासिक वास्तू, किल्ले व सांस्कृतिक स्थळे असून त्यांचे जतन चांगल्याप्रकारे केले गेलेले नाही त्यामूळे बहुतांश पर्यटन स्थळे दुर्लक्षित आहेत

पर्यटन व्यवसायाचा विकास

भंडारा जिल्हयात पर्यटन व्यवसाय विकासाची अनुकूल परिस्थिती लाभली आहे. इतिहास व संस्कृती यामूळे जिल्हयातील पर्यटन क्षेत्राकडे दरवर्षी लाखो पर्यटक येतात. पर्यटन व्यवसायातील फार मोठया संधी येथे उपलब्ध आहेत. येथिल पर्यटन स्थळांचा विकास घडवून आणल्यास या व्यवसायाला भविष्यात चांगले दिवस येवू शकतात या दृष्टीने प्रयत्न होणे गरजेचे आहे.

उपाययोजना

पर्यटन व्यवसायातील संधी व भवितव्ये या दृष्टीने पर्यटन स्थळांचा व तिर्थस्थळांचा विकास होणे गरजेचे आहे. याकरिता प्रशासनाने सर्व सोयीसुविधा उपलब्ध करून दयाव्यात. याशिवाय शासनाने जास्तीत जास्त पैसा खर्च करून पर्यटन स्थळांचा विकास करण्यास साहाय्य करावे.

पर्यटन स्थळांचा व तिर्थक्षेत्र यांचा विकास घडून आल्यास स्थानिक लोकांना रोजगार उपलब्ध होईल त्यामुळे रोजगाराच्या संधी आपोआप प्राप्त होतील. पर्यटन स्थळांचा विकास झाल्यास लोकांचे जिवनमान बदलेल व लोकांचा राहणीमानाचा दर्जा उंचावेल.

जिल्हयात पर्यटन स्थळांचा विकास होण्याकरीता प्रशासनाने, श्रीमंताना पर्यटनात भांडवल गुंतवणूक करण्यास सांगावे. अशाप्रकारे या क्षेत्रात बऱ्याच मोठया प्रमाणावर व्यवसायाच्या संधी आहेत. याकरीता प्रमाण बध्दरितीने पर्यटन स्थळांचा विकास घडवून आणणे गरजेचे आहे.

संदर्भग्रंथ

१. भंडारा जिल्हयाचा इतिहास – संपादक दिनेश नखाते
२. भंडारा जिल्हा गॅजेटीयर – १९९१
३. जणगणना पुस्तीका – भंडारा जिल्हा २०११ (C.D.)
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Quality Assurance In Teaching Learning And Evaluation

Dr. Vinod Marotrao Bali
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Abstract:

Higher education contributes to the growth of a nation through the production and dissemination of knowledge. The process of production and dissemination of knowledge is influenced by the quality of higher education. This paper explains the Committee's approach. After a brief introduction, this paper compares three main types of quality assurance mechanisms used in higher education: accreditation, assessment, and auditing. This includes curriculum design, pedagogical design, quality of implementation, assessment of results, and provision of resources. It should be noted that quality assurance in higher education is important because of the rapid expansion of the higher education system.

Keywords: Quality assurance, higher education, accreditation

Introduction:

Quality assurance is the process of checking that standards and quality of provision of higher education meet agreed expectations. By 2025, the global demand projected for higher education can reach 263 million students which has increased from a little less than 100 million students in 2000. This could represent an increase of 163 million in 25 years. Because the demand for quality education is increasing, there is an increasing demand for quality assurance (QA) for international universities where there is increased mobility of students, faculties, programs and higher education institutions in a global network. Quality assurance can be a driving force for institutions to achieve excellence in higher education. But ensuring that the quality of educational programs meet local and international standards simultaneously has become a major challenge in many countries. Therefore there needs to be cooperation from quality assurance institutions and acceptance of quality assurance review decisions.

Approach to quality assurance

There are different approaches to quality followed by a quality assurance system. The three main approaches are accreditation, assessment and audit.

Accreditation

The purpose of accreditation was captured in the ECSA document in August 2000 which provides an overview of these objectives, which are stated as follows:

□To determine whether a program meets the educational requirements for registration in a special category; MenetapkanTo determine whether graduates of a program are ready to enter work and are equipped to continue learning throughout their careers;

□To establish a comparison of international programs;

. To ensure the public about the quality of the program;

□To encourage improvement and innovation in education in response to national and global needs.

Accreditation is an evaluation of whether an institution or program meets threshold standards, and qualifies for certain statuses. Obtaining accreditation can have implications for the higher education institution itself, and also for students.

The Organization of Economic Cooperation and Development (OECD) countries broadly support the accreditation method. South Africa is one of the non-member economies with which the OECD has a working relationship, in addition to 30 other member countries. South Africa was also invited to participate in the OECD "Emerging Market Forum" at the close in 2000. The OECD Council at the ministerial level adopted a resolution on 16 May 2007 to strengthen cooperation with South Africa, as well as Brazil, China, India and Indonesia,

through an increase in engagement program.

The implications of accreditation are:

1. Many professions and institutions will not receive financial support from professional boards if they are not accredited to provide the program.
2. In certain professions, the impact of accreditation on students. This can be seen in law students; for example, students may not write exams for enrollment if they have not completed their qualifications with an accredited provider.
3. Many professional bodies register accredited institutions, and therefore the impact of accreditation on the ability of providers to attract students to the program.
4. Accreditation also has an impact on the process of recognition among institutions of Higher Education and Training.

There are implications for students if accreditation is removed from the provider. Accreditation withdrawals only occur after the institution has been given the opportunity to correct the identified problems. When an institution loses its accreditation, often with mutual agreement, a number of processes are put in place to protect

students and students:

- Students in institutions that have lost their accreditation can complete the program and access the same opportunities as students in accredited institutions.
- Students can enter the program at an accredited institution.
- Students are able to write national examinations regardless of the institution where the student is registered.

Assessment

Assessment is an evaluation that makes a graded assessment of quality, which, according to Dill, goes beyond accreditation that makes binary judgments. The assessment asked: "How good is your output?" Further quality assessment refers to a number of measures of effectiveness and efficiency as defined by various stakeholders in education and representatives of academic institutions.

Audit

Quality audits are related to processes and procedures. This is a systematic and independent examination to determine whether quality activities and related outcomes are in accordance with planned arrangements and whether these arrangements are implemented effectively and are suitable for achieving the objectives (Bureau of Indian Standards 1988: 1) established by SAQA. Quality audits examine the extent to which the institution reaches its own explicit or implicit goals. Academic audit is conducted at the institutional level.

Teaching and learning process

The teaching and learning process can be explained in the following five sub-processes, which form one dimension of Panel investigations. Each sub-process is illustrated by questions that might be asked about an institution, faculty, department, or individual staff member. However, questions are presented with only examples. The panel does not assume that all questions, or indeed one of them, apply in certain situations. However, agencies were asked to arrange their documentation in terms of five sub-processes.

1. Curriculum design: by what processes are curricula designed, reviewed, and improved?

A. Are faculty supplement design inputs from academic disciplines with those from employers, current results assessments, past students, professional bodies (if any), and other data related to 'fitness to use'?

b. How are various integrated design inputs? How was the controversy resolved?

c. What review mechanisms operate at the school and institutional level? How do they work?

d. Is the internal process complemented by an external review mechanism such as the visiting committee? Do external reviewers include cross sections of stakeholders, or are they mainly academics from other institutions?

2. **Pedagogical design:** with the process of what methods of learning and teaching are decided and repaired?

A. To what extent are pedagogical methods subject to active consideration by professors, departments, schools, etc.? Do staff spend quality time working together on this issue?

b. How broad is the definition of 'pedagogical method'? For example, does it focus on learning and also teaching? Does this integrate feedback about the achievement of learning by sending academic content?

c. Are pedagogical methods the subject of innovation? Have they changed over time (for example, to combine more actively with passive learning)? Are they using enough information technology?

3 **Quality of implementation:** how well do faculty members carry out their teaching duties?

A. How broad is the definition of 'teaching'? Does it include student contact outside the classroom (including advisors) and student assessment (including feedback about assessment) and in-class contact?

b. What are the incentives for good teaching? What is the disincentive? (It is important to consider staff perceptions and the program itself.)

c. How is teaching performance evaluated? (Possible mechanisms including self evaluation, student evaluation, and peer evaluation.)

d. How can teaching evaluation be used? For example, are they used in review evaluations? Are they shared among faculties as part of the reciprocal improvement process? Do they produce specific self-improvement efforts, such as the use of teaching development centers?

4 **Assessment of results: how do staff,** departments, schools, and institutions monitor student outcomes and assess learning outcomes to improve the teaching and learning process? "

A. To what extent do academic units use traditional types of assessment methods (for example, normalized exams, external examiners) to evaluate the performance of teaching and learning programs?

b. To what extent do academic units use non-traditional assessment methods (for example, student satisfaction as stated in exit conferences, feedback from previous students and their employers, a measure of statistical success in the labor market)?

c. Does the academic unit feel responsible for immediately making changes identified based on the assessment as needed?

5 **Provision of resources:** are human, technical and financial resources needed for the quality available when and where is needed?

A. Are the activities needed to achieve and ensure the quality of teaching and learning given the right priority in the process of allocating institutional resources?

b. How does the staff recruitment process promote and maintain the quality of teaching and learning?

c. How do incentives and the environment reward institutions further on the quality agenda of teaching and learning?

d. To what extent do institutions offer technical assistance and training to staff who want to improve the quality of their teaching? To what extent are these resources utilized by staff?

Conclusion:

In this paper the three elements of quality assurance, namely quality, standard and relevance. From the literature it is clear that quality has been defined differently in different contexts. This is a term that is widely used and little understood. Quality in higher education means that the education process is such that it ensures that students achieve their goals, and thus meet the needs of the community and contribute to national development.

Quality assurance in higher education is important because of the rapid expansion of the higher education system. Globalization also brings increased levels of academic fraud, such as diploma factories, night flight providers, fake institutions or fake credentials.

This increases the demand for trustworthy organizations that can build trust using quality assurance methods.

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CONTENTS OF ENGLISH PART - I

6. Accrediation of Colleges in Rural Area: A Challenge

Dr. J. V. Dadve
Principal, Y. C. College, Lakhandur Dist. Bhandara.
Dr. R. P. Wasnik
Assist. Prof., Y. C. College, Lakhandur Dist. Bhandara.
Dr. V. B. Turkar
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Abstract

Assessment and accreditation processconducted by NAAC has emerged as a big challenge to the colleges situated in rural areas although the said process has a very crucial role in bringing positive and innovative changes in the colleges. As compared to the colleges in urban areas, the colleges in rural areas have to suffer from several problems which mainly include infrastructural ones due to the lack of funds provided by UGC, Government. Similarly, the government, UGC, Universities don't make it compulsory to follow all the required parameters for the establishment of colleges in rural areas which lead to the unavailability of adequate facilities in such colleges. As a result, these colleges have to face several problems while undergoing the process of assessment and accreditation by NAAC. Hence, NAAC should have separate parameters for the assessment and accreditation of the colleges in rural areas as compared to those in urban areas.

Key words: *accreditation, assessment, NAAC, colleges in rural area.*

Introduction

After due consideration about the various perspectives regarding how to develop the standard of higher education in India, the NAAC was established by UGC in the concluding part of the last century. The head quarter of this organization is located in Bengaluru, Karnataka. The rules and regulations of NAAC regarding the assessment and accreditation are framed and revised from time to time introducing conspicuous changes in the last few years. The NAAC has uniform parameters for the assessment and accreditation of colleges across the country. However, the fact is that the problems faced by colleges in rural area and the colleges in urban area are quite different. And hence, the colleges situated in rural area have to face certain

difficulties and problems while undergoing the process of assessment and accreditation conducted by NAAC. In the present paper an attempt has been made to analyse the difficulties and problems faced by colleges in the rural areas.

Establishment of Colleges in Rural Area

In most of the states in India, in accordance with the respective state governments, universities and local rural administrations, the perspective plans for the establishment of colleges in rural areas are prepared and having taken into consideration the population and the parameters along with the distant factor, it is decided as to where the colleges should be situated and accordingly the concerned university and government, after due consideration, grant permission for the establishment of colleges in rural areas. In Maharashtra, the rural areas with inadequate population are provided with special relaxation by the government about the various rules and regulations for the establishment of colleges. On the other hand, in urban areas all these rules and regulations are literally to be followed. However, the colleges are started on the basis of required population and infrastructural facilities. The central government has founded some model colleges in the rural areas. All things considered, there is enough scope to say that there are, beyond doubt, so many problems in the rural area for running colleges while in cities colleges have all the requisite infrastructural facilities.

Prevailing Conditions in Rural Area

There are several colleges in rural area well equipped with all the facilities and these colleges are granted with 2(f) and 12(B) status by UGC. Such colleges get funds from UGC for the development of various facilities on campus. But there is a big group of such colleges in rural areas which is not funded either by UGC or government or any other agency and non-salary grant. However, such colleges are run by the management bodies on their own. These colleges perform a vital role in the educational development of the people living in the villages. Such colleges have to face several problems and difficulties while undergoing NAAC assessment and accreditation.

Problems Faced by the Colleges in Rural Areas for Assessment and Accreditation

The colleges situated in rural region have several problems from the NAAC assessment and accreditation point of view. These problems can be enumerated in short as follows:

1. These colleges lack in requisite infrastructural facilities. However, they fulfil the demand of higher education in the rural areas.

2. The students are provided with guidance on the important issues like the need of awareness of rural life, market places etc. along with the awareness of environmental conservation. All other facilities are made available for the students by the teachers. Students are provided with an easy access to the libraries, and encouraged to take the benefit of ICT facilities. The facilities required for the smooth conduct of educational process are provided to students. In spite of this, most of the time the students have to suffer from the problems such as unavailability of means of transportation, lack of residential facilities at the places where the colleges are situated in rural areas, poor internet connectivity etc.
3. As the most of the colleges in rural areas are not funded by UGC, the students undertaking research activities have to conduct their research with the help of inadequate funds and other facilities provided by the concerned colleges.
4. Most of the colleges are situated in the remote parts of the rural regions and so the funds and other government schemes take a long time to reach the students of such colleges.

Remedial Steps

1. While granting permission to the colleges in rural areas, the government, UGC, Universities offer relaxation about various rule and regulations. But the same sort of relaxation is not provided to such colleges at the time of assessment and accreditation by NAAC.
2. The parameters for assessment and accreditation for both the rural and urban colleges are same but there should actually be different and somewhat lenient parameters for the assessment and accreditation of the former.
3. The fees for the assessment and accreditation of rural colleges should be relatively less and affordable.
4. The colleges, situated in rural areas where there is unavailability of internet connectivity, should be allowed to manually submit the SSR.

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९. राजर्षी शाहू महाराजांचे शैक्षणिक कार्य व सक्तीचे मोफत शिक्षणाचा हक्क - एक विश्लेषण

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रयतेचे राजे छत्रपती शिवाजी महाराज,यांचे वंशज म्हणजे महाराष्ट्रातील करवीर संस्थानचे कोल्हापूर [illegible] थोर समाजसुधारक, सक्तीचे प्राथमिक शिक्षण, जातीभेद निवारण, अस्पृश्यता निवारण, कृषी विकास, [illegible] विकास, शैक्षणिक विकास, पाटबंधारे व जलसंधारण पुरस्कर्ते म्हणजेच राजर्षी शाहू महाराज.

शाहू महाराजांचे संपूर्ण जीवन चरित्र स्पष्ट करणे अवघड कार्य आहे. त्यांच्या कार्यांची व्यापकता म्हणजे शिक्षण, स्त्री-दास्य विमोचन, कुस्ती, नाटक, गायन, कलादृष्टी, धर्म सुधारणा, बहुजनांचा सर्वांगीण विकास करण्याचे [illegible] उतरविणारे स्पृश्य-अस्पृश्य, भेदाभेद न मानणारे, मानवतावादी दार्शनिक रयतेचे राजे शाहू महाराज .....

प्रस्तुत शोधनिबंधात शाहू महाराजांचे शैक्षणिक कार्य व त्यांचे उद्देश आजच्या स्थितीमध्ये स्वतंत्र भारत देशात महत्त्वपूर्ण आहेत. आज सक्तिच्या प्राथमिक शिक्षणाची अंमलबजावणी भारतामध्ये सर्वांपाने झालेली दिसून येत नाही. या संबंधीचा परामर्श प्रस्तुत लेखात घेतलेला आहे.

उद्देश :- महाराष्ट्रातच नव्हे तर संपूर्ण भारतामध्ये शाहू महाराजांचे शैक्षणिक कार्य व वसतीगृहांची स्थापना संपूर्ण बहुजन समाजाकरिता मोफत व सक्तिचे करणे गरजेचे आहे.

शाहू महाराजांनी वेदोक्त प्रकरणानंतर,सत्यशोधक व आर्यसमाज ब्राम्हणेतर पुरोहितांची निर्मिती करण्याकरिता छात्र जगदगुरुची निर्मिती केली. तसेच करवीर संस्थानामध्ये शिक्षणात व नोकरीमध्ये ५०% आरक्षण दिले होते. महार वतने व बलुते बंद व खालसा करुन त्यांनाही सामान्य प्रवाहात आणले होते. अस्पृस्यांना समान वागणूक दिली होती.मात्र आजची परिस्थिती विपरीत दिसून येते. शाहू महाराजांचे कार्य आजही देशात लागू करणे महत्त्वाचे आहे.

सक्तिचे व मोफत प्राथमिक शिक्षण

शिक्षणाचे ध्येय म्हणजे ^उत्तम नागरिक निर्माण करणे होय* त्याकरिता मुला-मुलींना सक्तिचे मोफत शिक्षणाचा कायदा शाहू महाराजांनी केला. सक्तिचे मोफत प्राथमिक शिक्षण हुकूम (जाहिरनामा) २६ जाने १९१८, विद्यार्थ्यांचा अन्न व पोशाख साधा असावा व शिक्षणाचे ध्येय उच्च राहून उत्तम नागरिक सदर बोर्डिंगमधून निपजतील अशी आशा आहे. याकरिता प्रत्येक जाती समूहाकरिता वेगवेगळी वसतीगृह स्थापन करुन उच्च आदर्श शाहू महाराजांनी निर्माण केला. एकटया कोल्हापूरम

२२ वसतीगृहे त्यांनी स्थापन केले होते. ^मानवाच्या व समाजाच्या उध्दाराचे, विकासाचे सर्वांगीण उन्नतीचे कार्य म्हणजे शिक्षण*! ही सर्व सुधारणांची जननी आहे असे महाराजांचे विचार होते.

सर्वसामान्य बहुजनांकरिता शिक्षणाची दारे या देशात ब्रिटिशांनी उघडून दिली. १८१३ चा चार्टर ॲक्टनुसार इंग्रजी शिक्षणाची सुरुवात झाली. १८५४ चा वुडचा खलिता, १८८२ चा हंटर आयोग सरकारने अंमलात आणला. भारतामध्ये म. जोतीराव फुलेंनी मुलींच्या व अस्पृश्यांच्या शिक्षणाची गंगा पुण्यातून सुरु केली. तरीही ^शिक्षण ही ब्राम्हणांची मक्तेदारी हा अहंगंड तर शिक्षण क्षेत्र आपले नाही हा बहुजनांचा न्यूनगंड होता. जोतीराव फुल्यांनी याला तडा दिला. ऐहिक व बौध्दिक गुलामगिरी नाहीशी करण्याचा प्रयत्न केला होता.* हंटर कमिशन समोर म.जोतीराव फुल्यांनी मागणी केली होती की, १२ वर्ष आतील सर्व मुलींना प्राथमिक शिक्षण मोफत व सक्तीचे द्यावे. असा प्रयत्न तत्कालीन समाजसुधारकांनी केल्याचे आढळत नाही. हाच विचार राजर्षी शाहू महाराजांनी पुढे चालविला. शिक्षणाची महती विशद करतांना महाराज म्हणतात, ^आम्ही कसे खावे, कसा श्वास घ्यावा हेही शिकले पाहिजे ..... बहुजन समाज बलवान करण्यासाठी उत्तम शेतकरी, उत्तम शिक्षक, उत्तम व्यापारी, उत्तम उद्योगपती, उत्तम सैनिक तयार झाले पाहिजे*-

शिक्षण खात्याकडे शाहू महाराजांचे विशेष लक्ष होते. सार्वजनिक शिक्षण एक प्रयोग - प्रत्येक खेडयात एक शाळा- एक शिक्षक-पगारी नाही तर वतनी शिक्षक नेमायचा पण हा प्रयोग असफल ठरला. २४ जुलै १९१७ रोजी प्रसिध्द केलेल्या जाहिरनाम्यात म्हटले की, येत्या गणेशचतुर्थीपासून (३० सप्टेंबर) करवीर ईलाख्यात प्राथमिक शिक्षण मोफत व सक्तीचे करावयाचे आहे. सध्या असलेल्या सर्व शाळातील फी सदर दिवसापासून माफ करण्यात येत आहे. सक्तिच्या प्राथमिक शिक्षण नियमावली तयार करण्यासाठी करमकर, मराठे, प्रो.पंडितराव अशा ब्राम्हण शिक्षणतज्ञांची समिती नेमली. अभ्यासक्रम तयार करण्याची जबाबदारी इन्स्पेक्टर डॉगरेकडे सोपवली.- योजनेचा खर्च १ लाख रुपये पैकी ८० हजार दरबार खजिन्यातून तर २० हजार देवस्थान फंडातून खर्च होणार होते. या रक्कमेतून उरलेली रक्कम ट्रेनिंग कॉलेज, शाळांच्या इमारती, शैक्षणिक साहित्याव खर्च करावेत.

२१ सप्टे. १९१७ समितीने तयार केलेल्या नियमावलीन्वये सक्तिच्या शिक्षणाचा कायदा खास जाहिरनाम्याने प्रसि करण्यात आला.

सक्तिच्या व मोफत प्राथमिक शिक्षणाचा उद्देश :- करवीर ईलाख्यात आमच्या सर्व प्रजाजनांना लिहिता वा येऊन आपली स्थिती ओळखून सुधारण्यास समर्थ व्हावे. - शाळेमध्ये योग्य वयाच्या मुला-मुलींना पाठविण्याची शक्ती होती. अन्यथा प्रतिमहा १ रुपया दंड वसुलीची तरतूद होती. अंमलबजावणी- ५०० ते १००० लोकवस्तीच्या गावात स्थापन चावळी, देऊळ, धर्मशाळा ह्या इमारतीत शाळा सुरु केल्या. ह्या इमारती नसलेल्या गावी तुळजा भवानीचे मंदिर बांधावे एका सोप्यात शाळा तर दुसऱ्या सोप्यात चावळी असा आदेश दिला. वर्षभरात खेडयापाडयात ९६ शाळा सुरु झाल्या. स शाळेचा उद्घाटन सोहळा चिखली गावी खुद महाराजांच्या हस्ते संपन्न झाला. (४ मार्च १९१८)

ह्या सोबतच शाहू महाराजांनी स्त्री शिक्षणाला प्रोत्साहन दिले होते.करवीर संस्थानचा शिक्षण खर्च वार्षिक १ लाख रुपये होता व तो पुढे वाढतच गेला. संपूर्ण भारतातील कोणत्याही संस्थानचा खर्च इतका नव्हता. १९१८ च्या प्रारंभी शाहू महाराजांनी सक्तिच्या मोफत शिक्षणासाठी एक स्वतंत्र खाते करवीर संस्थानात स्थापन केले. त्यामध्ये डायरेक्टर आणि एज्युकेशनल इन्स्पेक्टर हे वरिष्ठ अधिकारी नियुक्त केले होते. तसेच हे खाते खुद आमचे नजरेखाली राहील असे महाराजांनी जाहीर केले.

संस्थानातील गाव पाटीलांवर मोठी जबाबदारी सोपविली शाळा तपासणी, शाळेत व्हिजिट बुक, त्यांचा रिपोर्ट, दंड वसुली आदि यामागे उद्देश हा की, ही योजना कागदोपत्री न राहता तिची काटेकोर अंमलबजावणी व्हावी हा होता. शाळेत शिक्षक नेमतांना त्याला थोडेबहुत इंग्रजीचेही ज्ञान असावे ही अपेक्षा होती. तसेच नेमणूकपूर्व परीक्षा उत्तीर्ण व्हावे लागत होते.

परिणाम/महत्व :- अस्पृश्य शाळा बंद केल्या. अस्पृश्य मुले स्पृश्यांच्या मुलांसोबत शिकू लागली. शेतकरी उदासीन होता.म्हणून खेड्यातील शेतकऱ्यांनी आपल्या मुलांना सकाळी किंवा सायंकाळी शाळेत दोन तास यावे, बाकी वेळेत शेतीकाम करावे असा (दंडक) सवलत दिली. शाहू महाराजाचे शैक्षणिक धोरण करवीर संस्थान व त्यांच्या कारकीर्दीपूरतेच मर्यादित न राहता त्यांच्या कार्यापासून प्रेरणा घेऊन कर्मवीर भाऊराव पाटील ते पंजाबराव देशमुख बहुजन समाजाच्या शिक्षण प्रगतीकरिता शिक्षण चळवळ अर्ध शतकभर चालविली. ही ज्ञानगंगा महाराष्ट्रात बहुजन समाजाच्या सर्वांगीण अभ्युदयाकरिता अभूतपूर्व ठरली याची पाळेमुळे शाहू महाराज व महात्मा फुले यांच्या कृतीत व विचारात आहेत.

स्वतंत्र भारतातील सन २०१०चा मोफत शिक्षणाचा हक्क

१) मातृभाषेतून शिक्षण (२) मोफत शिक्षण (देणगी/मुलाखती नको) (३) विकसनशील दृष्टी नाही (४) क्वालिटी, क्वांटिटी, युटिलिटी, इक्वीलिटी, अकाऊंटलिटी अशी आव्हाने (५) शिक्षण विकासाभिमुख, ज्ञानाभिमुख, समाजाभिमुख, ज्ञानाविज्ञान कल्याणाभिमुख असावे (६) कमी निकालांच्या शाळांना सामाजिक संस्थांनी व शिक्षण संस्थांनी दत्तक घ्यावे. सन २०१० च्या मोफत शिक्षणाच्या हक्कामध्ये सन १९९१ च्या जागतिकीकरण, खाजगीकरण व उदारीकरणाचा प्रभाव जाणवलो. जुजबी शिक्षण - समाजनिर्मिती न राहता गरजेपुरते असावे ज्ञानाचा शिक्षणाचा व्यापार सुरु झाला, महागडे शिक्षण आले खाजगीकरणावर भर देऊन राज्यघटनेनुसार न राहता बाजारी शक्तीच्या तालावर सुरु आहे. शासन यामधून अंग काढून घेत आहे लोकशाहीचा लोप होऊन संपूर्ण निर्णय केंद्रीय पध्दतीने जनता, विद्यापीठ, विद्यार्थी, शिक्षक, यांना न विचारताच घेतले जाता शिक्षणाचा बाजार होऊन शिक्षणसंस्था उत्पादक तर विद्यार्थी ग्राहक बनत आहेत. सर्वत्र असमान शिक्षण असून त्याचा विद्यार्थ्यांच्या पैसे देण्याच्या कुवतीवर अवलंबून आहे. सध्याचे शिक्षण समतामुलक नाही. शिक्षण म्हणजे गुंतवणूक, नफेखो चालना व राज्यघटना धाब्यावर बसवून धोकाधादायक धोरण अंमलात येत आहेत. त्यामुळे शिक्षणाचा मुळ उद्देश बाजुला र गेला आहे.

समारोप

राजर्षी शाहू महाराजांचे प्राथमिक सक्तिच्या व मोफत शिक्षणाचा उद्देश, हेतू, तळमळ, अंमलबजावणी आणि मोफत शिक्षण हक्काचा संपूर्ण आढावा घेतल्यास असे दिसून येते की, स्वतंत्र भारतातील शिक्षण प्रणाली ही खाजगी

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नफेखोरीकडे वळलेली दिसून येते. उत्तम नागरिक घडणे व त्यांचा सर्वांगीण विकास होणे हे उद्देश बाजूला झालेली दिसतात. आजही आपणाला शाहू महाराजांचे शैक्षणिक विचार, उद्देश व कार्य भारतात लागू करुन त्यांची काटेकोरपणे, प्रामाणिकपणे अंमलबजावणी करणे काळाची गरज आहे. त्याशिवाय भारत देश विकसीत राष्ट्र म्हणून पुढे येऊ शकणार नाही. स्वातंत्र्याची फळे सर्व तळागाळातील, खेडयापाडयातील, अस्पृश्य, आदिवासी, बहुजन समाजाच्या संपूर्ण स्त्री - पुरुषांना चाखता येतील. प्रत्येक तालुक्याच्या ठिकाणी शाहू महाराजांनी कोल्हापूर येथे स्थापन केलेल्या वसतीगृहाच्या धर्तीवर वसतीगृहांची स्थापना करणे, सक्तिचे मोफत प्राथमिक शिक्षण, सर्व हुशार मुला-मुलींना देश-विदेशात उच्च शिक्षणाकरिता शिष्यवृत्त्या दिल्या जाव्यात खाजगी इंग्रजी शाळांची दुकाने बंद करणे शिक्षण विभागाकडे लक्ष देऊन उपलब्ध निधीमध्ये वाढ करणे, बजेटमध्ये शिक्षणावर भर देणे, शिक्षण खाते सार्वजनिक बनविणे व स्थानिक उद्योगांना बळ देऊन त्यांना संरक्षण देणे तरच महात्मा फुले व शाहू महाराजांचे स्वप्न भारतात साकार होतील!

शाहू महाराजांनी दिल्ली दरबार मेमोरियल पाटील स्कूल १६ एप्रिल १९१२ च्या जाहिरनाम्यानुसार व गाव पाटिलाकरिता सुरु केलेली होती. त्याच धर्तीवर सरपंच, तंटामुक्त समितीचे अध्यक्ष व पोलीस पाटील यांच्याकरिता प्रशिक्षण संस्था सुरु कराव्यात जेणेकरुन ग्रामोत्थानाचे ध्येय व उद्देश सफल व्हावेत आणि मानवाच्या सर्वांगीण उन्नतीचे शिक्षणाच्या ज्ञानगंगेत संपूर्ण जनता जनार्धन न्हाऊन निघावेत हाच उद्देश.

संदर्भ

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Advantages of NAAC in Quality Assurance and Student Development

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Abstract

India has the third largest system of higher education in the world; next only to USA and China. A focus on quality, access and relevance of higher education to achieve the required social transformation for sustainable economic development of the country has been the national priority. Qualitative improvement in higher education, to realize the desired dimensions of human resource development necessitated the establishment of the premier Quality Assurance Agency – NAAC – by the UGC, on 16th September, 1994 was a historic step.

NAAC is an autonomous institution established by the UGC with the prime agenda of assessing and accrediting institutions of higher learning with all objective of helping them to work continuously to improve the quality of education. Towards achieving this goal, while the participation of all stakeholders is essential, the involvement of student participation in the institutional quality enhancement processes is crucial and invaluable, because of Students are the largest groups within any HEI, and therefore are the main Stakeholders who have a much stronger voice than any other stakeholders. Students are quite well informed, committed, participative, motivated and curious, and this provides for valuable contributions. The several dimensions of student participation often surpass the four walls of the institution and other academic frontiers, following the trend that induces or obliges the institutions to open up to the society. World over, there is a wide and positive attitude towards increased student influence in higher education governance including the role of student activism in social changes. Students could therefore be the driving force behind ambitious and far reaching Higher Education reform.

Key words: NAAC accreditation, Higher Education, student participation etc.

Introduction

Quality is often described as the totality of features and characteristics of a service that bear on its ability to satisfy stated or implied needs. Quality in higher education, according to Article 11 of the World Declaration on Higher Education published by the United Nations, is a multi-dimensional concept, which should embrace all its functions and activities: teaching and academic programmes, research and scholarship, staffing, students, buildings, faculties, equipment, services the community and the academic environment. It should take the form of internal self-evaluation and external review, conducted openly by independent specialists, if possible with international expertise, which are vital for enhancing quality. Independent national bodies should be established and comparative standards of quality, recognized at international level, should be defined. Due attention should be paid to the specific institutional, national and

regional contexts in order to take into account diversity and to avoid uniformity. Stakeholders should be an integral part of the institutional evaluation process. Quality also requires that higher education should be characterized by its international dimension: exchange of knowledge, interactive networking, mobility of teachers and students, and international research projects, while taking into account the national cultural values and circumstances.

The aim of this paper is to examine the concept of quality and quality assurance in education from the perspective of students and with a focus on student involvement. Some ideas and tools will be presented that can help students to get involved in the quality assurance of their own study programs and courses as well as institutions. There will be exploration of several methods of self-organization within the QA process that will be followed by the outlining of various possible methods that can be utilized by students in becoming key actors in QA in their institutions.

Quality Assurance Policy

- The institution enshrines the value of student participation in quality assurance activities at module, programme, unit, department, school, and faculty and institution level.
- The policy, associated procedures and calendar for reviews have formal status and are publicly available, actively communicated and known within the institution.
- The institution designs its student representation system to provide opportunities for student engagement in decision-making and quality management arrangements. These opportunities are enshrined and clearly set out in Quality Assurance/Enhancement Handbook, Student Handbook or equivalent document and are actively communicated.
- As part of the institution's development and implementation of a strategy for the continuous enhancement of quality, a policy and associated procedures for the assurance of the quality and standards of their programmes and awards have been established, setting out a role for students as partners in quality assurance

Quality Assurance Procedures

- Students are represented at all fora that contribute to quality processes at the institution.
- In addition to formal feedback, informal feedback should also be sought and captured (e.g. feedback from individuals, focus groups etc.)
- Students participate in internal quality reviews at module, programme, unit, department, school, faculty and institution level as appropriate.

Student Feedback on Modules, Programmes and Services

- Coherent and systematic student feedback mechanisms are in place for all modules, programmes and services.
- Student feedback on modules, programmes and services is analyzed and such feedback is an explicit input to the quality assurance process at the institution.
- Outcomes of student feedback are reported back to students along with an action plan to address any issues raised.

The roles of the student in external panels at institutional level

The students take on several simultaneous roles in the external panels that evaluate institutions. First of all, the student representative is, of course, a student, and as such the only one who has the ability to see the situation from the perspective of a student and of a learner.

Secondly, the students elected to be a part of an evaluation panel in Norway usually have a background as student representatives, either at the institutional or the national level. Their insight and knowledge of the higher education system is thus significant, and they have the ability to see and understand consequences for the students' situation, which the other panel members may not take into account. A third role of the students consists in being the largest stakeholder in higher education, investing time and money in education.

Students should be seen as partners in the academic community, because they often have a balanced view of the aim of the academic institution; on the cultural, political and historical aspects of the academic community; on the institutions' role in society and on the future of the academic tradition. This insight combined with factors such as the influence of their age, their peer group, and the time they live in, means that students may bring a valuable perspective into the panel's work. Finally, it should be stressed that students need to be acknowledged as full committee members. Some might argue that the students may not have enough academic experience or organizational insight to be accepted as full members in expert committees. In some cases, the students may lack a full understanding of some organizational aspects of an institution, but one might think that this is not a serious hindrance compared to professors who do not understand the importance of modern learning methods. In the end, students, quality assurance experts and academic staff have competences which are complementary for an evaluation. Therefore, all these groups of stakeholders ought to be included. It is important to acknowledge and appreciate the differences between an academic staff representative and a student involved in the evaluation processes. The student may have a different approach to the process, and use different jargon. The student background will also contribute to the adoption of a different point of view, which in several cases has proven to be a valuable contribution to the evaluation process, including matters not directly linked with the students' learning situation. Most importantly, the participants of an evaluation panel may identify different challenges due to the different perspectives they represent, and thus the evaluation might result in a more thorough process, due to the better opportunity to "get under the surface". Despite their potentially varying perspectives, the expert panel members all have the same goal: a system where the higher education institutions function at their best; and a versatile, flexible system with better learning conditions, including the wellbeing of staff. The creation of better learning outcomes is the overall goal of evaluation.

Conclusion

Quality Assurance Agency for Higher Education encourages institutions to work in partnership with their student representatives to enhance policy and practices, and to involve students in their quality assurance and enhancement practices, to help the continuing improvement of higher education and the overall student experience.

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Science of Meditation

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Abstract

Meditation has its roots in cultural, spiritual, and religious settings. It is an ancient practice that has been braced by individuals throughout the world. Meditation involves used to train your thoughts to stay in the present moment, because in the present states there is true peace. Thoughts of the future that is (what/will happens, leading to fear or anxiety) or of the past (might have happened, leading to sadness, depression, anger, or jealousy) prevent us from feeling the inner peace that is in the present moment. Meditation originally was meant to help deepen focus on the sacred and mystical forces of life. Meditation impacts health such as, relaxation, systematic desensitization, release of repressed memories, un-stressing and so on.

Key Word: Meditation, Anapan Sati, Meditation techniques

Introduction:

Meditation is one powerful way to the exercise of mind to keep it healthy & free of perversions. In the depth of Meditation, one experiences a dialogue with one's own self/soul. Miseries as human being are primarily due to our thoughts, emotions, desires-aspiration, ego, perceptions, liking-disliking (raga-dwesha), attitude etc. our constant shifts between past & present tense. If we carefully analyse, these are all the functions of our mind. If we learn to improve on these, our miseries would be gone. Meditation teaches us to improve on all these aspects. Peace of mind& happiness are sought for by each and every person. But our search for them is in outside world. At some stage, we realize that peace of mind& happiness actually resides in our own selves. The day we begin internal journey, we start getting peace of mind& happiness. This internal journey is gifted and guaranteed by meditation. All great prophets, religious path makers & saints have done meditation in some or other form to achieve the greatness and enlightenment. From oriental and western spiritual texts, it is clear that Lords like Shiva, Mahavir, Buddha to Rama, Krishna, Patanjali and from Christ to Prophet Mohammed to Asho Jarthushtra to recent most saints all have meditated for a long time during their self-realization enlightenment process so, if we really want peace of mind & happiness and eliminate our miseries or if we want to experience god like we must meditate regularly.

Benefits of meditation:

There are so many advantages of meditation. Meditation can restore physical, mental & emotional health. It can be useful in controlling several lifestyle disorders, psychosomatic disorders including high BP, coronary artery disease, diabetes, asthma, rheumatism etc. In this modern stressful life, it's a powerful weapon or antidote to acute as well as chronic stress also it improves concentration and sharpness. It decreases

reactivity to a situation or a person, so one remains serene.

Person who does meditation has a totally different attitude towards everything in life. Thus meditation is helps to improves interpersonal relationship, job performance; cultivate positive emotions and removes negativity of person. It also helps in controlling anger and conquering fear. In all, it brings inner peace, patience & happiness and thus changes quality of life for better. Higher level of meditation brings intuitive knowledge, healing power, magnetic personality and occult powers.

The neurochemistry of meditation is entirely the reverse of stress. Meditation up regulates parasympathetic system, while stress regulates sympathetic system responsible for increase in heart rate, respiration, blood pressure etc. According to our oriental spiritual texts and our spiritual masters, we should meditate for much higher gain than above mentioned physical &mental benefits. The real purpose of meditation is conquering the mind, elimination of ego and then elimination of mind itself, thus attaining Samadhi-total bliss. Here soul remains uninhibited, manifesting its complete knowledge, complete revelations etc. We can understand the state of self realization, God realization comes here which is a part of Enlightenment &Liberation as per our masters & texts. Meditation is not a pushbutton system. We need to have patience courage, hard work and perseverance. A person has right guide, right technique, right understanding and real belief and dedication can bring success. There is a high failure rate amongst mediators due to non fulfilling of above criteria. It is said, that meditation has become a business of billions and many opportunists have misused and abused this sacred spiritual science.

Two major styles of meditation:

- **Focused-attention meditation:** Concentrates on a single object, thought, sound or visualization. It emphasizes ridding your mind of attention and distraction. Meditation may focus on breathing, a mantra or a calming sound.
- **Open-monitoring meditation:** Encourages awareness of all aspects of your environment, train of thought and sense of self. It may include aware of thoughts, feelings or impulses that you might normally try to suppress.

Anapan Sati:

This technique is about moment to moment awareness of our own breathing. The technique concentration or focus on breathing, but not a pranayama which is controlling breathing, but here one has to see and know every natural breath that goes in and comes out, Just no other thoughts, no other objects. Be aware of your own natural breathing, moment to moment in an effortless, choice less way. Please do not lose a single breath. When the mind gets distressed, as it commonly happens with every beginner, one has to bring it back to breathing very quietly, without criticising or cursing the mind. With months, years of practice, one learns to be with every breath for several minutes to hour. This facilitates the awakening process or enlightenment.

In this technique there is no deity, no sect, and no religion; hence it's perfectly a secular technique. Also breathing is a vital process, without it nobody can survive;

therefore it's a vital technique. Breathing is always with you wherever you are and whenever you go hence this is a hassle free, easy and handy technique. You are alive, because you are breathing. This is a truth. One can't deny this eternal truth about existence. So when one concentrates on breathing, in a way one is perusing the truth. By perusing this truth, one is supposed to be near the ultimate truth .The enlightenment, as revealed by experienced sages. Breathing is the carrier of our emotions. Breathing changes with different emotions and perversions. With anger, hatred the breathing becomes fast. With love towards living beings it becomes slow with compassion it becomes slower and even effective.

For a regular practitioner of breathing meditation, it becomes a feedback of one's own emotions and perversions. It's an auto check mechanism and whenever there is a negative emotion one becomes alert, as one's own breathing tells look here, something is wrong, control it. This is a wonderful reason, why breath practitioner becomes quiet, calm and compassionate and is always full of positive emotions/energy.

Finally, breathing is our own present tense, present moment. When we stay on breath, we actually remain in present moment. Our mind always fluctuates, between past and future that is one of the major tragedies and root of our miseries. This meditation technique is a straight training of remaining in present tense. It is not easy to dwell on breathing, without losing a single breath with hard work, dedication and commitment to achieve.

Similarly, with all other techniques there is some science and some logic in each one of them. In meditation over thought, one has to either pursue one and unified thought process e.g. a good or noble thought, or just simply watch the stream of thoughts ,as they come one after the other, and the next. For sound meditation, one can chant a mantra several times (loudly or internally without vocalizing) or listen calmly in a quiet place at night or in a jungle the subtle sound that enters the ears and concentrate on that. In object based meditation, one stare at the object continuously even without blinking eyes.

Based on the techniques, several masters have designed different methods. Patanjali Rajyoga, Anapan Sati, Smriti Upasthan, Vipashyana, Prekshadhyan, Jaindhyan, Transcendental meditation to name few important methods. Amongst others are Mantra dhyan, Zen meditation, Yoganindra, Nays, Dynamic (HooDhyan) meditation, Sahajdhyan, Tratak, Kayotsarga, Atitdhyana, Bhavidhyana, Swapnadhyana, Tahata, Spanddhyan, etc.

All our mistakes or bad karma happen during our unaware state. In Jain technical language it is called pramad. If one is aware moment to moment, one will be very cautious. Hence mistake or pramad (unawareness) does not occur. So Karmic Dosha of thoughts, speech or deed is minimized. Lord Mahavir used to frequently say to his chief disciple Gautam Always be aware and watch your thoughts, words and actions so closely that nothing goes wrong anywhere.

If one understands the basics of meditation, one can really design one's own tailor made system, suitable to one. Initially one should learn one standard method, follow it for few years, then after

mastering it, at some stage one can modify.

Most of these oriental techniques have come from teachings of Lord Shiva, Patanjali, Buddha, Adinath, Mahavir, amongst several others.

No one method is better than others really. All methods are great & equally beneficial. Comparison is dangerous & has no meaning. One has to choose the method that suits to one. One should remember that all methods teach to remain in present tense, this particular moment. Choice less, effortless, non judgmental awareness brings happiness & joy. As nicely described in Vipashyana Method, actually speaking, meditation is an operation of mind, by the mind. The tools of mind are calm and quiet mind, Awake & attentive mind, an equanimous mind. When this state is practiced several times over weeks & months & years, one achieves what is called mindfulness practice. Here mediator remains in a state of constant awareness in whatever he/she does. Eating meditation, sitting meditation, working meditation, walking meditation. To achieve this, 3 rules are mostly famous.

1. Whenever the body is, mind should also be there without any exception. All activities of body are with full mind at every moment.

2. To Develop wakeful plain observorship: Non judgmental. Thus, one learns to detach body from mind.

3. Ultimately to know the soul with our own soul.

Conclusion:

Meditation act to changes the body and mind together and research on the impact of diverse kinds of meditation is the most favoured trend among the present day. Working together with Mediators, researchers help to understanding the concept of meditation and its impact on the physiological and psychological wellbeing of the human community. When meditation acts as a constant repetitive stimulus, certain qualitative and quantitative variations occur permanently. As we see effects of meditation on metabolism, we realize there are decreased heart rate, decreased breathing and decreased B P. Researcher studies shown that the blood flow to liver and kidneys is reduced with increase in cardiac output. The oxygen utilization level is decreased in muscles. The root cause of our problems/miseries is our own mind. The thoughts, desires, emotions, ego, perceptions, attitude etc. causes the problems. If we take our mind, the miseries will be gone. To tackle our mind is meditation is important in our everyday life.

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28

CAUSES OF OBESITY AND ROLE OF EXERCISE IN ITS TREATMENT

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Abstract

The purpose of the present paper is to explore the causes, and treatment of obesity. Obesity means having too much body fat. It is being too overweight and it is unhealthy. Some define it as being 20 percent over the ideal body weight for their stature. Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have an adverse effect on health, leading to reduced life expectancy and/or increased health problems. People are considered as obese when their body mass index (BMI), a measurement obtained by dividing a person's weight in kilograms by the square of the person's height in metres, exceeds 30 kg/m. Obesity increases the likelihood of various diseases, particularly heart disease, type 2 diabetes, obstructive sleep apnea, certain types of cancer, and osteoarthritis. Excessive body weight is associated with various diseases, particularly cardiovascular diseases, diabetes mellitus type 2, obstructive sleep apnea, certain types of cancer, and osteoarthritis. As a result, obesity has been found to reduce life expectancy. Obesity, however, has many causes. The reasons for the imbalance between calorie intake and consumption vary by individual. Your age, gender, genes, psychological makeup, and environmental factors all may contribute. Weight gain occurs when you eat more calories than your body uses up. If the food you eat provides more calories than your body needs, the excess is converted to fat. Initially, fat cells increase in size. When they can no longer expand, they increase in number. If you lose weight, the size of the fat cells decreases, but the number of cells does not. Obesity can be associated with other eating disorders, such as binge eating or bulimia.Obesity treatment strategies vary from person to person. Beginning treatment early is an essential part of success, and it is important to talk with your physician before beginning any weight-loss program. There are several methods for treating obesity, such as behavior modification, physical activity, non clinical weight management programs, medically managed weight-loss and surgical treatment. Whether you're at risk of becoming obese, currently overweight or at a healthy weight, you can take steps to prevent unhealthy weight gain and related health problems.

(heart), renal (kidney), neurological (nerves), retinal (visual) systems and with infectious diseases and problems with healing. (F) Depression (obese patients are typically inactive which can lead to increased incidences of chronic clinical depression that could be treated and greatly improved with exercise).

Causes of Obesity

Obesity, however, has many causes. The reasons for the imbalance between calorie intake and consumption vary by individual. Your age, gender, genes, psychological makeup, and environmental factors all may contribute. Weight gain occurs when you eat more calories than your body uses up. If the food you eat provides more calories than your body needs, the excess is converted to fat. Initially, fat cells increase in size. When they can no longer expand, they increase in number. If you lose weight, the size of the fat cells decreases, but the number of cells does not.

Genes:

Obesity tends to run in families. This is caused both by genes and by shared diet and lifestyle habits. Having obese relatives does not guarantee that you will be obese.

Emotions:

Some people overeat because of depression, hopelessness, anger, boredom, and many other reasons that have nothing to do with hunger. This doesn't mean that overweight and obese people have more emotional problems than other people. It just means that their feelings influence their eating habits, causing them to overeat.

Environmental factors:

The most important environmental factor is lifestyle. Your eating habits and activity level are partly learned from the people around you. Overeating and sedentary habits (inactivity) are the most important risk factors for obesity.

Sex:

Men have more muscle than women, on average. Because muscle burns more calories than other types of tissue, men use more calories than women, even at rest. Thus, women are more likely than men to gain weight with the same calorie intake.

Age:

People tend to lose muscle and gain fat as they age. Their metabolism also slows somewhat. Both of these lower their calorie requirements.

Pregnancy:

Women tend to weigh an average of 4-6 pounds more after a pregnancy than they did before the pregnancy. This can compound with each pregnancy.

Certain medical conditions and medications can cause or promote obesity, although these are much less common causes of obesity than overeating and inactivity. Some examples of these are as follows: Cushing syndrome; Depression, Certain medications

(examples are steroids, antidepressants, birth control pills).Prader-Willi syndrome and Polycystic ovarian syndrome. Obesity can be associated with other eating disorders, such as binge eating or bulimia. A sedentary lifestyle plays a significant role in obesity. In both children and adults, there is an association between television viewing time and the risk of obesity. A review found 63 of 73 studies (86%) showed an increased rate of childhood obesity with increased media exposure, with rates increasing proportionally to time spent watching television.

Treatment-of-Obesity

Obesity treatment strategies vary from person to person. Beginning treatment early is an essential part of success, and it is important to talk with your physician before beginning any weight-loss program. There are several methods for treating obesity, such as behavior modification, physical activity, non clinical weight management programs, medically managed weight-loss and surgical treatment.

Behaviour-Modification

Behaviour plays a significant role in obesity. A few suggested behavior modifiers include: changing eating habits, increasing physical activity, becoming educated about the body and how to nourish it appropriately, engaging in a support group or extracurricular activity and setting realistic weight management goals.

Physical-Activity

Increasing or initiating a physical activity program is an important aspect in managing obesity. Today's society has developed a very sedentary lifestyle and routine physical activity can greatly impact your health. Set realistic goals and make sure to consult with your doctor before initiating any exercise program.

Surgical-Treatment

Surgical treatment of obesity is an option for those who are classified as morbidly obese. There are a few different types of bariatric surgery or weight-loss surgery treatment options, such as Roux-En-Y Gastric Bypass, Gastric Sleeve resection and Adjustable Gastric Banding.

The Role of Exercise in Obesity

The benefits of exercise are many. How hard you exercise plays an important role in weight loss and obesity. Simply put, high-intensity exercise burns more calories. To stimulate weight loss and change the shape of your body, you must exceed your comfort zone during exercise. To lose weight, you must create a negative caloric balance. That is, you must expend more calories than you ingest. Exercise boosts caloric expenditure in three important ways. The additional calories you burn during your workout create a deficit so

long as your food consumption does not cancel out the burned calories. Exercise also builds lean muscle and bone, causing an elevated basal metabolism that burns more calories all day long. And exercise boosts energy, making you less tired and sluggish and more inclined to be active. In a 2007 study published in the Journal of Applied Physiology, researchers found that resistance training stimulates the production of the hormones epinephrine, nor epinephrine and growth hormone, all of which promote fat metabolism. But to engender fat metabolism, exercise intensity must be sufficient to stimulate hormone production. For each exercise, select a weight with which you can barely do eight repetitions with good form and continue repetitions to volitional fatigue, or the point to which you cannot do one more repetition. You will burn more calories during your weight training session and see greater increases in lean mass, basal metabolism and daily caloric expenditure. Studies show that even the most inactive people can gain significant health benefits if they accumulate 30 minutes or more of physical activity per day. Research consistently shows that regular physical activity, combined with healthy eating habits, is the most efficient and healthful way to control obesity. Whether you are trying to lose weight or maintain it, you should understand the important role of physical activity and include it in your lifestyle.

Conclusion

In conclusion, it seems that we will have to reassess our entire lifestyle if we are to avoid the problems associated with obesity. Despite restrictive diets and tempting advertisements, most of us instinctively understand good common-sense eating. However, we have to combine this with more activity and with new insights into the importance of good health. There are several methods for treating obesity, such as behavior modification, physical activity, non clinical weight management programs, medically managed weight-loss and surgical treatment. Research consistently shows that regular physical activity, combined with healthy eating habits, is the most efficient and healthful way to control obesity.

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INDEX

ई कॉमर्स कंपन्यांची भूमिका आणि त्याचे फायदे–तोटे –एक अभ्यास

प्रा.रिता आर राऊत

वाणिज्य विभाग प्रमुख यशवंतराव चव्हाण महाविद्यालय लाखांदूर जि.भंडारा ४४१८०३

सारांश

आज भारत हा जागतिक महासत्तेचा देश बनला आहे. यामागील कारण म्हणजे भारतात [illegible] चाललेला ऑनलाईन व्यापार होय. भारतात ई कॉमर्स मुळे व्यापाराचे स्वरूप बदलले [illegible] भारतात ऑनलाईन व्यापार ३८.५ बिलीयन यूएसडॉलर होता तो २०२६ मध्ये २०० बिलीयन [illegible] डॉलर अपेक्षित आहे. ही वाढ केवळ स्मार्ट फोन्स आणि इंटरनेटच्या सहाय्याने होऊ शकते. भारतात या व्यापारात ५१% या वार्षिक दराने झपाटयात वाढ होत आहे. ई कामर्स ही ई बिझनेसला [illegible] आहे. ई व्यवसायाचा एक प्रकार म्हणून ई वाणिज्याचा उपयोग केला जातो. जिथे खरेदीदारास [illegible] विक्रेत्यास इंटनेटद्वारे जोडून उत्पादन आणि सेवा यांची खरेदी विक्री करणे तसेच [illegible] सहाय्यक क्रिया इत्यादीचा समावेश ई वाणिज्यात केला जातो. ई कामर्स हे आधुनिक तंत्रज्ञानाचे [illegible] उत्तम उदाहरण आहे. प्रत्येक व्यवसायीकाने हे तंत्रज्ञान हाताळने ही एक गरज बनली आहे.

ई कॉमर्स क्षेत्राचा प्रत्यक्ष किरकोळ, लहान आणि मध्यम उद्योगांवर प्रभाव पडला. ई कॉमर्स क्षेत्राच्या विकास आणि वाढीमुळे रोजगाराला चालना मिळाली तसेच रोजगार वाढला. निर्यातीला प्राप्ती झाली, एक्स चेकर्सकडून कर गोळा झाला तसेच दिर्घकाळाकरिता ग्राहकांना वस्तू आणि [illegible] यांचा पुरवठा करण्यात आला.

प्रस्तावना

आधुनिक काळातग्राहकांच्या आवडीनिवडीपेक्षा ग्राहकांना कोणत्या वेळी कोणत्या वस्तूची [illegible] आहे आणि त्यापासून त्यांना समाधान कशापद्धतीने प्राप्त होईल याकरिता विशेष प्रयत्न करण्यात [illegible] आहे. आज वस्तूंच्या खरेदी विक्रीबरोबरच सेवांची सुद्धा खरेदी विक्री ऑनलाईन पद्धतीने करण्यात येते. प्रत्यक्ष दुकानात जाऊन वस्तू खरेदी केल्यामूळे वेळ आणि पैसा खर्च होतो. यावर मात करण्याचे साधन म्हणजे ई कामर्स होय. यात ईटरनेटद्वारा विनीमय केला जातो. टेलीफोन, मोबाईल, ईमेल यद्वारे वस्तू बूक करण्यात येते. संबंधीत कंपनीच्या वेबसाईटवर संबंधीत वस्तूची संपूर्ण माहिती सविस्तर दिलेली असते. ती वाचून ग्राहक विश्वासाने वस्तू खरेदी करू शकतो. यामूळे कंपनीबद्दल ग्राहकांच्या मनात विश्वास निर्माण होतो. कंपनीची सामाजिक प्रतिष्ठा वाढते. कंपनी आणि ग्राहक यांच्या सलोख्याचे संबंध निर्माण होतात आणि शेवटी कंपनीला आर्थिक लाभ होते. कोणत्याही व्यक्ती कुठेही राहून ऑनलाईन वस्तूची खरेदी विक्री करता येते. भारतात याचे प्रमाण वाढलेले आहे. २०१८ मध्ये भारताच्या एकूण रिटैल विक्रीच्या प्रमाणात ई कामर्सच्या विक्रीचे प्रमाण २.२% होते. तसेच २०१८ नुसार ई कॉमर्स वापरणाऱ्यांचे प्रमाण ७४% होते. २०१६ मध्ये भारतात डिजीटल स्वरूपात खरेदी करणाऱ्यांचे प्रमाण १३०.४ मिलीयन होते.

या शोधनिबंधात ई कामर्सचे कार्य करणाऱ्या विविध कंपन्यांची ओळख करून देण्यात आली आहे. ई कामर्समध्ये काम करणाऱ्या विविध कंपन्या आणि या अनुषंघाने विविध उपक्रम राबविणारे [illegible] सरकार यांची भूमिका सांगण्यात आली आहे. संशोधनामागील उद्देश म्हणजे ई कामर्सचे फायदे आणि तोटे जाणून घेऊन त्यावर उपाययोजना करणे आणि समाजाला ई कामर्सचे महत्त्व समजावून सांगणे आहे.

भारतातील ई कॉमर्स असणाऱ्या कंपन्यांनी ई कॉमर्स उद्योगात उडान घेतली आहे. कमीत कमी वेळेत भारतात ईकॉमर्स कंपन्यांची मोठय प्रमाणात वाढ आणि विस्तार वाढून आली. या कंपन्यांचे प्रमुख वैशिष्टये म्हणजे ग्राहकांना वस्तुंबरोबर देण्यात येणाऱ्या सेवा होय. तसेच ग्राहकांना वस्तुची कमी, स्वस्त सुरक्षितता, ग्राहकांचे शोधन, वस्तू परत घेणे, कॅश ऑन डिलीवरी हे सुद्धा ग्राहकांना समाधान मिळवून देते. आजच्या स्थितीत शहरांपासून ते गावखेडयांपर्यंत ई कॉमर्स पोहचलेले आहे. प्रत्येकाकडे कमी वेळ आणि माफक दरात वस्तू घरपोच प्राप्त होतात म्हणून बहुतेक जण ऑनलाईन खरेदी पसंत करीत आहेत. भारतात पुढील केंद्र हे ऑनलाईन पद्धतीने खरेदी विक्रीच्या कार्याचे केंद्रबिंदू ठरलेले आहे.

ॲमेझान विकास केंद्र भारत खा.मर्या.ही एक अमेरिकन इलेक्ट्रॉनीक कामर्स कंपनी आहे. याचे मुख्यालय Seattle Washington येथे आहे. हे सर्वात प्रथम क्रमांकावर सर्वात अधिक जलद सेवा देणारे केंद्र आहे. ॲमेझानचे प्रमुख वैशिष्टये म्हणजे रिव्हिव्यू, प्रोडक्ट फिचर्स, आणि थर्ड पार्टी विक्रेते हे आहे. सुरूवातीला ऑनलाईन बुकस्टोअर चालू केले नंतर डिव्हीडीज, व्हिडीओ सिडीज, बघू ३ सिडीज यांची ऑनलाईन विक्री केली नंतर सर्वच प्रकारच्या वस्तू विकायला सुरूवात केली आणि आज सर्वात अधिक गतिने विक्री करणारे आणि भांडवलाची उलाढाल करणारे केंद्र बनले.हे भारतातच नव्हे तर संपूर्ण जगातसुद्धा अधिक विश्वसनीय आहे.

ब्रेनबीज सोल्यशन प्राय.लि.(फर्स्ट क्राय.कामें) ही भारतीय कंपनी पुण्यात स्थित आहे. या कंपनीचे वैशिष्टये म्हणजे ही कंपनी सर्व वयोगटाच्या मुलांच्या सर्व प्रकारच्या गरजा भागविणाऱ्या वस्तू आणि सेवा पूरविते.

फ्लीपकार्ट इंटरनेट प्रायवेट ली. २००७ मध्ये ही ई कॉमर्स कंपनी भारतात स्थापन झाली त्यानी नोंदणी सिंगापूर मध्ये झाली आणि त्याचे मुख्यालय बंगलोर येथे आहे. ॲमेझानप्रमाणे ही सुद्धा प्रचलित कंपनी आहे. ही कंपनी सुरूवातीला डिजीफ्लिप च्या नावाखाली स्वत:चेच वस्तू विकायला सुरूवात केली त्यामध्ये लॅपटॉप बॅगज, टॅबलेट्स, यूएसबीज यांची विक्री केली जात होती. यानंतर या कंपनीने कपडयांपासून सर्वच वस्तू विकायला सुरूवात केली.

FSN Ecommerce Ventures Pvt Ltd (Nykaa.com)ही भारतीय कंपनी आहे. मुंबई हे मुख्यालय आहे. या कंपनीची स्थापना फाल्गुणी नाय्यर यांनी २०१२ मध्ये केली. या कंपनीद्वारा महिलांकरिता उपयोगाच्या कॉस्मेटिक आणि वेलनेस प्रॉडक्ट्स ऑनलाईन पद्धतीने उपलब्ध करून दिले.

IndiaMART InterMESH Ltd. ... नॉईड,यूपी येथे १९९९ मध्ये ही कंपनी स्थापन झाली. ही कंपनी व्यवसाय ते व्यवसाय बाजारस्थळी ईंटरनेट पुरविण्याचे काम करते. या कंपनीची स्थापना दिनेश अग्रवाल आणि ब्रिजेश अग्रवाल यांनी केली. लघुउद्योग म्हणून सुरूवातीला या कंपनीची ओळख होती मात्र आज हे सर्वात मोठी बिट्बी कंपनी उरलेली आहे. कमी वेळेत अनेक पारितोषिक या कंपनीने मिळविले आहेत

Jasper Infotech Pvt Ltd (Snapdeal.com) स्नॅपडिल कंपनी ही न्यू दिल्ली येथे कुणाल बहल आणि रोहित बन्सल यांनी २०१० मध्ये सुरू केली. या कंपनीचा व्यापार ६००० गाव आणि शहरांपर्यंत पोहोचलेला आहे **Justdial Ltd.** ही कंपनी १९९६ मध्ये मुबई येथे व्हि.एस.एस.मानी यांनी सुरू केली. या कंपनीद्वारा voice, Web, mobile Internet and mobile applicationsb-सेवा देण्यात येते. तसेच ऑनलाईन अन्न पुरविणे, डॉक्टर appointment] चित्रपट टिकीट बुकिंग, बस,कॅब, जेट बुकिंग, ग्लोसरी खरेदी इ. सेवा आणि वस्तू विकण्याचे काम करते. **MakeMyTrip India Pvt Ltd.** ही कंपनी २००० मध्ये दीपा कार्ला यांनी स्थापन केली. ही कंपनी पर्यटन उद्योगाशी संबंधीत आहे.

Myntra Jabong २००९ मध्ये ही कंपनी बंगलुरू येथे स्थापन झाली. या कंपनीद्वारा पुरूष आणि महिला यांच्या फॅशनेबल पोषाखांची विक्री केली जाते. **One 97 Communications ltd(Paytm)**ही कंपनी २०१०मध्ये भारतातील नॉईडा येथे स्थापन झाली याकंपनीद्वारा मोबाईल रिचार्ज बिल शोधन

आणि वस्तूंची विक्री केली जाते. २०१५ पासून बस ट्रेवल बुक करणे सुरू केले आणि २०१[illegible] सीनेपॉईल्स यांच्या भागीदारीसोबत मूव्ही तिकीट बुकींग करण्याचे काम सुरू केले. इतर सेवामध्ये [illegible] पर्यटन, औषधी, हॉटेल्स बुकींग, इ विविध वस्तू आणि सेवा पुरविणाऱ्या कंपन्या भारतात [illegible] आहेत. त्यात Yatra Online Pvt Ltd,Bigtree Entertainment Pvt Ltd.(Bookmysho.com)[illegible] Tchnologies Pvt Ltdb- कंपन्यांचा समावेश आहे.

ई कॉमर्सचे क्षेत्र वाढविण्यात भारत सरकारची भूमिका आणि यश

२०१४ मध्ये भारत सरकारने Digital India, Make in India, Start-up India, Skill India [illegible] Innovation Fund हया संकल्पना पोशीत केल्या होत्या. या संकल्पनांच्या निर्मिती आणि [illegible] भारतात ई कॉमर्स क्षेत्रामध्ये वाढ झाली. २०१८–१९ मध्ये १,५०,००० ग्राम पंचायतींना [illegible] सेवा देण्याकरिता युनियन बजेटमध्ये भारतनेट प्रकल्पाला भारत सरकारने रू ८,००० करोड [illegible] कॉमर्सक्षेत्रात विदेशी प्लेअर्स चा सहभाग वाढावा याकरिता भारत सरकारने एफडिआय [illegible] १०० % पर्यंत विदुबी मॉडेल–ई कॉमर्स मार्केटप्लेस मोडेल मध्ये वाढ केली आहे. [illegible] वाढविण्याकरिता भारत सरकारने मोठ्या प्रमाणात गुंतवणूक केली आहे यामूळे ईकॉमर्स [illegible] होईल.

मागील चार वर्षात डिजीटल इंडिया मुव्हमेंट अंतर्गत सरकारने विविध उपक्रम [illegible] उडान, उमंग, स्टार्ट अप इंडिया पोर्टल इ इंटरनेट साथी या उपक्रमांतर्गत भारतातील [illegible] खेडयात १६ मिलीयन पेक्षा अधिक महिलांना सपर्कात घेण्यात आले. भारतातील ८० पेक्षा [illegible] शहरांमध्ये उडान, विदूबी ऑनलाईन ट्रेड प्लेटफार्म तयार करण्यात आले आणि यामाध्यमातून [illegible] वर शहरांमध्ये सेवा देण्यात आली. UN's E Governance index नुसार भारत ११ व्या स्थानावर [illegible] तसेच मोबाईलवर आधारित पेयमेंट करण्याकरिता BHIM APP राबविण्यात आले.

ई कॉमर्सचे फायदे

१. प्रत्यक्ष कंपनी आणि ग्राहक यांना खरेदी–विक्री करता येते. दोघांमध्ये सलोख्याचे [illegible] प्रस्थापित करता येते.ई कॉमर्समुळे खर्चात आणि वेळेत बचत होते.
२. ग्राहकांना योग्य वस्तूची निवड करणे सुलभ होते तसेच विविध वस्तूमध्ये तुलना [illegible] मूल्यमापन करणे सोयीचे होते. वस्तूची माहिती सविस्तरपणे पाहता येते.
३. परवसल्या ग्राहकांना वस्तू आणि सेवांची कमीत कमी किंमतीत खरेदी आणि विक्री [illegible] येते.
४. २४X७ही सेवा सतत सुरू असते कोणतयाही व्यक्तीला कुठेही राहून वस्तूंची खरेदी करता [illegible]
५. ई कॉमर्समुळे नवीन ज्ञान आणि कौशल्य ग्राहक आत्मसात करतात.
६. ग्रामीण भागातील तरूण वर्ग ई शॉपींग करताना दिसतात.
७. ऑनलाईन शोधनाची सोय असल्यामूळे कागदांची बचत होते पर्यायाने झाडांची बचत [illegible] पर्यावरण संतुलीत ठेवण्यास मदत होते. वाहतूक कमी होऊन पेट्रोल डिझेलची बचत होते.
८. मध्यस्थांचा सहभाग नसल्यामूळे वस्तूची किमत कमी असते.

ई कॉमर्सचे तोटे

१. कंपनीसोबत प्रत्यक्ष संपर्क नसल्यामुळे ग्राहकांना विविध संभ्रम निर्माण होतात. [illegible] कंपनीची विक्री कमी होण्याची शक्यता वाढत असते.
२. खरेदी करताना विश्वासाचा अभाव आणि असुरक्षिततेची भावना ग्राहकांना भेळसावत [illegible] प्रत्यक्ष वस्तू हाताळता न आल्याने खरेदीचे प्रमाण कमी असते. ग्राहक समाधानी राहत [illegible] अशा प्रकारची खरेदी ही अंदाजावर केलेली असते. त्यामुळे त्याच्यात जोखीम आणि [illegible] अधिक [illegible]

३. अँनड्राईड मोबाईल आणि ईंटरनेट असणे गरजेचे आहे. तसेच वेळोवेळी इंटरनेट पॅक [illegible] लागतात. अशाप्रकारची ऑनलाईन खरेदी खर्चीक असून सर्व लोकांना परवडणारी नाही.

४. अँनड्राईड मोबाईल आणि ईंटरनेट वापरणे ग्रामीण भागातील जनतेला अशक्य आहे. कारण [illegible] मोबाईल वापरण्याचे ज्ञान आणि कौशल्य ग्रामीण भागातील जनतेला नसते. ग्रामीण भागातील केवळ ४५% तरुण वर्ग ऑनलाईन शॉपींग करतात.

५. अपडेटचा खर्च, साईट हॅक होणे, बँक अकाऊंट्सची माहिती गुप्त राहत नाही, फिशिंग होण्याची शक्यता जास्त असते.

शिफारशी

ई कॉमर्सच्या मर्यादा लक्षात घेतले तरी त्याचे फायदे महत्वाचे आहे. समाजाने याची [illegible] ठेवून ई कामर्स ची संकल्पना आत्मसात करणे ही काळाची गरज आहे. देशाच्या [illegible] गावपातळीवरून शहरापर्यंत ई कॉमर्स चा प्रसार होणे गरजेचे आहे. शासनाने काळजीपूर्वक [illegible] केला तर वरील तोटे उद्भवनार नाहीत. गावपातळीवर कॉम्प्लेक्स व्यवहार तसेच ई कामर्स [illegible] उपयोगाबद्दल माहिती देण्याकरिता सरकारने कार्यशाळा राबविल्या पाहिजेत.

संदर्भ सूची–

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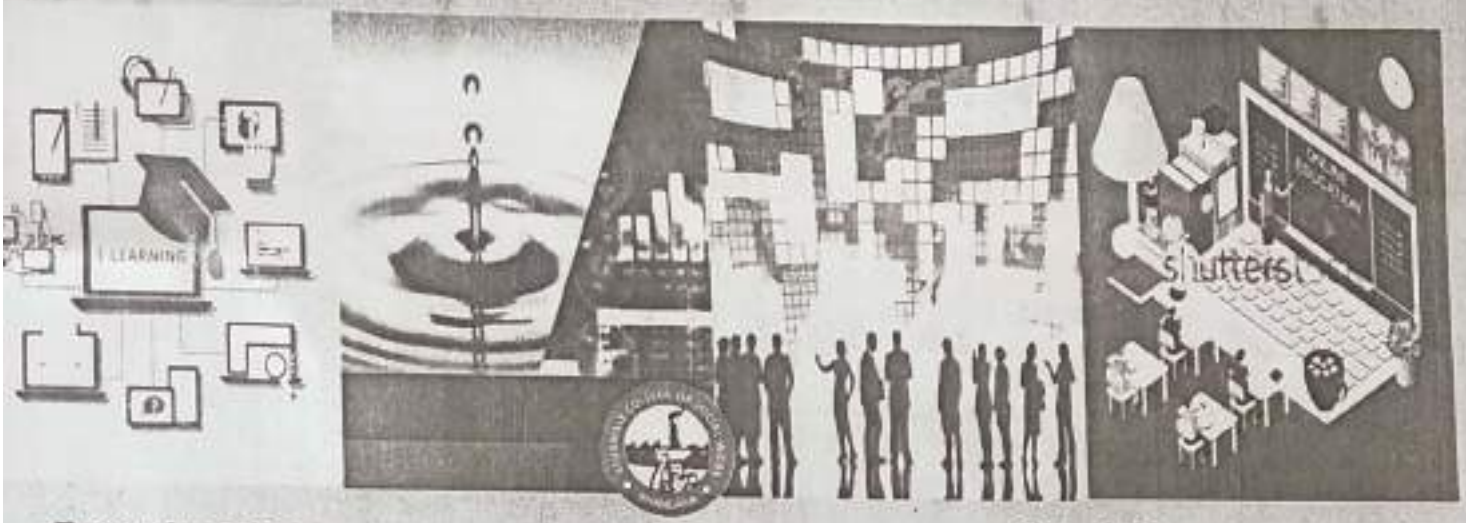

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Introduction to Msme and it's effect on indian economy

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Summary

In the current business scenario, micro, small and medium enterprises have been designated as growth engines to promote equitable development. MSME also has a very important role in the spread of industry and generating employment opportunities. MSMEs for more than 6 crore people work. The MSME sector is 8% of the country's GDP, 45% of manufacturing and 36% of exports. The MSME sector is constantly recording a higher growth rate compared to the industry sector as a whole. Allocation of MSMEs across India is not the same due to the unavailability of raw materials, unconsciousness or lack of development of entrepreneurial skills and lack of financial and technical assistance from relevant local authorities at the district or state and central levels. Lack of adequate and timely credit facilities, high credit costs, lack of modern technology, no research and innovation, lack of training and skills development, multiple labor laws are the main problems of MSMEs. Although, there are various opportunities that can be accessed in the development of MSMEs. The MSME sector can also be the focus of foreign investment and technology. There must be surveys and research to find out the problems and difficulties of SMEs so that rapid expansion can be achieved.

Introduction

The Micro, Small and Medium Sectors (MSMEs) have emerged as a very attractive and dynamic sector of the Indian economy over the past five decades. This makes a significant contribution to the economic and social development of the country by fostering entrepreneurship and generating the greatest employment opportunities with relatively lower capital costs, after agriculture. MSMEs complement each other for large industries as support units and the sector contributes significantly to the development of inclusive industries in the country. MSMEs expand their domains across all economic sectors, producing a variety of products and services to meet domestic and global market demands. The Micro, Small and Medium Enterprise Development Law (MSMED) notified in 2006 to give lectures on different issues. mobilizing MSMEs includes investment sector coverage and ceilings. The MSMED Act seeks to facilitate the development of these companies and also increase their competitiveness

Micro, Small & Medium Enterprises:

In accordance with the provisions of the Micro, Small & Medium Enterprises (MSMED) Law, 2006, Micro, Small and Medium Enterprises (MSMEs) are classified as follows:

Manufacturing Sector: -

Company Category -Invest in factories & machinery
Micro Enterprises - Not more than twenty five lakh rupees
Small Business - More than twenty-five lakh rupees but not more than five rupee crore

Medium Business - More than five crore rupees but not more than ten crore rupees

Service sector: -

Company Category- Investment in equipment

Micro Business - Not exceeding ten lakh rupees;

Small Business - More than ten lakh rupees but not more than two rupees crore

Intermediate Enterprises - More than two crore rupees but not more than five core rupees

The main responsibility for the promotion and development of MSMEs is that of the State Government. However, the Government of India, added manpower from the State Government through various initiatives. The task of the Ministry of MSMEs and their organizations is to support States in their efforts to improve entrepreneurship, employment opportunities and livelihoods and improve the competitiveness of MSMEs in a distorted economic scenario.

The organizational structure of the Ministry of MSME consists of the Small & Medium Enterprises Division (UKM), the Agro & Rural Industry Division (ARI), the Integrated Financial Wings (IF) and the Data Analysis and Technical Coordination (DATC), in addition to the Commissioner Development Office (DCMSME) as closed for offices and other subordinate organizations.

SME Division - The SME Division collect work, inter alia, administration, vigilance and administrative oversight from National Small Industries Corporation (NSIC) Ltd., a central public sector company and the National Institute of Micro, Small & Medium Enterprises (NIMSME) a development / training organization autonomous national level entrepreneurship. This division is also responsible for completing the scheme that connects to the National SC-ST Center, Performance and Credit Rating and Assistance for Training Institutions, amidst the others. Furthermore, the Division has responsibility for agreements with applications received under Public Complaints via CPGRAMS and under the Right to Information Act, 2005. The SME Division also deals with work that links to the foundation of the Ministry's media campaign to sponsor schemes and implementation by issues advertisements in electronic and print media and promotion of Ministry schemes through Social Media.

The ARI Division - The ARI Division handles the management of two legal entities - the Village and Khadi Industrial Commission (KVIC) as well as the Coir Council and also the Mahatma Gandhi Institute for Rural Industrialization (MGIRI). It also oversees the achievement of the Prime Minister's Employment Generation Program (PMEGP), the Funding Scheme for Traditional Industrial Regeneration (SFURTI) and the Scheme for Promoting Innovation, Rural Industry and Entrepreneurship (ASPIRE).

IF Wing - IFW examines various proposals determined by the Program Division of the Ministries and O / O DC (MSMEs) for (i) fund release agreements under various schemes; (ii) provide comments on the EFC / SFC so that the Scheme will continue from the 12th Five-Year Plan and hold an EFC / SFC meeting. Wing also examines various other matters relating to the signing of the MoU / other agreements / contracts, etc.

DATC Wing – This is a newly formed wing to conduct data / statistical analysis related to the MSME Sector and provide technical input for evidence-based decision making related to the MSME Sector. Technical coordination with all stakeholders towards the progress and maintenance of the MSME database; coordinating absolute compliance with directives for the

Direct Benefit Transfer (DBT) scheme from the Ministry; carrying out Digital Payment authorization at the Ministry and managing the Ministry of IT Cells are some of the extra important activities.

The role of MSMEs in the Indian Economy Micro, Small & Medium Enterprises (MSMEs) has become an important cause for the growth of entrepreneurial businesses through business innovation. MSMEs expand their domains across economic sectors, producing a variety of products and services to unite domestic and global market demands. In accordance with existing data with the Central Statistics Office (CSO), Ministry of Statistics & Programmed Implementation, the contribution of the MSME Sector in the Gross Value Added (GVA) of 1 country and Gross Domestic Product (GDP) 2, with current prices for the last five years is as following:

Contribution of MSMEs in Country's Economy at Current Price

Year	MSME GVA	Growth (%)	Total GVA	Share of MSME in GVA (%)	Total GDP	Share of MSME in GDP (in %)
2011-12	2583263	-	8106946	31.86	8736329	29.57
2012-13	2977623	15.27	9202692	32.36	9944013	29.94
2013-14	3343009	12.27	10363153	32.26	11233522	29.76
2014-15	3658196	9.43	11481794	31.86	12445128	29.39
2015-16	3936788	7.62	12458642	31.60	13682035	28.77

Source: Central Statistics Office (CSO), Ministry of Statistics & Programme Implementation

The contribution of industry MSMEs in the total GVO4 Manufacturing in the country (Gross Output Value) at current prices has also remained consistent at around 33%, which is one third over the past five years. The GDP rate is almost around 29.80%. The GDT rate decreased in 2015 by 28.77%

This work is more feasible through the development of MSMEs. THE SMEs will be able to meet the needs of customers to a very large extent after allowing their expectations primarily. Rural youth migration can be blocked by giving them the opportunity to work in their places. Modification of reciprocal technology surrounded by various types of MSMEs, financial and technical assistance, liberal labor laws, training and skill building will help in the development of MSMEs.

MSME Problems in India

1. Lack of bank credit, poor infrastructure and sophisticated technology
2. Competition from multinational companies.
3. The unavailability of raw materials and other inputs
4. Lack of marketing distribution channels
5. Lack of training and skills development programs
6. Complicated labor laws and bureaucracy

SUGGESTION

1. Mutual Technology Supply, Constitutional Consultant Panel
2. Determination of the right technology, research and development needs
3. Training and development, awareness programs
4. Availability of adequate credit, Relaxation in labor and bureaucratic laws

Conclusion MSMEs offer employment and employment and ultimately independence. In a country like India, only self-dependence is the method, which can be a treatment for Indian Rupee deflation. Therefore, MSMEs can be a benefit and hope for the Indian economy in the near future. MSMEs are given that development is synonymous with society and can be a massive means of exploiting India's natural resources. MSME strongly supports to eliminate area imbalances if found in disadvantaged areas. MSMEs are for more jobs per unit

So, foreign investment can be enchanted. However, at present, Indian MSMEs face different problems at different levels. SME owners do not start and their entrepreneurial skills are very low. Finally, the government does not provide a satisfactory type of training or skills development scheme. The problem of not being aware of technological progress can be eliminated after effective training operations and skills development programs. There must be a low cost credit to MSMEs. A panel of experts must consist to assess the status and wishes of MSMEs. The future of the MSME sector in India is very bright and will improve the economy.

Source

1- Annual report of the Ministry of Micro, Small and Medium Enterprises pg no.7-9.27
2- Financial express
3- INDIA TODAY September 26 2015
4- economic time goes up on June 1, 2018, up on July 4, 2019

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Director
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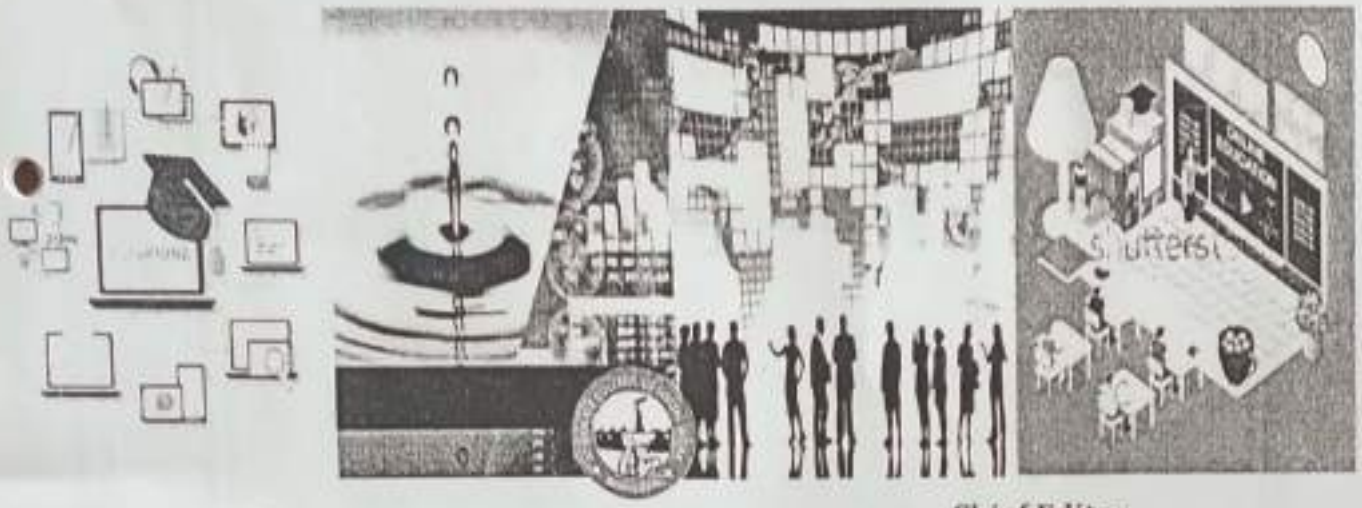

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INDEX

भारतीय लोकशाही शासन व्यवस्थेत प्रसार माध्यमांची भूमिका – एक अध्ययन

प्रा.डॉ.सौ. अल्का दहीकर
गृहअर्थशास्त्र विभाग प्रमुख
यशवंतराव चव्हाण महाविद्यालय, लखांदूर जि.भंडारा

आजचे युग लोकशाहीचे युग आहे. आधुनिक काळात लोकशाहीचा उदय सर्वप्रथम ब्रिटनमध्ये झाला. म्हणुन ब्रिटनला लोकशाहीची जननी मानल्या जाते. लोकशाहीचा अर्थ अब्राहम लिंकन यांनी असा लावला. ''लोकांचे, लोकांनी आणि लोकांकरीता चालविलेले शासन म्हणजे लोकशाही शासन होय.'' लोकशाही शासन जरी लोकांद्वारे चालविल्या जाते असले तरी लोकांच्या हिताचे असायला पाहिजे. लोकशाही शासन हे लोकमतावर आधारीत असते व हे लोकमत घडविण्यामध्ये प्रसार माध्यमांची भूमिका महत्वाची असते.

स्वातंत्र्यानंतर आकाशवाणीला झपाट्याने महत्व प्राप्त होऊ लागले. त्यानंतर दुरदर्शन अस्तित्वात आले. देशभरातील लोकांना दुरदर्शनचे आकर्षण वाटू लागले. दुरदर्शनवर दाखवण्यात येऊ लागले. त्यामुळे त्या काळात दुरदर्शन हे प्रसार माध्यमांचे जास्तीत जास्त प्रभावी माध्यम ठरले. घडलेली घटना काही काळानंतर दुरदर्शनवर प्रसारीत करून लोकांना दाखवण्यात येत होती. मात्र १९९० च्या जागतीकी करणानंतर माध्यम क्षेत्रामध्ये आमुलाग्र बदल घडून आले. तंत्रज्ञान, दळणवळणाची सोय, यामुळे बातम्यांचे प्रसारण जलद गतीने होऊ लागले. देशभरात काय घडते आहे, याची उत्सुकता लोकांना अधिक जागवू लागल्यामुळे दुरदर्शन बघण्यासाठी लोक तासनतास टीव्हीसमोर बसुन असल्याचे त्यावेळी पहावयास मिळत होते. सध्या माहितीचे आणि संदेशाचे वहन इतके जलदगतीने होत आहे की, सेकंदापूर्वी, २ मिनिटांपूर्वी काय घडले याच्या अपडेट्स ट्विटर किंवा फेसबुक किंवा व्हॉटसअप यासारख्या सोशल साइटसवरून त्वरीत प्रसारीत होत असतात.

लोकशाही व्यवस्थेत प्रसार माध्यमांचे मुख्य कार्यच हे आहे की, लोकांसमोर सत्य आणि मार्गदर्शक माहिती मांडणे, भारतात सद्यस्थितीचा विचार करता धर्मनिरपेक्ष चौकटीतुन मार्ग शोधण्याचे कार्य प्रसारमाध्यमांद्वारे होणे अपेक्षीत आहे. या दृष्टीने प्रसार माध्यमांची भूमिका तटस्थ विश्लेषकाची भूमिका असावी लागते. सर्वसामान्य घटनांमध्ये माध्यमे आपली भूमिका योग्यपणे बजावित असतात. त्याबद्दल दूमत असण्याचे कारण नाही. परंतु एखादी घटना जेव्हा धर्म, जाती, संप्रदाय व राजकारण यांच्या हितसंबंधाशी गुंतलेली असते व जिथे मानवी हक्कांची पायमल्ली झालेली असते. तेथे प्रसार माध्यमे वेगवेगळी भूमिका मांडताना दिसतात. त्यामुळे खऱ्या अर्थाने लोकशाही व्यवस्था असुनही लोकांसमोर अनेक गंभीर घटनांसंबंधी सत्य माहिती येत नाही तो येऊ नये म्हणून विभीन्न व्यक्ती आणि संस्थाद्वारे दबाव आणला जातो. अशावेळी गंभीर घटनांचे विश्लेषण करताना माध्यमांची भूमिका बांधीलकीची किंवा लाचारीची दिसुन येते. ज्या ठिकाणी माध्यमांवर कोणत्याही प्रकारचा दबाव नसतो. तेथील प्रसार माध्यमे निर्भिडपणे सत्यस्थिती निदर्शनास आणून देतात. मात्र माध्यमे आणि प्रसार प्रतिष्ठान प्रमुखांचे हितसंबंध जेथे गुंतलेले असतात, तेथे माध्यमांकडून सत्यकथन होणे दुरापास्त असते. अशा स्थितीत प्रसार माध्यमे मानवीय मुल्यांचे जतन करण्यास कितपत प्रामाणिक असतात असे प्रश्न निर्माण होऊन माध्यमांकडे संशयाच्या दृष्टीने पाहण्याकडे लोकांचा कल वाढतो.

लोकशाहीतील प्रसार माध्यमांचे स्थान

प्रसार माध्यम हा एक असा आरसा आहे. ज्यामध्ये समाज आणि राष्ट्राचे प्रतिबिंब दिसते. आकाशवाणी, वृत्तपत्रे याशिवाय अत्याधुनिक इलेक्ट्रानिक माध्यमे दुरदर्शन आणि त्यांच्या वाहीण्या यांनी जनता आणि शासन यातील अंतर कमी झाले. प्रसारमाध्यमाद्वारे जनतेला आपले मत मांडण्याचे पूर्ण स्वातंत्र्य असते. लोकशाहीत प्रसारमाध्यमे लोकांमध्ये जागृती घडवून आणण्याचे व समाजजीवनाचे कार्य करीत असतात. सुदृढ निकोपी विवेकी आणि वैचारीक संतुलन सामर्थ्यशाली समाजाचे भवितव्य घडविण्याच्या दृष्टीने शासनांच्या विविध योजनांची तसेच आर्थिक क्षेत्रातील घडामोडींची अद्ययावत माहिती जनतेला प्रसारमाध्यमांद्वारेच होत असते. राष्ट्रीय समस्याविषयी

लोकांमध्ये जागृती घडवून आणण्याचे कार्यही प्रसार माध्यमच करीत असतात. प्रसारमाध्यमातील एक प्रभावी माध्यम म्हणजे वर्तमानपत्र आणि पत्रकार म्हणजे शासनाचे डोळे आहे. सामान्य जनतेवर सत्ताकारी पक्षाकडून जर काही अन्याय अत्याचार होत असतील तर त्याला वाचा फोडून अत्याचारी सत्ताधाऱ्यांची खरे चेहरे लोकांसमोर आणण्याचे एक विधायक कार्य प्रसारमाध्यमांद्वारेच केले जाते.

आधुनिक काळात राजकीय व्यवस्थेत महत्व प्राप्त झालेली माध्यमे म्हणून वर्तमानपत्र, रेडीओ, टेलीव्हिजन, राजकीय पक्ष, विरोधी पक्ष, यांचा उल्लेख केला जातो. ही माध्यमे प्रामुख्याने संसुचनाचेच कार्य करतात व लोकनिर्मितीस किंवा बदल घास हातभार लावतात. वर्तमानपत्राचा प्रभाव सुशिक्षित किंवा साक्षर लोकांपुरताच मर्यादीत राहते. तसे रेडिओ व टेलिव्हिजनचे नसते. व्यवस्थेत तांत्रीक विकास झाला असल्यास असंख्य लोकांपर्यंत कमी वेळात पोहचवण्याची क्षमता या माध्यमांकडे असते.

वर्तमानपत्रे :–

हे माध्यम रेडिओ व टेलिव्हीजन यांच्या निर्मितीपूर्वीचे माध्यम आहे. साक्षर समाजात ते विशेष प्रभावी असते. लोकशाही व हुकूमशाही व्यवस्थेत मतनिर्मितीचे हे महत्वाचे साधन आहे. लक्षावधी लोकांकडून वर्तमानपत्रे वाचली जातात. दैनीक, साप्ताहीके या मार्फत मत प्रसार केला जातो. वर्तमानपत्राचे स्वातंत्र्य हे लोकशाहीत एक महत्वाचे स्वातंत्र्य मानले जाते.

विशेषत: निवडणुकीच्या वेळी हे माध्यम अधिक क्रियाशिल असते. वर्तमानपत्रे विशिष्ट पध्दतीने बातम्या प्रस्तुत करीत असते. व त्यातुन प्रभाव पाडण्याचे कार्य करीत असते. प्रचार मोहीम, उमेदवारांचा दर्जा, मतदारांची कर्तव्ये कोणती, कोण निवडून येण्याची शक्यता आहे याविषयी स्वताचे विचार अंदाज याविषयी लिखान करतात. यामुळे सर्व साधारण मतदारांवर निश्चितपणे प्रभाव पडत असतो.

रेडिओ :–

वर्तमानपत्र वाचणारा वर्ग निश्चित असतो. तर रेडिओ ऐकणारे लोक अनिश्चित असतात रेडिओचा उद्देश मनोरंजनाचा असला तरी त्याला शैक्षणीक महत्वही आहे. महत्वाच्या बातम्या माहिती चालू घडामोडी प्रसारित केली जाते. त्यामुळे लोकमत घडविले जाते. आजकाल इंटरनेटमुळे मोबाईलवर रेडिओचे कार्यक्रम ऐकता येणे शक्य झाले आहे. त्यामुळे आपल्या आवडीनुसार हव्या त्या ठिकाणी, हवे ते कार्यक्रम ऐकणे शक्य झाले आहे.

टेलिव्हिजन :–

हे संसुचनाचे अत्याधुनिक असे माध्यम आहे. यावर शासनाचे नियंत्रण असते. भारतात ८०० पेक्षा जास्त टीव्ही चॅनल दिवसभरातील २४ तास माहिती रंजनाचा मारा करीत आहेत. चित्रवाहिन्या नेमके काय दाखवितात याचा सखोल अभ्यास केला तर हेच वास्तव नजरेस पडते लोकांच्या खऱ्या प्रश्नांपासून चित्रवाहिन्या दूर असल्याचेच चित्र आपणांस दिसते.

इंटरनेट :–

इंटरनेटमुळे जग जवळ आले हे खरे आहे. त्यातुन सर्व अद्यावत माहीती मिळते. त्याचप्रमाणे प्रत्येक माणसाला अभिव्यक्त होण्याची संधी मिळाली हे देखील सत्य आहे. मात्र नवमाध्यमांच्या साधेपी वापराचे कुठलेच ज्ञान, प्रशिक्षण न मिळता ही समाजमाध्यमे लोकांच्या हाती आली आहेत. या माध्यमांचा गैरवापर करून जातीधर्मातील भांडणे, द्वेष, वाद निर्माण करीत आहेत या जागतीक माध्यमांवर सरकारचे नियंत्रण राहू शकत नाही, कायदेही अपूरे पडतात. त्याचा फायदा घेऊन समाजकंटक, अतिरेकी या माध्यमांचा गैरवापर करीत आहेत. काही दिवसांपूर्वी काश्मिरमध्ये एक आठवडा इंटरनेटवर बंदी घालावी लागली होती. हे या संदर्भातील दुष्परिणामाचे ताजे उदाहरण आहे.

स्मार्ट फोन :-

स्मार्ट फोन हे खरे तर ज्ञान संपादनाचे एक महत्वपूर्ण साधन आहे. मात्र या साधनांचा रंजनासाठीच सर्वाधिक वापर होतो. युवापिढी वॉटसअप आणि चेटिंगचा आहारी जाताना दिसत आहे. कार्पोरेट क्षेत्रातील लोक आकर्षक जाहिरातींचा मारा करून ही पुंगी उतरूच नये असा प्रयत्न करीत आहेत. रंगनाथ पठारे यांनी हे वास्तव अधोरेखीत करताना म्हटले आहे, संगणक क्रांती आणि इलेक्ट्रीक माध्यमे, बऱ्यांशी मोठया सत्ताचा ताबा आहे. आपण काय, कसे किती बघायचे, वाचायचे, वा शोधायचे याचा विचार करण्याची आवश्यकताच संपेल अशी भयानक परिस्थिती निर्माण झालेली आहे.

प्रसारमाध्यमांची भूमिका :-

वस्तुता प्रसारमाध्यमे ही लोकमताचा आरसा आहेत आणि याच भूमिकेतुन त्यांनी आपले कार्य करायला हवे. परंतु बहूतांश वेळेत असे दिसत नाही. म्हणून आज प्रसारमाध्यमे अनेकांच्या टिकेचे लक्ष्य बनले असुन प्रसारमाध्यमाच्या स्वायतत्तेवर गंभीरपणे प्रश्न उपस्थित होतांना दिसतात. लोकशाही शासन व्यवस्थेतील आपली जबाबदारी ओळखून प्रसारमाध्यमांनी वेळीच सावध झाले पाहिजे. अन्यथा सुरूंग लागायला वेळ लागणार नाही. १९८९ मध्ये प्रसार भारती विधेयक संसदेत सादर केल्यानंतर त्यांत अनेक दुरूस्त्या होवुन १९९७ मध्ये हा कायदा अस्तित्वात आला त्याची प्रमुख उद्दीष्टे पूढीलप्रमाणे आहेत.

१) देशाची एकात्मता व अखंडता तसेच लोकशाही मुल्यांची जपणूक करणे.
२) सामाजिक न्यायाचा पुरस्कार करून शोषण व विषमतेचे उच्चाटन करणे.
३) साक्षरता आणि शिक्षणाचा प्रसार करणे.
४) विविध राज्यातील भिन्न भिन्न संस्कृती आणि भाषा यांची माहिती प्रसारीत करणे.
५) स्त्रियांच्या स्थितीचे व समस्यांचे तसेच क्रीडा क्षेत्राची माहीती देणे.

उपरोक्त उद्दिष्टांना अनुसरून प्रसारमाध्यमांनी जबाबदारीने आपली भूमिका व कार्य पार पाडल्यास लोकशाही शासन व्यवस्थेला निश्चितच बळकटी प्राप्त होईल. यात दुर्लक्षीतही शंका नाही.

निष्कर्ष :-

१) प्रसार माध्यमे जनतेला जागृत करण्याची महत्वाची भूमिका पार पाडते.
२) प्रसार माध्यमामुळे भ्रष्टाचाराला आळा बसतो.
३) प्रसार माध्यमामुळे लोकशाही यशस्वी होण्यास मदत होते.
४) प्रसार माध्यमांमुळे लोकमताची निर्मिती होते व देशाचा विकास होतो.

संदर्भ

१) भारतीय लोकशाही अर्थ आणि व्यवहार – संपादक राजेन्द्र व्होरा व सुहास पळशीकर
२) प्रसारभारती आणि स्वायतत्ता – दयानंद कांबळे, जगन्नाथ पाटील
३) राजकीय सिध्दांत आणि राजकीय विचार – डॉ. अल्का देशमुख
४) जागतिकीकरण नवी गुलामगिरी – भागवत विष्णू
५) पर्यायी लोकवादी व्यवस्था – डॉ. चंद्रकांत केळकर

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(ECIC-2019)

Organized On

18th September 2019

Organized By

Department of Commerce

Seth Kesarimal Porwal College of Arts & Science & Commerce, Kamptee, Dist: Nagpur (M.S.)

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ELIXIR-Peer Reviewed National Journal of Multidisciplinary Research ISSN: 2277-3428
Special Edition Sept. 2019 Vol. VIII
National Conference on "Electronic Commerce Issues and Challenges" 18th Sept. 2019,
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E-Commerce Industry and Career Opportunities for Youth

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Abstract

In today the world of internet E-commerce sector is the fastest growing industry. The present paper main objective is to study the career opportunities available for the youth in E-Commerce sector. The others objectives are to study the key factor for the growth of this industry, how this industry is contributing in social economic development. This research paper also identifies the key companies in e- commerce segment and why this sector is lucrative for the selecting as career option. The present paper discusses the view of other writers and its literature based research paper.

Keywords : *E-Commerce Sector, Career opportunities and social economic development*

Introduction

E-Commerce sector is the fastest growing industry in India. In the world of internet connectivity, India has a huge growth in terms of consumer using smartphones, laptop and tablets. Growth in internet users increase substantially over a period of time. After the US and China, India stand at third position in providing employment opportunities in E-Commerce space. It's among the one of the industry which getting more attention from the entrepreneurs as well as consumer. (Tanushree Sanwal, 2016) There are companies like Zomato, ebay, myntra, amazon, Ola, Uber, Paytm, Googlepay etc. who are growing substantially and well know in e- commerce sectors. Revenues and sales from this enterprises are also one of the factor in growth in e-commerce market. The e- commerce sector growth in India is projected to cross USD 103 billion by 2020 at a impressive CAGR of 41%. (Bhal, 2016)

In the e-commerce sector E-tail comprises of the largest share at USD 23 billion and this sector is one of the fastest growing sector. As per the KPMG report it is said that other sector in E-Commerce market

collectively contribute to USD 18 billion. E-tail market is expected to grow to USD 68.8 billion by 2020 total share of -67% of whole world share. (Bhal, 2016)

Factors contributing to Growth of E-Commerce business in India.

- As per the KPMG report internet penetration is expected to rise 59 % by 2020 from 32 % in 2015.
- Online shoppers as % of internet users is expected to grow from 12% in 2015 to 4o % in 2020.
- Number of shoppers called as digital buyers in India is expected to grow from 54.1 million to 329.1 million.

Job Opportunities in E-Commerce Business

As per the Economic times study, the e tailer sector is primarily is looking to recruit students from IITS (Indian institute of technology),National institute of Technology (NITs) and IIMs (Indian institute of Management) and they want students who are ready to work in artificial intelligence. E-tail is the industry which providing direct employment whereas indirect employment opportunities are also available in allied industries like warehousing, IT/ITes, logistics, payment solution, marketers and advertisers.

- E –Tail and allied sectors such as logistics, warehousing, IT,ITes create direct employment from 23,500 jobs in 2012 to 1.45 million by 2020.
- E-Tail logistic and warehouse sector directly planning to employ 1 million people by 2021.
- Majority of e-tail logistic companies are providing employment opportunities to even unskilled people who will be engaged in providing last mile connectivity. This employment opportunity is more in tier II and tier III Cities.
- Beyond technology function some of the other functions like finance and account, administrative, HR, production, sales, healthcare etc to add nearly 0.1 million workforce by 2021. (Bhal, 2016)

E-Commerce sector contribution in Social economic development

E-Commerce sector is not only contribute for employment generation but also its contribute for the society development. How it will contribute for the society? The answer to this question is given under the some of the past studies and report. Following points will answer to the question.

- Providing opportunities to women to act as independent entrepreneur and enable them to perform dual role in their life as earner and homemaker. As per the KPMG report the portal Mahila-e-Haat is expected to benefit approximately 10,000 self-help group And 1.25 womens.
- As per the MOU with Ministry of communication and information technology it is plan to connect e-commerce companies with 1,30,000 common service centers for creating employment opportunity to tentatively 3,00,000 People.
- It also provide opportunities to artists and craftman through creating bridge between sellers (Artists and Craftman) and buyer directly.
- It's also pushing entrepreneurship skills among the youth. As majority of startup founder ass per KPMG report are less than 35 year old and 9 to 10 percent in them are women. (Bhal, 2016)

Key Companies in E-Commerce Sector

E-Commerce sector in India is categorized into following six key industries areas.

Travelling/ Ticketing	Retail & Marketplace	Deals
Education	Classifed Portals	Hyperlocals

Source: - Report of Fobes opinion By Avilk Roy

- Travelling sector has the biggest share in E-Commerce space approximately 70 %. The major companies in this sector are cleartrip, MakeMyTrip,Yatra etc.
- Retail and marketplace is one of the fastest growing sector with 56%of CAGR and leading companies are Amazon, Myntra,snapdeal, Bigbasket,Flipkart etc.
- In education sector Edurekha is leading company. Beyond this other companies with object of providing education are creating their online portals such as government initiative SWAYAM and other education sector companies like NPTEL Platform.
- Cassified portals are gaining popularity now a days. Many of the youths are working with companies like Jeevansathi.com, shaddi.com, Naukri.com, Justdial etc.
- Hyperlocal is the new kind of block and attracting youth. Companies such as Swiggy, Zomatto, Grofers, PepperTap etc. are in this category. (Mandel)

Job Description in E-Commerce Sector

Following are the three areas around which the job opportunities and career path around.

1. Creative: - appearance of product, feel of the product, customer experience , marketing, branding. Promoting etc.
2. Operations: - Product category management, logistic, supply chain, warehouse, inventory etc.
3. Auxiliary: - Finance, legal, payment, Admintrative, HR etc. (Career Opportunities in eCommerce in India)

The following table represents the list of Job description in detail of E-Commerce Sector

Job Title	Qualification required	Role and activities involve in Job	Career Progress
Designer	Bachelor / Master's degree in Design or fine arts	1. Giving inputs in UI /UX front 2. Designing wire-frames, colour blends, photography etc.	Product Design owner → Chief Experience Office (User experience)

Marketing	Graduate + MBA (Marketing)	Marketing is a profession that remains similar across the globe	Give flexibility in moving in create roles.
Product Management	B.Tech+ MBA B.Design + MBA	Communicate and interact with stakeholders starting from SCM, finance, marketing, vendors, logistics etc.	Product Mgr → Product Head → Chief Product Officer → CEO
Product Development	MBA & Agile Certifications are an added plus	Work in some of the best cutting edge technologies like mobility, 3D presence	Development → Product Manager → Product Head → Chief Product Officer
Supply Chain	B.Tech (Experience in SCM roles) MBA(Retail/ SCM)	Direct connect with the customer	Supply chain → COO
Finance	B.com + MBA (Finance), C.A. ICWA	Same in maximum industry handling and managing payments	Finance –CFO-CEO (In some case)
Business Analyst	B.Tech (Having worked in IT in a BA role) MBA(Retail/SCM)– Freshers, B.tech(Computer Science allied branches)	understand the business / Consumer needs and articulate it in the most comprehensive way	Business Analyst - Product Management or Supply Chain roles
Content Manager	Bachelors in Mass Communication	Writing about product. They need in depth understanding about product.	Many companies provide services as writer.

Source :- www.ecomerce.universiy (List of Ecommerce roles and their requirements)

Key reasons of Selecting E-Commerce Sector as a Career Option

1. **Long term Global Growth**: - The e- commerce sector growth in India is projected to cross USD 103 billion by 2020 at a impressive CAGR of 41%. E commerce sector is booming not only in India but also other part of the world.

Therefore working in this sector is lucrative option for the youth and talented workforce. By spending few years to gain skills and knowledge this sector gives you long term growth opportunity.

2. **Variety of Core Skills**: - It will expose you to series of business processes that will help you to acquire different set of skills and ethical practices in this sector. Many of the job profiles available where people can work and learn exciting things.
3. **Makes more Customers Oriented :-** Apart from the technical skills there are some of the job profiles where you can develop soft skill. through the customer experience you can see the things from customer perspective and contribute substantially for the growth of business and increasing sales.
4. **Platform for the youth: -** E-commerce sector is one of the booming industry and its growing worldwide. Therefore it's a a good career path for young generation. They can develop their skills set in this domain.

Conclusion:-

This research paper involves a factors contributing to the growth of e-commerce sector in India, contribution of its in economic developments, key companies and job opportunities in this sector. In short we can concluded that growth of e commerce business is because of internet penetration, rise in smartphone market and usage and increase in online shoppers. E-Commerce business is also contributing for the society development through providing employment opportunities to women, aspirant youth, bridging the gap between artist/craftman to ultimate consumer and developing the entrepreneurship skills among youth. It is concluded from the study that there are various position and job requirements are there in this sector. If youth can acquire required qualification, they can get job in this sector and grow accordingly. Researcher also suggested the key reasons why young generation should select this sector as career path.

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The Impact of E- Commerce on Business Organization in Indian Economy

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Abstract

E-commerce (electronic commerce) is the import and advertising of produce and services, or the transmitting of finances or information, more than an electronic network, mainly the internet. The conditions e-commerce and e-business are frequently used interchangeably. The word e-mail is also every so often used in suggestion to the transactional processes for online shopping.

Present electronic commerce usually uses the World Wide Web at most at one point in the business life-cycle, even though it may include a wider range of technologies seeing that e-mail, telephones and mobile devices as well. With the sudden increase of the E-commerce in the past few years, different buying patterns and preferences have emerged for specific groups and other demographics. These patterns have been considered and composed by numerous independent marketing, business and still academic studies to appreciate how consumers connect with new technology. This paper lays the basis with concise introduction of recent trends in e-commerce on public. This is followed by their broad perceptions and preferences of the online shopping include product and website selection. Every of these e-commerce generalities will be compared to information collective from open ended discussions and survey questions. E-commerce companies in India recommend the most substantial and finest e-commerce solutions, taking greatest concern of the privacy and security of the e-commerce website.

Keywords : *Computer network, e-commerce, marketing, shopping trends, World Wide Web.*

Introduction

The expression e-commerce stands for electronic commerce. It is defined as buying and selling of products and services over the internet, but it are not a full definition of E-commerce. It is a classification to facilitate not only includes the business that inside on buying and selling of goods and services to make income but also those income sustain invention, such as generating demand of those

goods and services, contribution sales and consumer tune-up i.e., it includes not only buying or selling but also includes marketing of goods and services and as well the move of funds online.

- **Differences Between Electronic Commerce And Traditional Commerce :**

The main difference is the system information is exchanged and processed:

- **Traditional Commerce:**
  1) Traditional commerce includes face-to-face, telephone lines, or e-mail systems.
  2) It includes instruction manual processing of traditional business transactions.
  3) In traditional commerce individual concerned in all stages of big business transactions.

- **E-Commerce:**
  1) It uses Internet or further network communication technologies.
  2) E-commerce uses computerized processing of business transactions.
  3) It pulls simultaneously all actions of business transactions, marketing and advertising as well as Service and customer sustain.

- **Benefits Of Internet Commerce :**

E-commerce allows public to take away businesses without the barriers of instance or expanse. One can follow on to the Internet at any point of time, be it day or night and purchase or sell everything one requirements at a single click of the mouse.

- **Marketing Benefits:**

- Enhanced market analysis, product analysis and customer analysis.

- Low-cost marketing.

- Simple to generate and uphold customer o client database.

❖ **Customer Benefits**:

- Wide-scale information broadcasting.

- Wide collection of good quality products and goods at the low down price.

- Take away moment in time is exhausted in resolving invoice and array discrepancies.

- Wider entrance to support and to guidance from experts and peers.

- Accumulate shopping moment in time and cash.

- Rapid services and liberation.

- Diminution in buyer's cataloging out time.

❖ **Strategic Benefits:**

The strategic benefit of creation a business 'e-commerce enabled', is that it helps in decrease the Liberation instance, labour charge and the cost incurred in the following areas-

- Document preparation

- Error detection and correction

- Reconciliation

- Mail preparation

- Telephone calling

- Credit card machines

- Data entry

- Overtime

- Supervision expenses

➢ The Impact Of E-Commerce On Business :

The internet has tainted a lot of aspects of our lives, as well as the system we communicate with each other, how we maintain our finances. It has prepared a thoughtful impact on society. At the present we shop online since our houses. This forces retailers to release online partition. It can also force minor businesses to close their doors, or modify to being totally online. It also has altered people approach of spending money. Certainly, it will prolong to influence how companies vend and market their products, as well as how people decide to make purchases for lots of years to appear. The follow are the impact of e-commerce on the universal country.

➢ Impact On Direct Marketing :

Product promotion : E-commerce enhances encouragement of products and services during direct, attractive and interactive make contact with customers.

New sales channel : E-commerce creates a new allotment channel for obtainable products. It facilitates direct attain of customers and the bi-directional environment of communication.

Reduced cycle time : The delivery of digitized products and services can be compact to seconds. In addition the administrative work related to physical delivery, particularly transversely international borders, can be bargain radically, cutting the cycle time by more than 91 percent.

Customer service : Customer service can be significantly improved by enabling customers to discover thorough information online. As well, intellectual agents can answer standard e-mail questions in seconds and human being expert services can be expedited with help-desk software.

Corporate image : On the network, newcomers can set up corporate images very fast. Corporate image means trust, which is essential for direct sales. Traditional companies such as Intel, Disney and Dell make use of their Web activities to assert their corporate identity and brand image.

- **Impacts On Organizations :**

Technology and Organizational Learning: Fast progress in E-Commerce will force companies to acclimatize rapidly to the new technology and recommend them an opportunity to testing with new products, services, and process. New technologies entail new organizational approaches. For example, the formation of the organizational unit dealing with E-Commerce might have to be different from the conservative sales and marketing departments. To be more flexible and approachable to the market, new processes must be put in place. This type of commercial change must be intended and managed.

Changing Nature of Work: The nature of work and employment will be transformed in the Digital era; it is already happen prior to our eyes. Driven by improved competition in the global marketplace, firms are sinking the number of workers downward to a core of necessary staff and outsourcing anything work they can to countries where income are considerably less costly. The disturbance brought on by these changes is creating new opportunities and new risks and forcing us into new traditions of thinking about jobs, careers, and salaries. The Digital era workers will have to develop into very flexible. Few of them will have truthfully protected jobs in the traditional intelligence, and all of them will have to be prepared and capable to continually learn, adapt, create decisions, and situate with them.

New product capabilities: E-Commerce allows for new products to be created and obtainable products to be modified in modern ways. Such changes may redefine organizations' missions and the approach in which they function. E-Commerce also allows suppliers to get together modified information on customers. Structure customer profiles as well as collecting information on certain groups of customers be capable of be used as a foundation of information for improving products or designing new ones. Accumulation customization, as described in advance, enables manufacturers to create exact products for each customer, based on his or her accurate desires. For example, Samsung gathers customer requirements for a pager or a cellular phone, transmits them electronically to the manufacturing plant wherever they are manufactured, beside with the customer's stipulation and then send the product/goods to the customer within a day.

- **Impacts On Manufacturing :**

E-Commerce is altering manufacturing systems from accumulation production to demand-driven and probably customized, just-in-time manufacturing. Moreover, the production systems are incorporated with finance, marketing, and further functional systems, as well as with business associates and customers. Using Web-based ERP systems, information that is in use from customers can be going to to designers and to the manufacture floor, within seconds. Manufacture sequence time is cut by 50 percent or more in many gears, particularly when manufacture is done in a different country from anywhere the designers and engineers are situated. Companies like IBM, General Motors, are assembling products/goods for which the mechanisms are manufactured in many locations. Sub-assemblers get together materials and parts from their vendors, and they may use one or more tiers of manufacturers. Communication, association, and organization develop into significant in such multitier systems. Using electronic bidding, assemblers get sub-assemblies 15 percent to 20 percent cheaper than earlier than and 80 percent more rapidly.

- **Impacts On Finance :**

E-commerce requires particular finance and accounting systems. Traditional recompense systems are useless or incompetent for electronic trade. The make use of the new compensation systems such as electronic cash is complex because it involves legal issues and agreements on international standards. Even so, electronic cash is assured to come soon and it will change the approach in which costs are being completed. In many ways, electronic cash, which can be backed by currency or other resources, represents the biggest revolution in currency seeing as gold replaced cowry shells. Its variety and pluralism is completely suited to the Internet. It could modify consumers' economic lives and vibrate the foundations of financial systems and still governments.

Conclusion

This paper concludes that e-commerce is very excellence for us who provides us broad assortment of products and services with lots of information and gorgeous pictures at a reasonably priced price at our

doorstep. It uses Internet or further network communication technologies. E-commerce uses computerized processing of business transactions. Traditional commerce includes face-to-face, telephone lines, or e-mail systems. It provides convenience to customers and allows the activity to increase their business beyond internet. E-commerce have excellent impact on markets like diminish the cost of advertisements as a lot of customers can attract throughout internet, new brand can be developed, can sustain a good relationship with customers and can compose customized products according to customer's requirements. Along with the impacts e-commerce also offers several constraint in terms of markets that is website price, to generate and maintain a website a lot of money is required; infrastructure cost, to accomplish the orders online marketers have to maintain a huge stock in a large warehouse. The information search is the most essential aspect that helps the customers find the appropriate products or services for their requirements. Hence, the online retailers have to improve and progress the information supporting such as provide much complete product information and use internal search engine in order to enlarge the capable of information search.

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A Study on E-Commerce Trades related to Customers Consciousness and Happiness with reference to Nagpur Division

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Abstract

This paper present E-Commerce Trades related to Consumer Consciousness and Happiness in Nagpur Division. The data collected from E-Commerce Customers who purchase various kinds of product through E-Commerce service provider websites. For the study, purpose responses from 1250 E-Commerce Customers in different areas of Nagpur Division have taken. Hence, data is collected from total 625 E-Commerce Investors.

Introduction

The research is based on the Consumer Consciousness and Happiness regarding adopting E-Commerce transaction. The research discusses the opinion of the Customers regarding the E-Commerce transaction Consciousness and Happiness. Also the research analysis the problem face by the Customers while using the E-Commerce services. The research evaluates the Customers the between the activities undertaken through E-Commerce service by the Investors, the potentials of E-Commerce services and the problem of E-Commerce transaction.

The research has taken e-banking, e-payment, e-trade, e-credit and loan, e-insurance & guarantees and e-rating as the E-Commerce services which I the Customers uses for various modes of services like ATM/ debit card, credit card, mobile banking, online banking, and Teli banking. The researcher also analysis the problem faced by the Customers while dealing with E-Commerce service.

E-Commerce transaction

E-Commerce transaction is a business methodology that addresses the needs of participants to reduce costs while improving the quality of goods and services, product marketing and advertising and increasing the speed of service delivery. Kalakota and Whinston (1996) have identified four principal reasons why E-Commerce transaction such as E-Commerce and e-retailing has evolved. First, the cost of processing many types of financial and retail Trades has been rising so rapidly that it is imperative to develop new ways to handle those Trades . Second, competition in banking and retailing has become so intense that only those organizations that can provide superior consumer services, which in turn require sophisticated transaction management, will continue to grow and prosper. Third, consumers themselves are feeding the fires of competition by demanding more services and greater convenience in their banking and shopping activities. Finally, the technology is at last in place to process electronic Trades at faster speeds more easily and at less cost than consumers can process paper Trades .

Focusing on the argument of Kalakota and Whinston (1996), by describing how E-Commerce transaction technologies have been deployed by different kinds of financial and retail firms, and how the role and structure of the products and services sector have been reshaped by these new technologies.

Objective of the Study

- To study customer are Consciousness and Happiness regarding E-Commerce transaction

Research Methodology

The researcher has adopted analytical, descriptive and comparative methodology for this report; reliance has been placed on books, journals, newspapers and online databases and on the views of writers in the discipline of Competition law.

Table 1: Frequency of E-commerce Transaction by the E-commerce service provider website Customers in Nagpur Division.

Frequency of E-commerce Transaction	**Frequency**	**Percentage**
Once a week	31	5.0
at least once a month	156	24.9
Once in 2-3 months	31	5.0
Once in a year	63	10.0
According to the need	344	55.1
Total	**625**	**100.0**
Chi-Square	**Df**	**Sig.**
1129.520	**4**	**<0.05**

df- degree of freedom; Sig.- Significance

Above **Table 1** illustrates frequency of E-commerce Transaction by the E-commerce service provider website Customers in Nagpur Division. It is evident from the information that 5.0% E-commerce services provider website Customers do the E-commerce transaction once in a week, which was followed by Customers doing E-commerce transaction at least once in a month (24.9%). Furthermore, 5.0% E-commerce services provider website Customers do E-commerce transaction once in 2-3 months whereas 10% and 55.1% Customers do E-commerce transaction once in a year and according to the need respectively. The non-parametric chi-square statistics showed that there is significant (Chi. Sq. = 1129.520; $P<0.05$) difference among E-commerce services provider website Customers with respect to their frequency of E-commerce transaction. Thus, it is evident from the above information that majority of E-commerce website Customers of Nagpur Division do E-commerce transaction according to their need.

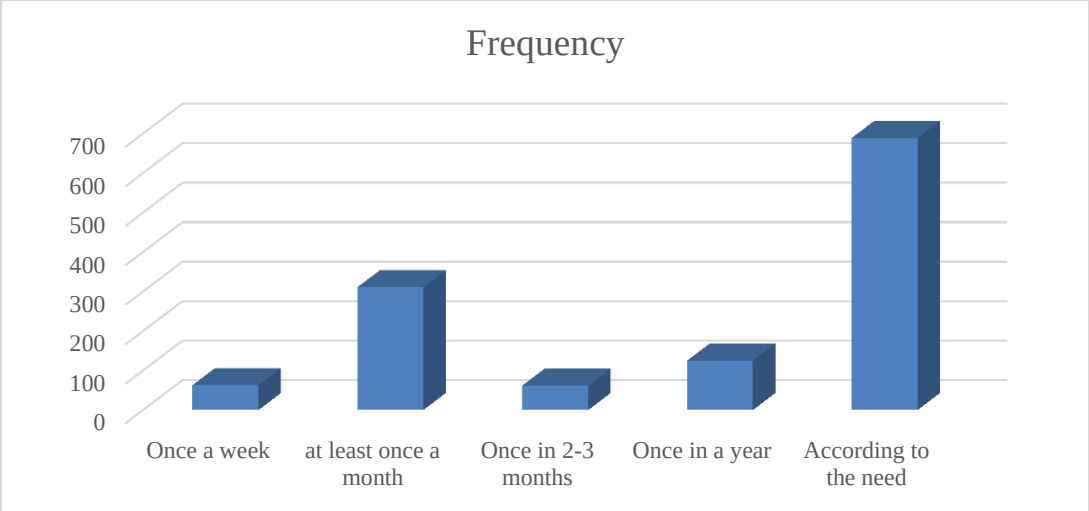

Fig. 1: frequency of E-commerce Transaction by the E-commerce service provider website Customers in Nagpur Division

Table 2: Sources used by the E-commerce Customers of Nagpur Division for gathering information about various products

Sources of gathering information about various products	**Frequency**	**Percentage**
Search Engines	188	30.1
Friends and Family	94	15.0
Company Website	62	9.9
Advertisements	188	30.0
Promotional e-mails	31	5.0
Television Advertisements	63	10.0
Total	**1250**	**100.0**
Chi-Square	**Df**	**Sig.**
440.512	**5**	**<0.05**

df- degree of freedom; Sig.- Significance

Above Table 2 illustrates sources used by the E-Commerce Customers of Nagpur Division for gathering information about various products. It is evident from the information that 30.1% E-Commerce Customers use search engines for gathering information, which was followed by taking views of friends and family (15.0%). Furthermore, 9.9% E-Commerce Customers use company websites whereas 30%, 5% and 10% Customers use advertisements, promotional e-mails and television advertisements respectively. The non-parametric chi-square statistics showed that there is significant (Chi. Sq. = 440.512; $P<0.05$) difference among E-Commerce Customers with respect to sources used by them for gathering information about various products. Thus, it is evident from the above information that majority of E-Commerce Customers of Nagpur Division use search engines and advertisement for gathering information about various products.

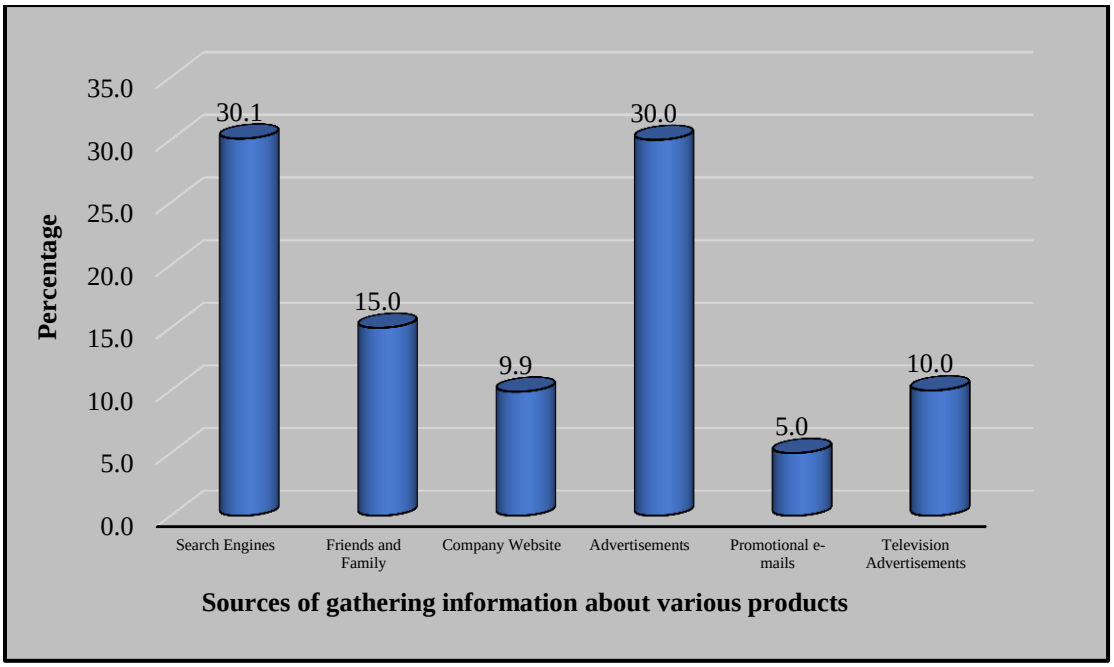

Fig. 2: Sources used by the E-Commerce Customers of Nagpur Division for gathering information about various products

Conclusion:-

It is evident from the study result of Table 1 that significant (Chi. Sq. = 1129.520; P<0.05) no. of E-Commerce Customers of Nagpur Division do E-Commerce transaction according to their need. Furthermore, substantial (Chi. Sq. = 440.512; P<0.05) no. of E-Commerce Customers of Nagpur Division use search engines and advertisement for gathering information about various products (Table2). Hence, on the basis of above results it is evident that Customers are aware regarding E-Commerce transaction. But they afraid of answering too many personal questions while purchasing a product through E-Commerce site; using personal information by E-Commerce websites for other purpose without seeking their consent. They select E-Commerce site, which is easy to use, and to find information. They are not fully aware of the security and transaction policy of E-Commerce site.

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A study of Impact of E-commerce on Indian economy

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Abstract

E-commerce is electronic commerce. Electronic data has given the prospect of eliminating paper documents ,reducing costs and improving efficiency by exchanging business information in electronic form. In India the digital penetration has increased significantly, according to statistical data internet use has increased to 429.23 million user in India and is expected to reach around 830m by year 2021 ."There has been significant rise of e commerce in India, as India's internet economy is 125 billion dollar in 2017. The present paper attempt to study What is the e-commerce ,features of ecommerce, advantages of ecommerce in Indian economy, Barriers of ecommerce developing in Indian economy.

Keywords : *E-commerce, Features, Indian economy, Internet, Impact, Barriers*

Introduction

E-commerce has so many benefit it makes life convenient of the people. Several explanation have been proposed for e-commerce. E-commerce is Electronic data Interchange (EDI). E-commerce revolution started in the year 1997. The foremost reason behind the growth of Internet users besides social media in e-commerce. E-Commerce is at the heart of the Internet and e-commerce is as important as a heart is for a body. The rapidly growth of e-commerce in India is being driven by relater customer choice and it improved the help of internet merchant or venders who sale the product or payment through debit card ,credit card or electronic fund transfer payment. E-commerce is already appearing in all areas of business customer services, new product development and design. E-commerce business is growing in India and indirectly developing Indian economy .

Objective

- To explain the concept of e-commerce in Indian economy.
- To study the advantages of e-commerce in Indian economy.
- To Explain the barriers of e-commerce development in Indian economy

Research methodology

Entire research paper is based on secondary data. Secondary data was collected through reference books, periodicals and internet also. Collected data was analyses in descriptive methods.

What is E-Commerce?

Prashant Jain defined electronic commerce (E-Commerce)as "the exchange of business information using electronic formats, including electronic mail, electronic bulletin boards and electronic funds transfer. E-commerce technologies are designed to replace traditional paper-based work flow with faster, more efficient and reliable communications between computers." e-commerce is the buying and selling of goods and services via the communications capabilities of private and public computer networks including the internet. Global business indeed is increasingly becoming e-commerce. This helps both the parties to efficiently co-ordinate their activities. E-Commerce is more specific than e-business, it means that in addition to providing information to visitors about the company, its history, policies, products and job opportunities, the company or site offers to transact or facilities the selling of products and services online. E-commerce is most important for further development.

Definition

1. E-Commerce (electronic commerce) is the buying and selling of goods and services on the Internet, especially the World Wide Web. In practice, this term and a newer term, e-business, are often used interchangeably.

   According to The World Trade Organization defines

2. E-commerce is the production, distribution, marketing, sales or delivery of goods and services by electronic means & Internet

Features of e-commerce

Improve Responsiveness: E-commerce network enables a company to implement marketing programmes with greater precision such as- pre-empt competitiveness with a change in marketing tactics before they can react. Improve responsiveness by revising price change and marketing programmes as and when required.

Effectiveness and Efficiency: E-commerce can increase the efficiency and effectiveness of public relation programmes, broadcast press release, financial updates and other corporate communication. copy reviews and approvals are expedited by circulating instant massages to key internal and external contacts.

Expedites and Streamlines Reporting : It has been an experience in conventional commercial practices with factors like delays and ineffectiveness in reporting system crippling effectiveness. Responsive, timely information flows from sound management systems. E-commerce improves delivery and distribution both within and outside organizations.

Close Contact with Clients: In any business where maintaining close contact with customer is a priority consideration, electronic business can increase responsiveness of the company and ensure customer satisfaction. Appointment confirmations, request for information, follow-up report and electronic data interchange can be effected with greater efficiency using instant massages.

Coordinates Sales Efforts : Benefit of e-commerce are eliminating telephone tag, sending and received massage at convenience. Linking sales team number together, including international representatives and closing sales without delays, relying heavily on telephone calls for contact with their head officers and customers.

The impact of e-commerce on Indian Economy

E-Commerce is a growing various sector in India. Just like the growth of IT industry in India through the 1990s, the 2010s will be remembered for the growth in the E-Commerce. In its present state the contribution of E-Commerce to GDP is around 0.2% which is expected to grow 15 times to around 2.5% by 2030.The impact is so huge that the present wave of de-monetization could have not been thought if E-Commerce did not exist. E-Commerce to a large extent helped absorb its shock as well as gained the maximum out of it as well.

The positive impact of E-Commerce industry are still in very nascent stage but are visible. The impact at the moment can be seen in the following sectors:

1. **Technology**- One of the major drivers of technology will be E-Commerce industry and vice versa. We are seeing new age technological solutions (AI/Machine Learning) being taken up to solve the business problems to bring commerce to everyone digitally. This is seen in both B2C and B2B sector. Investment into technology sector is happening to drive growth in the E-Commerce domain.
2. **Logistics**- Logistics industry is both a bottleneck and a driver for e-commerce industry. For the same we see how last mile and inter-city logistics solutions have come up to digitally connect the different stakeholders across the country. The Uber model of moving passengers is implemented in some form or the other in the logistic sector. The growth of E-Commerce will drive innovation in the logistic sector to make the products available to the end user.
3. **Travel**- At the moment 70% of the contribution to E-Commerce comes from the travel sector which includes the online ticket bookings to other travel arrangements. This has made the market competitive by bringing all players on the same platform and has also given consumer more options. Travel industry will be earliest adopters to become completely digitized and that is thanks to E-Commerce.
4. **Education-** One of the industries to have the most profound impact of E-Commerce is the education. The ability of E-Commerce to provide quality education to everyone is immense. India will have one of the biggest set of youth population and hence the scope for education sector to be the biggest achievers because of E-Commerce is sure.
5. **Etail**- The flag bearers of the E-commerce wave have been the various E-Retail commerce platforms. Etail sector is projected to contribute to around 3% of the total Retail sells by 2020 and is at present around 1%. This wave is seen in both B2C and C2C model and is bound to grow further. This is not only for goods but also has captured the food sector.
6. **Other Industries**- The way of working in the Real Estate sector is already seeing the change because of the E-Commerce. This will change further with all property related transactions coming online and getting closed online as well. Banking sector is benefiting as well with

reduced operations cost of online transactions. E-Commerce in health care has brought health related solutions to the urban India and will further penetrate deep into Tier I and Tier II cities.

7. **Support Industries**- There are various support industries which have developed because of E-Commerce. These are digital advertising, analytics, payment gateways etc. These will become billion dollars sectors as E-Commerce grows exponentially.

Besides the impact to these industries, E-Commerce is helping make the market more competitive, driving better customer experience and driving accessibility of goods to all. E-Commerce is also bringing transactions online which makes the system more transparent and to an extent may further drive technological adoption. This will also help in driving corruption levels down with everything coming online. The impact are profound and will evolve with time.

Advantages of e-commerce for Indian economy

The ecommerce sector is changing the retail landscape in India..ecommerce is good for the Indian economy. Here are five good reasons in favor of ecommerce.

Improving the technology sector : In a way, ecommerce has brought the Indian technological sector out of the shadows. Driven by the need to provide better and quicker services, ecommerce companies are compelled to innovate. The ecommerce industry has brought about a new wave of innovations in unheard of areas.

Generating employment: As ecommerce undoubtedly depends on cutting edge technology, it in turn requires a quality workforce. There is a strong demand for web developers, software coders, analytics experts, content writers, graphic designers and digital marketers among other specialized tech areas. On the business side, there is a massive requirement for product and UI interface designers, marketing, professionals and customer facing staff. Many scoff that creating fifty thousand deliverymen is not generating employment.

Providing competitive pricing for customers: In a study conducted by the Indian Planning Commission, the expenditure to deliver one rupee of food to the people through the government. This means that neither the producer nor consumer benefits, while the middlemen bite into the margins. E-

commerce has changed this equation in favor of merchants and consumers. Of course, ecommerce transactions are transparent and use smart technology to create sales channels which reduce the cost of inventory, distribution and delivery.

Producing opportunities for merchant partners: Traditionally, manufacturers and merchants have been treated as untouchables by the big marketing firms. Squeezing margins from small-time product developers is the norm. Yet by introducing technology and transparent processes, ecommerce players have created a more vibrant and healthy sales networks which helps merchants greatly. Small time businessmen with niche products can now reach out to a large audience without a big advertising budget.

Boosting real estate: There is a hunt for good office space, warehouses and transit locations. There can be no doubt that the ecommerce boom in India will bring technological innovations in its wake. As the industry grows, it will require better technology and more creative and innovative thinkers. Most of the ecommerce ventures are flush with funds and investment in technology is one of their primary goals. Fierce competition, cut throat pricing and the desire for more market share will drive ecommerce ventures to focus on technology. The Indian economy will be the ultimate beneficiary of their munificence.

Barriers of e-commerce in developing the Indian Economy

Poor Internet Facilities: Internet is considered the backbone of the e-commerce. But the penetration of internet facilities in India especially in rural area is very less. Speed of Internet is also the major challenge in our country. No doubt we are moving towards 4G internet services but still a lot has to be done.

Feeling Unsecure: Feeling unsecure by customer is one of the major and continuing challenges for e-commerce in our country. Customers have to be confident about the integrity of the e-dealers and payment process before making any Risk of hacking and cyber crimes are also there. Privacy has also become a major concern for consumers with identity theft and impersonation. Security challenges are

not restricted to consumers only in e-commerce, corporate firms also face security challenge as their vital information, records and reputation is at stake**.**

Logistic and Supply Chain : Logistics and supply chain has been the major challenge to the e-commerce companies. Most of the population in India lives in villages. To reach the consumer in the village is a big challenge. The e-commerce companies' needs to invest more on setting up warehouse and signing up more suppliers across the country to ensure customers get order delivered by nearest suppliers.

Cash on Delivery (COD) : Cash on delivery is big problem for e-commerce companies. In the era of digital payments, cash on delivery is still the most favored mode of payment used by the consumers. This mode is very expensive for e-commerce companies. If the customer return the product than it becomes very expensive for the company as the company pay two way courier charges.

High Competition: There is a cut throat competition among the player in the e-commerce market. With intense competition, the profitability of the of the companies decreases as they use aggressive pricing strategy and offer huge discounts and commissions.

Tax Structure: Tax structure is another factor for lesser growth of e-commerce sector in India in comparison to other developed countries like USA and UK. Some states are even charging separate tax on e-commerce transactions in India. Government has implemented the GST Act, which is expected to solve this problem to great extent.

Absence of Cyber Laws : Absence of cyber laws to regulate the online business transactions is another bottleneck to e-commerce in India. The new technology has created huge legal uncertainty in our country. The existing Consumer Protection Act 1986 needs to be amended to update and widen the scope of the Act.

Physical Purchase : Most of Indian customers are more comfortable in buying product physically. They want to see and touch the product before buying. So they do not prefer to buy product online**.**

CONCLUSION:

E-commerce plays an important role in upgrading and developing the Indian economic system. Indian economy growing rapidly despites many challenges. Indian economy is one of the largest growing economy with e-commerce. E-commerce is changing the way of buying and selling. Due to the e-commerce the gap has been reduce between manufacturer and consumer According to Indian population their vast scope for e-commerce because currently in India 19% people using internet selling and buying good and services so we can consider that having scope in Indian economy.

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THE IMPACT OF ELECTRONIC COMMERCE ON BUSINESS

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Abstract

The research study has highlighted the Management Information Systems, Finance and Accounting, Marketing and Computer Sciences of E-Commerce on Business. E-commerce is a way of conducting business over the Internet. Though it is a relatively new concept, it has the potential to alter the traditional form of economic activities. Already it affects such large sectors as communications, finance and retail trade and holds promises in areas such as education, health and government. The largest effects may be associated not with many of the impacts that command the most attention but with less visible, but potentially more pervasive, effects on routine business activities. The integration of Electronic Commerce and Business will bring a renaissance in marketing function.

Keywords : *E-commerce , business*

Introduction

E-commerce has a significant impact on business costs and productivity. E-Commerce has a chance to be widely adopted due to its simple applications. Thus it has a large economic impact. Electronic Commerce provides the capability of buying and selling products and information on the internet and other on-line service. Electronic commerce or e-commerce refers to a wide range of online business activities for products and services. Electronic commerce is transforming the marketplace by changing firms' business models, by shaping relations among market actors, and by contributing to changes in market structure. It is difficult to single out their impact of electronic commerce. Some businesses addresses three themes associated with electronic commerce and the organizational changes it entails: changes in business models, changes in market structure and opportunities for economic growth created by organizational change. Electronic commerce creates the possibility of new models for organizing

production and transacting business, by offering inters modality and complementarily – not only substitution – in business models.

Objectives of the Research Study

1. To study the theoreticalconcept of E-Commerce.

2. To study the impact of E-Commerce on Business.

E-commerce

E-commerce has a great deal of advantages over the "brick and mortar" shopfront. Effective e-commerce adoption is beneficial to organizations in terms of substantial cost savings, revenue maximization, and improvement in product delivery and customer service . Therefore, e-commerce is a significant area for research due to its potential positive impact on business performance. Prior studies have empirically confirmed the factors affecting ecommerce adoption . However, much is not known on the overall review on e-commerce adoption studies, as this review has not been done by previous studies. Thus, the novelty feature for this study is the fact that it is the first attempt to comprehensively review on the previous studies on the e-commerce adoption studies. Therefore, this study's approach is unique as it focuses on examining the prior studies published in Scopus databases.

The Impact of Electronic Commerce on Business

E-Commerce and E-Business are not solely the Internet, websites or dot.com companies. It is about a new business concept that incorporates all previous business management and economic concepts. As such, E-Business and E-Commerce impact on manyareas of business and disciplines of business management studies.

1. Management Information Systems – Analysis, design and implementation of e-business systems within an organization; issues of integration of front-end and back-end systems

2. Human Resource Management – Issues of on-line recruiting, home working and 'Intrapreneurs' works on a project by project basis replacing permanent employees.

3. Finance and Accounting –On-line banking; issues of transaction costs; accounting and auditing implications where 'intangible' assets and human capital must be tangibly valued in an increasingly knowledge based economy.

4. Economics –The impact of e-commerce on local and global economies; understanding the concepts of a digital and knowledge-based economy and how this fits into economic theory

5. Production and Operations Management –The impact of on-line processing has led to reduced cycle times. It takes seconds to deliver digitized products and services electronically; similarly the time for processing orders can be reduced by more than 90 per cent from days to minutes. Production systems are integrated with finance marketing and other functional systems as well as with business partners and customers.

6. Marketing – Issues of on-line advertising, marketing strategies and consumer behavior and cultures. One of the areas in which it impacts particularly is direct marketing. In the past this was mainly door-to door, home parties and mail order using catalogues or leaflets.

7. Computer Sciences – Development of different network and computing technologies and languages to support e-commerce and e-business, for example linking front and back office legacy systems with the 'web based' technology.

Conclusion

This research paper involves a study of the inability to find the product or services of interest quickly is the biggest barrier to effective marketing this problem may be overcome through E- commerce, where number of companies offer several products thought the net. In Short, Indian e-commerce has to face many difficulties in web marketing because of infrastructural difficulties and computer illiteracy. Majority of the customers live in rural areas do not sufficient knowledge about computer and internet. Some of customers in urban areas do not have credit facilities and therefore online buying and selling of goods is limited to urban class having knowledge of computer internet if Indian marketers take into account essentials of good website they can definitely make success marketing in international markets.

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Impact of Electronic Commmerce on Brand Management in India

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Abstract

Today world is of liberalization, privatization and globalization, that's why there are keen competition in the market for selling goods and services for corporate. In such situation the product or the company of which brand value are strong that can be survive, the product which are not branded in the form of quality and reasonable price that may become out of market. Various time we assume that branded goods means imported goods or services means of foreign brand but it is not necessary that all imported goods or services are branded, therefore rather than focusing on foreign brand we have to think about local brand also Because brand means the goods, services or the company which providing quality, durability of product at reasonable price. And in order to build the brand value and brand equity of specific brand electronic commerce play a vital role. E-commerce brands provide the platform to the customer to choice the best product by saving time and cost. And such a way online shopping competition is created.

The objective of this paper is to study impact of E-commerce on brand management in India in different areas, like, impact of E-commerce on corporate brand, I would say thanks to S.K. Porwal college, Kamptee for giving the chance to write and express something on very important topic that is impact of Electronic commerce on brand management.

Keywords : *E-commerce, Brand Name, Brand equity, Top Indian Brand, Emerging Brand.*

Objectives:

The following objectives have been designed for the paper:

1) To study meaning of E-commerce and brand management.
2) To analyze impact of E-commerce on top Indian brand with their Brand value and Turnover.
3) To study various emerging brand in different field with the help of E-commerce in India.

Hypothesis:

1. There are positive impact of E-commerce on Name of Brand and its turnover (sales).
2. Due to E-commerce various new brands are emerging in India.

Scope and Limitation:

In this research paper focuses on only top Indian brand and some new emerging brand through E-commerce in India. This study is restricted to Indian brand only.

Research Methodology:

The present research paper is purely based on the secondary data which is collected from reference books, websites, published books and journals etc.

Introduction:

A name, term, sign, symbol or any other feature that identifies one sellers goods or services as distinct from those others. The process of maintaining, improving, and upholding a brand so that the name is associated with positive results, E-commerce Industry is booming with rapid pace. Many e-commerce companies have shown remarkable growth in short span of time. Sale with service is required to fit into the criteria of best e-commerce brands in India. There are many reasons which are contributing in the growth of e-commerce sector. In today's time, everyone prefers for online shopping due to lack of time and reasonable pricing. It is main reason behind the boom in e-commerce Industry. Some of the best e-

commerce brands include **Flipkart Internet Pvt Ltd, Amazon Development Center India Pvt Ltd, Jasper Infotech Pvt Ltd etc.**

Brand management involves a number of important aspects such as cost, customer satisfaction, in-store presentation, and competition. Brand management is built on a marketing foundation, but focuses directly on the brand and how that brand can remain favorable to customers. In today's E-commerce era, Proper brand management can result in higher sales of not only one product, but on other products associated with that brand.

Brand management is continues process, in two way we can acquire the brand. Firstly, by purchasing the name of the brand from other corporate, and secondly, we create brand by providing quality goods and services. People should must aware about originality of the brand because various time it focus in the minds of consumer through advertisement and various sales promotional activities by using electronic media. Therefore we can say that E-commerce brands acts as online logistics for other company to improve their sales.

Some terms related to Brand:

Brand name: Word(s) that identify not only a product but also its manufacturer or producer, such as Amazon, Flipkart, Paytm etc.

brand loyalty: The extent of the faithfulness of consumers to a particular brand, expressed through their repeat purchases, irrespective of the marketing pressure generated by the competing brands. This is called as brand loyalty. You should hope that your customers will have a strong brand loyalty so they keep coming back to your product.

Brand personality: Human traits or characteristics associated with a specific brand name. Common characteristics or traits represented include uniqueness, sincerity, intellectualism, competence, excitement and sophistication. The brand personalities give consumers something with which they can relate, effectively increasing brand awareness and popularity. We have developed our brand personality to connect with customers on a personal level so our brand is very memorable. You should try to have a

great brand personality so that people will always have positives thoughts when they think of your company.

Brand portfolio: The total collection of trademarks that a company applies to its products or services, Each make or brand within a business' brand portfolio might be registered under applicable trademark laws and can represent a valuable asset to a company that is often actively promoted to potential customers.

Brand Equity: Brand equity is the power of the brand lies in the mind of consumer, it is nothing but worth of the brand. Brand equity is important intangible assets that have psychological and financial value to the firm. "Brand equity is net result of all the investment and efforts that a marketer put into building a brand".

Top 10 Most Valuable E-commerce Brands in India:

1. **Amazon Development Centre India Pvt Ltd**: Amazon.com, Inc. often referred to as simply **Amazon**, is an American electronic commerce and cloud computing company with headquarters in Seattle Washington. It is the largest Internet-based retailer in the world by total sales and market capitalization. Amazon.com started as an online bookstore, later diversifying to sell DVDs, Blu-rays CDs, video downloads/streaming, MP3 downloads/streaming etc. **Reviews-** It gives you the option to write product reviews. Many are benefiting from the product reviews given on amazon.com. Amazon product reviews are helping customers to take decision related to purchase. **Third Party Sellers-** Amazon is also working through third party sellers. It also runs associate program in which third party is allowed to put amazon product links. Associate gets commission if link generate sales. The company is one of the top E-commerce companies in India.

2. **Brainbees Solutions Pvt Ltd (Firstcry.com)**: Brainbees Solutions Pvt. Ltd was founded in the year 2010. It is headquartered in Pune, India. It is one of the top E- commerce companies in India. Today the company has become leading online store for baby products. It is offering huge range of baby products for different age groups such as baby and kids clothes, footwear, toys, books and CDs, school supplies, birthday party supplies, baby gear, and gifts; and diapering and baby care, feeding

and nursing, bath and skin care, health and safety, nursery, and moms and maternity products. The company has stores & warehouses throughout India.

3. **Flipkart Internet Pvt Ltd**:It is one of the top e-commerce companies in India. **Flipkart** is founded in 2007 by Sachin Bansal and Binny Bansal. The company is registered in Singapore, but has its headquarters in Bangalore. Flipkart has launched its own product range under the name "DigiFlip" with products including tablets, USBs, and laptop bags. The company is leading e-commerce Industry with several product categories. It has also launched several in house products.

4. **FSN Ecommerce Ventures Pvt Ltd (Nykaa.com)**: Nykaa was founded in the year 2012 by Falguni Nayar. She was formerly working as managing director at Kotak Mahindra Capital Company. The company is headquartered in Mumbai, Maharashtra. It is Mumbai based multi- brand beauty retailer that is selling cosmetics and wellness products for women. The company is one of the top e commerce companies in India.

5. **IndiaMART InterMESH Ltd**: IndiaMart InterMesh Ltd was founded in the year 1999. It is headquartered in Noida, UP. It is serving Internet B2B marketplace. The company is one of the top e commerce companies in India. The company was founded by Dinesh Agarwal and Brijesh Agarwal. Started as a small business directory, now it has became one of the biggest B2B company. Within last few years, it has raised various funding and won awards.

6. **Jasper Infotech Pvt Ltd (Snapdeal.com)**: Snapdeal is an online market place based in New Delhi, India. The company was started by Kunal Bahl, a Wharton graduate as part of the dual degree M & T Engineering and Business program at Penn, and Rohit Bansal, an alumnus of IIT Delhi in February 2010. The company is one of the top e commerce companies in India having a reach of approx 6,000 towns and cities across the country.

7. **Justdial Ltd**: Justdial Ltd was founded in the year 1996 by V.S.S Mani. It is headquartered in Mumbai, Maharashtra. It is one of the Top 10 E-commerce companies in India. Its offices are located on all top Indian Cities. The Company offers its services across various platforms, such as voice, Web, mobile Internet and mobile applications. It offers an array of search plus services, including order food online, book a doctor's appointment online, book movie tickets online, book a

cab/flight/bus online, order grocery online, schedule a laundry pick-up online and schedule a courier pick-up online, among others.

8. **MakeMyTrip India Pvt Ltd**: The Indian travel Company Make My Trip is known for its strong online presence. The company provides entire gamut of travel services including flight, holiday packages, tickets, hotel booking etc. It provides travel packages of all tourist locations. It has launched its travel apps.

The India's top e-commerce company was founded in 2000 by Deep Kalra. The company has also presence internationally through offices in Sydney and New York City.

9. **Myntra-Jabong**: Myntra is one of the top e-commerce companies in India. It is leading online fashion store offering products for men and women both in all ranges. The company is headquartered in Bengaluru, Karnataka. It was launched in the year 2009. It has gained success in short span of time. The company was founded in 2007 to sell personalized gift items.

10. **One97 Communications Ltd (Paytm)**: **Paytm** is an Indian e-commerce website headquartered in Noida, India. It was launched in 2010 and is owned by One97 Communications. The firm started with offering mobile recharge, adding bill payment and e-commerce, with products similar to businesses such as Flipkart, Amazon.com, Snapdeal. In 2015, it further added booking bus travel. Paytm also launched movie ticket booking by partnering with Cinépolis in the year 2016.

Today's there are increasing competition in the E-commerce industries, in India top ten brands based on their brand values are as under.

Rank	**Brand Name**	**Year of Establishment**	**Brand Value (in 2019)**	**Sales (In financial Year 2019)**	**Sector**
1	**Amazon Development Centre India Pvt Ltd**	1994	$ 315.51 billion.	$ 3.2 Billion	Diversified (online selling)
2	**Brainbees Solutions Pvt Ltd (Firstcry.com)**	2010	$ 22 Billion	$ 3.1 Billion	Online store for baby products.
3	**Flipkart Internet Pvt Ltd**	2007	$ 15 Billion	$3.8 Billion	Internet Startup (Online Selling)

4	**FSN Ecommerce Ventures Pvt Ltd (Nykaa.com)**	2012	$ 11.37 Billion	$ 2.6 Billion	Online E-Commerce Store
5	**IndiaMART InterMESH Ltd**	1999	$10 Billion	$ 1.9 Billion	Internet B2B Marketplace
6	**Jasper Infotech Pvt Ltd (Snapdeal.com)**	2010	$ 9.56 Billion	$ 2.1 Billion	Online E-Commerce Store
7	**Justdial Ltd**	1996	$ 8 Billion	$ 8.91 Billion	Online services
8	**MakeMyTrip India Pvt Ltd**	2000	$ 6.6 Billion	$ 3.2 Billion	Travel services
9	**Myntra-Jabong**	2007	$ 6 Billion	$1.9 Billion	online fashion store
10	**One97 Communications Ltd (Paytm)**	2010	$ 5.5 Billion	$ 3.25 Billion	Bill payment and e-commerce

(Source: Brand Finance India)

In India E-commerce revaluation started after the boom in information technology sector. Various E-commerce companies come into focus and make their brand popular. Increase their brand value, turnover and brand equity simultaneously. Now a day's buying and selling of goods and services is become very easy, customers are getting that all the services from their home only, therefore e-commerce is consider as very convenient market for the sophisticated customers. Various new innovations and up gradations are going on in this field, so in near future again so many changes in the field of E-commerce may possible.

If we observe above table, then we find that various E-commerce companies established in last 10 to 15 years, though the growth rate of this companies is very high not only in India but also outside of India, because the sales and the brand value of the company is very high. So we can say that there is boom in E-commerce industry in India.

Conclusion:

From the above research paper it is clear that E-commerce Companies are growing well in India, and that all the companies are survive in cut-throat competition. Through proper management of the brand builds the long time reputation or goodwill in future of organization. Continuously Brand value and the sales on this company are increasing day by day. Various E-commerce companies are new but having high level of popularity. These E-commerce companies are having in different sectors like, Diversified (online selling), online store for baby, Internet Startup (Online Selling) products, Internet Startup (Online Selling), Online E-Commerce Store, Internet B2B Marketplace, Online E-Commerce Store, Online services, Travel services, online fashion store, Bill payment and e-commerce. Etc. the main factor which contributes to brand value is the "quality of the product or services" but other factors also contributes equally to builds up strong brand of the organization.

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An overview of E-Commerce in India

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Abstract

E-commerce dates back to the invention of the very old notion of 'Sell and Buy'. E-commerce became possible in 1991 when the Internet was opened to commercial use. Since that date thousands of businesses have taken up residence at websites. Online shopping only became possible when the internet was opened to the public in 1991. Amazon.com was one of the first e-commerce sites in the US to start selling products online and thousands of businesses have followed since. India has an internet users base of about 475 million as of July, 2018 about 40% of the population in 2017. The largest e-commerce companies in India were Flipkart, Amazon, Myntra, Paytm and Snapdeal. E-commerce conducted using a variety of applications such as e-mail online catalogs and shopping carts, EDI the file transfer protocol, web services, and mobile devices. Electricity, cables, computers, modems and the internet are e-commerce sources. This includes business to business activities and outreach, such as using e-mail for unsolicited ads, usually viewed as spam, to consumers and other business prospects as well as sending out e-newsletters to subscribers and SMS texts to mobile devices. More companies now try to entice consumers directly online, using tools such as digital coupons, social media marketing and targeted advertisement. The Indian E-Commerce market is expected to reach US $200 billion by 2026. Indian e-commerce Industry Analysis (IEEF) that the Indian e-commerce industry has been on an upward growth trajectory and is expected to surpass the US to become the second largest e-commerce in the world by 2034. The e-commerce market is expected to reach US $200 billion by 2027 from US $38.5 billion in 2017. The benefits of e-commerce include it around the clock availability, the speed of access, the wide availability of goods and services for the consumer, easy accessibility and international reach because of this benefits ecommerce growing for popular but the perceived downside of e-commerce include

sometimes limited customer service consumers not being able to see or touch a product prior to purchase and the wait time for product shipping.

Keywords : *E-commerce history, benefits, downside, kinds, inclination, Industry analysis.*

Introduction

E-commerce is the buying and selling of goods and services or the transmitting of funds or data over an electronic network, primarily the internet. Those business transactions occur either as business to business (B2B), business to consumer (B2C), consumer to consumer (C2C) or consumer to business (C2B). The terms e-commerce and e-business often used interchangeably. The term e-tail is also sometimes used in reference to the transactional process for online shopping.

History of e-commerce:

The beginnings of e-commerce can be traced to the 1960's, when businesses started using Electronic Data Interchange (EDI) to share business documents with other companies. In 1979 the American National Standards Institute developed ASC*12 as a universal standard for businesses to share documents through electronic networks.

After the number of individual users sharing electronic documents with each grew in the 1980s, the rise of eBay and Amazon in the 1990s revolutionized the e-commerce industry. Consumers can now purchase endless amounts of items online from e-trailers, typical brick and mortar stores with e-commerce capabilities and one another

Brief History of e-commerce:

1970's e-commerce meant the facilitation of commercial transaction electronically, using technology such as Electronic Data Interchange (EDI) and Electronic Funds Transfer (EFT), allowing businesses to send commercial documents like purchase orders or invoices electronically.

Defination:

E-commerce or Electrionic Commerce is a process of buying, selling, transferring or exchanging networks and computers.

Objectives of the study:

The research paper has been conducted with the following objectives-

1. To analysis the overview of electronic commerce.
2. To study the growth of electronic commerce.
3. To understand the reasons for growing popularity of electronic commerce.
4. To identify the limitations of electronic commerce.

Research Methodology:

The research methodology comprises of the sources of data. To study combined both Historical & Qualitative researches designs. The study is based on secondary data. Secondary data had been collected from various books & journals who writing of various authors in the stream of Industry, Trading academician. The sources of documents included e-resources, websites, Industry magazines & newspapers updates.

E-commerce Application:

E-commerce conducted using a variety of applications such as e-mail online catalogs and shopping carts, EDI the file transfer protocol, web services, and mobile devices. This includes business to business activities and outreach, such as using e-mail for unsolicited ads, usually viewed as spam, to consumers and other business prospects as well as sending out e-newsletters to subscribers and SMS texts to mobile devices. More companies now try to entice consumers directly online, using tools such as digital coupons, social media marketing and targeted advertisement.

The rise of e-commerce has forced IT personnel to move beyond infrastructure design and maintenance to consider numerous customer-facing aspects such as consumer data privacy and security. When developing it systems and applications to accommodate e-commerce activities, data governance- related regulatory compliance mandates, personally identifiable information protection protocols must be consider.

Kinds of e-commerce:

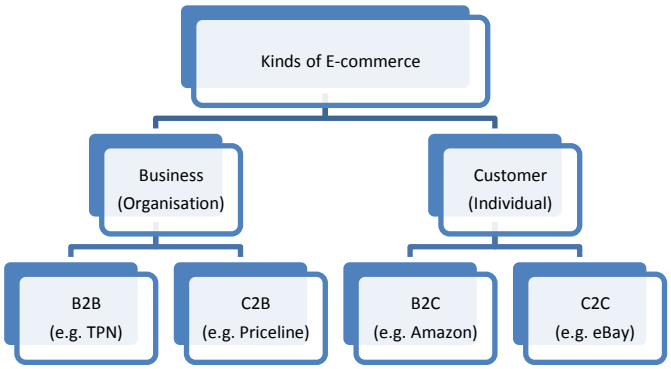
Business to Business (B2B): B2B e-commerce refers to the electronic exchange of products, services or information between businesses rather than between businesses and consumers. Examples include online directories, product and supply exchange websites that allow businesses to search for products, services, information and to initiate transactions through e-procurement interfaces. In 2017, Forrester Research predicted that B2B e-commerce market will top 1.1 trillon in the U.S. by 2021, accounting for 13% of all B2B sales in the nation.

Consumer to Business (C2B): C2B is a type of e-commerce in which consumers make their products and services available online for companies to bid on and purchase. This is the opposite of the traditional commerce model of B2C. A popular example of a C2B platform is a market that sells royalty free photographs, images media and design elements such as istock. Another example would be a job board.

Business to Consumer (B2C): B2C is the retail part of e-commerce on the internet. It is when businesses sell products, services or information directly to consumers. The term was popular during the dot-com boom of the late 1990s, when online retailers and sellers of goods were a novelty. Today, there are innumerable virtual stores and malls on the internet selling all types of consumer goods. The most recognized example of these sites is Amazon which dominates the B2C market.

Consumer to Consumer (C2C): C2C is type of e-commerce in which consumers trade products services and information with each other online. These transactions are generally conducted through a third party that provides on online platform on which the transactions are carried out. Online auctions and classified advertisements are two examples of C2C platforms, with eBay and craigslist being two of

the most popular of these platforms. Because eBay is a business, this form of e-commerce could also be called C2B2C consumer to business to consumer.



(Source by internet)

Business to Administration (B2A): It refers to transactions conducted online between companies and public administration or government bodies. Many branches of government are dependent on e-services or products in one way or another especially when it comes to legal documents, registers, social security, fiscals and employment. Businesses can supply these electronically. B2A services have grown considerably in recent years as investments have been made in e-government capabilities.

Consumer to Administration (C2A): It refers to transactions conducted online between individual consumers and Public Administration or government bodies. The government rarely buys products or services from citizens but individuals frequently use electronic means in the following areas-

Education- Disseminating information, distance learning/online lectures etc.

Social security- Distributing information making payments etc.

Taxes- Filing tax returns, making payment etc.

Health- making appointments, providing information about illnesses, making health services payments etc.

Benefits of e-commerce:

The benefits of e-commerce include it around the clock availability, the speed of access, the wide availability of goods and services for the consumer, easy accessibility and international reach.

1) Availability: Aside from outages or scheduled maintenance, e-commerce sites are available 24x7 allowing visitors to browse and shop at any time. Bricks and mortar businesses tend to open for a fixed amount of hours and may even close entirely on certain days.

2) Speed of access: Wile shoppers in a physical store can be slowed by crowds, e-commerce sites run quickly, which is determined by compute and bandwidth considerations on both consumer device and e-commerce site. Product page and shopping pages trod in a few seconds or less. An e-commerce transaction can comprise a few click and take less than five minutes.

3) Wide availability: Amazon's first slogan was "Earth's Biggest Bookstore" They could make this claim because they were an e-commerce site and not a physical store that had to stock each book on its shelves. E-commerce enables brands to make a wide array of products available which are then shipped from a warehouse after a purchase is made.

4) Easy accessibility: Customers shopping a physical store may have a hard time determining which roadway a particular product is in. In e-commerce, visitors can browse product category pages and use the site search feature the find the product immediately.

5) International reach: Bricks and mortar businesses sell to customers who physically visit their stores. With e-commerce businesses can sell to any customer who can access the web. E-commerce has the potential to extend a business customer base globally.

6) Lower Cost: Pure play e-commerce businesses avoid the cost associated with physical stores, such as rent, inventory and cahiers although they may incur shipping and warehouse costs.

7) Personalization and product recommendations: E-commerce sites can track visitors browse, search and purchase history. They can leverage this data to present useful and personalized product recommendation. Examples include sections of Amazon product pages labeled 'Frequently bought together" and "customers who viewed this item also viewed"

Disadvantages of e-commerce:

The perceived downside of e-commerce include sometimes limited customer service consumers not being able to see or touch a product prior to purchase and the wait time for product shipping.

1) Limited customer service: If a customer has a question or issue in a physical store, he or she can see a clerk, cashier or store manager for help- In an e-commerce store, customer service may be limited, the site may only provide support during certain hours of the day, or a call to a customer service phone number may keep the customer on hold.

2) Not being able to touch or see: While images on a web page can provide a good sense about a product. It's different from experiencing it "directly" such as playing music on speakers assessing the picture quality of a television or trying on a shirt or dress. E- commerce can lead consumers to receive products that differ from their expectations which leads to returns. In some scenarios the customer bears the burden for the cost of shipping the returned item to the retailer.

3) Wait Time: If a customer sees an item that he or she likes in a store, the customer pays for it and then goes home with it. With e-commerce, there is a wait time for the product to be shipped to the customer's address. Although shipping windows are decreasing as next day delivery is now quite common, it's not instantaneous.

4) Security: Skilled hackers can create authentic- looking websites that claim to sell well-known product. Instead the site sends customers forfeit or imitation versions of those product or simply collects customers credit card information with the retailer to make future purchases easier. If the retailer's site is hacked hackers may come into the possession of customers credit card information.

Government regulations for e-commerce:

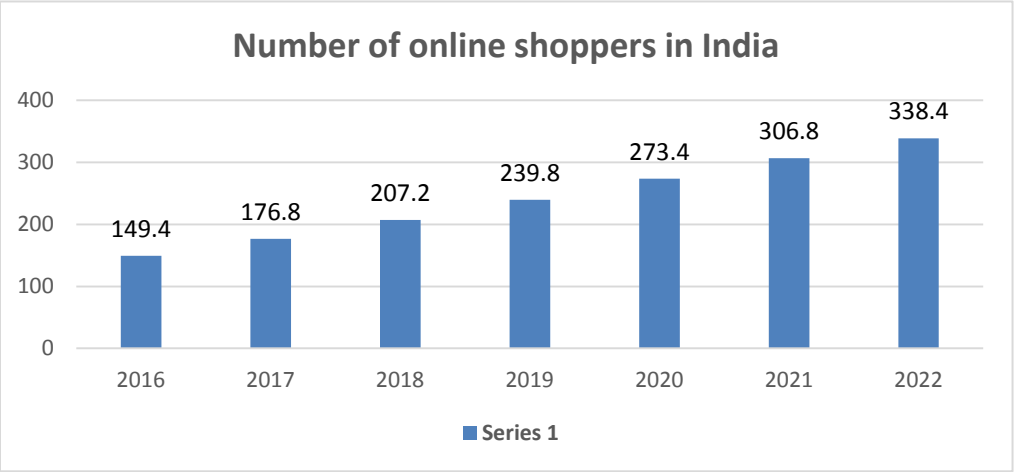
In the United States the Federal Trade Commission (FTC) and the Payment Card Industry (PCI) security standards Council are among the primary agencies that regulated e-commerce activities. The FTC monitors activities such as online advertising, content marketing and customer privacy, while the PCI

council develops standards and rules including PCI Data security Standard compliance which outlines procedures forth e-proper handlings and storage of consumers financial data.

To ensure the security, privacy and effectiveness of e-commerce businesses should authenticate business transactions, control access to resources such as webpages for registered or selected users encrypt communications and implement security technologies such as the secure sockets layer and two factor authentication.

The New Inclination in E-commerce:

In this graph shows that e-commerce is day to day growing in India. Upcoming days online shoppers will be increased in large scale.



(Source- Statista, ecommerce India user in millions)

Indian e-commerce Industry Analysis (IEEF):

The Indian E-Commerce market is expected to reach US $200 billion by 2026. The Indian e-commerce industry has been on an upward growth trajectory and is expected to surpass the US to become the

second largest e-commerce in the world by 2034. The e-commerce market is expected to reach US $200 billion by 2027 from US $38.5 billion in 2017.

E-commerce in India:

India has an internet users base of about 475 million as of July 2018 about 40% of the population in 2017. The largest e-commerce companies in India were Flipkart, Amazon, Myntra, Paytm and Snapdeal.

Conclusion:

E-commerce is promising as a significant instrument to make sure comprehensive growth. The conventional model of business in undergoing aquatic change to reduce the fame of physical infrastructure of big cities as an necessary state for the smooth performance of business. Emergence of international shipping options creates the occasion to reach online consumers around the globe. Finally understanding that e-commerce has made shopping more convenient.

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The Traditional Business Vs Electronic Commerce

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Abstract

The world is ever changing it is the universal truth likewise the style of the society and social setup is also changing as per the need of the time. It is quite natural that the changes are taking place; it is the tendency of human beings that they are always in search of better things and services they can produce to make their life easy and hassle free. Hence, the field of business and commerce is not untouched. As the use of ICT increased the world now become a small village and one can reach virtually everywhere to buy and sale the goods or services. But there are certain advantages and disadvantages discussed in this paper and conclusion is made accordingly.

Introduction

Only the earth in this universe having evitable the existence of human beings and other beings, and the human beings always making searches and researches for the betterment of their life. Earlier, the human beings were busy in fulfilling their daily and basic needs on regular basis. As they made themselves sure to overcome their basic needs fulfilling easily and in the sufficient quantity then, they searched to make their life more comfortable. Now, the world has made progress almost in all the sectors as the civilized human societies in the form and name of different countries, and the subjects (citizens) of these countries are always in search of making our life more luxurious. This is the common phenomenon exists in the human beings this study was made on the ground of self-actualization by Mr. Abraham

Maslow. Who believes that human beings are highly motivated to make search to made them self-actualized.

According to theory of Abraham Maslow the human beings made the searches, researches, inventions and discoveries not only to make their lives more comfort and luxurious but for the self-actualization. Now, almost all the developed nations on this earth are mounting to prove this theory and the people within these countries are motivated for self-actualization. Earlier, more researches in the field of science were carried but now a days researches not only made in the field of science but in the field of commerce and humanities. Ultimately the human beings will affect it positively since these researches are meant for their betterment to achieve the best living styles by them and for them.

Commerce is an alternative word generally used and denotes for trade or business. It means buying and selling of goods and services. As the environment is there, the commerce also prevails everywhere on this earth irrespective of size of trade or business in respect of the size of the capital volume of turnover. Further, the commerce is not restricted up to the buying and selling of goods or services it also includes the business incidental to trade or business like transportation, banking warehousing and so on. Hence, the term commerce is not an exclusive term but it is an inclusive term. These transactions of buying and selling of goods and services also includes the element of money thus the economics is also concerned with the commerce and while studying the commerce the economics automatically studied at the same time. Thus commerce and economics are complementary to each other. The commerce as mentioned here is not necessarily indigenous it may be interstate or at international level.

Ecommerce, also known as electronic commerce or internet commerce, refers to the buying and selling of goods or services using the internet, and the transfer of money and data to execute these transactions. Ecommerce is often used to refer to the sale of physical products online, but it can also describe any kind of commercial transaction that is facilitated through the internet.

Whereas e-business refers to all aspects of operating an online business, ecommerce refers specifically to the transaction of goods and services. (https://www.shopify.com/encyclopedia/what-is-ecommerce)

Types of Ecommerce Models

1. Business to Consumer (B2C): 2. Business to Business (B2B): 3. Consumer to Consumer (C2C): 4. Consumer to Business (C2B):

Examples of Ecommerce

E-commerce can take on a variety of forms involving different transactional relationships between businesses and consumers, as well as different objects being exchanged as part of these transactions.

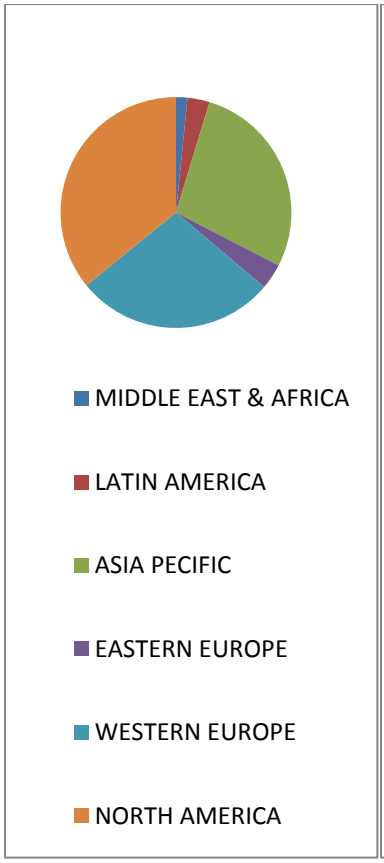
1. Retail 2. Wholesale 3. Dropshipping 4. Crowd funding: 5. Subscription 6. Physical products 7. Digital products 8. Services:

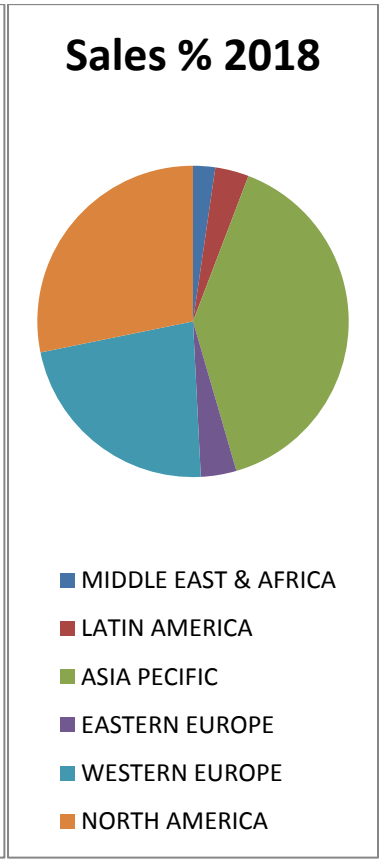
Developed economies dominate the market …but emerging economies are expected to catch up 7 Sources: e-Marketer Other signs of rapid growth in the South China E-commerce has grown by 120% a year since 2003 Set to surpass US in 2013 as largest e-commerce market Alibaba now employs 24,000 workers China, India and Indonesia expected to grow fastest in 2013 Latin America: from $1.6 billion to $43 billion in past decade Brazil accounts for largest market share (59%) Middle East and Africa: its share in global e-commerce expected to rise from 1.6% to 3.5% by 2019. Sources: Economist, Morgan Stanley, e-Marketer Lessons from European business surveys(1) Great variation in e-commerce use 9 Source: Eurostat Lessons from European business surveys(2) Larger enterprises more active in e-commerce 19% of large companies' turnover from e-commerce 4% of small companies' turnover from e-commerce Cross-border e-commerce sales not fully exploited 14% of enterprises sell online to domestic market 6% of enterprises export online to other EU market 10 Source: Eurostat Lessons from the Republic of Korea 62% of all businesses with 10 or more employees sold or bought online in 2013, up from 50% in 2012 Industry variation ICT sector has highest usage of e-commerce sales Real estate and construction services use e- commerce sales the least E-commerce usage increases with the size of the business Main benefits from e-commerce sales Reduced transaction time

2013	Sales %
MIDDLE EAST & AFRICA	1.6
LATIN AMERICA	3.0
ASIA PECIFIC	27.9
EASTERN EUROPE	3.6
WESTERN EUROPE	28
NORTH AMERICA	35.9

2018	Sales %
MIDDLE EAST & AFRICA	2.3
LATIN AMERICA	3.5
ASIA PECIFIC	39.7
EASTERN EUROPE	3.7
WESTERN EUROPE	22.6
NORTH AMERICA	28.2

2013 **2018**





(https://www.shopify.com/encyclopedia/what-is-ecommerce)

Study Conduted By Ajeet Khurana In Nut Shell

When you read the following list of advantages of e-commerce for businesses and customers, you will get the sense that e-commerce is the holy grail of retail.

A) Global Village B)Easy accessibility by the customers/ consumers C)Easy search and convenient to search the product by the customers/ consumers D)The cost element E) Time saving F) More Option on a single click.

I) Overcome Geographical Limitations II) Gain New Customers with Search Engine Visibility III) Lower Costs IV) Locate the Product Quicker V) Eliminate Travel Time and Cost VI) Provide Comparison Shopping VII) Enable Deals, Bargains, Coupons, and Group Buying VIII) Provide Abundant Information IX) Create Targeted Communication X) Remain Open All the Time

- Advertising and Marketing: pay-per-click, and social media traffic are some of the advertising channels that can be cost-effective.
- Personnel: The automation of checkout, billing, payments, inventory management, and other operational processes lowers the number of employees required to run an e-commerce setup.
- Real Estate: This one is a no-brainer. An e-commerce merchant does not need a prominent physical location.

E-commerce facilitates comparison shopping. There are several online services that allow customers to browse multiple e-commerce merchants and find the best prices.

Create Markets for Niche Products

Buyers and sellers of niche products can find it difficult to locate each other in the physical world. Online, it is only a matter of the customer searching for the product in a search engine. One example could be the purchase of obsolete parts. Instead of trashing older equipment for lack of spares, today we can locate parts online with great ease.

Drawbacks

E-commerce Lacks Personal Touch

Not that all physical retailers have a personal approach, but many do. As a result, shopping at those retail outlets is reassuring and refreshing. Clicking on "Buy Now," and piling up products in virtual shopping carts, is just not the same.

Different people sing to different tunes. The demise of the personal touch in online transactions can be the biggest disadvantage of e-commerce.

E-commerce Delays Goods

Unless you are using a website to order a pizza, e-commerce website delivery takes a lot longer to get the goods into your hands. Even with express shipping, the earliest you get goods is usually "tomorrow" (except for some Amazon services).

But if you want to buy a pen because you need to write something right now, you cannot buy it off an electronic website. Likewise, with candy that you want to eat now, a book that you want to read tonight, a birthday gift that you need this evening - you get the idea.

An exception to this rule is in the case of digital goods, e.g., an e-book or a music file. In this case, e-commerce might be faster than purchasing goods from a physical store.

E-commerce does Not Allow You to Experience the Product before Purchase

You cannot touch the fabric of the garment you want to buy. You cannot check how the shoe feels on your feet. You cannot "test" the perfume that you want to buy. You get the idea.

In many cases, customers want to experience the product before purchase. E-commerce does not allow that. If you buy a music system, you cannot play it online to check if it sounds right? If you are

purchasing a home theater system, you would much rather sit in the "experience center" that several retail stores set up.

Anyone Can Set Up an e-Commerce Website

We live in an era where online storefront providers bring you the ability to set up an e-commerce store within minutes. I have tried it, and it is possible to set up a basic store in under 10 minutes.

But if anybody can set up a store, how do I know that the store I am purchasing from is genuine? The lowered barriers to entry might be a great attraction to the aspiring e-commerce entrepreneur. But for the buyer, reliability can be an issue. It could lead customers to restrict their online purchases to famous e-commerce websites.

Security:

When making an online purchase, you have to provide at least your credit card information and mailing address. In many cases, e-commerce websites can harvest other information about your online behavior and preferences. It could lead to credit card fraud or worse, identify theft.

Conclusion:

Apart from advantages, we must acknowledge that there are disadvantages too. Only when we accept our shortcomings will we work towards overcoming them.

E-commerce Lacks Personal Touch, E-commerce Delays Goods E-commerce Does Not Allow You to Experience the Product before Purchase, Anyone Can Set Up an e-Commerce Website

Now, the educated and higher income group people are more cautious about their online marketing and e commerce habits, it appears from the pie chart drawn here in above the percentage of sale in Northern American and the countries belong to Western Europe decreased as compared to developing countries in the other part of the world.

Recently, there are number of instances and raids conducted by the respective authorities worldwide at the places from and where the duplicate goods of reputed and branded companies like Nike, Adidas and i- phones were supplied online by e-commerce websites like Snapdeal and Amazon.

Many products are not suitable to purchase through e commerce. Some of the products prefebly have to be purchased from traditional marketing system.

The single line conclusion is that the physical marketing is better than the e-commerce style of marketing.

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E-Commerce Sector and Its Growth in India

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Abstract

E-Commerce includes online transactions. This present paper reveals the E- Commerce sector overview in India. E commerce business is showing tremendous growth the way the business is done in India. As per the report of India Brand Equity foundation Indian revenue from E- Commerce business is expected to rise from US $ 39 billion in 2017 to Us $120 billion, growth is around 51% which consider as highest in the world. In this research paper researcher has studies market size of E-commerce industry, recent developments in this industry, key initiatives taken by Indian Government, factor leading to growth of E-Commerce Industry and major challenges in India faced by E-Commerce Company.

Keywords : *E- Commerce, Development, Challenges and Factor*

Introduction

E-commerce industry has transformed the way the business is carried out in India. From the statistics of Indian Brand Equity Foundation it says that India E-Commerce market is expected to grow from US $ 38.5 billion in 2017 to US $ 200 Billion by 2026. (E-Commerce Industy in India , 2019). The concept of E-commerce business is changing the way business is done. In today era the accessibility to e-commerce business is not consider as privilege but includes in necessity for most of people. (Kumar Anuj, 2018). E-Commerce business is a platform for social growth in India economy as well as generating employment opportunity for youth. As per the KPMG report e-commerce industry is expected to create direct employment of nearby 1.45 million workforce by the time 2021. (E-commerce

expected to create 1.45 million jobs by 2021: Report, 2016). The one of the reason for the growth of e-commerce business in India is rising in total numbers of internet users and smartphone penetration. In this research the focus on analyzing the contribution of E-commerce business in the development of the economy.

Concept of E-Commerce

E- Commerce is defined as defined as buying and selling of goods and services or transforming the funds and data over the electronic network, mainly the internet and other activities which are associated with the transaction such as delivery, payment Facilitation, service management and supply chain. (Kumar Anuj, 2018) .The transaction in electronic business are business-to-business, business-to-consumer, consumer-to-consumer or consumer to business. Electronic commerce use the variety of application like email, fax,online catalog, shopping cards, online catalog, transfer protocol, Electronic data interchange and web services. (Dr. Rajasekar, 2016). Thus in short it can be says as E-commerceand E- business is used interchangeably.

Market Size of India E-commerce business

As the smartphone penetration is rising, Launch of 4G network, rising consumer income and spending power of consumer Indian e commerce market is expected to increase from US $ 200 billion by 2026 from US $ 38.5 billion in 2017. In the year 2018 electronic is the highest contributor to online retail sales in India with a share of 48%, followed closely by appeal at 29%. (E-Commerce Industy in India , 2019) As per the report of Deloitte India retail association of India says that Retail market in terms of money in India is expected to grow to USD 1.2 trillion by 2021 from USD 795 billion in 2017. (Indian e-commerce market to touch USD 84 billion in 2021: Report , 2019) As per the Deloitte report Indian is in continuous to hold a strong position in terms of market potential and is on the way of becoming third largest consumer market. As per the PWC report they said that India represents a high aspiration consumer market. With an emerging middle class population of more than 500 million and approximately 65% of population aged 35 or below. India have potential to overtake US and become

the World's largest economy by 2050. (Propelling Indian towards Global leadership in E-Commerce, 2018)

Development in E-Commerce Industry

- There were 21 private equity and venture capital deals worth US $ 2.1 billion in 2017 and 40 deals worth US $ 1,129 million in first half of 2018.
- After acquiring of flipkart by Walmart for US $ 16 billion, they are planning to launch more offline stores in India to promote private labels in segment of fashion and electronics. During the period of 2018 flipkart acquired Israel based analytics start up upstream commerce which help the company to price and promotion its products.
- Google enter India ecommerce space with Google shopping. Google and Tata together joint hand for project 'Internet Sathi' to improve internet penetration among rural women in India.
- Payment banks boost the business of e- commerce by facilitating the process of online transaction customer friendly. (exporter.gov, 2019)

Key Initiatives by Government in E-Commerce Industry

- Indian Government has given rewards worth around US $ 23.8 million to approximately 1 million customers for acceptance digital payments, under the Digi- Dhan Vyapar Yojana and Lucky Grahak Yojana.
- Launch of E-Commerce portal called TRIFED by GOI and M-Commerce Portal named as "Tribes India" which helps 55,000 tribal artisans to get access to international market.
- RBI taken step to allow "Inter-Operability" among prepaid payment instruments like digital wallets, Prepaid telephone top up card and prepaid cash coupons. The Indian banking authority also instructed

- To make all KYC compliant Prepaid payment instruments , such as mobile wallets, interoperable amongst themselves via unified Payment Interface.
- For increasing participation of foreign players in E-Commerce Industry, Indian government increase the limit of FDI in marketplace model upto 100 percent in (B2B Models).
- E Commerce sector is impacting MSME directly by means of providing financing, technology and training. It has favorable effect on other industries as well. (exporter.gov, 2019)

Factors leading E-Commerce growth in India

- Rise in Indian language user on internet is expected to reach 540 million by 2021.
- Larger number of population uses smartphones and subscribed to 3G and 4G internet services.
- Standard of living of people increase.
- Increase in frequency of online shopping and specific site where second hand goods are buy and sold.
- Increasing numbers of customers using debit card for cashless transaction over a period of time.
- Evolution of e-commerce companies like ola, zomatta, bookmyshow, FreshToHome, cleardekho,Cars24, sharechats etc.

Challenges to E-Commerce Industry in India

Following are the few lists of challenges in E-Commerce Industry.

1. Lack of **proper knowledge and poor market research**
2. Difficulty for new seller to **choice new product**
3. Difficulty for the new seller in **fixing the price of product on profitable margin**
4. Maintaining **proper Inventory level** as they cannot afford to delay shipping
5. **Return and cancellation of order** by customers

6. **Packaging of the product** leads to ultimate customer satisfaction
7. **Lack of inventory** is hurdle in launching the product
8. E-Commerce business **shut down** their business due to **legal violation**
9. **Cash on delivery is risky** as some of the customers refuse to accept goods at the time of delivery due to various reasons.
10. **Change in the market trend** as more and more sellers are adopting the strategy to import economical goods like Chinese goods.
11. **Retaining** the customers
12. **Events** when internet connectivity is low and people don't use smartphone (Singh, 2019)

Conclusion

Growth of E commerce depends on many factors few of them are development in technology, IT security system and need of the customers. Many of the start up organigation are start to take advantage of government initiatives and find the potential growth in E-Commerce Industry. With the continuous development in this sector challenges remain to overcomes. In the current scenario where the potential of earning of the people increase and they found less time for outdoor shopping, E-commerce business is blessing for them. By sitting at any place you can do online shopping. The other reason for the growth in this sector is better internet connectivity with 3G and 4G network and use of devices like smartphones, tablet and laptop by customers, millions of customers are making decision online and in this way enterprises can build the brand digitally and enhance the productivity. E commerce industry is growing digitally and geographically. The key challenges like building customer trust, choice of product, packaging, method of payment and security issues that needs further research.

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E-Commerce Industry and Career Opportunities for Youth

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Abstract

The main objectives of the paper is to accomplish measurable describing the actuality of internet shopping in the case of the India in order to explain the progress of internet shopping and its impact on consumer behaviour. The paper construct on the related literature. Furthermore, the future progress of internet shopping will be measured and deep evaluation of consumer behaviour connecting different countries. This paper support the research questions that with current trends and various problems in internet shopping, and principle elements for consumer behaviour. As well, the outcome of the study shows that internet consumer faith and visible risk have strong impacts on their buying decisions. Privacy concerns, security concerns, consumer`s trust are the main factors for using internet for shopping, the conviction on websites impact to the buying decision of any consumer. Further, the experiential result notified how the E-commerce companies to create marketing strategies though the research data and analyzing result.

Keywords : *E-commerce, Impact, Consumer Behaviour*

Introduction

The internet is being developed speedily since previous two decades, and with related digital economy that is driven by information technology also being developed global. Behind a long time development of internet, which speedily increased web users and highly speed internet connection, and some updated technology also have been developed and used for web developing, those guide to firms can promote and enhance images of product and services through web site. Thus, according to Arjun Mittal, details of 132 product information and better service attracts more and more people changed their consumer behaviour from the traditional method to more rely on the internet shopping. Say to other word, more

companies have realized that the consumer behaviour transformation is required trend, and thus change their marketing strategy. As the current researches have indicated that, the internet shopping particularly in business to consumer has grow and online shopping become more popular too many people. Main reasons of rapid growth of internet shopping are which mainly due to the benefits that internet provides. Firstly, the internet offers different types of convenience to consumers. Noticeably, consumers do not require go out looking for product details as the internet can assist them to search from online sites, and it also helps evaluate connecting each sites to get the lowest price for purchase. Furthermore, the internet can increase consumer use product more efficiently and effectively than other channels to satisfy their requirements. Within the various search engines, consumers save time to access to the consumption related information, and which information with combination of descriptions, sound, and very deeply manuscript description to assist consumer learning and selecting the most suitable product (Moon, 2004). Though, internet shopping has prospective risks for the customers, such as payment safety, and after service. Due to the internet technology progress, internet payment newly becomes prevalent way for purchasing goods from the internet. Online payment raise consumptive effectiveness, at the equal time, as its virtual assets reduced online security.

Objective of Study:

The study has following objectives

- To understand the concept of Electronic Commerce
- To study the Impact of E-commerce on Consumer Behaviour

Research Methodology:

The researchers used an explanatory research technique based on past literature from respective journal, annual reports, newspaper, magazine, internet sites of academic literature of Electronic Commerce. Considering the objectives of the study descriptive type research design is adopted to have more accuracy and rigorous analysis of research study. The accessible secondary data is extensively used for research paper.

Difference between online/offline Stores

The online shopping has been quickly developed, especially in consumer products industry, there still have a large difference among traditional and online consumer shopping. Referred to sales in the Indian consumer product industry, the online sales engaged at a very low down percentage rate. So as to could be caused by a lot of reasons, however the most importance is the benefits are present in both traditional shops and online market; together of them have definite characteristics. For instance, the traditional seller can supply convenience in parking and shopping, it allows customers come to examine and check the quality of goods before they buy, and the after service is more directly to customers. Though, the traditional store has restricted number of goods, and the selling price is higher than online store. with assessment, we can find out the disadvantage of traditional store are more likely as the benefits of online store, in compare, the limitation of online store is also seems as the benefits of traditional store. It is clear from the summary of internet and online shopping expansion that e-commerce is being used in many corporations due to the dramatic progress of technology and competitive benefits of online selling. Furthermore, the progress of the usage by individuals also becomes main contributors to the development of online shopping. Comparatively only some studies have investigated in the online shopping and impact on consumer behaviour. The before studies are more focus on the marker's point of view, such as how to set up a more efficient marketing channel online rather than the E-commerce: It's Impact on consumer Behaviour one hundred and thirty three traditional offline channel. so, this research will combines with prior studies from literature reviews, and focus on the impact of the online shopping on consumer behaviours to find out a complete analytical development which show the compulsory part of business and marketing to filling the consumer's requirements, and a deeply understanding of online consumer behaviour as a reference for any e-commerce company to build marketing strategies.

Impact of Internet on Consumer Behaviour

The impacts on consumer behaviour are regularly made among internal and external factors. Internal factors are generally from the consumer's mind, and external factors are come from the environmental circumstances. There are many factors could impact on consumer's behaviours. According to Sheth (1983), the internal influences are diversity of mental processes, which makes attitudes, perception,

motivation, learning, self image, and semiotics (Malcolm). The external influences could divide as: Demographics, technology, socio-economics, and public policy; culture; sub-culture; reference groups; and marketing. Warner also suggested that the consumers have two types of motives though shopping, which are first is functional and second is non-functional. Firstly deliberated functional motives are mostly about the time, shopping place and consumer's requirements, which could be like one-stop shopping to save time, the ecological of shopping place such as free parking place, lesser price of products and available to select from usually range of products. Secondly non-functional motives are more related among culture or social values, such as the brand name of the store. The traditional shopping is purely concerning the customer to purchase their requirements. This behaviour will be influenced by the seller's publicity and promotion which attracts customers goes there and buying products, then a part of new products will be taken home and be used.

Internet Shopping

According to Jarvanpaa and Todd, 1997, internet shopping and traditional shopping are partaking a lot of similarities, at the same time, it still exists some differences among them, such as the Internet shopping could supply convenience and interactive services, and the traditional shopping could gives customers more comfy shopping environment and good quality of products by Lee and Chung, 2000. Equally aspect of shopping malls are demanding to getting better their services by learn commutatively from each other, such as traditional shopping malls supply more parking spaces, further counters, and closer to residential area in order to improve services in convenience; Online shopping malls accept virtual truth by Lee 2001. In the subsequent sections, the study would provide the nature of online shopping at first, then the E-commerce web site will be indicated to understand the fundamental nature of internet shopping, later than, online safety, privacy and reliance will be discussed.

Facilities

According to Wolhander, 1999; Internet provides a large convenience for buyer as the main cause for the shopping online has been agreed by most of researcher and customers. Due to the feature of Internet, it allows customer to shopping online anytime and anywhere, which means customer can browse and

shopping online twenty four hours in a days from home or office, which attracts some time-starved shoppers come to Internet for save time to searching products in physical store. Moreover, online offers some product ways to save money and time. For instance, buyers do not require go out to the physical store and therefore there is no transportation price. Compare among the traditional shopping, there is no waiting queue for buyers on the Internet, and some buyers reported that they undergo pressure from the sales people sometimes, however Internet offers them further pleasant while shopping online (Wolhandler, 1999; GVU's WWW 9th User Surveys, 1998).

Technology

The convenience based on Internet is mostly according to the technology advancement, and which plays a key role through the expansion of Internet shopping. According to Clark,1989; In the last decade, organizations have realized that the new technology could impact on Internet shopping deeply, and thus there are many important technologies like virtual reality and three D techniques have adopted to increase large competitive advantages. According to White, 1997; Information technology has used in the form of the Internet improved better feature of product information, which help buyers decision making. Through the large range of surveys about the Internet use, the progress of Internet and the rate of increase of Internet usage have been speedy increased in the last decade.

Consumer Trust in Internet Shopping

A lot of customers are unconvinced or doubtful regarding the functional mechanisms of e-commerce; it's in clear processes and effects, and the feature of many products that are available online. Their purchase products and services are the mainly based on their level of trust in this product or services, and sellers whichever in the physical store or online shops. Online purchasing trust is the basic and important component for creating a relationship with customers. The trustworthiness of E-commerce web site is very relying on the how much privacy security can be provided. For instance, a very technological competence can be a factor to influence the trustworthiness (Singh and Sirdeshmukh, 2000). While mentioned above that the web seller can supply third-party authentication to e-commerce web site, and as this privacy and safety strategies are used, customers will believe their e-commerce

dealings by Internet are safe and sound and thus the site is more consistent to them. Beside this point, if the Ecommerce web site can provide the information about their customer services, location of the office, contact telephone number, and a help button on the web site, customers could also increase their trustiness as they can feel that the online retailers is truly exist (Lohse and Spiller, 1998).

Conclusion:

This study is mainly focus on the factors from the Internet and examines those factors that affect the consumer's online shopping behaviours. It starts with the current status of the Internet progress, and mentioned the background of marketing as 136 Arjun Mittal representations and its difference with physical stores which in order to show the embryonic history of online shopping since the E-commerce become popular. This research study focus on the Internet shopping (consist of the nature of Internet shopping, E-commerce website, and trust and reliability, online security, online privacy,) and online consumer behaviours (consist of motivation, environment, shopping and decision making procedure). Those factors were looked at, and examined to disclose the impact at online consumer behaviours. The earlier researches were used to assist researchers perceptive more exhaustively. Furthermore, the customer's purchase decision making process was also examined to recognize the prospective factors. The details find out is the mainly significant factor that assist the customers search the proper products or services for their requirements. Accordingly, the online retailers have to increase and improve the cognition supporting such as supply much detailed product information and use internal search engine in order to augment the efficient of information search. For the assessment phase, customers more think a lot of the reputation from the E-commerce website, and the payment security for the purchase stage. At the post-purchase stage, the factor of after services which is the mainly concerned regarding. On the whole, the factors from the Internet that influenced or prevented online consumer behaviours require to be carefully concerned by the online retailers, who can use the proper marketing communications to support the customer's purchase decision making process and get better their performance.

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E- Business

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Abstract

Business plays a very important role in the economic development of all the nations of the world. E-business involves business processes spanning the entire value chain: electronic purchasing and supply chain management, processing orders electronically, handling customers service, and cooperating with business partners. Electronic business is a wide ranging collection of functions and activities that are facilitated by digital and electronic means. The ultimate goal of e-business is to establish an online presence for an organization and to provide as much interactivity and functionality as possible. E-business relies on information and communication technologies (ICT) to improve and expand the operation and functions of an organization, such as business, government agency or nonprofit organization. This paper details about the e-business.

Keywords : *E-Business, internet, E- Commerce*

Introduction

Electronic Business commonly referred to as "**E-business**" or "**e-business**", is sometimes used interchangeable with E-commerce. E-commerce constitutes the narrower definition of buying, selling, transferring or exchange of products and services, between businesses, groups and/or individuals using the internet, and intranets[1]. It is an essential activity of business today.E-business covers a broader definition and includes e-commerce, customer relations management (CRM), and business partnership, "e-learning and conducting electronic transactions within an organization".[2] Electronic business methods enable companies to link their internal and external data processing systems more efficiently

and flexibly, to work more closely with suppliers and partners, and to better satisfy the needs and expectation of their customers. In practice, e-business is more than just e-commerce. While e-business refers to more strategic focus with an emphasis on the functions that occur using electronic capabilities, e- commerce is a subset of an overall e-business strategy.

Objective of the Study :

- To understand the meaning of E-Business.
- To study the scope of E-Business.
- To study the customer relationship.
- To study the common security measures.

Hypotheses:

- E-Business provides business security.
- E-Business helps to take decisions for long term benefits.
- It is the common way to ensure the business transaction.
- An electronic meeting and trending place, which adds efficiency in conducting business.
- E-Business supports efficiency in distribution.

Methodology:

The present research uses the descriptive analysis method, using data and information published books, internet, research papers and journals.

Scope of E-Business

Business- to- Consumer (B2B) means business selling goods and services online to final consumers. Today's consumers can buy almost anything online-form clothing, kitchen gadgets and airline and railway tickets to buy computers and cars. Online costumers buying continue to growth at healthy rate. More than half of all U.S. households now regularly shop online. Last year, U.S. consumers generated

$175 billion in online retail sales, up to 22% from the previous year. From2010, the internet has influence a staggering 50% of total retail sales.

E-Business provides business security

E-Business systems naturally have greater security risks than traditional business systems, therefore it is important for e-business systems to be fully protected against these risks. A far greater number of traditional business. Customers', suppliers, employees and numerous other people use any particular e-business system daily and except their confidential information to stay secure. Hackers are one of the great threats to the security of e-businesses. Some of the methods of protecting e-business security and keeping information secure include physical security measures as well as data storage, data transmission, antivirus software, firewalls, and encryption to list a few.

Authenticity

E-Business transactions pose greater challenges for establishing authenticity due to the ease with which electronic information may be altered and copied. Both parties in an e-business transaction want to have the assurance that the other party is who they claim to be, especially when a customer places an order and then submits a payment electronically. One common way to ensure this is to limit access to a network or trusted parties by using a virtual private network technology. The establishment of authenticity is even greater when a combination of techniques are used, and such techniques involve checking "something you know" (i.e. password or PIN), "something you need" (i. e .credit card), or "something you are (i.e. digital signatures or voice recognition methods). Many times in e-business, however, "something you are" is pretty strongly verified by checking the purchaser's "something you have" (i.e. credit card) and "something you know" (i.e. card number).

Non- repudiation

This concern deals with the existence of proof in transaction. A business must have assurance that the receiving party or purchaser cannot deny that a transaction has occurred, and this means having

sufficient evidence to prove the transaction. One way to address non-repudiation is using digital signatures. A digital signature not only ensures that a message or document has been electronically signed by the person, but since a digital signature can only be created by one person, it also ensures that this person cannot later deny that provided their signature.[4]

Access control

When certain electronic resources and information is limited to only a few authorized individuals, a business and its customers must have the assurance that no one else can access the systems or information. Fortunately, there are a variety of techniques to address this concern including firewalls, access privileges, user identification and authentication techniques ,Virtual Private Networks and much more.

Availability

This concern is specially pertinent to a business customers as certain information must be available when customers need it. Messages must be delivered in a reliable and timely fashion , and information must be stored and retrieved as required, because availability of service is important for all e-business websites, steps must be taken to prevent disruption of service by events such power outages and damage to physical infrastructure. Examples to address this include data backup, fire-suppression systems, Uninterrupted Power Supply systems, virus protection, as well as making sure that there is sufficient capacity to handle the demands posed by heavy network traffic.

Common security measures

Many different forms of security exit for e-business. Some general security guidelines include areas in physical security, data storage, data transmission, application development, and system administration. Despite e-business being business done online, there are still physical security measures that can be taken to protect the business as a whole. Even though business is done online, the building that houses the serves and computers must be protected and have limited access to employees and other persons. For

example, this room should only allow authorized users to enter, and should ensure that "window, dropped ceilings, large air ducts, and raised floors" do not allow easy access to unauthorized persons. Preferably these important items would be kept in an air- conditioned room without any windows.

Protecting against the environment is equally important in physical security as protecting against unauthorized users. The room may protect the equipment against flooding by keeping all equipments raised off of the floor. In addition, the room should contain a fire extinguisher in case of fire. The organization should have a fire plan in case this situation arises.

In addition to keeping the servers and computers safe, physical security of confidential information is important. This include client information such as credit card numbers, checks, phone numbers, etc. it also includes any of the organization`s privet information. Locking physical and electronic copies of this data in a drawer or cabinet is one additional measure of security. Doors and windows leading into this area should also be securely locked. Only employees that need to use this information as part of their job should be given keys.

Important information can also be kept secure by keeping backups of files and updating them on a regular basis. It is best to keep these backups in separate secure location in case there is a natural disaster or breach of security at the main location.

"Failover sites" can be built in case there is a problem with the main location. This site should be just like the main location in terms of hardware, software and security features. This site can be used in case of fire or natural disaster at the original site. It is also important to test the "failover site" to ensure it will actually work if the need arises.

State of the art security systems, such as the one used at Tidepoint`s headquarters, might include access control, alarm systems, and closed-circuit television. One form of access control is face (or another feature) recognition system. This allows only authorized personnel to enter, and serves the purpose of convenience for employees who don't have to carry keys or cards. Cameras can also be placed throughout the building and at all points of entry. Alarm system also serve as an added measure of protection against theft.

Conclusion & Suggestions

E-business involves business processes spanning the entire value chain; electronic purchasing and supply chain management, processing orders electronically, handling customer service, and cooperating with business partners. Special technical standards for e-business facilitate the exchange of data between companies. E-business software solutions allow the integration of intra and inter firm business processes. E-business can be conducted using the Web, the Internet, intranets, extranets, or some combination of these.

Storing data in a secure manner is very important to all businesses, but especially to e-businesses where most of the data is stored in an electronic manner. Data that is confidential should not be stored on the e-business server, but instead moved to another physical machine to be stored. If possible this machine should not be directly connected to the internet, and should also be stored in a safe location. The information should be stored in an encrypted format.

E-businesses may use passwords for employee logons, accessing secure information, or by customers. Passwords should be made impossible to guess. They should consist of both letters and numbers and be at least seven or eight digits long. They should not contain any names, birth dates etc. Passwords should be changed frequently and should be unique each time. Only the password`s user should know the password and it should never be written down or stored anywhere. Users should also be locked out of the system after certain number of failed logon attempts to prevent guessing of password.

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Development of e-commerce and its Impact on human life

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Abstract

Today, e-commerce is being used widely in all fields. So e-commerce are related to human life in their daily activities. Today's stressful and busy lifestyle there is no option but to use e-commerce meeting daily needs to attaining social status in society. Today in all aspects of our daily lives, the internet has become an undivided part of our lives, as it has a versatile impact on our daily social activities. Every day, going to the bank and to make cash transactions or withdraw money or go to the market to buy things and essential commodities is now quite difficult since there is no time, the human being has become too busy in his work and, so, in these circumstances, online purses have become an increasingly integral part of our society. Therefore what is e-commerce, the development of e-commerce and the impact of e-commerce on human life are discussed in details here.

Keywords : *e-commerce, internet*

The concept of e-commerce:

E-commerce is the activity of buying or selling of products on online services or over the Internet. Electronic commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems.

Modern electronic commerce typically uses the World Wide Web for at least one part of the transaction's life cycle although it may also use other technologies such as e-mail. Typical e-commerce transactions include the purchase of online books and music, and to a less extent, customized online liquor store inventory services. E-commerce is supported by electronic business.

There are three areas of e-commerce:

- online retailing
- electronic markets, and
- online auctions.

According to the definition of Wikipedia is…

"A system for the buying and selling of goods, and services using the Internet as the main means of exchange".

Another words, it is a business that electronically manages both the collections and payments. E-commerce is the buying and selling of goods and services as well as the transmitting of funds or data, over an electronic network, primarily the internet.

History of e-commerce

The beginnings of e-commerce can be traced to the 1960s, when businesses started using Electronic Data Interchange (EDI) to share business documents with other companies.1971 or 1972, the ARPANET is used to arrange a cannabis sale between students at the Stanford Artificial Intelligence Laboratory and the Massachusetts Institute of Technology In 1979, the American National Standards Institute developed ASC X12 as a universal standard for businesses to share documents through electronic networks. And Michael Aldrich demonstrates the first online shopping system. After the number of individual users sharing electronic documents with each other grew in the 1980s.In 1981, Thomson Holidays UK is the first business-to-business online shopping system to be installed. Then the rise of eBay and Amazon in the 1990s revolutionized the e-commerce industry. Consumers can now purchase endless amounts of items online, from e-tailers, typical brick and mortar stores with e-commerce capabilities and one another. In **India**, the Information Technology Act 2000 governs the basic applicability of e-commerce. After that…

In 2000, The dot-com bust.

In 2001, Alibaba.com achieved profitability in December 2001.

In 2002, eBay

In 2003, Amazon.com posts first yearly profit.

In 2004, DHgate.com, China's first online b2b transaction platform, is established, forcing other b2b sites to move away from the "yellow pages" model.

In 2007, Business.com acquired by R.H. Donnelley for $345 million.

In 2014, US e-commerce and Online Retail sales projected to reach $294 billion, an increase of 12 percent over 2013 and 9% of all retail sales. Alibaba Group has the largest Initial public offering ever, worth $25 billion.

In 2015, Amazon.com accounts for more than half of all e-commerce growth, selling almost 500 Million SKU's in the US.

In 2017, Retail ecommerce sales across the world reached $2.304 trillion.

Differences between e-commerce and e-business

E-commerce is often confused with **e-business,** although they have nothing to do with one another. E-commerce only refers to the goods and services transaction between a seller and a consumer, whereas e-business refers to the complete process necessary to manage an online business, for example: Inbound marketing, Sales promotions, Stock control, SEO, Email marketing, Etc. The e-business concept is wider than the e-commerce one and e-commerce is actually a part of e-business since it is a type of business model.

Advantages of e-Commerce to Customers:

- Provide details of the virtual showcase on websites with online catalogs.
- Reduced prices due to contests (coupons and offers).

- Access and convenience 24 hours.
- The global market for the purchase or sale of the product.
- Provide secure business transactions
- It is easier to compare prices with other premium brands
- Do not stay online or be held forever
- Many options and range (options and options)
- Return products if it is of lower quality
- Time savings and reviews of easy review.

Advantages of e-Commerce to Business:

- Increase in potential market share by increasing the customer base
- Use of EDI, B2B data exchange
- Low barriers to items
- Provide safe business and instant transactions
- Participate in retail for the launch of new products and services
- 24/7, 365 days of sales (buyer and seller)
- Expanding the scope of the business
- Main warehouse administration
- Reduction of employee costs

Due to these advantages, e-commerce is very essential in human life.

Government regulations for e-commerce

In the United States, the Federal Trade Commission (FTC) and the Payment Card Industry (PCI) Security Standards Council are among the primary agencies that regulate e-commerce activities. The FTC monitors activities such as online advertising, content marketing and customer privacy, while the PCI Council develops standards and rules, including PCI Data Security Standard compliance, which outlines procedures for the proper handling and storage of consumers' financial data.

Development of e-commerce

India's e-commerce market was worth about $3.9 billion in 2009, it went up to $12.6 billion in 2013. In 2013, the e-retail segment was worth US$2.3 billion. About 79% of India's e-commerce market is travel related. According to Google India, there were 35 million online shoppers in India in 2014 Q1 and was expected to cross 100 million mark by end of year 2016. CAGR vis-à-vis a global growth rate of 8–10%. Electronics and Apparel are the biggest categories in terms of sales. According to a study conducted by the Internet and Mobile Association of India, the e-commerce sector is estimated to reach Rs. 211,005 crore by December 2016. The study also stated that online travel accounts for 61% of the e-commerce market. According to Google India Research, by 2021 India is expected to generate $100 billion online retail revenue out of which $35 billion will be through fashion e-commerce. Online apparel sales are set to grow four times in coming years. India's retail market is estimated at $470 billion in 2011 and is expected to grow to $675 billion by 2016 and $850 billion by 2020, – estimated CAGR of 10%. According to Forrester, the e-commerce market in India is set to grow the fastest within the Asia-Pacific Region at a CAGR of over 57% between 2012–16. As per "India Goes Digital", a report by Avendus Capital, the Indian e-commerce market is estimated at Rs 28,500 Crore ($6.3 billion) for the year 2011. Online travel constitutes a sizable portion (87%) of this market today. Online travel market in India had a growth rate of 22% over the next 4 years and reach Rs 54,800 crore ($12.2 billion) in size by 2015. Indian e-tailing industry is estimated at Rs 3,600 crore (US$800 million) in 2011 and estimated to grow to Rs 53,000 crore ($11.8 billion) in 2015.

Overall e-commerce market had reached Rs 1,07,800 crores (US$24 billion) by the year 2015 with both online travel and e-tailing contributing equally. Another big segment in e-commerce is mobile/DTH recharge with nearly 1 million transactions daily by operator websites. A new sector in e-commerce is online medicine, selling complementary and alternative medicine or prescription medicine online. There are no dedicated online pharmacy laws in India and it is permissible to sell prescription medicine online with a legitimate license. Online sales of luxury products like jewellery also increased over the years. Most of the retail brands have also started entering into the market and they expect at least 20% sales through online in next 2–3 years. In 2017, the largest e-commerce companies in India were Flipkart, Amazon, Myntra, Paytm, and Snapdeal.

E-commerce rapid growth in internet adoption marks the shift of retailing from traditional brick and mortar to online buying and selling. E-commerce implementation and maintenance services including Omni-channel B2B & B2C portal development and platform re-engineering. its offer comprehensive, integrated e-Commerce development services for marketing, merchandising, catalogue & content management, order management & payment processing. Leveraging our strategic partnership with Magento, most popular ecommerce platform, we deliver full range of Magento development and customization as part of our e-commerce development services to create customer experience.

Mobile Enablement

Mobile technology is revolutionizing the face of retail industry today. Its help retailers deliver a seamless mobile experience to customers from browsing to checkout with mobile e-commerce development services. With vast experience in retail industry and mobile technology.

Digital Transformation

Retail industry has experienced paradigm shift in recent years with the explosion of digital technologies. Brick & mortar and online stores are undertaking plethora of digital transformation activities to stay competitive. Our technology and domain experts leverage the power of disruptive technologies such as SMAC, to embark on the digital transformation journey.

Analytics :

Retailers generate huge volumes of data at different stages of the retail lifecycle every day. To add pressure, digital savvy shoppers seek personalization and convenience. Thus, it becomes imperative for retailers to have robust data management and analytical engine to draw near-real time actionable insights and drive informed retail decisions. Nous' Analytics services help retailers analyze customers, products and omni-channel operations data across geographical markets. Retail technology solutions span critical areas of retailing including customer segmentation, assortment optimization, location based marketing,

purchase pattern identification and more. We integrate data from various touch points such as POS, merchandising and supply chain systems to identify revenue and profit opportunities.

System Integration :

Retailing is characterized by various activities, starting from procurement to sales and post sales. These activities are powered by various IT systems which perform specific functions. Integrating such IT systems is very crucial in order to maintain smooth and hassle free retailing operations. We are specialized in providing System Integration services using Enterprise Service Bus architecture that enables heterogeneous systems including e-commerce, ERP, POS, CRM, CMS and WMS systems to communicate with each other.

E-commerce's Impact on human life

1. On customer :

E-commerce brings convenience for customers as they do not have to leave home and only need to browse website online. It could help customers buy wider range of products and save customers' time. Consumers also gain power through online shopping. They are able to research products and compare prices among retailers. Also, online shopping often provides sales promotion or discounts code, thus it is more price effective for customers. Moreover, e-commerce provides products' detailed information; even the in-store staff cannot offer such detailed explanation. Customers can also review and track the order history online. E-commerce technologies cut transaction costs by allowing both manufactures and consumers to skip through the intermediaries. However, e-commerce lacks human interaction for customers, especially who prefer face-to-face connection. Customers are also concerned with the security of online transactions and tend to remain loyal to well-known retailers. When the customer regret the purchase of a product, it involves returning goods and refunding process. This process is inconvenient as customers need to pack and post the goods. If the products are expensive, large or fragile, it refers to safety issues.

2. On employment :

E-commerce helps create new job opportunities due to information related services, software app and digital products. It also causes job losses. The areas with the greatest predicted job-loss are retail, postal, and travel agencies. The development of e-commerce will create jobs that require highly skilled workers to manage large amounts of information, customer demands, and production processes. In contrast, people with poor technical skills cannot enjoy the wages welfare. On the other hand, because e-commerce requires sufficient stocks that could be delivered to customers in time, the warehouse becomes an important element. Warehouse needs more staff to manage, supervise and organize, thus the condition of warehouse environment will be concerned by employees.

3. On supply chain management :

E-commerce has a more sophisticated level of impact on supply chains: Firstly, the performance gap will be eliminated since companies can identify gaps between different levels of supply chains by electronic means of solutions; Secondly, as a result of e-commerce emergence, new capabilities such implementing ERP systems, like SAP ERP, Xero, or Megaventory, have helped companies to manage operations with customers and suppliers. Yet these new capabilities are still not fully exploited. Thirdly, technology companies would keep investing on new e-commerce software solutions as they are expecting investment return. Fourthly, e-commerce would help to solve many aspects of issues that companies may feel difficult to cope with, such as political barriers or cross-country changes. Finally, e-commerce provides companies a more efficient and effective way to collaborate with each other within the supply chain.

(Main article: Supply chain management)

4. On markets and retailers

E-commerce markets are growing at noticeable rates. Many larger retailers are able to maintain a presence offline and online by linking physical and online offerings. E-commerce allows customers to overcome geographical barriers and allows them to purchase products anytime and from anywhere. Online retailers often hold no inventory but send customer orders directly to the manufacture. Its base prices on the speed of delivery. Many customers prefer online markets if the products can be delivered quickly at relatively low price.

The social impact of e-commerce can be measured by satisfaction and trust through the following factors:

- This segment is the leading user of advanced applications and online technologies.
- According to a survey conducted by the Internet and Mobile Association of India, the number of Internet users in the country was 190 million at the end of June 2013.
- With more and more users on the web through telephony, it was expected that the country reached 243 million in June 2014, representing a growth of 28% over the previous year.
- The growth in the number of Internet users has also led to substantial growth in other digital industries such as e-commerce, mobile commerce, and digital advertising.
- The government of India has made efforts in the education system through the implementation of computer tools and techniques, essential for all educational levels, from primary education to the end of studies.
- Students from urban and rural areas were sensitized by supplying the personal computer, Laptops, tablets or laptops with the use of the Internet and its advantages to improve lifestyle and provide electronic books and e-books.
- Entrepreneurs are also attracted to advanced computer technologies and their usefulness for electronic commerce.
- The development of educational standards at all levels has allowed a great demand for electronic commerce and m-commerce in the market.
- Changes in online shopping habits The online shopping process is constantly being worked on to make it easier, more understandable and easier to use.
- As online offers give some discounts and attractive prices.

Also Read: WooCommerce SEO Tips

Conclusion:

E-commerce is functionally in our daily private and also international business lives. E-commerce in personal use is not much complicated and has straight borders around, but in professional

business field, it has relied on serious laws & regulations (most of the time these differs by countries and/or regions). World is smaller and more accessible with e-commerce; offers reach variety of shopping & trading opportunities and will spread wider into our lives day by day. E-commerce has a wide scope, it deals with not only the activities which are related to transfer of goods & services but also with the enhancement and marketing of trade business. India is not only ready for e-commerce; e-commerce has already become essential for human life. There are many reasons which make India a suitable market for e-commerce. In the study of e-commerce it was observed that the advantages of e-commerce are more than its disadvantages therefore in today's stressful and busy lifestyle there is no option but to use e-commerce meeting daily needs to attaining social status in society.

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Impact of E-commerce on Consumer buying Behaviour in India

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Abstract

The main objectives of the paper is to accomplish measurable describing the actuality of internet shopping in the case of the India in order to explain the progress of internet shopping and its impact on consumer behaviour. The paper construct on the related literature. Furthermore, the future progress of internet shopping will be measured and deep evaluation of consumer behaviour connecting different countries. This paper support the research questions that with current trends and various problems in internet shopping, and principle elements for consumer behaviour. As well, the outcome of the study shows that internet consumer faith and visible risk have strong impacts on their buying decisions. Privacy concerns, security concerns, consumer`s trust are the main factors for using internet for shopping, the conviction on websites impact to the buying decision of any consumer. Further, the experiential result notified how the E-commerce companies to create marketing strategies though the research data and analyzing result.

Keywords : *E-commerce, Impact, Consumer Behaviour*

Introduction

The internet is being developed speedily since previous two decades, and with related digital economy that is driven by information technology also being developed global. Behind a long time development of internet, which speedily increased web users and highly speed internet connection, and some updated technology also have been developed and used for web developing, those guide to firms can promote and enhance images of product and services through web site. Thus, according to Arjun Mittal, details of

132 product information and better service attracts more and more people changed their consumer behaviour from the traditional method to more rely on the internet shopping. Say to other word, more companies have realized that the consumer behaviour transformation is required trend, and thus change their marketing strategy. As the current researches have indicated that, the internet shopping particularly in business to consumer has grow and online shopping become more popular too many people. Main reasons of rapid growth of internet shopping are which mainly due to the benefits that internet provides. Firstly, the internet offers different types of convenience to consumers. Noticeably, consumers do not require go out looking for product details as the internet can assist them to search from online sites, and it also helps evaluate connecting each sites to get the lowest price for purchase. Furthermore, the internet can increase consumer use product more efficiently and effectively than other channels to satisfy their requirements. Within the various search engines, consumers save time to access to the consumption related information, and which information with combination of descriptions, sound, and very deeply manuscript description to assist consumer learning and selecting the most suitable product (Moon, 2004). Though, internet shopping has prospective risks for the customers, such as payment safety, and after service. Due to the internet technology progress, internet payment newly becomes prevalent way for purchasing goods from the internet. Online payment raise consumptive effectiveness, at the equal time, as its virtual assets reduced online security.

Objective of Study: The study has following objectives

- To understand the concept of Electronic Commerce
- To study the Impact of E-commerce on Consumer Behaviour in India

Difference between online/offline Stores

The online shopping has been quickly developed, especially in consumer products industry, there still have a large difference among traditional and online consumer shopping. Referred to sales in the Indian consumer product industry, the online sales engaged at a very low down percentage rate. So as to could be caused by a lot of reasons, however the most importance is the benefits are present in both traditional shops and online market; together of them have definite characteristics. For instance, the traditional seller can supply convenience in parking and shopping, it allows customers come to examine and check

the quality of goods before they buy, and the after service is more directly to customers. Though, the traditional store has restricted number of goods, and the selling price is higher than online store. with assessment, we can find out the disadvantage of traditional store are more likely as the benefits of online store, in compare, the limitation of online store is also seems as the benefits of traditional store. It is clear from the summary of internet and online shopping expansion that e-commerce is being used in many corporations due to the dramatic progress of technology and competitive benefits of online selling. Furthermore, the progress of the usage by individuals also becomes main contributors to the development of online shopping. Comparatively only some studies have investigated in the online shopping and impact on consumer behaviour. The before studies are more focus on the marker's point of view, such as how to set up a more efficient marketing channel online rather than the E-commerce: It's Impact on consumer Behaviour one hundred and thirty three traditional offline channel. so, this research will combines with prior studies from literature reviews, and focus on the impact of the online shopping on consumer behaviours to find out a complete analytical development which show the compulsory part of business and marketing to filling the consumer's requirements, and a deeply understanding of online consumer behaviour as a reference for any e-commerce company to build marketing strategies.

Impact of Internet on Consumer Behaviour

The impacts on consumer behaviour are regularly made among internal and external factors. Internal factors are generally from the consumer's mind, and external factors are come from the environmental circumstances. There are many factors could impact on consumer's behaviours. According to Sheth (1983), the internal influences are diversity of mental processes, which makes attitudes, perception, motivation, learning, self image, and semiotics (Malcolm). The external influences could divide as: Demographics, technology, socio-economics, and public policy; culture; sub-culture; reference groups; and marketing. Warner also suggested that the consumers have two types of motives though shopping, which are first is functional and second is non-functional. Firstly deliberated functional motives are mostly about the time, shopping place and consumer's requirements, which could be like one-stop shopping to save time, the ecological of shopping place such as free parking place, lesser price of products and available to select from usually range of products. Secondly non-functional motives are

more related among culture or social values, such as the brand name of the store. The traditional shopping is purely concerning the customer to purchase their requirements. This behaviour will be influenced by the seller's publicity and promotion which attracts customers goes there and buying products, then a part of new products will be taken home and be used.

Internet Shopping

According to Jarvanpaa and Todd, 1997, internet shopping and traditional shopping are partaking a lot of similarities, at the same time, it still exists some differences among them, such as the Internet shopping could supply convenience and interactive services, and the traditional shopping could gives customers more comfy shopping environment and good quality of products by Lee and Chung, 2000. Equally aspect of shopping malls are demanding to getting better their services by learn commutatively from each other, such as traditional shopping malls supply more parking spaces, further counters, and closer to residential area in order to improve services in convenience; Online shopping malls accept virtual truth by Lee 2001. In the subsequent sections, the study would provide the nature of online shopping at first, then the E-commerce web site will be indicated to understand the fundamental nature of internet shopping, later than, online safety, privacy and reliance will be discussed.

Facilities

According to Wolhander, 1999; Internet provides a large convenience for buyer as the main cause for the shopping online has been agreed by most of researcher and customers. Due to the feature of Internet, it allows customer to shopping online anytime and anywhere, which means customer can browse and shopping online twenty four hours in a days from home or office, which attracts some time-starved shoppers come to Internet for save time to searching products in physical store. Moreover, online offers some product ways to save money and time. For instance, buyers do not require go out to the physical store and therefore there is no transportation price. Compare among the traditional shopping, there is no waiting queue for buyers on the Internet, and some buyers reported that they undergo pressure from the sales people sometimes, however Internet offers them further pleasant while shopping online (Wolhandler, 1999; GVU's WWW 9th User Surveys, 1998).

Technology

The convenience based on Internet is mostly according to the technology advancement, and which plays a key role through the expansion of Internet shopping. According to Clark,1989; In the last decade, organizations have realized that the new technology could impact on Internet shopping deeply, and thus there are many important technologies like virtual reality and three D techniques have adopted to increase large competitive advantages. According to White, 1997; Information technology has used in the form of the Internet improved better feature of product information, which help buyers decision making. Through the large range of surveys about the Internet use, the progress of Internet and the rate of increase of Internet usage have been speedy increased in the last decade.

Consumer Trust in Internet Shopping

A lot of customers are unconvinced or doubtful regarding the functional mechanisms of e-

Conclusion & recommendation

This study is mainly focus on the factors from the Internet and examines those factors that affect the consumer's online shopping behaviours. It starts with the current status of the Internet progress, and mentioned the background of marketing as 136 Arjun Mittal representations and its difference with physical stores which in order to show the embryonic history of online shopping since the E-commerce become popular. This research study focus on the Internet shopping (consist of the nature of Internet shopping, E-commerce website, and trust and reliability, online security, online privacy,) and online consumer behaviours (consist of motivation, environment, shopping and decision making procedure). Those factors were looked at, and examined to disclose the impact at online consumer behaviours. The earlier researches were used to assist researchers perceptive more exhaustively. Furthermore, the customer's purchase decision making process was also examined to recognize the prospective factors. The details find out is the mainly significant factor that assist the customers search the proper products or services for their requirements.

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Merits and Demerits of E-commerce

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Abstract

E - Commerce allows consumers to electronically exchange goods and services with no barriers of time or distance. Electronic commerce has expanded rapidly over the past five years and is predicted to continue at this rate, or even accelerate. In the near future the boundaries between "conventional" and "electronic" commerce will become increasingly blurred as more and more businesses move sections of their operations onto the Internet. The e-commerce industry in India is growing at a remarkable pace due to high penetration of internet and sophisticated electronic devices. However, the recent growth rate of e-commerce in India is far lagging behind than other developed countries. The advantages of e-commerce are convenience, Time saving, Options, Easy to compare, Easy to find reviews, Coupons and deals, Increasing customer base, Rise in sales, 24/7, 365 days, Expand business reach, Recurring payments made easy, Instant transactions.

Keywords : *E – Commerce, merits and demerits*

Introduction

E-Commerce stands for electronic commerce and caters to exchange of products, services and information via internet. Electronic commerce is more than just buying and selling products online. It includes the entire online process of developing, marketing, selling, delivering, serving and paying for products and services. It is doing business online. It includes any commercial activity that takes place directly between a business, its partners, or its customers through electronic communication and digital information processing technology. E-Commerce is a modern business methodology that addresses the needs of the organisations, merchants and consumers to cut costs while improving the quality of goods

and services and increasing the speed of service delivery. India has shown tremendous growth in the E-Commerce segment.

Objectives

- To study the present status of E-Commerce
- To study the merits and demerits of E-Commerce

Merits of E-commerce

Increasing customer base: The customer base is every business's main concern, online or off. When online, a business doesn't have to worry about getting the best property in town, people from around the world have access to their products and can come back at any time.

Rise in sales: By not managing a storefront, any business will have more sales online with a higher profit margin. They can redistribute money to make the consumer shopping experience faster and more efficient. While being available to international markets, more products will sell.

24/7, 365 days: If it's snowing and the roads are closed, or it's too hot and humid to even step outside in the summer, or a holiday that every store in town closes, your online business is open for consumers 24/7 every day of the year. The doors never close and profits will keep rising.

Expand business reach: A great tool on the internet is…translation! A business online does not have to make a site for every language. With the right marketing, every consumer around the globe can find the business site, products and information without leaving home.

Recurring payments made easy: With a little research, every business can set up recurring payments. Find the provider that best suits your needs and billing will be done in a consistent manner; payments will be received in the same way.

Instant transactions: With e-commerce there is no more waiting for the check to clear or a 30-day wait for certain other types of payment. Transactions are cleared immediately or at most two to three days for the money to clear through the banking system.

Demerits of E-commerce

Privacy and security: Before making instant transactions online, be sure to check the sites certificates of security. While it may be easy and convenient to shop, no one wants their personal information to be stolen. While many sites are reputable, always do your research for those with less than sufficient security.

Quality: While e-commerce makes everything easily accessible, a consumer cannot actually touch products until they are delivered to the door. It is important to view the return policy before buying. Always make sure returning goods is an option.

Hidden costs: When making purchases, the consumer is aware of the product cost, shipping, handling and possible taxes. Be advised: there may be hidden fees that won't show up on your purchasing bill but will show up on your form of payment. Extra handling fees may occur, especially with international purchases.

Delay in receiving goods: Although delivery of products is often quicker than expected, be prepared for delays. A snow storm in one place may throw off the shipping system across the board. There is also a chance that your product may be lost or delivered to the wrong address.

Need access to internet: Internet access is not free, and if you are using free wifi, there is the chance of information theft over an unsecure site. If you are wearing of your public library, or cannot afford the internet or computer at home, it may be best to shop locally.

Lack of personal interaction: While the rules and regulations of each e-commerce business is laid out for you to read, there is a lot to read and it may be confusing when it comes to the legalities. With large or important orders, there is no one you can talk to face to face when you have questions and concerns.

Security issues: While businesses make great efforts to keep themselves and the consumer safe, there are people out there that will break every firewall possible to get the information they want. We have all seen recently how the biggest and most renowned business can be hacked online.

Credit card issues: Many credit card businesses will take the side of the consumer when there is dispute about billing—they want to keep their clients, too. This can lead to a loss for e-commerce business when goods have already been delivered and the payment is refunded back to the consumer.

Extra expense and expertise for e-commerce infrastructure: To be sure an online business is running correctly, money will have to be invested. As an owner, you need to know transactions are being handled properly and products are represented in the most truthful way. To make sure you get what you need, you will have to hire a professional to tie up any loose ends.

Needs for expanded reverse logistics: The infrastructure of an online business must be on point. This will be another cost to the business because money will need to be invested to ensure proper handling of all aspects of buying and selling, especially with disgruntled consumers that want more than a refund.

Sufficient internet service: Although it seems that everyone is now on the internet all the time, there are still areas in which network bandwidth can cause issues. Before setting up an e-commerce business, be sure your area can handle the telecommunication bandwidth you will need to run effectively.

Constant upkeep: When a business has started as e-commerce, they must be ready to make changes to stay compatible. While technology grows, the systems that support your business must be kept up to date or replaced if needed. There may be additional overhead in order to keep data bases and applications running.

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Impact of Electronic Commerce on Small Businesses

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Abstract

Electronic commerce refers to a set of powerful tools and methodologies used for promoting products and services through the Internet. Electronic commerce is the integration of communication technologies based applications that accentuate buying and selling of goods and services between customers, regardless of the platform or operating system being used on respective networks. E-commerce includes a wider range of marketing elements than traditional business marketing due to the extra channels and marketing mechanism available on the internet. E-commerce connects organisations with customers and takes business development to a much higher level than traditional business.

The integration of Internet technology and core competencies of a business is the essence of electronic commerce. It's an innovative strategy of driving traffic into the store and yet also bringing the merchandise most popular with Web for availability 24 hours a day, 7 days a week. The organization of the online store is also consistent with the needs of the international visitors that the actual store itself attracts. This paper throws some light on the Impact of e-commerce on small businesses in Bhandara region.

Keywords : *B2B, Datasheets, Gateway, URL.*

Introduction

Electronic commerce is its ability to reach a global market, without necessarily implying a large financial investment. By allowing direct interaction with the final consumer, e-commerce shortens the product distribution chain, sometimes even eliminating it completely. Electronic commerce allows

marketers to make transactions without any need on stores, infrastructure and other common things. Marketers only built websites and customer service. Customer compare offers from all potential suppliers, regardless of their locations.

This way, a direct channel between the producer or service provider and the final user is created, enabling them to offer products and services that suit the individual preferences of the target market.

E-commerce allows suppliers to be closer to their customers, resulting in increased productivity and competitiveness for companies; as a result, the consumer is benefited with an improvement in quality service. Marketers can decrease the cost of managing their inventory of goods using web based management system.

Advantages of Electronic commerce:

I. Advantages for customers:

- Convenience and Easiness
- Offer Product Datasheets
- More Options
- Offer Huge information
- Easy to find Reviews

II. Advantages for Marketers:

- Selling products across the world
- Decreasing cost of Inventory Management
- Competence
- Economy Benefits
- Scalability

Electronic Commerce Based on products sold:

1. Digital goods like e-books, software, movies, music, and text, videos, images etc
2. Physical goods cloth, furniture, ex. Flipkart, Amazon
3. Services: travel tickets, movie tickets, insurance ex. : Bookmy show, Irctc etc.

Types of Electronic Commerce:

1. Business-to-Business (B2B)
2. Business-to-Consumer (B2C)
3. Consumer-to-Consumer (C2C)
4. Consumer-to-Business (C2B).
5. Business-to-Administration (B2A)
6. Consumer-to-Administration (C2A)

- **Business-to-Business (B2B):** Business-to-Business (B2B) e-commerce encompasses all electronic transactions of goods or services conducted between companies. Producers and traditional commerce wholesalers typically operate with this type of electronic commerce.
- **Business-to-Consumer (B2C):** The Business-to-Consumer type of e-commerce is distinguished by the establishment of electronic business relationships between businesses and final consumers. It corresponds to the retail section of e-commerce, where traditional retail trade normally operates.
- **Consumer-to-Consumer (C2C):** Consumer-to-Consumer (C2C) type e-commerce encompasses all electronic transactions of goods or services conducted between consumers. Generally, these transactions are conducted through a third party, which provides the online platform where the transactions are actually carried out.
- **Consumer-to-Business (C2B):** In C2B there is a complete reversal of the traditional sense of exchanging goods. This type of e-commerce is very common in crowdsourcing based projects. A

large number of individuals make their services or products available for purchase for companies seeking precisely these types of services or products.

- **Business-to-Administration (B2A):** This part of e-commerce encompasses all transactions conducted online between companies and public administration. This is an area that involves a large amount and a variety of services, particularly in areas such as fiscal, social security, employment, legal documents and registers, etc. These types of services have increased considerably in recent years with investments made in e-government.
- **Consumer-to-Administration (C2A):** The Consumer-to-Administration model encompasses all electronic transactions conducted between individuals and public administration.

Statement of the Problem

Impact of electronic commerce on small businesses have been widely attracted significant from various groups including academic, business and the public. Therefore it is the need of time to have the study on the public awareness, knowledge and understanding of Impact of electronic commerce on small businesses in Bhandara region.

Objectives of the Study:

- To have a study on the Businessman's level of expectations from the implementation of electronic commerce.
- To study about the impact of electronic commerce on small businesses.
- To analyses opinion regarding impact of electronic commerce on small businesses.
- To offer suggestions on the relevant subject.

Need for the Study

There are many research projects regarding the electronic commerce and so on. A Study on impact of electronic commerce on small businesses in Bhandara Region is an untouched topic, hence the present study has been undertaken to fill up that gap.

Research Methodology:

- Primary data: A structured questionnaire is used to collect the primary data.
- Secondary data: Secondary data is collected by referring related books, journals and web sites.

SAMPLE: The sample size of the study is 300.

Tools and Techniques

Simple percentage

Limitations

- The survey was restricted to Bhandara region.
- The number of respondents was limited to 300 only.

Respondents' data

Question no.1

Gender of the respondents

Gender	No. of Respondent	Percentage
Male	289	96.33
Female	011	03.67
Total	300	100.00

(SOURCE: PRIMARY DATA)

The above table shows the gender of the respondents. Out of the total respondents taken for the study, 96.33 % are male and the remaining

03.67 % are female.

Question on. 2

Impact of e-commerce on small businesses

Opinion	No. of Respondent	Percentage
Yes	237	079
No	063	021
Total	300	100

(SOURCE: PRIMARY DATA)

The above table shows the Impact of e-commerce on small businesses in Bhandara Region.

Out of the total respondents taken for the study, 79 % of the public opinion that Impact of e-commerce on small businesses in Bhandara Region while 21 % of the public opinion that no Impact of e-commerce on small businesses in Bhandara Region

Majority of the public opinion that there is Impact of e-commerce on small businesses in Bhandara Region.

Question no. 3

Whether customers aware about e- commerce

Aware e- commerce	No. of Respondent	Percentage
Yes	192	064
No	108	036
Total	300	100

(SOURCE: PRIMARY DATA)

The above table shows whether customers aware about e- commerce.

Out of the total respondents taken for the study, 64% customers aware about e- commerce while 36% customers are not aware about e- commerce. Majority of the businessman opinion that customers are aware about e-commerce in Bhandara Region.

Question no.4

Customers buy goods online

Buy goods online	No. of respondents	Percentage
Yes	096	032
No	204	068
Total	300	100

(SOURCE: PRIMARY DATA)

The above table shows whether customers buy goods online.

Out of the total respondents taken for the study, 32% customers buy goods online while 68% customers not buy goods online. Majority of the customers not buy goods online in Bhandara Region.

Question no. 5

Customers buy daily needs goods via online

Buy daily needs goods	No. of respondents	Percentage
Yes	04	01.33

No	296	98.67.
Total	300	100

(SOURCE: PRIMARY DATA)

The above table shows Whether customers buy daily needs goods online.

Out of the total respondents taken for the study, 1.33% customers buy daily needs online while 98.67% customers not buy daily needs goods online. Majority of the customers not buy daily needs goods online in Bhandara Region.

Question no. 6

Impact of e-commerce decrease the business of small businessman

Decrease the business	No. of respondents	Percentage
Yes	184	61.33
No	116	36.67
Total	300	100

(SOURCE: PRIMARY DATA)

The above table shows the opinion about whether Impact of e-commerce decrease the business of small businessman

Out of the total respondents taken for the study, 61.33% of the public opinion that Impact of e-commerce decrease the business of small businessman and the remaining 36.367% of the public opinion that Impact of e-commerce decrease the business of small businessman. Majority of the public is of the opinion that the Impact of e-commerce decrease the business of small businessman.

Question no. 7

e-commerce increase the Tax revenue of Government

Increases tax revenue	No. of respondents	Percentage
Yes	192	64
No	108	36
Total	300	100

(SOURCE: PRIMARY DATA)

The above table shows the opinion about whether e-commerce will increase the tax revenue of the government

Out of the total respondents taken for the study, 64% of the public opinion that e-commerce will increase the tax revenue of the government and the remaining 36% of the public opinion that e-commerce will not increase the tax revenue. Majority of the public is of the opinion that the e-commerce will increase the tax revenue of government.

Question no. 8

e-commerce affect the small business

Affects small business	No. of respondents	Percentage
Yes	182	60.67
No	118	39.33
Total	300	100

(SOURCE: PRIMARY DATA)

The above table shows the e-commerce affect the small business.

Out of the total respondents taken for the study, 60.67 % of the businessman opinion that e-commerce affect the small business.

While 39.33 % of the businessman opinion that e-commerce not affect the small business.

Majority of the businessman opinion that e-commerce affect the small business.

Question no. 9

e-commerce reduced the purchasing power of consumers

Reduced purchasing power	No. of respondents	Percentage
Yes	072	024
No	228	076
Total	300	100

(SOURCE: PRIMARY DATA

The above table shows the opinion about e-commerce reduced the purchasing power of consumers.

Out of the total respondents taken for the study, 24% of the public opinion that e-commerce will reduced the purchasing power of consumers, while 76% of the respondent opinion that the e-commerce will not be reduced the purchasing power of consumers. Majority of the public is of the opinion that e-commerce not reduced the purchasing power of consumers.

Question no. 10

e-commerce decreases employment

Decreases employment	No. of respondents	Percentage
Yes	168	056
No	132	044
Total	300	100

(SOURCE: PRIMARY DATA

The above table shows that whether e-commerce decreases employment.

Out of the total respondents taken for the study, 56% of businessman opinion that e-commerce decreases employment while 44% of businessman opinion that e-commerce decreases employment. Majority of the businessman opinion that e-commerce decreases employment.

Findings:

- Most of the public respondents are male.
- Majority of the public opinion that there is Impact of e-commerce on small businesses in Bhandara Region.
- Majority of the businessman opinion that customers are aware about e-commerce in Bhandara Region.
- Majority of the customers not buy goods online in Bhandara Region.
- Majority of the customers not buy daily needs goods online in Bhandara Region.

- Majority of the public is of the opinion that the Impact of e-commerce decrease the business of small businessman.
- Majority of the public is of the opinion that the e-commerce will increase the tax revenue of government.
- Majority of the businessman opinion that e-commerce affect the small business.

- Majority of the public is of the opinion that e-commerce not reduced the purchasing power of consumers.
- Majority of the businessman opinion that e-commerce decreases employment.

Conclusion:

A Study on Awareness towards GST in Bhandara Region prove that people are aware about GST, but government should organise seminars, or organise campaigns in Bhandara region.

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Electronic Commerce Issues and Challenges

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Abstract

Electronic commerce is fundamentally World Wide Web-based buying and selling of goods and services. Most people see it as the ultimate form of removing the intermediary or go-between (also known as disintermediation). The basics of e-commerce can already be found in Electronic Data Interchange (EDI) that many corporations already use in conducting transactions between many of their suppliers. Nevertheless, there are many fundamental differences between EDI and e-commerce. Traditional EDI networks, known as value-added networks (VANs), are virtual private networks (VPNs) run by major well-established corporations. The biggest providers, such as AT & T, GE Inforamation Service, and IBM Global Services, extremely careful about protecting information that flows across these networks. As these major providers and others offer more Internet-based services, the ability to protect this information may become more difficult. As businesses increasingly choose to conduct EDI transactions over the Internet and develop e-commerce as well, the very nature of the Internet makes security and reliability real issues. With the use of substantially less secure transmission media, there will be many technical issues associated with security and reliability that will need resolution. "This is very exciting stuff, and the greatest changes and challenges aren't in the technology. In fact, connecting to the Net is relatively easy.

Introduction

E-commerce is anything that involves an online transaction. This can range from ordering online, through online delivery of paid content, to financial transactions such as movement of money between bank accounts. Electronic Business is more than just buying and selling products online. It also includes the entire online process of developing, marketing, selling, delivering, servicing and paying for products and services. . India is showing tremendous growth in the E-business. India has an internet user base of over 100 million users. The penetration of e-business is low compared to markets like the US and the UK but is growing at a much faster rate with a large number of new entrants. India is yet to witness a breakthrough E-commerce success story particularly in online retail. E-commerce creates new opportunities for business; it also creates new opportunities for education and academics line. It raises key challenges that are being faced by consumers relating to e-commerce viz., Ethical issues, Perceptions of risk in e-service encounters, challenges for e-business education and legal system.

We live in a world increasingly propelled by technological change. The next big thrust in a quest to make our lives better, simpler and more productive is electronic commerce (or E-commerce). What is E-commerce? Who will use it? What are the barriers to its successful implementation? How will a viable consumer model be constructed?

While I will examine the technology that makes this e-commerce possible, I will also examine the issues of trust and image in e-commerce. It is not possible to separate the issues of technology, security, and trust. The whole image that secure, Web-based commerce needs polishing if it will ever meet expectations. One prediction claims that e-commerce will achieve revenues of $200 billion globally by the end of the year 2000. Considering that in 1995 approximately $131 million of goods were purchased online, the jump to $200 billion is staggering.

E-Commerce and Banking

As per the Reserve Bank of India (RBI), India's banking sector is sufficiently capitalised and well-regulated. The financial and economic conditions in the country are far superior to any other country in

the world. Credit, market and liquidity risk studies suggest that Indian banks are generally resilient and have withstood the global downturn well.

Indian banking industry has recently witnessed the roll out of innovative banking models like payments and small finance banks. RBI's new measures may go a long way in helping the restructuring of the domestic banking industry.

The digital payments system in India has evolved the most among 25 countries with India's Immediate Payment Service (IMPS) being the only system at level 5 in the Faster Payments Innovation Index (FPII).

E-Commerce and Consumer

Indian consumer durables market is broadly segregated into urban and rural markets, and is attracting marketers from across the world. The sector comprises of a huge middle class, relatively large affluent class and a small economically disadvantaged class. Global corporations view India as one of the key markets from where future growth is likely to emerge. The growth in India's consumer market would be primarily driven by a favorable population composition and increasing disposable incomes.

Per capita GDP of India is expected to reach US$ 3,273.85 in 2023 from US$ 1,983 in 2012. The maximum consumer spending is likely to occur in food, housing, consumer durables, and transport and communication sectors.

The e-commerce has transformed the way business is done in India. The Indian e-commerce market is expected to grow to US$ 200 billion by 2026 from US$ 38.5 billion as of 2017. Much growth of the industry has been triggered by increasing internet and smartphone penetration. The ongoing digital transformation in the country is expected to increase India's total internet user base to 829 million by 2021 from 604.21 million as of December 2018. India's internet economy is expected to double from US$125 billion

as of April 2017 to US$ 250 billion by 2020, majorly backed by ecommerce. India's E-commerce revenue is expected to jump from US$ 39 billion in 2017 to US$ 120 billion in 2020, growing at an annual rate of 51 per cent, the highest in the world.

Market Size

Propelled by rising Smartphone penetration, the launch of 4G networks and increasing consumer wealth, the Indian e-commerce market is expected to grow to US$ 200 billion by 2026 from US$ 38.5 billion in 2017 Online retail sales in India are expected to grow by 31 per cent to touch US$ 32.70 billion in 2018, led by Flip kart, Amazon India and Paytm Mall.

During 2018, electronics is currently the biggest contributor to online retail sales in India with a share of 48 per cent, followed closely by apparel at 29 per cent.

Investments/ Developments

Some of the major developments in the Indian e-commerce sector are as follows:

- Flipkart, after getting acquired by Walmart for US$ 16 billion, is expected to launch more offline retail stores in India to promote private labels in segments such as fashion and electronics. In September 2018, Flipkart acquired Israel based analytics start-up Upstream Commerce that will help the firm to price and position its products in an efficient way.
- Paytm has launched its bank - Paytm Payment Bank. Paytm bank is India's first bank with zero charges on online transactions, no minimum balance requirement and free virtual debit card
- As of June 2018, Google is also planning to enter into the E-commerce space by November 2018. India is expected to be its first market.
- Reliance retail is going to launch online retail this year. It has already launched its food and grocery app for beta testing among its employees.

- E-commerce industry in India witnessed 21 private equity and venture capital deals worth US$ 2.1 billion in 2017 and 40 deals worth US$ 1,129 million in the first half of 2018.
- Google and Tata Trust have collaborated for the project 'Internet Saathi' to improve internet penetration among rural women in India.

Achievements

Following are the achievements of the government in the past four years:

- Under the Digital India movement, government launched various initiatives like Udaan, Umang, Start-up India Portal etc.
- Under the project 'Internet Saathi', the government has influenced over 16 million women in India and reached 166,000 villages
- Udaan, a B2B online trade platform that connect small and medium size manufacturers and wholesalers with online retailers and also provide them logistics, payments and technology support, has sellers in over 80 cities of India and delivers to over 500 cities.
- According to the UN's eGovernance index, India has jumped 11 positions to 107 in 2016 from 2018 in 2014.
- The government introduced Bharat Interface for Money (BHIM), a simple mobile based platform for digital payments.

Road Ahead

The e-commerce industry been directly impacting the micro, small & medium enterprises (MSME) in India by providing means of financing, technology and training and has a favourable cascading effect on other industries as well. The Indian e-commerce industry has been on an upward growth trajectory and is expected to surpass the US to become the second largest e-commerce market in the world by 2034. Technology enabled innovations like digital payments, hyper-local logistics, analytics driven customer engagement and digital advertisements will likely support the growth in the sector. The growth

in e-commerce sector will also boost employment, increase revenues from export, increase tax collection by ex-chequers, and provide better products and services to customers in the long-term.

The same thing is happening with computing devices. Chips are getting so small and inexpensive, they're being embedded in everything: cars, appliances, tools, doorknobs, clothes. Most significantly, all these tiny intelligent devices will be interwoven in the global fabric of computing and communication.

And soon we'll see this hyper-extended networked world - made up of a trillion interconnected intelligent devices - intersecting with the data mining capability I spoke of earlier. "Pervasive computing" meets "Deep Computing." Companies and institutions will amass more data, more information than ever in history - and for the first time be able to do something productive with it - turn raw data into knowledge and move that knowledge to the right people instantaneously. Personally, I believe that future leadership institutions of all kinds will be those that know how to compete and win on the basis of knowledge - learning, adapting and improving using this vital asset we know as information.

"Pervasive computing" meets "Deep Computing" - trillions of interconnected intelligent devices - sounds frightening. The ability to track peoples movements, their likes and dislikes, all while being able to store and manipulate the data is comparable to being filmed and recorded 24 hours a day. While the benefits to be gained are immense, the potential pitfalls are just as large. The security of e-commerce decreases as its functionality requires the use of distributed applications that execute many transactions against multiple databases. Not to sound Orwellian, but the possibilities for abuse are enormous.

Given the potential for abuse, it is only a matter of time before legislation will mandate privacy and security mechanisms. There is some evidence to indicate Internet community will welcome government intervention on this matter. In a recent Business Week /Harris poll , the majority cited privacy concerns as the number one reason they are not using the Internet. In the same poll, 74% of extremely active Internet users said they would use the World Wide Web more if there was a guarantee of their privacy. Another 60% of those polled were of the opinion that the U.S. government should pass laws immediately addressing the issues of digital collection of personal data .To understand the importance of these security concerns, understand that 68% of those surveyed by *Business Week* and Harris who use

the Internet said that their decision to buy online is clearly influenced by those Web sites that have policies that guarantee security. According to Alan F. Westin of Columbia University who helped conduct the Business Week poll: "It's clearly a signal to business that they have to be more aggressive in forming privacy controls." To understand the shift that is taking place, many early backers of self-regulation are having doubts and starting to press for government intervention. Christine A. Varney, a former Federal Trade Commission (FTC) member, herself an early supporter of self-regulation remarked that "for self-regulation to make it, it has to exist - I don't think we're seeing it."

Many Web sites do not post their policies governing privacy and the use of garnered information. *Business Week* examined the 100 top Web sites and discovered that only 43% posted privacy policies. Some of these policies were not only difficult to find but inconsistent in their explanations of how information is tracked and utilized. Also troubling, is the fact that truste, the non-profit organization providing a means to verify that sites are meeting certain standards for disclosure of privacy policies and independent outside auditing practices, has not met its goals. As of March 1998, they have only signed 75 sites that can display their "Trustmark", well below their goal announced in June 1997, to have 750 Web sites signed on. We do digital abuses manifest themselves? Let's first look at how Web sites can collect and use data. This information is gathered by Web sites with and without the consumer's knowledge. The commonest method is by using click stream data. This method tracks where individuals travel in a site and which advertisements and content they examine and use. Cookies are one common tool; these are small files that are transferred to your computer by some Web sites when you first log on. This file allows the Web server to track preferences and usage of information; it then can be employed to target advertisements or specific content. Though cookies will allow a site to brand users, they do not disclose real names and addresses unless this information has previously been secured by other means. Some browsers allow you to determine if you want cookie files located on your computer

The future road ahead of e commerce

The future of e-commerce will see a drastic change in every aspect. Customers, and the whole industry itself, are evolving. However, this might send tidings of catastrophe for every e-commerce merchant, because it could interrupt their initial deployment and growth plans.

With that said, e-commerce outfits can make the cut as long as one swiftly catches up with the latest trends and become agile. Here are some thoughts.

Advantages of E-Commerce to Businesses in India:

There is a rising awareness among the businesses in India about the opportunities offered by e-commerce. Ease of Internet access is the critical factor that will result in rapid adoption of Net commerce. Safe and secure payment modes are fundamental along with the need to invent and popularize innovations such as Mobile Commerce. E-commerce provides a new place for connecting with consumers and conducting transactions. Virtual stores operate 24 hours a day, 7 days a week. Many virtual retailers represent a single company while others, such as Top Online Shopping (toponlineshopping.com), represent a association of companies. Global Trade : E-business is one of the major factors in the globalization of business. Other factors include decreases in trade barriers, globalization of capital markets. Indian e-business has grown at a compounded annual growth rate of 30% since FY09, and is expected to be $18 billion (around Rs 1,116,00 crore) opportunity by FY15.

Conclusion

The issue of trust in e-commerce is fundamental to its eventual success. If consumers cannot trust that personal information is safe and secure, the Internet will never reach its economic potential. Guidelines like those outlined by TRUSTe, in conjunction with independent auditing, are a start. Government agencies, in conjunction with the industry, should consider establishing an 'Internet' consumer's bill of rights. This bill would categorically outline the legal policies that Web sites must follow and the remedies for redress available to consumers or visitors to the sites who have suffered harm. There

should be substantial penalties for those sites and their owners who fail to address the fundamental issues described in this bill.

Computer-based crimes are on the increase; in the past two years the Federal ureau of Investigation has recorded an increase over 250% in computer crimes. In one case, an intruder was able to break into an Internet Service Provider's network, connect a sniffer and collect numerous IDs and passwords. When this intruder was finally apprehended, the FBI retrieved 86,270 credit card numbers from 1,217 financial institutions [7]. Another study published in April 1998, noted that a majority of Fortune 1000 firms have had their systems successfully accessed by hackers in the last year. Almost 60% of the firms admitted to losing $200,000 or more because of each computer

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A Critical Evaluation of Electronic Commerce from Business Point of View

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Abstract

The research study has highlighted the Management Information Systems, Finance and Accounting, Marketing and Computer Sciences of E-Commerce on Business. E-commerce is a way of conducting business over the Internet. Though it is a relatively new concept, it has the potential to alter the traditional form of economic activities. Already it affects such large sectors as communications, finance and retail trade and holds promises in areas such as education, health and government. The largest effects may be associated not with many of the impacts that command the most attention but with less visible, but potentially more pervasive, effects on routine business activities. The integration of Electronic Commerce and Business will bring a renaissance in marketing function

Keywords : *E-commerce , business*

Introduction

Today e-commerce has become an important part of daily life. Accessibility to e-commerce platforms is not a privilege but rather a necessity for most people, particularly in the urban areas. There are alternative e-commerce platforms available (instead of the traditional physical platforms) for almost every aspect of our lives, starting from purchasing of everyday household items to online brokerage." As in 21st century as internet has become most important and frequently and most necessity device, it will surely race to achieve more growth and sales via internet. "According to eMarketer, worldwide retail Ecommerce sales will reach $1.915 trillion by the end of 2017 . with increase in digital penetration all

across the globe and cheap and frequent easy accessibly of internet , it is prone to increase the growth of ecommerce all across the world , meanwhile lot of traditional people are quite worried and tensed with change in pattern of sale via internet" , with the availability of cheap and high speed internet with variety and security options , lot of individual and firms have connected their business with e-commerce.(As in recent world it is highly impossible to grow without being available online . Thus to grow more and earn higher profit it is highly recommended to have proper structure availability and easy accessibility of online sites , because it not only determines profit and no. of users but also determines the ranking and position of enterprise of the firm in overall business world .

Objectives of the Research Study

1. To study the of E-Commerce.

2. To study the impact of E-Commerce on Business.

E-commerce

E-commerce has a great deal of advantages over the "brick and mortar" shopfront. Effective e-commerce adoption is beneficial to organizations in terms of substantial cost savings, revenue maximization, and improvement in product delivery and customer service . Therefore, e-commerce is a significant area for research due to its potential positive impact on business performance. Prior studies have empirically confirmed the factors affecting ecommerce adoption . However, much is not known on the overall review on e-commerce adoption studies, as this review has not been done by previous studies. Thus, the novelty feature for this study is the fact that it is the first attempt to comprehensively review on the previous studies on the e-commerce adoption studies. Therefore, this study's approach is unique as it focuses on examining the prior studies published in Scopus databases.

The Impact of Electronic Commerce on Business

E-Commerce and E-Business are not solely the Internet, websites or dot.com companies. It is about a new business concept that incorporates all previous business management and economic concepts. As

such,E-Business and E-Commerce impact on manyareas of business and disciplines of business management studies.

1. Management Information Systems – Analysis, design and implementation of e-business systems within an organization; issues of integration of front-end and back-end systems

2. Human Resource Management – Issues of on-line recruiting, home working and 'Intrapreneurs' works on a project by project basis replacing permanent employees.

3. Finance and Accounting –On-line banking; issues of transaction costs; accounting and auditing implications where 'intangible' assets and human capital must be tangibly valued in an increasingly knowledge based economy.

4. Economics –The impact of e-commerce on local and global economies; understanding the concepts of a digital and knowledge-based economy and how this fits into economic theory

5. Production and Operations Management –The impact of on-line processing has led to reduced cycle times. It takes seconds to deliver digitized products and services electronically; similarly the time for processing orders can be reduced by more than 90 per cent from days to minutes. Production systems are integrated with finance marketing and other functional systems as well as with business partners and customers.

6. Marketing – Issues of on-line advertising, marketing strategies and consumer behavior and cultures. One of the areas in which it impacts particularly is direct marketing. In the past this was mainly door-to door, home parties and mail order using catalogues or leaflets.

7. Computer Sciences – Development of different network and computing technologies and languages to support e-commerce and e-business, for example linking front and back office legacy systems with the 'web based' technology.

Conclusion

This research paper involves a study of the inability to find the product or services of interest quickly is the biggest barrier to effective marketing this problem may be overcome through E- commerce, where number of companies offer several products thought the net. In Short, Indian e-commerce has to face many difficulties in web marketing because of infrastructural difficulties and computer illiteracy. Majority of the customers live in rural areas do not sufficient knowledge about computer and internet. Some of customers in urban areas do not have credit facilities and therefore online buying and selling of goods is limited to urban class having knowledge of computer internet if Indian marketers take into account essentials of good website they can definitely make success marketing in international markets.

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E –Commerce in India

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Abstract

E-Commerce is growing with swift pace in our country. Backed by increasing internet users' base and favourable demographics, Indian E-Commerce Industry has registered impressive growth in the last few years. There are tremendous opportunities of growth in E-Commerce in future also. But there are certain challenges which need to be addressed properly.

Keywords : *E-Commerce*

Introduction

E-Commerce stands for electronic commerce and caters to exchange of products, services and information via internet. Electronic commerce is more than just buying and selling products online. It includes the entire online process of developing, marketing, selling, delivering, serving and paying for products and services. It is doing business online. It includes any commercial activity that takes place directly between a business, its partners, or its customers through electronic communication and digital information processing technology. E-Commerce is a modern business methodology that addresses the needs of the organisations, merchants and consumers to cut costs while improving the quality of goods and services and increasing the speed of service delivery. India has shown tremendous growth in the E-Commerce segment.

Objectives of The Present Paper:

- To study the present status of E-Commerce in India.
- To examine the barrier of E-Commerce in India.

Categories/Models of E-Commerce:

The different categories or Models of E-Commerce are as follows:

B2B (Business to Business):

Under B2B model one business sells to other business. Companies doing business with each other such as manufacturers selling to distributers, wholesalers selling to retailers are the examples of B2B e-commerce model. Pricing under this model is based on quantity of order and is often negotiable. Chinese E-Commerce Giant Alibaba is the example of B2B model.

B2C (Business to Consumers):

This is the usual from of E-Commerce. In this model business sells products and services directly to consumers over the internet. They display their products or services on their Websites or Apps and the consumers can order the product or service directly on their Websites or Apps. If an individual is buying a pair of shoes by placing an order to Flipkart.com is an example of B2C model.

C2B (Consumer to Business):

Consumer to Business E-Commerce model involves consumers selling products or services to business. In C2B consumers create value and business consume that value. For example, when a consumer writes, reviews or when a consumer gives a useful idea for new product development than consumer is creating value for the business if the business adopts that inputs. In C2B consumers can offer products and services to companies and the company pay the consumers. We can see the C2B model at work in blogs or internet forums in which the author offers a link back to an online business thereby facilitating the purchase of a product, for which the author might receive affiliate revenues from a successful sale.

C2C (Consumers to Consumers):

C2C is a business model that facilitates the transaction of products or services between customers. C2C provide an innovative way to allow customers to interact with each other. C2C involves the electronically facilitated transactions between consumers through some third party. A common example

is the online auction, in which a consumer posts an item for sale and other consumer bid to purchase it, the third party generally charge a flat fee or commission. The sites are only intermediaries, just there to match consumers.

Review Of Literature:

(Elizabeth & McGregor, 2000) in their paper analysed the impact of e-commerce on consumers, public policy, business and education. A discussion of public policy initiatives, research questions and ideas for future research was given.

(Dasgupta & Sengupta, 2002) in their paper examined the future and prospects of e-commerce in Indian Insurance Industry.

(Abhijit, 2013) in his paper opined that e-commerce has unleashed yet another revolution, which is changing the way businesses buy and sell the products and services. New methodologies have evolved. The role of geographic distances in forming business relations is reduced. With the development of 3G and 4G wireless communication technologies, the internet economy will continue to grow robustly.

(Raghunath & Panga, 2013) concluded that initially, new internet users would be reluctant to conduct any kind of business online, citing security reasons as their main concern. In order to increase consumer adoption of e-services, the source of consumer confusion, apprehension and risk need to be identified, understood and elevated. E-Commerce provides tremendous opportunities in different areas but it requires careful application for consumer protection issues.

Present Scenario of E-Commerce in India:

E-Commerce in India is still in a growing stage, but it offer tremendous opportunities for developing countries like India. The e-commerce sector in India started their operations late nineties among business to business users (B2B). Business to Consumers (B2C) e-commerce started in 1996 in the form of matrimonial portals. The cost and the speed of internet was the limiting factor for their growth at that time. The first E-Commerce website in India was rediff.com, which was one of the most trafficked portals for both Indians and non –residents Indians. Last five years have seen a rise in the number of companies enabling e-commerce technologies and the internet in India. Major Indian portal sites have

also shifted towards e-commerce instead of depending on advertisement revenues. Today E-Commerce has become an integral part of our society. There are websites providing any number of goods and services. These websites provide almost all categories of goods and services on a single site. These sites target the buyers of every possible product or service. These websites are known as Multi Product E-Commerce Sites. There are also Single Product E-Commerce Sites, which deal in specialised field only. Technology is changing the way of shopping. Out of the total internet users in India, 60% visit e-commerce sites. Favoured demographics and growing internet users' base helped in adding the growth. Growth shown by Indian players like Flipkart, India Times, Snapdeal etc. and huge investors' interest around these companies showed the immense potentials of the market.

Barriers of E-Commerce in India:

Poor Internet Facilities:

Internet is considered the backbone of the e-commerce. But the penetration of internet facilities in India especially in rural area is very less. Speed of Internet is also the major challenge in our country. No doubt we are moving towards 4G internet services but still a lot has to be done.

Feeling Unsecure:

Feeling unsecure by customer is one of the major and continuing challenges for e-commerce in our country. Customers have to be confident about the integpurchase order online. Risk of hacking and cyber crimes are also there. Privacy has also become a major concern for consumers with identity theft and impersonation. Security challenges are not restricted to consumers only in e-commerce, corporate firms also face security challenge as their vital information, records and reputation is at stake.

Logistic and Supply Chain:

Logistics and supply chain has been the major challenge to the e-commerce companies. Most of the population in India lives in villages. To reach the consumer in the village is a big challenge. The e-commerce companies' needs to invest more on setting up warehouse and signing up more suppliers across the country to ensure customers get order delivered by nearest suppliers.

Cash on Delivery (COD):

Cash on delivery is big problem for e-commerce companies. In the era of digital payments, cash on delivery is still the most favoured mode of payment used by the consumers. This mode is very expensive for e-commerce companies. Sometime courier companies take 30-40 days to return the cash collected from customers to dealers. If the customer return the product than it becomes very expensive for the company as the company pay two way courier charges.

High Competition:

There is a cut throat competition among the player in the e-commerce market. With intense competition, the profitability of the of the companies decreases as they use aggressive pricing strategy and offer huge discounts and commissions.

Tax Structure:

Tax structure is another factor for lesser growth of e-commerce sector in India in comparison to other developed countries like USA and UK. In India there are different types of taxes and these taxes create accounting problems to online business. Some states are even charging separate tax on e-commerce transactions. Government has implemented the GST Act, which is expected to solve this problem to great extent.

Absence of Cyber Laws:

Absence of cyber laws to regulate the online business transactions is another bottleneck to e-commerce in India. The new technology has created huge legal uncertainty in our country. The existing Consumer Protection Act 1986 needs to be amended to update and widen the scope of the Act.

Physical Purchase:

Most of Indian customers are more comfortable in buying product physically. They want to see and touch the product before buying. So they do not prefer to buy product online.

Conclusion:

E-Commerce has made the shopping easy. The E-Commerce Industry in India is growing rapidly despites many challenge. E-commerce industry is one of the largest growing industries in India at present. The sale of e-commerce industry is expected to grow by almost 4 times by 2021 than the sales

of 2015. This unprecedented growth in E-Commerce is due to increase in smart phones and internet users, 3G/4G internet services, awareness in public, government initiative of digitalisation, advanced shipping and payment options, entry of foreign e-business players etc. Government should take steps to provide a proper legal framework so that hurdles in the growth of e-commerce are reduced to minimum rity of the e-dealers and payment process before making any

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E-Commerce and It Impacts on Global Market

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Abstract

Many experts believe that in recent years, a revolution has occurred similar to the industrial revolution which the world has entered the information age. It makes large changes in the economic, social and cultural aspects. One aspect of this transformation is changes in economic relations between individuals, corporations and governments. Commercial exchange between people who had been based on paper documents to transactions of by us the systems based on electronic information.

Keywords : *E-Commerce, advantage*

Introduction

E-commerce has so many advantages in our life because it makes convenient in daily life of the people. Several explanations have been proposed for e-commerce that most of them are based on past experiences in the use of e-commerce. As with e-commerce, e-business also has a number of different definitions and is used in a number of different contexts. One of the first to use the term was IBM, in October 1997, when it launched a campaign built around e-business. Today, major corporations are rethinking their businesses in terms of the Internet and its new culture and capabilities and this is what some see as e-business. There is no one commonly agreed definition of e-commerce or e-business. Thus, there is a need to clarify terms being used and explain the context in which they are being applied. E-commerce has an impact on three major stakeholders, namely society, organizations and customers. There are a number of advantages, which include cost savings, increased efficiency, customization and global marketplaces.

What is the E-Commerce?

Electronic commerce, commonly known as E-commerce, is trading in products or services using computer networks, such as the Internet. Electronic commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems. Modern electronic commerce typically uses the World Wide Web for at least one part of the transaction's life cycle, although it may also use other technologies such as e-mail. In the simplest case, it can be defined as doing business transactions in an electronic format. The European Commission has defined the e-commerce in 1977 as follow: The April 1997 edition (ERCIM News No. 29) reported that "Europe has been lagging with respect to the rest of the world in its way towards the information society". As far as electronic commerce is concerned there is strong activity developing and a focus that is specifically European is certainly arising. This is happening on three fronts - firstly there is serious use of electronic commerce in many European countries, including France, The Netherlands, Sweden and the UK; secondly, these national activities are being brought together through a new user body, Electronic Commerce Europe (ECE); thirdly the European Commission is bringing together its various actions under a co-operative umbrella and calling for serious implementation initiatives under the latest ESPRIT Thematic Calls.

Impact on Markets and Retailers

Economists have theorized that e-commerce ought to lead to intensified price competition, as it increases consumers' ability to gather information about products and prices. Research by four economists at the University of Chicago has found that the growth of online shopping has also affected industry structure in two areas that have seen significant growth in e-commerce, bookshops and travel agencies. Generally, larger firms are able to use economies of scale and offer lower prices. The lone exception to this pattern has been the very smallest category of

Benefit of Electronic Commerce

The benefits of e-commerce include it's the speed of access, a wider selection of goods and services, accessibility, and international reach. It's perceived downsides include sometimes-limited customer service, not being able to see or touch a product prior to purchase, and the necessitated wait time for product shipping. To ensure the security, privacy and effectiveness of e-commerce, businesses should authenticate business transactions, control access to resources such as webpages for registered or selected users, encrypt communications and implement security technologies such as the Secure Sockets Layer.

Benefits to Organizations

E-commerce has many advantages for organizations which some of them are as follows:

Expands the marketplace to national and international markets, Decreases the cost of creating, processing, distributing, storing and retrieving paper-based information, allows reduced inventories and overhead by facilitating "pull" type supply chain management , the pull type processing allows for customization of products and services which provides competitive advantage to its implementers, Reduces the time between the outlay of capital and the receipt of products and services, Supports business processes reengineering (BPR) efforts, Lowers telecommunications cost the Internet is much cheaper than value added networks (VANs)

Conclusion

E-commerce has undeniably become an important part of our society. The World Wide Web is and will have a large part in our daily lives. It is therefore critical that small businesses have their own to keep in competition with the larger websites. Since web developers have lowered down the prices for their services, it has become more affordable for small businesses to use the World Wide Web to sell their products.

E-commerce can conduct any business online and via the Internet to express. Many techniques have been developed in recent years and are expected to grow more than this. By e-commerce, the exchange

of information related to the purchase and sale, required information for the transport of goods with less effort, exchange between banks and customers will be faster. Companies to communicate with each other haven't restriction and their relation to each other can be done easier and faster. Advantages of e-commerce are cost savings, increased efficiency, and customization. In order to understand electronic commerce it is important to identify the different terms that are used, and to assess their origin and usage.

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"F-Commerce" is One of Means of E-Commerce

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Abstract

In this paper contain about recent way or mean of commerce that is F-commerce, it is most popular social networking media use to connect huge number of peoples and corporate allow the space for marketing their products through f-commerce. Therefore f-commerce becomes hub for promotion of company. Facebook commerce, f-commerce, and f-comm refer to the buying and selling of goods or services through Facebook, either through Facebook directly or through the Facebook Open Graph.Until March 2010; 1.5 million businesses had pages on Facebook which were built by Facebook Markup Language (FBML). A year later, in March 2011, Facebook deprecated FBML and adopted iframes.This allowed developers to gather more information about their Facebook visitors. The value of transactions completed within Facebook is predicted to supersede those on Amazon over the next five years ($34 billion).

Some businesses using f-commerce include, Amazon, Apple, ASOS, Best Buy, Bulgari, Coa-Cola, Delta, Diesel, Disney, Dove (Unilever), Gap, Heinz, jcpenney, Levi's, Macy's, Max Factor, Mazda, Nike, Nine West, Old Spice, P&G, Pampers, Pantene, Rachel Roy, Sears, Starbucks, Volkswagen, W Hotels, Walmart, Warner Bros.

The objective of this paper is to study F-commerce as a means of E-commerce, because Facebook is provided free of cost services and millions of peoples connected with the facebook. I would say thanks to S.K. Porwal college, Kamptee for giving the chance to write and express something on very important topic that is facebook is a means of E-commerce.

Keywords : *Social media, F-commerce, industries views, E-commerce.*

Research Objective:

1) To understand f- commerce as new and popular social media for E-commerce.
2) To study the history of f-commerce and company which are using f-commerce as a means of E-commerce.
3) To study the positive impact of f-commerce on market.

Research Methodology:

The present research paper is purely based on the secondary data which is collected from reference books, websites, published books and journals, research blogs, articles and social media etc. to derive a meaningful conclusion.

Introduction:

F-commerce helps businesses facilitate and execute sales transactions using Facebook. F-Commerce can be used to drive customer acquisition (trial), customer loyalty (re-purchase) and customer advocacy (word of mouth), and improve customer experience. So, what is Facebook commerce, or f-comm F-commerce denotes the use of Facebook as a channel to monetize social media. It is one facet of a larger genre referred to as social commerce," wrote Paul Chaney, author of the Digital Handshake on Small Biz Survival.

Think of f-commerce as any sale that takes place on Facebook with the help of applications on Facebook business pages. To aid f-commerce, businesses may seek to take out Facebook ads posted on potential customers' pages as a way of driving traffic. F-commerce is expected to become a US$30 billion industry by 2015, according to analysts at Social Media Add,

What is f-commerce? "Facebook Commerce is selling with Facebook"

"F-Commerce, derived from e-commerce, is the use of Facebook as a platform for facilitating and executing sales transactions – either on Facebook itself or externally via the Facebook Open Graph. F-

commerce is a form of social commerce, the use use of social media, online media that supports social interaction and user contributions, to assist in the online buying and selling of products and services"

What is industry saying about f-commerce?

"Social media may not have driven sales in an obvious way so far, but the next logical step will be transactional social media. When you can buy products through Facebook, rather than just liking them, we'll start to see a shift in the role of social media in the business" Manish Mehta, head of social media, **Dell**

"It's a matter of time—within the next five or so years—before more business will be done on Facebook than Amazon" Sumeet Jain, Principal, **CMEA Capital**

"In three to five years, 10 percent to 15 percent of total consumer spending in developed countries may go through sites such as Facebook" Mike Fauscette, Analyst, **IDC Consulting**

"Anyone who still believes in 2010 that Facebook isn't going directly drive a massive commerce opportunity for merchants and retailers alike on that platform will find themselves this time next year in 2011 wishing for their own Christmas miracle" Karen Webster, President, **pymnts.com**

What are the different types of f-commerce?

1. **"on-Facebook" f-commerce**

- **Facebook stores (f-stores)** – e-commerce enabled Facebook pages, such as that of Coca-cola, used to sell Coke merchandise
- **Facebook Credits payments** – allows customer to make "frictionless" in-game payments and buy directly from their newsfeed (with Facebook Credits)

2. **"Off-Facebook" f-commerce**

- **Facebook-enhanced web-stores** - traditional e-commerce sites that integrate with Facebook to offer customers a Facebook experience whilst shopping on-site. For example, Amazon allows shopper to login with Facebook details, and uses the Open Graph data that comes with the login to offer instant personalisation (recommendations, birthday notifications, etc.)
- **Facebook-enhanced retail stores** – traditional brick and mortar retailers that integrate with Facebook to offer customers a Facebook experience whilst shopping in-store. For example, department store chain Macy's Magic Fitting Room is a Facebook-connected fitting room that allows customers to share clothing tryons – in real life and virtually

E-commerce with Facebook:

1.Ticketmaster : In April 2010 Facebook itself has stepped forward to say that every time a user posts on their newsfeed that they've bought a ticket from Ticketmaster, a friend spends on average an additional $5.30 on a ticket to the same event. Based on the success of this, last week Ticketmaster launched an upgraded Facebook app (as part of Facebook's Timeline apps announcement) that integrates with Spotify to recommend gigs based on listening history, with the option to then purchase.

2. Delta: Delta Airlines' offering is not new, but it's marketed very well and taps into a channel it knows its customers are active on. Hence why it's still going strong. It allows people to search, book and pay for flights within Facebook – which it discovered was popular with its travellers as it's the most visited site from its in-flight wi-fi service. Not only this, but the app is 'portable' – and can be embedded in ad units on third party sites – creating a convergence of social networking, e-commerce and advertising.

3. Hallmark: Hallmark's Social Calendar app is also another simple example that's been popular and in use for a prolonged period of time (in f-commerce terms at least). It ties in nicely with your Facebook calendar to send you alerts for friend's birthdays. Simply choose the Facebook friends whose birthdays you don't want to miss (you can also add dates and other special occasions manually) – then get

reminders at the beginning of every week and month. Send a personalised photo card, a virtual gift or just a personal message.

4. Heinz's Balsamic Tomato Ketchup and personalised soup cans : Heinz has been pushing the boundaries in terms of use of Facebook to seed new products, first launching an app to send special bottles of its Balsamic Tomato Ketchup to Facebook fans – which was then rolled out the US after a successful testing phase in the UK. The personalised soup can app used a similar theory – that passionate fans love unique and exclusive products. People could enter a name of a sick friend and send them a can of soup with 'Get Well Soon' on it, choosing from the brand's three most popular flavours.

5. Odeon's transactional booking app: In November, cinema chain Odeon launched its Event Organiser app, which enables users to select films, view screening times and purchase tickets from within the brand's Facebook page. People can also create a Facebook event around the film and invite their friends on the network to join, meaning they can coordinate cinema trips.

6. Oscar de la Renta : Taking a product-focused approach, the fashion brand launched a second f-commerce shop to sell four 'quote' bracelets exclusively on Facebook in December. The brand launched its first shop a month earlier in November to sell its Esprit d'Oscar solid perfume ring, also as an exclusive on the social network. Both apps are part of a wider strategy from the brand to consistently introduce new products through Facebook, and focus on creating a small group of highly-engaged users.

7. Burberry Body fragrance launch: Scott Galloway, New York University marketing professor and co-founder of think tank Luxury Lab told WWD.com late last year that almost 100% of brands cite Facebook as a source of upstream traffic. In an interview, said specifically that Burberry gets more traffic from Facebook than from Google.

Burberry is at the absolute forefront of innovation within social media, one example of which is the launch of its Burberry Body fragrance last year. This example is no longer live, but it's such a relevant campaign that we couldn't leave it out. A video starring CCO Christopher Bailey launched the scheme

(see below) - and people could apply for a free sample via the Facebook app. Burberry then extended this to allow people to buy full-size bottles of the perfume, with great success.

8. Gilt Groupe: The members-only 'flash sales' site created an app that allows users to log-in using their account details and browse 'must have' items. Content-rich, it combines deals, group and social buying, and f-commerce. As many commentators have pointed out regarding Gilt's offering, for such a trends-focused brand – this is key to its success.

9. Pink Floyd: EMI has recently launched a Pink Floyd Facebook store, allowing people to buy two album bundles from within the site. Though it's still within its trial stage, this is something the label has already done in part with The Beatles, The Prodigy and others. Pink Floyd's shop is the first to allow fans to complete a purchase with leaving Facebook however. The jury is out on whether this is a viable way to sell music, or if the fairly basic commerce functionality is just a duplicate of other channels.

10. Woolworths: Woolworths' wanted to give its community of over 144,000 South African Facebook fans a way to shop from within the site, and create a fairly basic f-commerce app a few weeks ago. This is another newer example, so there aren't any statistics to back it up just yet – but the content is clean and easy to navigate, which falls in line with the brand's online strategy. Nikki Cockcroft, head of online at the company, said that: "F-commerce forms part of our on-going three-year plan to make shopping with us even more convenient."

11. Amazon with Facebook and Max Factor: Procter & Gamble's Max Factor make-up was for a time being sold on a shop tab on the brand's UK Facebook page, with the check-out taking place on Amazon. This is an interesting example, as the purchase wasn't completed solely within Facebook. You'd imagine that Facebook wouldn't want to relinquish control of the commerce aspect, and that Max Factor wouldn't want to disturb its relationships with core sellers by going direct. Yet the removal of any problems relating to logistics and fulfillment, combined with beautiful design, made this a great match theory. The fact that it's no longer live however, and the page now links clearly to Boots and Superdrug's websites probably says a lot about stirring up competition. That's not to say that such a partnership wouldn't work for other brands.

Positive impact of F-commerce:

The recent survey on F-Commerce found that:

Houston, Texas (PRWEB):

- 2015 projected market potential for social commerce brands will be $30 billion.
- Facebook users are four times as likely to conduct a transaction inside Facebook if it is referred to them by a trusted friend.
- The CEO of SocialMediadd.com and social media expert Brandon Gaille had this to say on the rise of F-Commerce:
- "Facebook commerce is starting to become a major focus for marketers of brands that produce over $10 million in yearly revenue. There are major purchasing opportunities by simply offering exclusive items to Facebook fans of a brand who are active on the page."
- Social Media add provides social media marketing Twitter packages for businesses that are trying to expand the number of followers on Twitter.

Conclusion:-

F-commerce plays a vital role for promoting the E-commerce activity, because F-commerce is free of cost and billions of peoples connected with the facebook. Many people use facebook as a platform for promoting their business activities. After studying information on F-commerce of various companies it is conclude that the turnover of the companied are increase also marketing strategy become very shopesticated. F-commerce is expected to become a US$30 billion industry by 2020.

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Importance of E-Commerce and Information Technology in Teaching Learning Process

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In modern era business is changing their operations to increase supply capabilities, global competition and customers' expectations. E-commerce supports such changes on a global scale. e-Commerce is the powerful business environment that gets created when you connect directly to customers, vendors and business partners by using internet. Today E-Commerce provides open and global market place. It is the paperless exchange of business information. In E-Commerce business information is exchanged by using EDI, E-mail, Electronic bulletin Boards and Electronic funds transfer. E-commerce captures the global market and it provides 24 hours service to the customers for all 7 days. There are so many application for teaching learning e.g Byju's, Topper learning, Merit nations etc.

This paper shows importance of teaching & learning process and importance of E-commerce. The document is divided into the following sections:

1 Protection of computer network & data

2 Workplace

3 community impact

4 socio-political impact

5 economic impact

6 legal consideration

7 cultural issues

In addition to identifying the relevance of IT, we also need to do much more about it.

Security of Computers, Networks and Data

Reshearch Methodology:

The main purpose of research methodology is to determining the impact of e-commerce on teaching learning process

Hypotheses:

It is considered as e-commerce has made possible to view the world as one market and minimizes the time of purchaser and buyer and also the importance of national boundaries.

This topic is concerned with harm arising from disruption to computer and communications services. This is a very large area. I suggest that you start by looking at one specific area: the security of data transmission. You need to understand the nature of the risk involved and of the kinds of protective measures that can be used.

The same kinds of consideration need to be given to other aspects of data handling, including collection, storage, processing, use and disclosure.

Here are a couple of starting points for study of these topics:

- A set of link related to computer security.
- Achieves of the world-wide web security mailing list.

Workplace

The patterns of activities which employees undertake are also being affected, in such areas as:

- Organizational processes;
- Work-patterns and skills; and
- Organizational structures.

IT can be used to simply automate the procedures currently used in organizations; but existing activities are much more likely to be at least rationalized, in order to take advantage of new possibilities that the technology creates; and in some cases they need to be substantially re-invented. The impacts on organizational processes are therefore generally noticeable, and can be quite profound.

The expectation is that the changes will have considerable benefits, but these will often be felt only in the medium-term. Commonly, the short-term impact on the organization and its profit is negative, as investment is undertaken, once-off expenditure is written-off, and disruption occurs to the existing routine.

The impacts on employees are almost inevitably significant. Many people currently in the workforce have not been well conditioned for change by their education and training, and are not mentally well-prepared for it. Quite commonly, those workplaces most in need of radical re-design are those in which the employees have been in a settled (and increasingly inefficient) mode of operation; and hence the shock of change is all the greater.

Community Impacts

Beyond the workplace, communities are functioning differently because of I.T. Some of the more important impacts are in the following areas:

- Changes within existing communities;
- The emergence of electronic communities.

One of the tendencies of 'successful' I.T. applications is that they deliver a great deal of what each individual needs at a workstation or play station. So there is less reason for each individual to get up and walk around. Apart from being physically unhealthy, this also reduces people's direct interactions with one another, which is the cornerstone of existing communities.

Another negative impact is the reduced need for humans to work, arising from the productivity in white-collar work which I.T. is delivering. For many people, this results in lowered self-respect, and reduces their commitment to themselves, their community and their society. The effect on incomes is discussed under the heading 'Economic Impacts' below.

Social Impacts

Society as a whole, and individuals within society, are being significantly affected by IT. Some of the more important impacts are in the following areas:

- equity of access to information;
- pricing
- regulation
- consumer rights
- privacy &
- electronic freedoms.

In a society that claims to offer equality of opportunity, there is a need for equity of access to information, and hence to the infrastructure whereby information is accessed. Currently, the Internet and the world-wide web are accessible for relatively low costs.

A related issue is that of pricing, particularly of information gathered and made available by government. This raises questions about Crown copyright, statutes and court judgments, statistical collections and spatial information.

The information infrastructure comprises many components, including high-bandwidth backbones, regional capacity, 'tail-ends' out to user sites, and workstations in public institutions such as schools and libraries. The cabling, network hardware and software, and communications protocols need to respect a sufficiently common set of sufficiently advanced standards and protocols that inter-operability can be achieved; and yet the whole undertaking must incorporate sufficient flexibility and adaptability that future advances can be exploited. It is also important to appreciate that the scheme is intrinsically supra-national, or global rather than just regional, national or local.

Economic Impact

At a more general level, IT is affecting aspects of the national economy, in particular in the following areas:

- employment levels;
- the distribution of income; and
- access to education and training.

A pair of related concerns is employment levels and the distribution of income. It appears that the capacity of advanced societies to produce may be starting to outstrip their ability to consume. Productivity tools of many different kinds are enabling organizations to perform functions with fewer resources, and in many industries this means that fewer humans are being employed. The rate of new job creation by emergent industries appears not to be high enough to take up the slack. The result is that, even when the economy is improving, unemployment levels are staying high, participation rates are falling, and more people are in part-time employment than was the case in the past.

Some people are fairly well-adapted to part-time pay for part-time work, especially at particular stages of their lives, such as the period when young children are at home or needing care after school, and in the years preceding full retirement from the workforce. In the past, people who had never been employed, and had therefore never had an occupation, were rare exceptions; but we may be seeing the emergence of a whole class of permanently unemployed and unemployable. Many others among the currently unemployed are people who have not only an economic, but also a psychological, need to be in employment.

IT is succeeding for the organizations that use it, and may do so for the customers of those organizations (variously companies, consumers and clients of government agencies). It may also do so for the people who continue to be employed. There is therefore a need for society to deal fairly with the people who don't have jobs as a result, at least in part, of IT's success.

Limitation Of Study:

Every study has its limitation so this study also having some limitation.

1 Geographical area under study

2 Funds

3 Speed of device and internet.

4 Age factor

Measures of several kinds are needed:

- to ensure that the distribution of income is equitable;
- to enable the unemployed to achieve individual quality of life; and
- to address the problem of whole communities within which few members are employed.

A related need is means of ensuring that access to education and training is equitable, such that everyone has an opportunity to gather the knowledge and develop the skills needed to gain employment.

Legal Considerations

The law establishes the framework within which people's rights and responsibilities exist, and can be enforced. IT is having an impact on some aspects of the law, including:

- Evidentiary questions;
- Intellectual property, especially copyright; and
- Unintended contingent liabilities.

One difficulty that arises is whether data that has been created and stored in electronic form has evidentiary value in a court of law. If uncertainty exists, doubt arises as to whether organizations can enforce contracts, and gain judgments against recalcitrant debtors.

Another legal issue is that of intellectual property law in general, and copyright in digital materials in particular. Similar concerns arose with the widespread use of photocopiers, and of audio and video tape recorders. Digital technologies are much more complex, and their impacts more profound. Copyright statements accompany many on-line databases, but it is not entirely clear how enforceable these statements are, and what steps governments need to take to protect the rights of the authors.

Cultural and National Sovereignty Issues

At a more abstract level still, IT is having an impact on the larger communities to which people belong. Relevant topics in this area include:

- Cultural integrity

- National sovereignty &
- Integrity of the currency.

Some people are concerned about the cultural integrity of their regional or lingual groups. There are also ways in which national sovereignty is threatened by the global information infrastructure. The law can be difficult enough to impose within a geographical jurisdiction; but when data storage, information communication, and funds, all flow freely across national borders, the ability to enforce the law, and to collect the taxes on which government agencies depend, may be greatly reduced. Many people are skeptical about the ability of nations to survive the challenges that the global information infrastructure represents, and anticipate breakup of large countries into smaller communities.

Approaches to Dealing with These Problems

Rather than just listing problems, we need to work out what to do about them. The key terms that are used in this regard are:

- Risk analysis
- Risk management &
- Controls and audit.

Risk Management Strategies encompass the following alternatives:

Proactive Measures

Avoidance (don't use risky forms of IT, e.g. neural networks)

Deterrence (motivates people not to do risky things with IT, e.g. make people liable in criminal and civil law)

Prevention (put barriers in the way of people who might do risky things with IT, e.g. ban client-side scripting products like Java, install firewalls, avoid connecting company networks to the Internet)

- Reactive Measures
- Detection (have means of knowing when people make risky uses of IT, e.g. install virus-testing software on all workstations)

- Recovery (have means of repairing the damage, e.g. data backup and recovery procedures)
- Insurance (share the risks around, e.g. compulsory computer centre fire and earthquake insurance policies, duplicated processors, uninterruptable power supplies)
- Non-Reactive Measures
- Tolerance (put up with the risk)

Conclusion:

The above parameters help in teaching learning process of the institution. It is prove that IT has great impact and importance in each and every sector of society with some limitations and remedies.

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Impact of electronic commerce on consumers buying behavior

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Abstract

With the exponential growth of World Wide Web, and application of electronic commerce for online shopping, buying behavior patterns of the consumers have undergone a tremendous change in relation to the conventional buying done in physical market. The new technology has radically changed the traditional way of shopping and has brought a revolution in the shopping industry as a whole. Electronic commerce allowed companies to sell without the necessity to set up brick and mortar services .This paper tries to analyze the buying behavior of the customer in the era of electronic commerce and the problems faced by the consumer in internet shopping

Introduction

Online shopping enables the consumer to buy goods and services from a seller over the internet. With the rapid growth of world wide web, the popularity of online shopping has increased tremendously, as it enables the consumer to buy the product easily and conveniently by the click of the mouse .The advent of electronic commerce has shifted the consumers buying patterns towards online shopping as it provides the convenience of shopping and also enables the consumers to compare the product with other competitive products available on the internet with respect to color, quality, quantity, packing and after sale services .Online shopping satiates the need of the consumer for variety. The products available over the internet are comparatively cheaper and allows the customer to buy the product from anywhere in the world. Customers also have the facility of visiting the respective websites of the product for more details and promotional schemes related to the product. Online shopping has facilitated the use of debit cards, credit cards, on line bank transactions A typical online store enables the customer to browse the firm's

range of products and services, view photos or images of the products, along with information about the product specifications, features and prices. For physical products (e.g., paperback books or clothes), the e-tailer ships the products to the customer; for digital products, such as digital audio files of songs or software, the e-tailer usually sends the file to the customer over the Internet. The largest of these online retailing corporations are Alibaba, Amazon.com and eBay. Generally, higher levels of education and personal income correspond to more favorable perceptions of shopping online. Increased exposure to technology also increases the probability of developing favorable attitudes towards new shopping channels. It has been observed that online shopping provides more satisfaction to the modern day consumers who are seeking convenience and pace.

Customers buying behavior in the era of E-Commerce

"Consumer behavior can be described as the study of individuals, groups, or organizations and the processes they use to select, secure and dispose of products, services , experiences or ideas to satisfy needs and the impacts that these processes have on the consumer and society".

With the development of internet there has been a dramatic revolution in the way people buy products and services

Consumers find a product of interest by visiting the website of the retailer directly or by searching among alternative vendors using a shopping search engine Once a particular product has been found on the website of the seller, most online retailers use shopping cart to allow the consumer to accumulate multiple items and to adjust quantities, like filling a physical shopping cart or basket in a conventional store. A "checkout" process follows (continuing the physical-store analogy) in which payment and delivery information is collected, if necessary. Some stores allow consumers to sign up for a permanent online account so that some or all of this information only needs to be entered once. The consumer often receives an e-mail confirmation once the transaction is complete.

The following are the usually adopted methods of payment used by the customers of online shopping.

- **Debit card-** Debit card, alternately called a bank card or check card, is a way to pay directly that draws cash for a purchase directly from a bank account and transferring to an account held by the seller.Most online mercharts accept debit card payments.

- **Bank transfer-** The bank transfer is similar to the debit card method – it's a method of transferring cash from one bank account to another account. The debit card in a bank transfer transaction is not necessary, although the results are the same. The bank transfer method provides security and speed, and is widely used in Europe, but is also available in the U.S.

- **Online banking e payments-** Users of this method are directed at the time of purchase to the merchant's online bank website. The buyer logs in and authorizes the charges. Funds are transferred from the buyer's bank to the seller's bank. Highly secure, buyers using this payment method do not have to provide their account numbers or other personal data.

- **Electronic bill payment**- Electronic bill payment is another method of sending money to a seller's or creditor's bank account directly from an existing bank account. This method is also used to pay credit card or other bills, and not necessarily to merchants.

- **Mobile payments-** The mobile payment option is relatively new, and gaining popularity in foreign countries. Using a mobile phone, consumers can pay for a variety of goods and services, with the charges assigned to their phone bills. This method eliminates the use of checks, credit cards and other pay methods. Multiple charges are consolidated in one monthly statement – the phone bill.

- **Pay pal-** PayPal is an e-commerce payment processing company owned by eBay. Users set up a PayPal account and pay a fee for each cash transaction. Rules and fees vary for currencies used and cash amounts transacted. The PayPal website has an easy, step-by-step sign on process. Rules are spelled out in detail. Users can pay from their PayPal account.

- **Cash on delivery-** Cash on delivery (COD), sometimes called collect on delivery, is the sale of goods by mail order where payment is made on delivery rather than in advance. If the goods are not paid for, they are returned to the retailer

Customers are attracted to online shopping not only because of high levels of convenience, but also because of broader selections, competitive pricing, and greater access to information. Business organizations seek to offer online shopping not only because it is of much lower cost compared to bricks and mortar stores, but also because it offers access to a worldwide market, increases customer value, and builds sustainable capabilities.

Factors affecting consumer's behavior in e commerce

The influence of consumer behavior is often made between external and internal factors. External factors come from environmental conditions, and internal factors are usually from the consumer's mind. Following factors generally contribute to the increase in online shopping and shift in consumers buying patterns.

- **Convenience-** Convenience is the best aspect of online shopping. Individuals feel that online shopping is a major benefit in their lives because it saves time. Consumers can shop the product inside the comfort of their house. It allows customer to shopping online anytime and anywhere, which means customer can browse and shop online 24-hours a day, 7 days a week from home or office.. Additionally, Internet offers some good ways to save money and time. For example, shoppers do not need go out to the physical store and thus there is no transportation cost. Compare with the traditional shopping, there is no waiting line for shoppers on the Internet, and some shoppers reported that they feel pressure from the sales people sometimes, but Internet offers them more enjoyable experience while shopping online
- **Wide variety-**E-commerce has impacted consumer behavior through widening choices for consumers in several levels. Specifically, nowadays consumers have an opportunity of comparing various aspects of products online prior to making a commitment of purchasing from a specific brand.

- **Internet literacy and speed of internet-** Internet literacy plays an important role in deciding the consumers buying patterns .High level of internet literacy affects the consumer behavior in positive terms. Most of the consumers don't prefer an online platform which is slow to load. We are living in a high-speed internet world where time is more important than anything else This situation applied to both desktop and mobile users as they want to browse through several pages on e-commerce store in a quick span of time

- **Payment security-**Several online shoppers change their decision of purchasing a product because they don't see trust seal on the website. When a user makes online payment while purchasing a specific product he has to share his bank details and several other confidential details. So, consumers only prefer those websites that offer highly secured payment.

- **Occasional discount offered-**Festival discounts and occasional offers tend to attract more buyers as they tend to take advantage of limited discounts available on products of their choice. Most of the online stores provide cash back or bonus points on the bulk purchase done by buyers at the time of festivals or specific occasions.

- **Easy return policy** E-commerce platforms that are offering easy or no hassle return policy are attracting more buyers as compared to other websites. More than 60% of the buyers check the return policy before making any online purchase. They prefer to make a continuous purchase from online sites that are offering hassle free returns on their products

Risks and concerns of online shopping affecting consumer's behavior

1. Financial risk.

Financial risk is defined as the perception that a certain amount of money could be lost while purchasing or making a product work properly from a online purchase. Security and privacy of bank account while purchasing the product online. Hence usually older generations are skeptical to go for online purchases. They prefer traditional brick and mortar store .Consumers also avoid giving disclosing the financial information over the internet.

2. Product risk

In traditional brick and mortar store, consumers can feel and see the product with his naked eyes, but in online shopping product may not meet the expectation of the consumers as the description may not be per the product. Inability of the consumers to evaluate the quality of the product in online shopping increases the risk and concern of the consumers.

3. Non delivery of the product

Although this isn't a common occurrence while online shopping ,there are some fake websites which do not deliver the product after accepting the payment, or they deliver the product late or in a damaged state Consumers feel deceived and loose faith in e commerce

4. Return Policy

Without a proper return policy, a customer's shopping behavior is severely stunted because they are forced to put too much faith into the e commerce business. If the consumer does not receive the product as per their expectation and if the return policy is not favorable, then the consumer feels their money is wasted.

Conclusion

The scientific approach to online shopping is related to the characteristics of consumers, their decision to buy and affecting factors for shopping online. Individual shopping behavior is hard to predict, but providing the rudimentary needs of a customer and detailed information about the product can definitely increase the online shopping. By eliminating the obvious risk and concerns associate with online shopping the buying patterns of the consumers can be positively affected through e commerce. The analysis of the socio-demographic characteristics of the respondents has showed that women prefer to shop online because of lower prices of products offered, and men more value faster and more convenient shopping. Consumers education and income, their attitude and their cultural background affect their buying behavior.

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Issues & Challenges of E-commerce In Indian Banking System

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Abstract

E-commerce stands for electronic commerce. E-commerce is improving standard among the business community in worlds, about the opportunities offered by E-commerce. E-commerce as part of the information technology revolution became widely used in the world trade in general and Indian economy in particular. With advancements in technology, there have been many changes has been occupied. Indian banks have been playing an essential role with the e-commerce. Present scenario Banks are facing many issues and challenges by the e-commerce.

In the backdrop of all these developments the present paper makes an attempt to: highlight the challenges of e-commerce in Indian banks, and to understand the issues of e-commerce in Indian banks.

Keywords : *Electronic commerce, Issues, Challenges, Banking system*

Introduction

Here the increasing global economy, e-commerce and e-business have progressively more become a required component of business approach and a strong procedure for economic development. The incorporation of inclusion and communications technology in business has drastically change relationships within organizations and those between and among organizations and individuals. Particularly, the use of ICT in business has better productivity, encouraged greater customer participation, and enabled mass customization, in addition less costs.

As far as progress in the Internet and Web-based technologies is concerned, differences connecting traditional markets and the worldwide electronic market place, like business capital size, with others, are slowly being narrowed down. The name of the game is strategic positioning, the skill of a company to

determine emerging opportunities and employ the essential human resources skills to create the most of these opportunities during an e-business strategy that is simple, workable and practicable within the context of a global information setting and new financial environment.

Developing nations are given increased access to the worldwide marketplace, where they compete with and complement the further developed economies. Largely, if not all, developing countries are already participating in e-commerce, whichever as sellers or buyers. However, to facilitate e-commerce increase in these countries, the relatively underdeveloped information infrastructure should be better. With the areas for policy interventions are:

1. High Internet access costs, with connection service fees, communication fees, and hosting charges for websites with enough bandwidth;
2. Restricted availability of credit cards and a countrywide credit card system;
3. Undersized transportation infrastructure follow-on in slow and uncertain delivery of goods and services;
4. Internet security problems and not enough security safeguards;
5. Shortcomings of skilled human resources and key technologies
6. Substance limits on national security and other public policy grounds, which very much affect selling in the field of information services, such because the media and entertainment sectors;
7. Cross-border issues, such as the recognition of transactions underneath convention of other certification services, ASEAN member-countries, improvement of delivery systems and customs facilitation; and
8. The comparatively low cost of labour, which implies that a shift to a comparatively capital exhaustive solution

Objective of Study:

The study has following objectives

- To understand the concept of Electronic Commerce
- To study the Issues of E-commerce

- To highlight the challenges of E-commerce in Indian Banking

Research Methodology:

The researchers used an explanatory research technique based on past literature from respective journal, annual reports, newspaper, magazine, internet sites of academic literature of Electronic Commerce. Considering the objectives of the study descriptive type research design is adopted to have more accuracy and rigorous analysis of research study. The accessible secondary data is extensively used for research paper.

Importance of E-commerce:

E-commerce, which factually means business trading via the Internet, has been around the world since mid nineties. But, until the recent few years, E-commerce is getting more and more attention on local, national and international entrepreneur and consumers. One of the major reasons is due to the highly successful operations of some well known names on the Internet, such as Yahoo, eBay and Dell. The sales returns these companies shown in their yearly reports are without doubt, one of the largest factors why E-commerce is important in the commercial market these days. E-commerce proved its value based on the fact where time is essence. In the commercial markets, time plays an important role to equally the business and consumers. From the business approach, with less time spent during every transaction, more transaction can be achieved on the equal day. As for the consumer, they will save more time during their transaction. Because of this, E-commerce steps in and replaced the traditional commerce system where a sole transaction can cost both parties a lot of valuable time. With only a few clicks in minutes, a transaction or an order can be placed and completed through the internet with ease. For example, a banking transaction can be completed through the Internet in a few minutes compared to the traditional banking system which may take up to hours.

From the business perspective, E-commerce is much more cost effective compared to traditional commerce system. This is due to the fact where through E-commerce, the price for the middlemen to sell their products can be saved and diverted to another aspect of their business. One illustration is the giant computer enterprise, Dell, which practice such a system by running most of their business by

internet without inclusion any third parties. Apart from that, marketing for E-commerce can reach a better customer to price ratio as put an advertisement on the internet is relatively a lot inexpensive than putting up a wayside banner or filming a television advertisement. For E-commerce, the total on costs needed to run the business is significantly much less compared to the traditional commerce system. The reason due to that is where most of the cost can be cheap in E-commerce. For instance, in running an E-commerce business, only a head office is required rather than a head office with a few branches to run the business. Consumers and business, connectivity plays an important part as it is the key part determining the entire business. In the point of view of business, E-commerce provides superior connectivity for its probable customer as their respective website can be accessed virtually from anywhere throughout the Internet. This system, more probable customers can get in touch with the company's business and thus, eliminating the limits of geographical location. In the point of view of customer, E-commerce is greatly further comfortable as they can browse through a entire directories of catalogues without any hassle, compare prices among products, buying from another country and on top of that, they can do it while at home or at work, without any requirement to move a single inch from their chair. In worldwide market sense, the appearance of E-commerce as a pioneer has opened up a choice of windows of opportunities for a variety of other companies and investors. For example, due to the growth of E-commerce, maximum resources are being focussed into internet services, electronic securities, business policy and latest technologies grown-up in the worldwide market and in the end, it will become necessary business plan for a company in order to stay alive and stay competitive in the ever shifting market.

Issues of E-commerce:

Institution of a successful e-commerce industry is not limited to simply putting an idea on a website. There are many more issues that are required to be addressed by an e-commerce entrepreneur before his/her e-commerce endeavour becomes a successful one. These include lawful issues as well that range from e-commerce compliances to brand promotion and protection. Even the domain name protection strategy is a necessary element of successful e-commerce endeavour. E-commerce is one of the most beneficial business ventures in India these days. Not only its current augmentation is good but even its

future and proposed growth is tremendous. But, e-commerce in India is also necessary to be conducted in a lawfully permissible manner.

A dominant majority of e-commerce endeavour never live the second year of their establishment. Further, a lot of e-commerce websites are shut down due to legal violations. For example, many Bit coins exchanges in India have provisionally suspended their services due to legal doubts in this field. Some of them have even been targeted by ruling enforcement agencies of India for possible desecration of Indian laws.

E-commerce websites operating in India are required to follow various laws of India as well as the Information Technology Act, 2000. As per these Act e-commerce websites functioning in India are Internet mediators and they are necessary to comply with cyber law due diligence desires as well.

The legal wants for undertaking e-commerce in India also engage fulfilment through other laws similar to Indian contract law, Indian penal code, etc. more, online shopping in India also engage fulfilment with the banking and economic norms applicable in India. For example, take the illustration of PayPal in this regard. If PayPal has to allow online payments receipt and distributions for its alive or projected e-commerce activities, it has to obtain a license from Reserve Bank of India in this regard. Further, cyber due diligence for PayPal and other online payment transferors in India is also requisite to be observed.

Among the active use of e-commerce in India the e-commerce dispute solution in India is also required to be strengthened. The current procedures scheme of India is not conducive for the development of e-commerce in India and online argument resolution in India is more suitable for such purposes.

At last, for those who wish to engage in cloud computing, virtualisation and other Internet based services in India, they comply with techno legal rules of India. Cloud computing legal and regulatory needs in India for businesses and entrepreneurs are silent evolving. But they must be followed by the cloud computing business commune of India. Virtualisation and cloud computing service providers in India ought to not only follow the encryption laws of India but they should also ensure cyber law due diligence in India. That is further so when the cyber rules due diligence for companies in India has become very stringent and foreign companies and websites are regularly prosecuted in India for non use of cyber due diligence. In short, the highly advantageous e-commerce part of India must be explored only after complying with the laws governing the respective e-commerce segment. There is no single set

of laws and regulations that administrate all e-commerce segments and all e-commerce segments are governed by different laws.

Challenges of E-commerce in Indian banking system:

Indian e-commerce industry is growing at a remarkable pace due to high access of internet and sophisticated electronic devices. However, the current growth rate of e-commerce in India is far away lagging behind than other developed countries in the world. In the online merchant way have big problems and challenges. Security and safety of online money transaction being the large problem along with others have curbed the smooth development of the online industry in the country. Because, key factor of e-business sectors have affected by the followings given challenges however still there are some online companies like Makemytrip.com, flipkart.com, Snapdeal.com who have conquer the challenges and representation the ideal growth trends of e-commerce in India.

1) Poor Knowledge and Awareness: Most of the Indian rural population are lack of awareness of internet and it uses. Unexpectedly, urban population are also suffering from poor awareness on online business and its functionalities. A small number of are aware of the online corruption and fraud and thus darkness still exists. A reliable survey reveals that fifty percents of Indian online users are unaware of the solution of online security.

2) Online Transaction: The majority of Indian customers do not possess plastic money, credit card, debit card and net banking system, which is one of the main reasons to restrict the growth of ecommerce. However, in current years, a few of the nationalized banks have started to issue debit cards to all its account holders.

3) Cash on Delivery: In India, Cash on Delivery has evolved out of less penetration of credit cards. Generally of Indian E-commerce companies are offering cash on delivery as one of mode of payment for the purchase. Thirty to fifty percent of buyers are also taking benefit of this mode of payment while making purchase of any product and service over internet. Cash on Delivery has been introduced to counter the payment security issues of online transaction, but this mode has been proving to be loss and costly to the companies. It is seen that majority of the buyers denied to make the payment at the time of

delivery of the product. Therefore, companies tend to lose the sale along with product transportation fees.

4) Online Security: In case of commencing and small business, Business owners are ignoring the value of authentic software due to financial limitations. They are even failing to take the initial steps to make safe and protect their online business through installation of authentic protection services like antivirus and firewall protection, which definitely an important step for successful online business players. Maximum number of business entrepreneurs used illegal software in their server, which generally does not come with upgraded online security in India. Such pirated or illegal software leaves scope for virus, malwares and Trojan attacks and it is very dangerous task to make online transactions in the systems, which may divulge or to drop out sensitive information of credit cards, debit cards and online banking of the users.

5) Logistics and Shipment Services: In India, logistics and courier services obligatory a lot of improvement. Whereas, perfect and strong logistics service is one of the main reasons behind the accomplishment of any online company, India is lagging distant behind in this sector as most of the cities and small villages are still not covered under serviceable area of many of the courier and logistic companies. E-commerce is hampered in a big way due to the limited services offered by the courier service companies or providers.

6) Tax Structure: Indian Tax rate system is another factor for smaller growth rate of e-commerce in India in parallel to other developed countries like USA, UK and Japan. In those countries, tax rate is the same for all sectors while tax structure of India varies from sector to sector. This factor creates accounting issues for the Indian online business companies.

7) 'Touch and Feel' factors: Most of Indian customers are more comfortable and secure in buying products physically. They have a tendency to choose the product by touching the product directly. Thus, Indian buyers are more tending to do ticketing and booking online in Travel sectors, books and electronics.

Conclusion:

Banks are responding to various opportunities created by the increase of e-commerce. Several banks have beforehand put in place a cost-efficient electronic access channel used for traditional banking products. Furthermore, some banks are planning to offer new products designed specifically for e-commerce. At present banks are playing important role in the competition directly e-commerce.

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The Traditional Business Vs Electroic Commerce

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Abstract

Gone are the days when the commercial activities like the exchange of goods and services for money, between parties, take place only in the traditional mode i.e. the customer has to go the market, look at the variety of products, choose the required stuff and the purchasing them by paying the specified amount. But with the advantage of E-Commerce. People can buy goods. Pay bills or or transfer money in just one click. Many people still prefer traditional business over E-Commerce, due to their dogma that the latter is not safe; however, this is just a myth. Both modes have their pros and cons, so we have simplified you the traditional business Vs E-Commerce.

Keywords : *Traditional Business, E-Commerce, Customers.*

Introduction

A traditional business is typically an organization that is store, restaurant or agency. These types of business offer consumers some kind of service or product. A traditional business operates to provide its customers and consumers with a product in exchange for compensation. The typical goals of this type of business all lead to turning a profit for the owners or operators; meaning that the business makes more money in revenue that it spend. Business spends a large amount of money on operational bills and salaries Non profit organizations provide services to people with no benefit to the organization.

Traditional business is a local store which offers its services or products to its local customers it is a set up where customers will have to visit the store physically to buy the products. Decade 10 years ago, people had only one option to begin a new pursuit. There was no idiom like E-commerce to set up their business online all over the world.

E-Commerce:-

In today scenario there is no need to elaborate E-Commerce Business. We all are well aware about E-Commerce and online shopping using E-Commerce websites.

Well E-Commerce business is the strategy of selling product online through web rooms on same special price, offer price, and discounts. Generally people are moving from offline business to online business due to wide use of smart phones, laptop and desktop in today's world. E-Commerce has become a necessity not an option.

- **Basic Needs, Framework and Cost of Traditional Business.**

1) **Cost of Infrastructure:-**

   In traditional business infrastructure cost is very high renting and buying office is always expensive in offline business.

2) **Cost for employing Staff:-**

   You need to hire staff for sales accounts management and security

3) **Huge investment in maintaining Stock:-**

   It becomes compulsory for each and every retailer to maintain stock of the products he is dealing with due to which a huge amount of money remains blocked in business.

4) **Locality limitation:-**

   Choosing the correct location a very important aspect your store has be located centrally so that the customers can visit easily.

5) **Time limitation:-**

   Traditional showrooms run for limited time like from morning to evening and from Monday to Saturday only.

6) **Less scope for expansion:-**

   Little space of showroom / office will limit the chances of expanding the business in future.

- **Set Up Strategies For E-Commerce Business And Plan Cost-**

1) **Cost of Designing:-**

Web designing is the most important part to sell products online. There is no need to invest in infrastructure, renting and buying office in online business at all.

2) **Stock management:-**

There is no need to keep all products in stock initially. You can tie up with the vendors or sellers to arrange products offer receiving order.

3) **Tie up with shipping agencies and payment gateways:-**

You also to tie-up with various shipping agencies. (DHL, FedEX, DTDC, etc) to deliver the product timely to the customer you also need to integrate payment gateways (CC Avenue Paypal, payU, etc) to receive online payments from your customer.

4) **No foundation of location:-**

Online stores are just click away from you. It is easy to visit online store area or city closen't matter.

5) **Time accessibility:-**

Online web - rooms run for 24 hours. Anyone can buy products anytime even on holidays.

6) **Global Reach:-**

It is easy to expand your online business globally since physical presence of the custom is not required.

7) **Better customer service:-**

In E-Commerce business you can serve your customer better since you remain indirect contact with them. You can answer their queries much faster via – e mails and live chat.

8) **Financial Investment:-**

Any merchant can start online business without spending much money because e-commerce platforms are available which are providing e-commerce stores.

- **Promotional Activities & Expenses**

Traditional Business:-

The main aim of any businessmen is to earn profit which requires promotion in order to increase the customer's generate sales and profits you can promote your business through below mechanisms.

- Business cards for your brand and numerous personalized giveaways
- Highlight your infrastructure and real structure skills through open houses.
- Design brochures for your products and distribute to everyone.
- Run ads of your business remove through via newspaper, magazines, radio and T.V.
- Pamphlets, banners, posters for your showrooms and brands.
- Mouth to mouth publicity.

E-Commerce:-

You can promote your online business by various means likes.

- Enhance your online brand reputation
- Create and update your website blog
- Send newsletter to your subscribed visitors
- Use social networking sites to spread around the world.
- Digital marketing or online marketing
- Paid advertisement on Google, Face Book and affiliate marketing.

Conclusion:-

Traditional business is more risky as compared to E-Commerce business. Online business requires initial investment for designing a website and promotion (you do not need to keep the products in bulk at your offline store)

In E-Commerce, investment (input) is less and chances of positive results (output) are more.

In traditional business, investments are large and there is no guarantee of return.

Therefore it is preferable to go for E-Commerce business rather than Traditional one.

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Impact of Electronic Commerce and Indian Economy

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Abstract

This paper reveals the importance of ecommerce in Indian economy. As we all know India is among the fastest growing economy of the world , thus it is very much important to have government intervention and huge investment inflow in form of Foreign direct investment in large economy like India to stabilise and increase the growth of ecommerce industry in the economy.

The purpose of this study is to find out the influence and growth of e-commerce and its impact on national and global market. E-commerce is growing at a rapid pace across the world. Its growth and its benefits are already visible from the studies of developed countries but it's also making a positive impact in terms of growth of developing country.

Keywords : *Ecommerce, Economic Growth*

Introduction

Today e-commerce has become an important part of daily life. Accessibility to e-commerce platforms is not a privilege but rather a necessity for most people, particularly in the urban areas. There are alternative e-commerce platforms available (instead of the traditional physical platforms) for almost every aspect of our lives, starting from purchasing of everyday household items to online brokerage." As in 21st century as internet has become most important and frequently and most necessity device, it will surely race to achieve more growth and sales via internet. "According to eMarketer, worldwide retail Ecommerce sales will reach $1.915 trillion by the end of 2017 . with increase in digital penetration all across the globe and cheap and frequent easy accessibly of internet , it is prone to increase the growth of

ecommerce all across the world , meanwhile lot of traditional people are quite worried and tensed with change in pattern of sale via internet" , with the availability of cheap and high speed internet with variety and security options , lot of individual and firms have connected their business with e-commerce.(As in recent world it is highly impossible to grow without being available online . Thus to grow more and earn higher profit it is highly recommended to have proper structure availability and easy accessibility of online sites , because it not only determines profit and no. of users but also determines the ranking and position of enterprise of the firm in overall business world . Also in this research paper I will focused about the growth and pattern of e-commerce in India and its sales and impact in Indian economy, of all different types of e-commerce , my research paper restricts its study to mainly b2c types of business , though it did cover other types of e-commerce and its social impact also in India via sales of e-commerce in India.

What is E-commerce?

There is no general definition of electronic commerce , but generally e-commerce is defined as E-commerce (electronic commerce or EC) is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the internet but also all other activities which are associated with any transaction such as: ▪ Delivery ▪ Payment facilitation, ▪ Supply chain and service management, can also be categorized or put under this section of economy. E-commerce increases the growth of online business. It can be categorized under

1- Online marketing

2- Online advertising

3- Online sales

4- Product delivery

5- Product service

6- Online billing

7- Online payments

Thus, electronic commerce deals with all the work loads related to internet. It also describes the exchange of data between the financing, billing and payment aspects of e-business transactions. Generally e-commerce and e-business are used interchangeably."

Different Types Of E-Commerce

There are different types of e-commerce, we will examine five basic types of e-commerce in this research paper .

1- BUISNESS – TO-BUISNESS (B2B) – it comprises of all electronic transactions of good or services conducted between 2 companies. This type of e-commerce includes intra system and electronic markets.

2- BUISNESS TO CUSTOMER (B2C) - This transaction carried out in the retail trade with individual buyers . this typical buyer of any store on the site is a consumer or a buyer

3- CUSTOMER TO CUSTOMER (C2C)- in this type of e-commerce consumer sells its product directly to consumer

4- CUSTUMER TO BUISNESS(C2B)- In this category of e -commerce , individual consumer of goods or services sells their product to organisation .

5- BUISNESS TO GOVERNMENT (B2G) – In this e-commerce section it compromises of commerce between companies and public sector is listed .

There are some unique features of E-commerce which thus helps firm to expand their business and thus earn profit , and thus helps in achieving growth . some of the unique feature of E-commerce are –

2- Ubiquity

3- Global reach

4- Universal standards

5- Richness

6- Interactivity

7- Information density

8- Personalization

9 Types of e-commerce Business models

1- Drop shipping

2- Wholesaling and warehousing

3- White – labelling

4- Manufacturing

5- Subscription – based

10 Product models for E-COMMERCE

1- Single product

2- Single category

3- Multiple category

4- Affiliste

5- Hybrid

11 **M-COMMERCE** (mobile commerce) is the process of buying and selling of goods and services through wireless technology i.e. devices such as cellular telephones and personal digital assistants . Japan is seen as global leader of m-commerce. This is more faster, secure and scalable. In coming years the contribution will significantly increase in global market with more and more mobile penetration in the world .

With Reference Of M-Commerce In India

Government Initatives Supporting The E-Commerce Growth In India

The role of government in increasing the the growth of e-commerce is very important and plays huge role in the growth of e-commerce in Indian market . It is the government policies and reforms which not only affects the foreign investment and mindset of investors across the globe, but it is the people who also affects from the governmental policies. since 1991 when government of India opened its economy with the introduction of LPG (Liberalization , privatization and globalization) the Indian people started enjoying the benefits of open economy Since 1995 when internet was first introduced for e-commerce purpose in India . Since 2014 government of India has announced various initiatives namely

- ✓ Digital India
- ✓ Make in India
- ✓ Start-up-India
- ✓ Skill India
- ✓ Innovation fund

The proper functioning of and effective implementation of these program will certainly boost the growth trend of e-commerce in India .

- In the union budget of 2017-18 government has allocated us$1.55 billion to BharatNetproject . According to which village will also be accessible to high speed internet and Wi-Fi hotspots and digital services at very low tariff in rural and panchayatlevels .
- Government of India has announced the launch of BHIM app, it will increase the digital payment in the country .it has been adopted by more than 12.5 million people of India . For promotion of this app government of India has announced 2 scheme for promotion of this app. they are -

1- Referral bonus scheme for individual

2- Cashback scheme for merchants

- The government of India has distributed rewards worth of RS 153.5 crore to more than 1 million citizens or say customers for embracing digital payment under scheme of Lucky GrahakYojana and Digi – dhanvyaparyojana.

Government Of India has put lot of money and reforms which have impacted in growth of e-commerce in India . Not only growth but also has increased the standard of living of people. With the unemployment rate decreasing and rate of literacy is increasing over time , one thing which Gov. of India is currently focusing is on growth of entrepreneurs in India . Thus start up India is encouraging growth young entrepreneurs. Thus government of India has also launched various initiatives like UDAAN , UMANG , START-UP INDIA PORTAL etc

- The government of India has taken steps to provide funds through " Fund of Funds" scheme which is actively working in Indian scenario and thus helping out MSME also .
- Role of FDI plays important role in the growth of e-commerce industry in India . Earlier investment rate in India was considerably very low which thus signifies low e-commerce growth across nation. Since FDI IN B2B e-commerce is 100% FDI allowance which means more investment, but FDI in B2C is still restricted because of governmental norms. Despite of all the government restrictions investments are made in Indian market because there are lot of opportunity in Indian market which can be be proper utilized can lead to more profits . thus investment and FDI polices have an huge impact . investors like –

1- Idgvc Partners

2- Tiger Global Management

3- Accel Partners

4- Index Ventures

5- Sequoia Capital

6- Alibaba

7- Temasek Holdings

8- Forerunner Ventures

Are some of the major investors in e-commerce industry in India under government e-commerce policies. In India 2015 , there was highest ever funding with $11.3B . Though in India FDI in multi brand retail companies is not allowed yet , Though some firms uses PROMOTIONAL FUNDING which

is an indirect route for funding when FDI is restricted is prevalent in India . Thus 100% FDI in B2C is good start for investors to know the market size and opportunity in Indian market and thus more investment and FDI will surely increase the growth of e-commerce in Indian market .

- RESERVE BANK OF INDIA has decided to allow "inter-operability" among prepaid payment instruments (PPIs) such as e-wallets will encourage cashless economy and thus eventually more use of e-commerce in Indian market .
- TAX SYSTEM AND INTRODUCTION OF GST is another government incentive/ scheme which will increase e-commerce growth in India in coming years .with the unified tax system it decreases the cascading of tax which in return simplifies the supply chain management side of e-commerce also . thus e-tailing becomes easier and sometimes in some industry cheaper also which gives manufactures and retailer to expand their business across India . With uniformity in tax , it will help in expanding the positive side of e-commerce across India and thus will not favour any particular state . Though in India TIER1 cities are more prone of e-commerce as their average order value is RS – 1544 and in TIER 2 is RS 1157 and RS 1033 in TIER3 cities in India according to IBEF report (source – ibef.com) . Thus Tax system also plays important part in e-commerce growth in India . India ranked 119th position in 190 countries in estimator of "paying taxes" thus which needs to be decreased .thus because of which business becomes hard and difficult for retailers and thus investors doesn‟t willing to invest more.

Conclusion

Through the study of research paper we came to know how important is e-commerce industry currently in the world . With context of India we also try to find the upward trend of growth of e-commerce in India , and also increase in m-commence and digital penetration in India .Government policies and initiatives has also lead to increase of e-commerce in india over years . According to survey after demonization , role of cashless economy in India has increased significantly , thus the role of internet also likewise other such government policies have also had a major impact . a lot have been done and a lot has to be done when it comes to e-commerce industry in India . Also we study impact of literacy rate and unemployment rate on the growth of e-commerce industry in India . also there is significant need to

increase the literacy rate in india and also spread awareness among rural people in india about cashless economy and role of internet in India in today‟s world . With need of more allocation of money towards cyber crime and strict law‟s need to be made , not only to make this process more secure but also reliable . In this research paper we went through the trend of e-commerce in India which is rising significantly and also how service provider like 4G, 3G helped to increased the digital penetration in India which thus helped to increased the e-commerce and m-commerce sales in Indian economy. Likewise government had also played huge role through different laws and policies towards the growth of sales via internet.

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Benefits and Barriers of E-commerce

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Abstract

E-commerce involves an online transaction. E-commerce provides multiple benefits to the consumers in form of availability of goods at lower cost, wider choice and saves time. The general category of ecommerce can be broken down into two parts: E-Merchandise & E-finance. Many companies, organizations, and communities in India are doing business using E-commerce and also are adopting M-commerce for doing business

Keywords : *E-Commerce*

Introduction

Electronic commerce, or e-commerce, refers to economic activity that occurs online. E-commerce includes all types of business activity, such as retail shopping, banking, investing and rentals. Even small businesses that provide personal services, such as hair and nail salons, can benefit from ecommerce by providing a website for the sale of related health and beauty products that normally are available only to their local customers. Electronic commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data

collection systems. Modern electronic commerce typically uses the World Wide Web at least at one point in the transaction's life-cycle, although it may encompass a wider range of technologies such as e-mail, mobile devices social media, and telephones as well. E-commerce differs from ebusiness in that no commercial transaction, an exchange of value across organizational or individual boundaries, takes place

in e-business. The buying and selling of products, services by business and consumers through an electronic medium, without using any paper

Benefits of E-Commerce to Business

a) International Marketplace - What used to be a single physical market place located in a geographical area has now become a borderless market place including national and international markets? By becoming e-commerce enabled, businesses now have access to people all around the world. In effect all e-commerce businesses have become virtual multinational corporations.

b) Operational Cost Savings - The cost of creating, processing, distributing, storing and retrieving paper-based information has decreased.

c) Mass Customization - E-commerce has revolutionized the way consumers buy goods and services. The processing allows for products and services to be customized to the customer's requirements. In the past when Ford first started making motor cars, customers could have any color solong as it was black. Now customers can configure a car according to theirspecifications within minutes on-line via the www.ford.com website.

d) Lower Telecommunications Cost - The Internet is much cheaper than value added networks (VANs) which were based on leasing telephone lines for the sole use of the organization and its authorized partners. It is also cheaper to send a fax or e-mail via the Internet than direct dialing.

e) Digitization of Products and Processes - Particularly in the case of software and music/video products, this can be downloaded or e-mailed directly to customers via the Internet in digital or electronic format.

f) No more 24-hour-time Constraints - Businesses can be contacted by or contact customers or suppliers at any time.

2. Benefits of E-Commerce to Consumers

a) 24/7 Access - Enables customers to shop or conduct other transactions 24hours a day, all year round from almost any location. For example – checking balances, making payments, obtaining travel and other information.

b) More Choices - Customers not only have a whole range of products that they can choose from and customize, but also an international selection of suppliers.

c) Price Comparisons - Customers can 'shop' around the world and conduct comparisons either directly by visiting different sites, or by visiting a single site where prices are aggregated from a number of providers and compared.

d) Improved Delivery Processes - This can range from the immediate delivery of digitized or electronic goods such as software or audio-visual files by downloading via the Internet, to the on-line tracking of the progress of packages being delivered by mail or courier.

e) An Environment of Competition - Where substantial discounts can be foundor value added, as different retailers vie for customers. It also allows many individual customers to aggregate their orders together into a single order presented to wholesalers or manufacturers and obtain a more competitive price.

3. Benefits of E-Commerce to Society

a) Enables more Flexible Working Practices -This enhances the quality of life for a whole host of people in society, enabling them to work from home. Not only is this more convenient and provides happier and less stressful working environments, it also potentially reduces environmental pollution as fewer people have to travel to work regularly.

b) Connects People - Enables people in developing countries and rural are as to enjoy and access products, services, information and other people which otherwise would not be so easily available to them.

c) Facilitates Delivery of Public Services - For example, health services available over the Internet (on-line consultation with doctors or nurses) filing taxes over the Internet through the Inland Revenue website.

The Barriers of E-Commerce

The drivers of e-commerce were identified and summarized there are barriers to the growth and development of e-commerce. Numerous reports and surveys identify the different kinds of barriers, and many of them focus on security as being one of the largest inhibitors to and problems for e-commerce. Different nations are at different stages of development of ecommerce and as such the issues that are relevant to one nation may not be relevant to another. Similarly, the issues that are relevant to the type of organization also differ. Overall, all kinds of organizations have similar barriers but with different emphases for discuss as follows:

1. Commercial Infrastructure - Relates to issues such as international trade agreements, taxation laws and other legal agreements that facilitate all kinds of on-line trading and so is a barrier relevant to all types of businesses.

2. Technology Infrastructure - Deals with issues of standardization of systems and applications, which is a particular concern for larger organizations who want to

implement solutions such as value chain integration and e-supply chain management.

3. Internet Infrastructure - Deals with issues such as availability and quality of the Internet in terms of speed and reliability. This barrier is of particular concern to Business to Consumer organizations, since their business relies more on general consumers, and so the ease with which the general public can connect to the Internet has a direct impact on their Web-based business.

4. Security -In its broadest term is one of the most significant barriers toe-commerce both within the organization and external to it. Identified as Security and Encryption; Trust and Risk; User Authentication and Lack of Public Key Infrastructure; Fraud and Risk of Loss it relates to the development of a broader security infrastructure and it also relates to the kinds of measures barriers to e-commerce businesses can take to improve security.

5. Interoperability of systems– This is identified as one of the major barriers for large US based Business to Business corporations. This refers specifically to implementation and compatibility problems of integrating new e-commerce applications with existing legacy systems and resources within organizations. This problem also extends to interacting with systems of business partners and stakeholders.

6. Lack of Qualified Personnel- This is a particularly strong concern because internally they do not have sufficient resources to attract and maintain their own support staff to develop a sophisticated technology infrastructure. With regards to third parties, the qualified personnel tended to work for larger organizations.

Conclusion

This research paper involves a study of the inability to find the product or services of interest quickly is the biggest barrier to effective marketing this problem may be overcome through E- commerce, where number of companies offer several products thought the net. In Short, Indian e-commerce has to face many difficulties in web marketing because of infrastructural difficulties and computer illiteracy. Majority of the customers live in rural areas do not sufficient knowledge about computer and internet. Some of customers in urban areas do not have credit facilities and therefore online buying and selling of goods is limited to urban class

having knowledge of computer internet if Indian marketers take into account essentials of good website they can definitely make success marketing in international markets.

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Global and Indian Perspective of E-commerce

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Abstract

The researcher attempts to study Global and Indian Perspective of E-commerce keeping in view the principal objective to probe into the facts and figures about the present state and the future prospects of e-commerce worldwide as well as in our country. The present paper highlights the specific data to assess India's role in the global scenario of e-commerce and the problems faced by e-commerce industry with special reference to the recent updates of the FDI policy regarding e-commerce in India. The researcher aims to have the deeper knowledge of the topic through the related research based survey of printed and electronic sources of books, research papers and reports. The researcher concludes that India's updated guidelines of e-commerce FDI puts restrictions on the activities of giant companies but it assures a level playing field for all e-commerce players in India.

Keywords : *Indian, global, e-commerce, scenario, challenges*

Introduction

Electronic Commerce in India displayed rapid growth rates for the last decade due to the increasing penetration of internet in cities and villages of India. The e-commerce players of India are marching towards the global leadership platform of e-commerce. The emergence and development of e-commerce is due to digital technology advancement and digital awareness in our country leading to ever increasing number of internet users. The present research paper attempts to have a glance at the global and Indian scenario of e-commerce in the light of the growth prospects and the challenges on the way of its development.

Research Objectives:

One of the objectives of the present research paper is to assess the rank of Indian e-commerce on the global scenario of e-commerce through the related research based literature survey. The researcher keeps in mind the principal objective to probe into the facts and figures about the present state and the future prospects of e-commerce in our country as well as the in the entire world.

Research Methodology:

The present research paper is mainly based on the survey of the digital resources of the accessible books, research papers and research reports available online. In addition to this the secondary data is collected from the various books and papers of distinguished authors and researchers. The researcher has also tapped the source of internet to go through the related news reports available in electronic format.

Review of Research:

(B2B e-commerce growth projections for 2019-20, 2019) According to Research and Markets, B2B e-commerce sales will be more than double of the global online retail sales by the year 2020. B2B business is important to drive e-commerce revenue growth. B2B e-commerce is expected to reach $6.6 trillion and B2C e-commerce at $3.2 trillion by 2020. Payment modes of mobile wallets, online information as well as purchase, consumer based technology, up gradation of B2B software; multi-channel selling and mobile e-commerce are the new trends of e-commerce.

(55 e-commerce Statistics to Guide Your Strategy in 2019-General Stats and Facts, 2019) The fastest growth in the retail e-commerce is expected in India during the period 2018-2022. India is expected to rank first at the global level in terms of B2C e-commerce development with CAGR of 19.9 percent during the period. Indonesia ranks second with CAGR of 17.7 percent. They are followed by South Africa, Mexico, Turkey and China. The factors responsible for this rapid growth are cheaper smart-phones and internet subscription plans, improved infrastructure, increased spending power and comfortable online payments.

(Tapadia, 2019) The e-commerce exports at global level have annual market opportunity of $450 billion. Out of this market opportunity, India did a meager $1.2 billion in the year 2018-19. Currently around 75000 sellers or exporters are able to retail their goods to other countries on internet via e-commerce. India can multiply its e-commerce exports as it has e-commerce exports potential to translate into $12 billion worth by 2024. This tenfold growth can be achieved by growing volumes in existing and new categories. The author suggests the measures which should be taken by the government of India and the Reserve Bank of India

In his article 'Multi-channel services for click and mortars: development of a design method,' L.P.A. Simons states that the rise of Internet commerce led to multiple predictions of disintermediation and the decline of physical shopping. However, a "click and mortar" approach, which combines online, offline and telephone contact, has added value for customers and for supplier profitability, as recent research confirms. The research objective was to help organizations design Internet services for a multi-channel context.

Global Perspective of E- Commerce:

It can be predicted on the basis of the research survey data available on the different websites that global e-commerce will cover almost all the purchases and a major part of commercial activities worldwide in the next twenty to thirty years. According to NASDAQ, by 2040, 95% of the purchases are expected to be carried out through e-commerce. As per Research and Markets, B2B e-commerce is expected to reach $6.6 trillion and B2C e-commerce at $3.2 trillion by 2020.

According to Shopify estimates, the e-commerce market value of China with the largest market in the world was $672 billion followed by the e-commerce market value of the USA at $340 billion and the UK at $99 billion. As per the Forrester's research, B2B e-transactions of the US will reach $1.2 trillion by the year 2021 accounting for more than 13 percent of overall B2B sales in that country. The data presented in the following tables will highlight the global e-commerce related facts and growth estimates for 2021.

Table No. 1: Worldwide No. of Digital Buyers

Sr. No.	Year	No. of Digital Buyers
1	2014	1.32 billion
2	2019	1.92 billion
3	2021	2.14 billion

Source: Statista (compiled from the data retrieved from https://99firms.com)

The data displayed in the table indicates that the number of digital buyers all over the world was 1.32 billion in the year 2014. As per the estimates, it increased to 1.92 billion in 2019. The global growth estimates about the number of digital buyers indicate the further rise to reach at 2.14 billion in 2021.

Table No. 2: Global Retail E-commerce Sales Value

Sr. No.	Year	E-commerce Sales Value in trillion $
1	2014	1.34
2	2018	2.84
3	2021	4.88

Source: Statista retrived from https://99firms.com

The data presented in the above table indicates that the global retail e-commerce sales value was $1.34 trillion in the year 2014. As per the estimates, it went up to $ 2.84 trillion in 2018. The sales value of retail e-commerce at global level is estimated to increase to $ 4.88 trillion in 2021. The growth rate of global retail e-commerce sales value is more than the growth rate of the number of digital buyers at global level.

Present Scenario and Growth Prospects of Indian e- Commerce:

India with a population exceeding 1.3 Billion has an addressable market size of above 800 Million. India is the second emerging Asian market in terms of e-commerce. As per the data available on wikipedia.org, India has the world's second largest internet user base of 475 million internet users in

July 2018. The penetration of internet users in India is about 40 percent of the country's population. With continuous increase in the number of internet users, the electronic commerce market in India is ready for rapid growth.

According to Asia Pacific Techno Graphics Online Survey Report, e-commerce revenue in India jumped by five times from US$ 1.6 billion in 2012 to US$ 8.8 billion in 2016. The Forrester's report states that the e-commerce market in India is set to grow the fastest within the Asia Pacific Region due to the highest compound annual growth rate. India is expected to rank first at the global level in terms of B2C e-commerce development with about 20% CAGR during the period 2018-22.

With an expected 33 percent of the global market in 2015 and over 37 percent in 2018, the Asia Pacific region is becoming the leader of the e-commerce industry. According to a report co-authored by PwC, online commerce in India is tipped to surpass $100 billion per year by 2022 from $35 billion today, as more Indians come online.

As per the opinion of the CEO of Snapdeal, Kunal Bahl who welcomed the updates 2019 to FDI policy on e-commerce, small players will gain a foothold and be able to do more from e-commerce as marketplaces are meant for genuine, independent sellers, many of whom are MSMEs. These changes will enable a level playing field for all sellers helping them leverage the reach of e-commerce.

Challenges of Electronic Commerce in India:

The e-commerce exports value of India was just $1.2 billion in the year 2018-19. We cannot ignore the harsh reality that e-commerce is still a fraction of overall retail in India. The e-retail industry will need funds for infrastructure, logistics and warehousing. The issues specific to e-retailing are fake addresses, cash-on-delivery and higher expected return rates. The Economic Survey mentioned that the hurdles being faced by the Indian electronic commerce sector are majorly inventory management, logistics planning and resource availability. The other important challenge for e-commerce is the middle class dominated clientele which is very skeptical about shopping and spending.

JLL India chairman and country head Anuj Puri opines that the biggest nightmare for every online seller is to deal with a shopping cart abandonment rate of 70-80%. Vikas Bhasin, CFO, Pine Labs, an

integrated payment solutions company states that significant share of our customers still prefers to buy offline and consider online website as a research tool.

The Foreign Direct Investment policy of India updated in 2019 comes forward with some restrictions such as ban on exclusive sales as the new guidelines appear to complicate relationships with vendors by preventing the brands from selling more than 25 percent of their sales via any single e-commerce marketplace. It also gave way to the outlawing of the ruling that prevented foreign e-commerce businesses from owning inventory.

The new restrictions on discounts and cash back offers threat to cramp the appeal of online commerce as the e-commerce companies will not influence the sale price of goods and services and shall maintain level playing field. The cash back provided to buyers shall be fair and non-discriminatory.

Conclusions and Suggestions:

The value of B2B e-commerce is expected to reach beyond twice the value of B2C e-commerce at world level by 2020. The global growth rate of e-commerce sales value is more than the growth rate of the number of digital buyers. India has the world's second largest internet user base. The fastest growth in the retail e-commerce is expected in India during the period 2018-2022.The researcher concludes that Indian government's recent updated guidelines of e-commerce FDI is a challenge for the giant e-commerce companies as it puts restrictions on their activities. Yet, it is a positive step towards the destination of fulfilling the goals of a level playing field for all the small and medium e-commerce players in India.

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A study on impact of E-commerce on Indian economy

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Abstract

This paper enhances the importance of E-commerce in India and how it has impacted the online as well as retail sector of the economy. It is India's fastest evolving market with annual multifaceted growth rate (CAGR) 52% by 2020. With the advent of technology and increasing use of smartphones and internet has been a greatest boom in the E-commerce industry. Convenient payment process, speedy delivery of the product, high discounts, customer friendly policies, use of online banking system are contributing towards the E-commerce industry. The retail E-commerce sales worldwide from 2014 to 2021(in billion US dollars) are expected to be $4878 by 2021. The E-commerce also provides useful resources for the growth of small scale industry as well as rural development. The technological advancement has not only helped e-commerce in internet industry but will also help in rural development and generating employment opportunities. The 'Digital India' campaign launched by the government will absolutely boost E-commerce sector by providing internet access to remote corners of India.

Keywords : *E-commerce, technology, small scale industry.*

Introduction

Over the last decade there has been a growth in the business sector of economy. With the advent of technology there has been a boom in the internet industry which has given rise to the E-commerce. E-commerce basically means electronic commerce which means carrying out all the transactions electronically which includes online shopping, banking, retail sector, digital payments etc. with the help of telephone, fax, email. In 1972 the term E-commerce has been used by IBM for the first time. In 1973

with the development of computers successful transaction was carried out between European union and USA. With the successful growth of E-commerce in India it has become a compulsion for the business and companies to carry out their transactions online and electronically in order to survive in this competitive world.

A. Mode of E-commerce-

1) **C2C E-commerce**
2) **B2B E-commerce**
3) **B2C E-commerce**

1) **Consumer to Consumer (C2C)-** In consumer to consumer commerce various consumers over the market are allowed to sell things to each other over the internet.
Example- olx India.

2) **Business to Business (B2B) –** In business to business E-commerce different business houses are allowed to transact with each other. Figure 1 shows the various fields in B2B commerce.

Figure -1 various components of B2B commerce

3) **Business to Consumer (B2C)-** A B2C transaction is conducted over the internet between a business house and consumer. It is the most widely used transaction now days.

Example- Amazon, Flipkart etc.

B. Overview of e-commerce retail supply chain-

E-commerce retail supply chain includes various stages which are procurement, quality checking, dispatch, packing, bar coding, storage of goods etc. Figure 2 shows the overview of supply chain of e-commerce.

Figure 2- Overview of e-commerce retail supply chain.

Objective of the study-

1. To study the impact of e-commerce on Indian economy.
2. To study the growth and contribution of e-commerce.

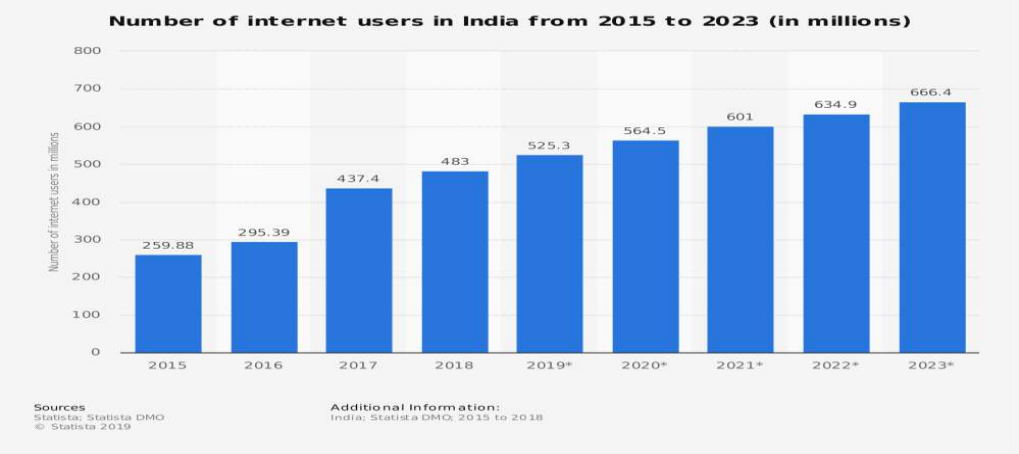
Research Methodology-

This research is based on primary data and secondary data which is collected through various sources.

Analysis of Data-

A. Internet users in India-

According to a recent report by economic times the internet usage in India has exceeded half a billion people for first time, pegged at 566 million, driven by rural growth and usage. India's internet users expected to register double digit growth to reach 627 million in 2019, driven by rapid internet growth in rural areas. Of the total user base, 87 per cent or 493 million Indians are defined as regular users, having accessed internet in last 30 days. Nearly 293 million active internet users reside in urban India, while there are 200 million active users in rural India, it said. (Source: economic times). Figure 3 shows the number of internet users from 2015 to 2023.



B. Recent trends in E-commerce-

- Online retailer major categories include smartphones, laptops, cameras, books, computers, clothes, home and kitchen appliances, gifts and toys.
- Various innovative products are being tested and launched in market.
- There are various consumer trends and delightful experiences given to the consumers such as discounts, coupons etc.

- Promotion of products, recruitment of employees through social media pattern of advertisement etc. are made online.

Role of Government in E-commerce-

The role of government in expanding the role of e-commerce has been truly wide. Since the advent of new economic policy in 1991 the liberalisation, privatisation, globalisation (LPG Model) people of economy are facing liberal behaviour. With the introduction of internet in 1995 people are enjoying the benefits of internet.

Since 2014 Government of India launched few initiatives namely

- Digital India
- Make in India
- Start-up India
- Skill India

E-commerce: challenges and risks

With every boon there is a bane so is the case with e-commerce. With the phenomenal growth of e-commerce there are also various challenges that

E-commerce possesses. Some of the challenges and issues are given below

- Cyber security risks
- Lack of transparency
- No E-commerce related laws in India
- Taxation problems

Conclusion

After taking a complete view of E-commerce and its impact it can be seen that E-commerce is emerging as an important tool for the overall growth of an economy. For a country like India it is extremely important to go on with the changing environmental conditions in order to survive in the competitive market. With a rapidly growing penetration internet is offering attractive options for the retailers to expand.

Government has also taken various steps for the development of internet penetration in India. The challenges and risks have to be overcome in order to make India truly digital and develop trust and confidence in E-commerce.

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Online Shopping and Consumer's Buying Tendencies

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Abstract

India has a change in digitalization in the last decade and this has given a rise to fresh business opportunities by evolving business models. E-Commerce has lived up to expectations by not only providing quality service but through various other deals and offers sufficient to attract consumers. Consumer behavior changes from time to time and E-Commerce fulfilled the necessities. Consumer behavior changed as consumers started purchasing from ecommerce websites rather than visiting traditional retail stores primarily due to convenience caused by home delivery service. Quality is another factor which is to be considered. The Ecommerce is also expected to further grow in the future generating employment and contributing to India.

In the last decade, the concepts of customer satisfaction and customer retention have gained increasing importance in both online and off-line businesses. Online shopping sites are fast replacing traditional or physical shops. Over the years, the trust of the customers for online shopping sites has increased considerably. The increase in the number of these sites, on one hand, has led to a fierce competition, which means better and cheaper products for customers. However, at the same time, customers have their privacy concerns when it comes to shopping online.

Online shopping is a form of electronic commerce which allows consumers to directly buy goods or services from a seller over the Internet using a web browser. Online shopping provides a good example of business revolution. E-commerce has made life Simple and innovative of individual and groups. Consumer behavior on online shopping is different from physical market where he/she has access to see the products online shopping sites are fast replacing traditional or physical shops. Over, the years the

trust of the customers for online shopping sites has increased considerably. The increase in the number of these sites on one hand has led to a fierce competition which means better and cheaper products for customers. However, at the same time customers have their privacy concerns when it comes to shopping online. Internet is changing the way consumers shop and buy goods and services and has rapidly evolved into a global phenomenon. The technology oriented factors like guaranteed quality, cash on delivery discounts and promotions are the major specific factors influencing customer's attitudes toward online shopping. This research paper attempts to analyze the consumer behavior towards online shopping and the various factors influencing trend of online shopping.

Keywords : *E-Commerce, Consumer Behavior, Online Shopping, Internet*

Introduction

Indian economy has not given millions of Indians the privilege of technology but also enabled them to utilize the internet in a way to have a great shopping experience. The world seems to be watching on excitedly as India fast becomes a major e-commerce player. There is everything to play for in this industry, but many brands are in need of a little guidance. E-Commerce has changed the lives of people around the world and its growth in India is not showing any signs of slowing down. The year 1991 noted a new chapter in the history of the online world where e-commerce became a hot choice amongst the commercial use of the internet. At that time nobody would have even thought that the buying and selling online or say the online trading will become a trend in the world and India will also share a good proportion of this success. India first came into interaction with the online E-Commerce via the IRCTC. The government of India experimented this online strategy to make it convenient for its public to book the train tickets. The acceptance of the ecommerce on a large scale by the Indian people influenced other business players also to try this technique for their E-businesses and gain high profits. It gained popularity only with deep discount model of Flipkart. E-Commerce has become almost indispensable for Indian consumers and is expected to have a greater impact in the future. *With the advent of e-commerce, the Indian retail market has witnessed a revolution post 2000.With world's second largest mobile phone user base and third largest internet connections base with around 100 million broadband subscriber base, the ecommerce scene is redefining and reshaping how businesses are conducted today.* There is a

significant impact of consumer behavior on the strategic decisions made by the mobile sector companies. In technology driven businesses, understanding the voice of consumers and their buying patterns has emerged a tough challenge for the mobile companies. India being a developing market and being a nation of diverse cultures and traditions, it becomes mandatory for mobile companies to have a deep understanding of buying behavior of consumer and buying patterns of mobile phones by Indian consumers. With the advent of globalization and the sequel changes in the country many mobile companies have started making a foray into Indian mobile market due to its sky-scraping potential. As a result of tremendous growth in mobile sector, mobile penetration in the mobile market has overshadowed all other means of communication

Consumer's Tendency: E Commerce

India is the second largest consumer market in the world. The Indian consumer profile has been changed in education, income, age, gender, occupation, and reference groups. There is a shift in consumer brand preferences for daily need products to high end technologies with the explosion of technology. Scenario to become equally popular among all age groups e-marketing will have to cover a longer distance. Mode of payment is dependent upon income of the consumers. People from different age groups are doing online shopping regularly. The attitude of consumers is changing with the time. In a country like India, consumers are finding online shopping comfortable because of many variables like cash on delivery, customization, or personalization of the websites, and home delivery. Online customer retention has attracted considerable attention in recent years, partly because it serves as a means of gaining competitive advantage. When a customer is satisfied with a particular internet store, he or she is more likely to shop there again. Therefore, concepts of both customer satisfaction and customer retention have become increasingly important to online and off-line businesses. It is important to understand the factors that drive consumers' satisfaction and their choice of the online channels.

Kolter pointed out that the buying process includes problem/need recognition, information search, and evaluation of alternatives, purchase decision, and post-purchase behavior. Satisfaction is the consequence of the customer's experience during various purchasing stages. Online customer shopping experience is based solely on online stores' information because of a lack of physical contact. Therefore,

information as well as system and service quality may influence customers' satisfaction during the information-search stage and shoppers' purchase decisions. Consumer plays a very crucial role as they are the ones who finally buy goods and services of the firm and the firm always make influential efforts to attract them towards its goods and services to earn revenue and enhance profitability. Consumer behavior is interdisciplinary approach based on concepts and theories about people that have been developed by behavioral scientists, philosophers and researchers in diverse disciplines of psychology, sociology, social psychology, cultural anthropology and economics. The study of consumer behavior also helps management to understand consumer needs to recognize the potential of consumer in lieu of new technology and to articulate new things in term of the consumers needs so that products will be universally accepted in the market well.

Factors that Influences on Online Shopping Decision of Consumers

The ease and convenience provided by the online stores for 24x7 has made shopping easy for the consumers. Consumers get affected by various factors such as with online shopping consumer can shop anywhere, anything and anytime with easy and safe payment option. Consumers can do comparison shopping between products as well as online stores by saving time and money. Availability of online information about product services, facility of making comparison with other products while shopping online, delivery time taken by the agency, content and quality of online shopping website and other security measures taken by agency to make customers identity safe and ensure a smooth transaction are other various important factors having impact on consumer attitude towards online shopping.

There are many reasons why people shop online. For examples, consumers can buy anything at anytime without going to the store; they can find the same product at a lower price by comparing different websites at the same time; they sometime want to avoid pressure when having a face-to-face interaction with salespeople; they can avoid in store traffic jam, etc. These factors influencing are:

- ***Convenience:*** Online shopping is available for customers around the clock comparing to traditional store. Consumers not only look for products, but also for online services. Some companies have online customer services available 24 hours. Therefore, even after business

hours, customers can ask questions; get necessary support or assistance, which has provided convenience to consumers.

Some customers use online channels just to escape from face-to-face interaction with salesperson because they pressure or uncomfortable when dealing with salespeople and do not want to be manipulated and controlled in the marketplace .This is especially true for those customers who may have had negative experience with the salesperson, or they just want to be free and make decision by themselves without salespersons' presence.

- ***Information:*** Today the internet has made the data accessing easier. Given customers rarely have a chance to touch and feel product and service online before they make decision, online sellers normally provide more product information that customers can use when making a purchase decision. Customers put the weight on the information that meets their information needs. In addition to get information from its website, consumers can also benefit from products' reviews by other customers. They can read those reviews before they make a decision.
- ***Available products and services:*** E-commerce has made a transaction easier than it was and online stores offer consumers benefits by providing more variety of products and services that they can choose. Consumers can find all kinds of products which might be available only online from all over the world. Most companies have their own websites to offer products or services online, no matter whether they already have their front store or not. Many traditional retailers sells certain products only available online to reduce their retailing costs or to offer customers with more choices of sizes, colors, or features. The company offers website to reach and to fulfill the need of Connecticut customers to order online. Moreover, online shopping sometimes offer good payment plans and options for customers. Customers can decide their payment date and amount in their own preference and convenience.
- ***Cost and time efficiency:*** Online shopping customers are often offered a better deal, they can get the same product as they buy at store at a lower price .Since online stores offer customers with variety of products and services. It gives customers more chances to compare price from different websites and find the products with lower prices than buying from local retailing stores. Some websites, offer customers auction or best offer option, so they can make a good deal for

their product. It also makes shopping a real game of chance and treasure hunt and makes shopping a fun and entertainment. online shopping can be anywhere and anytime, it make consumers' life easier because they do not have to stuck in the traffic, look for parking spot, wait in checkout lines or be in crowd in store. As such, customers often find shop from the website that is offering convenience can reduce their psychological costs.

- ***Personal Factors:*** Personal factors also affect the consumer behavior. Some of the important personal factors that influence the buying behavior are: lifestyle, economic situation, occupation, age and family life cycle, personality and self concept. Age and life-cycle have potential impact on the consumer buying behavior. It is obvious that the consumer's taste and preferences about goods and services changes with the passage of time. Family life-cycle consists of different stages such as young singles, married couples, and unmarried couples which help marketers to develop appropriate products for each stage. The occupation of a person also has a significant impact on the buying behavior of consumer. For example a marketing manager of an organization will try to purchase business suits whereas a low level worker in the same organization will purchase cheaper clothes only. Consumer's economic situation has great influence on his buying behavior. If the income of a customer is high then choice of more expensive products will be there and a person with low income will purchase inexpensive products. Lifestyle of customers is another important factor affecting the consumer buying behavior. Lifestyle refers to the way a person lives in a society and purchases the things according to his surroundings. Personality changes from person to person, time to time and place to place. It has a great influence on the buying behavior of customers.
- ***Psychological Factors:*** There are four important psychological factors affecting the consumer buying behavior. These are motivation, perception, beliefs and attitudes. The level of motivation affects the buying behavior of customers. Every person has different needs such as physiological needs, biological needs, and social needs. Selecting, organizing and interpreting information in a way to produce meaningful experience of the world is called perception. There are three different perceptual processes which are selective attention, selective distortion and selective retention. Customer possesses specific beliefs and attitudes toward various products. Since such beliefs and

attitudes make up brand image and affect consumer buying behavior therefore marketers are interested in them. All these factors combine to perform a comprehensive model of consumer behavior that reflects consumer decision making process. The major factors and the process of decision-making shape the behavior and preferences of consumer behavior.

- ***Cultural Factors:*** Consumer behavior is deeply influenced by cultural factors such as regional culture and Social class. Culture is the part of every society and influence of culture on buying behavior of customer varies from region to region. Each culture contains different aspects such as religions, nationalities, geographic regions, racial groups etc. Marketers can use these groups by segmenting the market into various small portions. Culture can be considered as lifestyle which is then passed on from one generation to other generation. Culture is not static. It is continually evolving, synthesizing, old ideas with new ones. People from different social classes tend to have different desires and consumption patterns. Disparities result from the differences in their purchasing power. According to some researchers behavior and buying habits would also be a way of identification and belonging to its social class. In this way marketing activities could be tailored according to different social classes.
- ***Social Factors:*** Social factors impact the buying behavior of consumers. The important social factors are: Reference groups, family, Role and status. Reference groups have potential in forming a person attitude or behavior. The impact of reference groups varies across products and brands. A reference group is an actual or imaginary individual or group conceived of having significant relevance upon individual evaluation, aspiration or behavior. Reference group influences consumers in two ways: informational utility and value expression . Buyer behavior is strongly influenced by the members of a family. Therefore marketers are trying to find the roles and influence of the husband, wife and children. If the buying decision of a particular product is influenced by wife then the marketers will try to target the women in their advertisement. Each person possesses different roles and status in the society depending upon the groups, clubs, family or organization to which he belongs. For example a woman is working in an organization as a finance manager.

Factors: Hamper Consumers from online Shopping

Major reason that hamper consumers from online shopping include unsecured payment, slow shipping, unwanted product, spam or virus, bothersome emails and technology problem. Business should be aware of such major problems which lead to dissatisfaction in online shopping.

- ***Security:*** The payment modes in online shopping are most likely made with credit card, so customers sometime pay attention to seller's information in order to protect themselves. Customers tend to buy product and service from the seller who they trust, or brand that they are familiar with. Online trust is one of the most critical issues that affect the success or failure of online retailers. Security seems to be a big concern that prevents customers from shopping online because they worried that the online store will cheat them or misuse their personal information, especially their credit card.
- ***Intangibility of online product:*** Some products are less likely to be purchased online because of the intangible nature of the online products. . For example, customers are less likely to buy clothes through online channel because they have no chance to try or examine actual product. Customers viewing a product on computer screen can show a different effect than actually seeing it in the store. In sum, customers cannot see, hear, feel, touch, smell, or try the product that they want when using online channel. In many cases, customers prefer to examine the product first and then decide whether or not they want to buy. Some people think the product information provided in website is not enough to make a decision. Online shoppers will be disappointed if the product information does not meet their expectation.
- ***Social contact:*** Some customers likely to be free from salesperson pressure, many online shopping would feel difficult to make a choice and thus get frustrated if there is no experienced salesperson's professional assistance Moreover, some customers are highly socially connected and rely on other peoples' opinions when making purchase decision tend. There are also consumers who sometimes shop at traditional store because they want to fulfill their entertainment and social needs which are limited by online stores.
- ***Dissatisfaction with online shopping:*** Sometimes customers' past online shopping experience often affect their future purchase decision. In online shopping, for example, they may get

unwanted product or low quality products, product does match what is described or expected The product may be fragile, wrong, or not working. Some online sellers may not agree to refund those products even though it is not what the customer wanted. Delivery is another thing that affects online purchasing decision.

Conclusion

Digital consumerism has a bright future and scope for patronage in India. The online shopping setting in India is changing very rapidly with the advent of big brands, international competitors & brands, augmented investments and development growth backed by the stabilization of the ecommerce business environment and importance demonstrated by various Venture Capitalists players including domestic & International, combined with support from the Government of India. With the emergence of technology, Economies around the world have benefitted and new ideas have been implemented to reach out to consumers. Consumers should also develop awareness as each brand may not able to provide quality service with more companies getting into the business. Success of all companies is not guaranteed as the competition is only expected to get extensive and a few notable brands is expected to survive having already developed a huge customer base. Companies will have to adopt unique strategies for survival. The previous few years have seen an unprecedented growth in the number of online business players. This ever increasing competition has called for adoption of new marketing strategies, new media and out of box thinking to influence the customer to visit the site and make purchases. The country's growing Internet-habituated consumer base, which will comprise about 180 million broadband users by 2020.

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Pros and Cons Of Electronic Commerce

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Keywords : *E-Commerce, social network, Broad Band, Logistics, Retailer, Smart phones, cash on delivery.*

Introduction

India has been witness from the goods to goods exchange policy earliest then it has been changed from goods to currency based transaction but now a days goods are been purchased ,sold and delivered through a very effective way that is electronic commerce comprises online facility based on internet Today e-commerce has become an integral part of everyday life. Accessibility to e-commerce platforms is not a privilege but rather a necessity for most people, particularly in the urban areas. There are alternative e-commerce platforms available (instead of the traditional physical platforms) for almost every aspect of our lives, starting from purchasing of everyday household items to online brokage . Mail order or catalogue shopping has been in existence in the United States since 1980. This was the predecessor of online commerce, which started in India post 2000.

Reason for Popularity of E-Commerce

1 Today the number of internet users in the world is close to 3 billion.

2 Out of this, India has a total of 259.14 Million internet and broadband subscribers.

3 This penetration of internet coupled with the increasing confidence of the internet users to purchase online, has led to an enormous growth in the e-commerce space, with an increasing number of customers registering on e-commerce websites and purchasing products through the use of mobile phones.

4 It is not surprising; therefore, that India is in a prime position for the growth and development of the e-commerce sector. In particular, e-commerce presents one of the greatest opportunities in

the retail sector since it provides a dramatic change from brick and mortar establishments to virtual shops which could operate for a fraction of the cost.

5 social networks play an important role in driving consumers online and getting them to engage with brands. This would gain specific significance in light of facts such as India being ranked as Facebook's second largest audience after the US.

6 However, it should be kept in mind that there still exists a form of 'digital divide' in India where the benefits of internet have not fully percolated to non-urban areas. In this scenario, mobile connections would play a very important role. India has close to 914.92 Million wireless subscribers.

7 Mobile phones have been and will be a key tool in helping users connects in a market where overall internet penetration may be low. The Indian Government has approved projects for providing broadband connectivity to the local and village level government bodies (i.e. the Gram Panchayats). The Government's plan is to enable broadband connectivity at the rural levels.This is further likely to boost e-commerce in India.

Key drivers of growth

The key factors enabling growth of internet are given as follows.

1. Rising standards of living in addition to it, there is an increase in annual household income.

2. Foreign Investors are funding ecommerce sector due to strong growth prospects.

3. Falling communication cost, large population subscribed to internet broadband and 3G.

4. Increased use of Smartphone, I-pad and tablets promote growth of ecommerce plus most of the spending comes from mobile devices.

Future of E-Commerce

Mobile commerce is finding increased infiltration in ecommerce market. Mobile transactions are increasing every year, the value of these transactions are estimated to be Rs36,000crore according to Forester research. According to Google India managing director India adds five million internet users a

month which are mobile users. Recently Myntra decided to shut down its website and moved all its operations to its mobile app. Gartner says that digital business means co-operation; which means companies interact with competitors with partial congruence of interest. They cooperate with each other to work in same market to acquire global reach. In coming years more high profile mergers and acquisitions are expected to take place in digital commerce sector. Future of ecommerce looks promising because more and companies will be investing in small business startups. E-Commerce investment list was big in India last year, more investment are expected in coming years. Social media has become marketing place for merchants where they can advertise and promote their product freely. The expansion of mobile networks and social media in commerce will take ecommerce to new horizons that will change online retail markets in future.

Some Advantages of E-Commerce

1. Cost effective
2. Secure
3. Easy find product
4. Faster buying and selling system
5. Don't require any physical shop
6. Represent your business in the world
7. A huge amount of profit
8. Gain your new customer
9. Boost conversation rate

Challenges

1. Ecommerce companies need to address many issues Strengthening logistics infrastructure and service levels in ecommerce market as warehousing requirement will increase in coming years with increase in ecommerce activity in coming years. In case of cross border ecommerce there exist problem of reverse logistics.

2. Security, privacy breaches and fictitious transaction issues need to focus as ecommerce is moving to mobile platform.

3. Rules and regulations for taxation and pricing of product for international and local company's .There should be throughout discussion regarding complexities of tax evasion, FDI, and loopholes in commerce between government and various competent ecommerce companies.

4. Customers are concerned about security when it comes to use of credit and debit cards so they are hesitant doing online transactions .Thus cash and delivery is preferred mode of payment which is expensive and risky.

5. Companies need to adopt to change in technology shift from laptop to mobile .They should provide multi-channel sales coupled with fast browsing experience along with after sales support and service. Online reviews, videos, return, product comparison should also be provided to enhance mobile experience.

6. Some of the infrastructural barriers responsible for slow growth of ecommerce in India are as follows. Some of these even present new business opportunities.

6.1 Payment Collection: When get paid by net banking one has to end up giving a significant share of revenue (4% or more) even with a business of thin margin. Fraudulent charges, charge backs etc. all become merchant's responsibility and hence to be accounted for in the business model.

6.2 Logistics: You have to deliver the product, safe and secure, in the hands of the right guy in right time frame. Regular post doesn't offer an acceptable service level; couriers have high charges and limited reach. Initially, you might have to take insurance for high value shipped articles increasing the cost.

6.3 Vendor Management: However advanced system may be, vendor will have to come down and deal in an inefficient system for inventory management. This will slow down drastically. Most of them won't carry any digital data for their products. No nice looking photographs, no digital data sheet, no mechanism to check for daily prices, availability to keep your site updated.

6. 4 Taxation: Octroi, entry tax, VAT and lots of state specific forms which accompany them. This can be confusing at times with lots of exceptions and special rules.

6.5 Limited internet access among customers and SMEs.

6.6. Poor telecom and infrastructure for reliable connectivity.

6.7. Multiple gaps in the current legal and regulatory framework.

6.8 Multiple issues of trust and lack of payment gateways: privacy of personal and business data connected over the internet not assured; security and confidentiality of data not in place.

7. Chief characteristics of the e-commerce market which impact the logistics models • 'Cash-on-delivery': India has been a vibrant cash economy where the consumer's purchasing behaviour involves an initial overall inspection of the product from different perspectives and paying subsequently. Further, customers in India do not extend much trust on the transit facilities for the delivery of the products. This has resulted in 'cash-on -delivery' (COD) as a preferred payment option of majority of the Indian consumers buying online.

8 . Consumers in India expect the return process to be seamless and convenient. However, with an expectation of return of the items purchased online, online shoppers have made available the option to return the purchased goods at the behest of the retailer. Retailers have considered this option of return to develop trust and confidence which results in seamless subsequent purchases and positive word-of-mouth support.

9. Free and quick home delivery is another characteristic of the e-commerce industry in India. E-retailers offer free delivery of the products within a promised timeline. Though this may be unsustainable in the long run but e-retailers have to offer the same convenience of free and quick shipping to compete with other retailers.

Conclusion:

E-COMMERCE is very popular now a days but while implementing it further more development in infrastructural part , facilities or policies provided by government, ensure safety and privacy of the consumers account , effective vigil of technical control board over the e-trade and many more challenges as mentioned on above can be resolve to promote the e-commerce in India effectively.

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Electronic Commerce & Consumer: Challenges and Opportunity

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Abstract

E-Commerce is the use of the Internet and the web to run business. E-Commerce on digitally enabled commercial transactions between organizations and individuals. Digitally enabled transactions include all transactions mediated by technology. The transactions that occur by using Internet and the web E-Commerce is the future of business. E-commerce is one of the business options that will explore in future. E-Commerce is growing with swift pace in our country.

There is tremendous growth in E-Commerce in future. Also there are challenges which is to be addressed. In the present paper an attempt has been made to study the Electronic Commerce and Consumer in India examines the challenges and opportunity of E-Commerce.

Keywords : *Mobile Commerce, infrastructure, Commercial transactions, business-to-business*

Introduction

E-commerce can be defined as the use of the Internet to conduct business transactions nationally or internationally.

Electronic commerce offers opportunities to both developing and developed countries. At present, the gains are concentrated on developed countries. Developing countries lack the infrastructure necessary to take advantage of Internet. Electronic commerce, or e-commerce, is the buying and selling of goods and services on the Internet.

The Internet is dramatically expanding opportunities for business-to-business and business-to-consumer e-commerce transactions. For business to consumer transactions the internet sets up a potential revolution in global commerce: the individualization of trade. It gives consumers the

ability to conduct a transaction directly with a foreign seller. The Internet allows sellers to put their storefronts, in the form of Web pages, to consumers all over the globe. Technology has expanded the consumer marketplace to an unprecedented way.

Types of e-Commerce

- Business to Consumer (B2C)
- Business to Business (B2B)
- Consumer to Consumer (C2C)
- Peer to Peer (P2P)
- Mobile Commerce

Business to Consumer (B2C)

Here, online businesses attempt to reach individual consumers. Different Business to Consumer (B2C) business models are Online retailers, Content providers, Transaction brokers, Service providers, and Community providers.

Business to Business (B2B)

Here, businesses focus on selling to other businesses. Net market places includes e-distributors, e-procurement companies, exchanges and private industrial networks including single firm and wide networks.

Consumer to Consumer (C2C)

It provides a path to consumers to sell to each other, by using an online market such as e-Bay. Here, consumer prepares and places the product for sale in order to displayed, discovered and paid for.

Peer to peer E-commerce

It enables internet users to share files and computer resources. Here no intermediary is required. These networks make use of intermediary "Super Servers".

Mobile Commerce

It refers to the use of wireless digital devices to enable transactions on the web. It involves the use wireless networks to connect cell phones, handheld devices and personal computers to the web.

Benefits of E-commerce

The benefit from the customers' is significant increase and saves of time and easy access from all over the world. Customer can place a purchase order at any time. The main benefits of e-commerce for customers are as follows:

1) Reduced transaction costs for market exchange.
2) Transactions can be made 24, without interaction with the business concerns.
3) Time saving- Customer by the use of internet can buy or sell any product at any time.
4) By the use of Internet customer will have easier to access information.
5) By the use of Internet purchases and sales can be performed from home or working place easily.
6) In case of unsatisfactory service provided by the company customer can easily change the company at any time.
7) Customer can buy a product which is not available in the local or national market, which gives customer a wider range of access to product than before.
8) A customer can put review comments about a product and can see what others are buying or see the review comments of other customers before final buying. The main benefits of e-commerce from sellers' point of view is increasing revenue and reducing operation and maintenance costs through internet. These include as follows:
   - Increases revenue.
   - Reduces operation and hence maintenance costs.
   - Reduces purchase and hence procurement costs.
   - Increase level of customer loyalty.
   - Reduces transportation costs.
   - Maintain customer and supplier relationships.
   - Improves speed of the procedure of selling.
   - Improves internal and external communication and
   - Develops the company image and brand globally.

Objectives

The main objectives of the study are as follows:

1. To get a full acquaintance of the E-commerce.
2. To identify the benefits of E-commerce
3. To know the challenges in E-commerce.

Research Methodology

The paper has been written by using secondary data. The secondary data were collected from published books, journals, research papers, magazines, local newspaper, internet and statistical Documents. The study is qualitative type.

Review of Literature

Internet and e-commerce are closely wrapped towards developed countries. But they can achieve tremendous benefits to developing countries if it is applicable as an ideal business purpose. E-commerce is a revolution in business practices (Ohidujjaman, et al 2013).

The term commerce is viewed as transactions conducted between business partners. Electronic commerce is an emerging concept that describes the process of buying and selling or exchanging of products, services and information via computer networks including internet (Anupam-2011).

Commercial transactions involve the exchange of value (e.g., money) across organizational or boundaries in return for products and services. Exchange of value is important for understanding the limits of e-commerce. Without an exchange of value, no commerce occurs (Laudon and Traver). E-business has changed processes within and between enterprises. Electronic Data Interface (EDI), widely introduced twenty five years ago on dedicated links between firms, showed how information could be directly passed from the operating systems of one enterprise into the order processing, production and logistics systems of another(Clayton and Criscuolo). If implemented properly, E-commerce technologies can result in business process improvements and increased efficiencies. Leveraging E- commerce technologies should result in improvements to developing countries, but so far have not produced the desired results (Jeffrey S. Ray-2011).

The development experienced in internet and other global online networks have, thus, created new commercial opportunities for e–commerce and creation of completely new sets of global and national trading relationships. This consequently, led to the perception that e-banking and e-commerce are now an inevitable aspect of financial services. It enables multiple buyers and sellers to come together on a common platform and conduct business without compromising individual requirements and relationships among the participants very quickly; (Harris and Spencer, 2002; Bairagi, 2011).

Electronic commerce is creating new opportunities to the global economic, for example in global travel and tourism industry. Transforming from traditional business method to electronic commerce method is hard and there were many different factors for companies to adapt them with electronic commerce factors (Nanehkaran, 2013). (Hasan, 2010) pointed out that nowadays e-commerce industries have increasingly become a necessary component of business strategy and a strong catalyst for economic development

Conclusion

E-commerce business provider should give importance on every customer by giving smooth service and many options for payment and have more functions available online. Other benefits are expanded product offerings and expanded geographic reach. But e-commerce business faces a lot of challenges in flourishing theirbusiness.

To understand some key business concept such as electronic markets, information goods. The primary societal issues are intellectual property, individual privacy and public policy. So the study of this e-commerce will be helpful to understand technology, business, society and its various application areas and models.

Internet will promote international trade much as lifting other trade barriers would. Thus, the volume of international trade will increase via e-commerce. The countries open to imports from high-income economies will benefit from knowledge spillovers. E-commerce can also have a significant impact on trade in services.

In addition, electronic commerce is also expected to directly and indirectly create new jobs as well as cause job losses.

New jobs will be generated in the information and communication technologies sector, while the indirect creation of jobs will occur via increased demand and productivity. The net employment gains and losses will depend on the demand for certain skills.

Government should take steps to provide a proper legal framework so that hurdles in the growth of e-commerce are reduced to minimum.

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E-Commerce and It Impacts on Global Market

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Abstract

The most important object of the paper is to attain quantitative describing the certainty of internet shopping in the case of the India in classify to explain the expansion of internet shopping and its impact on consumer behavior. The paper builds on the important literature and at the same time examines consumer behavior by questionnaires. In addition, the future improvement of internet shopping will be considered and deep contrast of consumer behavior involving dissimilar countries. This paper sustain the explore questions that as well as recent trends and different issues in internet shopping, and belief factors for consumer behavior.

Moreover, the result of the study shows that internet consumer belief and apparent risk contain burly impacts on their purchasing decisions. Consumer`s trust, privacy concerns, security concerns are the main factors for using internet for shopping, the trust on websites authority to the purchasing decision of any consumer. More particularly, the observed result suggests how the E-commerce companies make marketing strategies according the research data and analyzing effect.

Keywords : *E-commerce, internet shopping, World Wide Web, consumer's buying behavior, privacy and security, consumer trust.*

Introduction

The internet is being developed quickly ever since last two decades, and with important digital economy that is motivated by information technology also being developed worldwide. After a long term

improvement of internet, which speedily increased web users and highly speed internet connection, and a few new technology also have been developed and used for web developing, those direct to firms can support and improve images of product and services throughout web site. So, comprehensive product information and superior service attracts more and more people altered their consumer behavior from the conventional method to more rely on the internet shopping. On the other hand, other companies have realized that the consumer behavior alteration is necessary tendency, and thus adjust their marketing strategy. As the current researches have indicated that, the internet shopping mostly in business to consumer (B2C) has rise and online shopping become more admired too many people. There are many reasons for such a fast mounting of internet shopping, which mainly due to the benefits that internet provides. First of all, the internet offers dissimilar kind of convenience to consumers. Observably, consumers do not require go out looking for product information as the internet can help them to search from online sites, and it also helps estimate connecting each sites to get the cheapest price for acquire. Furthermore, the internet can improve consumer use product more professionally and effectively than other channels to convince their needs. All through the diverse search engines, consumers keep time to access to the use connected information, and which information with combination of images, sound, and very detailed text description to help consumer knowledge and choosing the most appropriate product.

However, internet shopping has probable risks for the customers, such as payment safety, and after check. Due to the internet technology developed, internet payment only just becomes prevailing method for purchasing goods from the internet. Internet payment increase consumptive effectiveness, at the same time, as its essential property compact internet security.

Variation Along With Online/Offline Stores:

Still the internet shopping has been hastily developed, in particular in consumer goods industry, but there still have a big variation linking traditional and online consumer shopping. Referred to sales in the Indian consumer goods industry, the online sales engaged at a very low percentage rate. That could be caused by many reasons, but the mainly consequence is the advantages exist in both traditional shops and online market; both of them have particular characteristics. For example, the traditional seller can afford convenience in parking and shopping, it allows customers come to examine and ensure the quality

of goods before they purchase, and the after service is more honestly to customers. However, the traditional store has partial number of goods, and the selling cost is higher than online store.

By evaluation, we can find out the limitations of traditional store are more likely as the advantages of online store, in difference, the weakness of online store is also seems as the advantages of traditional store. It is apparent from the overview of internet and internet shopping progress that e-commerce is being used in many corporations due to the spectacular growth of technology and aggressive compensation of web selling. Also, the expansions of the custom by individuals also become main contributors to the progress of internet shopping. Comparatively few studies have investigated in the internet shopping and impact on consumer behavior. The earlier studies are more edge on the marker's point of view, such as how to ascertain a more capable marketing channel online rather than the traditional offline channel. So, this research will combines with earlier studies from literature reviews, and edge on the impact of the internet shopping on consumer behaviors to find out a inclusive systematic outline which showing the necessary component of marketing and business to satisfying the consumer's requirements, and a intensely accepting of online consumer behavior as a orientation for any e-commerce company to build marketing strategies.

Impact of Internet on Consumer Buying Behavior:

The influences on consumer behavior are frequently prepared between external and internal factors. External factors are come from the environmental situation, and internal factors are generally from the consumer's mind. There are many factors could influence consumer's behaviors. The external influences could split keen on five sectors: Demographics, socio-economics, technology and community policy; culture; sub-culture; suggestion groups; and marketing. The internal influences are mixture of psychological processes, which embrace attitudes, education, awareness, inspiration, self image, and semiotics. In adding to these, the consumers have two types of motives while shopping, which are functional and non-functional. The functional motives are usually regarding the time, shopping place and consumer's desires, which could be like one-stop shopping to save time, the environmental of shopping place such as free parking place, lower cost of products and accessible to choose from broadly

range of products. The non-functional motives are more connected with culture or social values, such as the brand name of the store.

The traditional shopping is basically about the customer to purchase their requirements. This behavior will be influenced by the seller's promotion and encouragement which attracts consumers goes here and purchase goods, afterwards an element of new products will be taken home and be used.

Internet Shopping:

Internet shopping and traditional shopping are allocation many similarities, at the same time, it still exists some differences linking them, such as the Internet shopping might afford expediency and interactive services and the traditional shopping could gives customers more relaxed shopping environment and high-quality excellence of products. Both phase of shopping malls are trying to improving their services by discover commutatively from each other, such as traditional shopping malls afford more parking spaces, more counters, and nearer to residential area in order to develop services in convenience; Internet shopping malls implement virtual reality and 3D & 4D techniques to enhance the exterior of goods.

In the following sections, the study would provide the environment of internet shopping at first, then the E-commerce web site will be indicated to understand the concentrate of internet shopping, following that, online security, privacy and trust will be discussed. All of these broad overviews and consideration about the internet shopping will provide a background to the study and help to construction the base of intellectual researches.

Convenience:

Internet provides a huge convenience for shopper as the main basis for the shopping online has been fixed by most of researcher and customers. Owing to the portion of Internet, it allow customers to shopping online anytime and anywhere, which means consumer, can browse and shopping online 24-hours a day, 7 days a week from home or office, which attracts various time-starved shoppers approach to Internet for put away instance to incisive products in physical store. In addition, Internet offers

various good ways to save money and time. For example, shoppers do not must go out to the physical store and hence there is no carrying cost. Compare with the traditional shopping, there is no to come streak for shoppers on the Internet, and several shoppers reported that they consider stress from the sales people sometimes, but Internet offers them more pleasing while shopping online.

Technology :

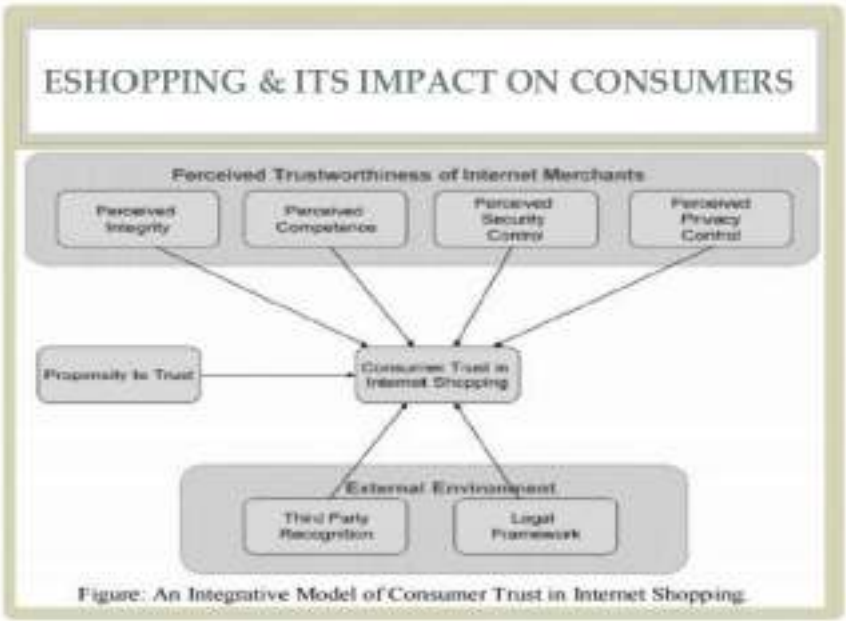
The convenience based on Internet is mostly according to the technology development, and which show business a key role through the development of Internet shopping. In the last decade, organizations have realized that the new technology might impact on Internet shopping intensely, and thus there are many vital technologies like virtual reality and 3D/4D techniques have adopted to expand huge spirited advantages. Information technology has used in the form of the Internet superior enhanced quality of product information, which facilitate shopper's decision making. Through the large range of surveys regarding the Internet use, the development of Internet and the rate of increase of Internet usage have been speedy improved in the last decade. According this report, in the aspect of Internet shopping, there are 40 million users frequently shopping online, and near 1/4 Internet users have online shopping experience. Both surveys shows that more and more Internet use prefers online payment while they shopping, so the security of online payment definitely will become a considerable aspect to authority the Internet shopping.

Consumer Trust in Internet Shopping:

The willingness of a party to be susceptible to the actions of another party based on the anticipation that the other will execute a particular action significant to the trustor, irrespective of the capability to broadly recognize and the most regularly cited.

People purchase products and services are the mainly based on their level of trust in this product or services, and sellers also in the physical store or online shops. Online trust is the essential and necessary element for building a relationship with customers. A present research shows that online trust is lower stage than the face-to-face communications in the physical and the result from shows that

trustworthiness of Internet mercantile (perceived integrity, perceived competence, and perceived security control) and external environment (third-party recognition and legal framework) have extensive impact on consumer trust in Internet shopping. The trustworthiness of E-commerce web site is very relying on the how much confidentiality security can be provided. For example, a vastly technical ability can be a factor to influence the trustworthiness. As mentioned above that the web merchant can make available third-party confirmation to E-commerce web site, and whereas this privacy and security strategies are used, customers will think their E-commerce transactions during Internet are secure and thus the site is more consistent to them. Beside this point, if the E-Commerce web site can present the information about their consumer services, location of the office, contact telephone number, and a help key on the web site, customers could also enhance their trustiness as they can experience that the online retailers is truly survive.



An Integrative Model of Consumer Trust in Internet Shopping.

Conclusion

This study is mostly edge on the factors from the Internet and examines those factors that anxiety the consumer's online shopping behaviors. It starts with the current position of the Internet development, and mentioned the environment of marketing as representation and its variation with physical stores which in order to explain the increasing history of Internet shopping while the E-commerce grow to be popular. In the chapter of literature review, there are three major sections have been discussed: traditional shopping behavior, Internet shopping and online consumer behaviors. Each section starts with the conception, and followed by other perspectives. The research edge on the Internet shopping and online consumer behaviors. Those factors were looked at, and examined to expose the influence at online consumer behaviors. In accumulation, the prior to researches were used to aid researchers understanding more expansively. In addition, the customer's purchase decision making process was also examined to recognize the potential factors. The information search is the most essential aspect that helps the customers find the appropriate products or services for their requirements. Hence, the online retailers have to improve and progress the information supporting such as provide much complete product information and use internal search engine in order to enlarge the capable of information search. For the appraisal stage, customers further assume a lot of the reputation from the E-commerce website, and the compensation security for the purchase stage. At the post-purchase stage, the aspect of after services which is the most concerned regarding. Generally, the factors from the Internet that influenced or prohibited online consumer behaviors require to be cautiously concerned by the online retailers, who can develop the suitable marketing communications to maintain the customer's acquire assessment make progression and enhance their appearance.

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Impact of electronic commerce on consumer's buying behaviour

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Abstract

The main aim of the paper is to obtain quantitative describing the actuality of internet shopping in the case of the India in order to development of internet shopping and its impact on consumer behaviour. The paper build on the relevant secondary data and the same time examines consumer behaviour by questionnaires.

Also, the result of the study shows that internet consumer trust and perceived risk have strong impacts on their purchasing decisions. Consumer's trust, privacy concerns, and measure factors for using internet for shopping, the trust on websites influence to the purchasing decision of any consumer..

Keywords : *Commerce, E-commerce, Internet shopping, Consumer behaviour and consumer trust.*

Meaning of Commerce:

It means trade as well as the services of Transferring the goods produced in industries to the consumers. Commerce is concerned with the exchange of goods. Commerce involves buying and selling of goods, commerce has a wider meaning Commerce includes trade and aids to trade. i.e. Besides trade, it includes all those activities which help the expansion of trade. And today's world, e-commerce is one of the activity to increase the trade in the world.

Introduction of E-Commerce:

In the e-commerce industry there is the adoption of technology because the people want to increase the standard of living. E-commerce is one of the source to help the people for increasing the standard of

living. Day by bay , increase the population in our country and most of the people use online website reasons that customers are buying and selling of products and services through using self smartphone, tablet. E-commerce is increasing in the customer behaviour because everyone across countries has the personal Smartphones and tablets. The increase in the global e-commerce is providing the website satisfaction to the customer. People are focused on various websites on the Social media so that there could be the focus on the new opportunities to customer.

Meaning of E-Commerce:

E-commerce or Electronic Commerce means buying and selling of goods, products and services over the internet. E-commerce is also known as internet commerce. These services provided online over the internet network. Transaction of money, funds and data are also considered as E-commerce.

Impact of electronic commerce on consumer's buying behaviour:

The topic research about Consumer's buying behaviour with the use of electronic commerce or use of internet. Number of the Online Sites and Mobile Apps available for online shopping. Eg. Amazon, Flipkart, Snapdeal, Nyka, Zivame, Club-factory etc. In the e- commerce industry there is the adoption of technology because every customers want to improve our standard of living. In today's world number of people busy in our jobs and works that's why people have no time to go to market for purchasing goods and services. Busy World, in 1979, Michel Aldrich invented online shopping or E-commerce to enable online transaction processing between consumer and business or between one business to another. E-commerce is very helpful for pack of schedule people to buying and selling goods and services with the use of personal smartphone and tablet.

Similarly, in various countries there is the increasing in young population, the population getting interested in online websites as there is the increasing access or the use the internet based on the reasons that customers are buying the products. E-commerce is increasing in the customer behaviour because everyone across countries has the personal smartphones and tablets. The increase in the global e-commerce is providing the website satisfaction to the customer. people are focused on various websites on the Social media so that there could be the focus on the new opportunities to consumer.

E-commerce is providing the various benefits to the consumers, as they can get the products and services of their own choices through the social interaction on the internet. The companies are focused on to increase the customer satisfaction, thus, technology acceptance model by the companies are impacting in the mind of the consumer. The companies like amazon, flipcart, snapdeal are using the web technology for the social interactions so that customers through the use of the internet can continue to increase the sales.

Consumer Trust in Internet Shopping:

Organisations have adopted many strategies so that they can facilitate consumers. Businesses are making more sales and profits because people like to place order online. The result of the study shows that consumer's perceived risk and consumer trust have a strong impact on their purchasing decisions. Privacy concern and consumer trust are major factors that have the influence of internet shopping. Purchasing decisions of consumers can change due to these factors. Some customers still not buy goods online because they are not satisfied with the quality of products or they don't feel safe while performing online transactions.

With the customer viewpoints some factors are very important for using e-commerce such as website design, loading speed of website, product reviews, shipping policy, payment safety, easy return policy, customer support etc. if all this factor are fulfilled by organisation, the customer trust will be increased and they also use online shopping and e-commerce.

Conclusion:

This Study is mainly focus on the factors from the internet and examines those factors that affect the consumer's online shopping behaviours. The research focus on internet shopping and consumer behaviours. Organisation provide Online platform through e-commerce to consumers. Organisation provide all information related to products in social media. The information search is the most important factor that helps the customers find the suitable products or services for their needs. So the customers take the better decision for buying goods and services with the use of e-commerce.

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Historical Development of E-Commerce

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Abstract

E-commerce is widely considered the buying and selling of products over the internet, but any transaction that is completed solely through electronic measures can be considered e-commerce. E-commerce is subdivided into three categories: business to business or B2B (Cisco), business to consumer or B2C (Amazon), and consumer to consumer or C2C (eBay). also called electronic commerce.

Keywords : *E-commerce, history*

Introduction

Electronic commerce, or e-commerce, refers to economic activity that occurs online. E-commerce includes all types of business activity, such as retail shopping, banking, investing and rentals. Even small businesses that provide personal services, such as hair and nail salons, can benefit from ecommerce by providing a website for the sale of related health and beauty products that normally are available only to their local customers. Electronic commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems. Modern electronic commerce typically uses the World Wide Web at least at one point in the transaction's life-cycle, although it may encompass a wider range of technologies such as e-mail, mobile devices social media, and telephones as well.

Historical Development of E-Commerce

A timeline for the development of e-commerce:

 1971 or 1972: The ARPANET is used to arrange a cannabis sale between students at the Stanford Artificial Intelligence Laboratory and the Massachusetts Institute of Technology, later described as "the seminal act of ecommerce" in John Markoff's book *What the Dormouse Said*.

 1979: Michael Aldrich demonstrates the first online shopping system.

 1981: Thomson Holidays UK is first business-to-business online shopping system to be installed.

 1982: Minitel was introduced nationwide in France by France Télécom and used for online ordering.

 1983: California State Assembly holds first hearing on "electronic commerce" in Volcano, California. Testifying are CPUC, MCI Mail, Prodigy, CompuServe, Volcano Telephone, and Pacific Telesis. (Not permitted to testify is Quantum Technology, later to become AOL.)

 1984: Gateshead SIS/Tesco is first B2C online shopping system and Mrs Snowball, 72, is the first online home shopper.

 1984: In April 1984, CompuServe launches the Electronic Mall in the USA and Canada. It is the first comprehensive electronic commerce service.

 1990: Tim Berners-Lee writes the first web browser, World Wide Web, using a NeXT computer.

 1992: Book Stacks Unlimited in Cleveland opens a commercial sales website (www.books.com) selling books online with credit card processing.

 1993: Paget Press releases edition No. 3 of the first app store, The Electronic AppWrapper

 1994: Netscape releases the Navigator browser in October under the code name Mozilla. Netscape 1.0 is introduced in late 1994 with SSL encryption that made transactions secure.

 1994: Ipswitch IMail Server becomes the first software available online for sale and immediate download via a partnership between Ipswitch, Inc. and OpenMarket.

 1994: "Ten Summoner's Tales" by Sting becomes the first secure online purchase.

 1995: The US National Science Foundation lifts its former strict prohibition of commercial enterprise on the Internet.

 1995: Thursday 27 April 1995, the purchase of a book by Paul Stanfield, Product Manager for CompuServe UK, from W H Smith's shop within CompuServe's UK Shopping Centre is the UK's first national online shopping service secure transaction. The shopping service at launch featured W H Smith, Tesco, Virgin Megastores/Our Price,Great Universal Stores (GUS), Interflora,Dixons Retail, Past Times, PC World (retailer) and Innovations.

 1995: Jeff Bezos launches Amazon.com and the first commercial-free 24-hour, internet-only radio stations, Radio HK and NetRadio start broadcasting. eBay is founded by computer programmer Pierre Omidyar as AuctionWeb.

 1996: IndiaMART B2B marketplace established in India.

 1996: ECPlaza B2B marketplace established in Korea.

 1998: Electronic postal stamps can be purchased and downloaded for printing from the Web.

 1999: Alibaba Group is established in China. Business.com sold for US $7.5 million to eCompanies, which was purchased in 1997 for US $149,000. The peer-to-peer filesharing softwareNapster launches. ATG Stores launches to sell decorative items for the home online.

 2000: The dot-com bust.

 2001: Alibaba.com achieved profitability in December 2001.

 2002: eBay acquires PayPal for $1.5 billion. Niche retail companies Wayfair and NetShops are founded with the concept of selling products through several targeted domains, rather than a central portal.

 2003: Amazon.com posts first yearly profit.

 2003: Bossgoo B2B marketplace established in China.

 2004: DHgate.com, China's first online b2b transaction platform, is established, forcing other b2b sites to move away from the "yellow pages" model.

 2007: Business.com acquired by R.H. Donnelley for $345million.

 2009: Zappos.com acquired by Amazon.com for $928 million. Retail Convergence, operator of private sale website RueLaLa.com, acquired by GSI Commerce for $180 million, plus up to $170 million in earn-out payments based on performance through 2012.

 2010: Groupon reportedly rejects a $6 billion offer from Google. Instead, the group buying websites went ahead with an IPO on 4 November 2011. It was the largest IPO since Google.

 2011: Quidsi.com, parent company of Diapers.com, acquired by Amazon.com for $500 million in cash plus $45 million in debt and other obligations. GSI Commerce, a company specializing in creating, developing and running online shopping sites for brick and mortar businesses, acquired by eBay for $2.4 billion.

 2014: Overstock.com processes over $1 million in Bitcoin sales. India's e-commerce industry is estimated to have grown more than 30% from 2012 to $12.6 billion in 2013. US eCommerce and Online Retail sales projected to reach $294 billion, an increase of 12 percent over 2013 and 9% of all retail sales. Alibaba Group has the largest Initial public offeringever, worth $25 billion.

 2015: Amazon.com accounts for more than half of all ecommerce growth, selling almost 500 Million SKU's in the US.

Conclusion

With the explosion of internet connectivity through mobile devices like Smartphone and tablets, millions of consumers are making decisions online and in this way enterprises can build the brand digitally and enhance productivity but government policies must ensure the cost effective methods/solutions. E-Commerce in India is destined to grow both in revenue and geographic reach. The challenge of establishing consumer trust in e-commerce poses problems and issues that need further research.

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A Critical Analysis of E-Commerce from Customer Point of View

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Abstract

The Internet has changed the business environment and further created opportunities for businesses throughout the world. The worldwide development in information technologies has introduced the electronic commerce (ecommerce) phenomenon. Although the Internet was common among the public in 1994, e-commerce became a phenomenon in developed countries only by 2000. A great number of businesses in the United States and Western Europe started to represent their services online and public started to purchase goods and services over the Internet using secure connections and electronic payment services. The overwhelming public attention and rapid use of the internet over the years has contributed much in facilitating electronic commerce in global business environment. This paper is an attempt to analyze critically the e-commerce from customer point of view

Keywords : *E-commerce*

Introduction

Along with the rapid development of social media and electronic commerce, the social business of SNS and e-commerce is becoming more and more popular. Social business can meet the marketing needs of businesses. The value of social business is created by users and enterprises, and the user plays an important role in this process. How to meet the needs of users of social business experience, to achieve a user to create value, will become the focus of the study of the future of social commerce[1]. On the one hand, use the number of social media and spend time are increasing, the United States nearly 80% adults use online social networking, spend on social networks and blogs time accounts for about 23% of Internet time and 70% of the social network users have online shopping behavior[2], a trend promoted

the emergence and development of social commerce; on the other hand, enterprises use social commerce to better locate the target users, increase sales revenue, so all kinds of enterprises began to social commerce as part of brand marketing and product promotion, under the influence of social environment, market camp pin combined with the advantage of easy and quick network and improve the efficiency of enterprise marketing.

Objectives

1) To understand the concept of e-commerce
2) To analyze e-commerce from customer point of view

E-Commerce Advantages for Customers

Convenience: Every product is at the tip of your fingers on the internet, literally. Type in the product you are looking for into your favorite search engine and every option will appear in a well-organized list in a matter of seconds.

Time saving: With e-commerce there is no driving in circles while looking and digging in hopes of finding what you need. Stores online offer their full line as well as use warehouses instead of store fronts—products are easy to locate and can be delivered to your door in just days.

Options, options, and options: Without driving from store to store the consumer can easily compare and contrast products. See who offers the best pricing and have more options to choose from. While a physical store has limited space, the same store on the internet will have full stock.

Easy to compare: Side by side comparisons are readily available and easy to do. When products are placed online, they come with all the specifics, and they *want* you to compare them with others, know they have the best options and come back for more!

Easy to find reviews: Because the competition is high, companies' online want you to look at other consumer reviews. Good and bad reviews are on every site, not only can you see if the product is liked, you can also see the reasons behind the thumbs up or down.

Coupons and deals: With every online business wanting you, more and more coupons and deals can't be avoided, which are totally great for customers. With major sites that act as department store, you may find items up to 80% off. Take advantage of the competition and find the best price available.

E-Commerce Disadvantages for Customers

Privacy and security: Before making instant transactions online, be sure to check the sites certificates of security. While it may be easy and convenient to shop, no one wants their personal information to be stolen. While many sites are reputable, always do your research for those with less than sufficient security.

Quality: While e-commerce makes everything easily accessible, a consumer cannot actually touch products until they are delivered to the door. It is important to view the return policy before buying. Always make sure returning goods is an option.

Hidden costs: When making purchases, the consumer is aware of the product cost, shipping, handling and possible taxes. Be advised: there may be hidden fees that won't show up on your purchasing bill but will show up on your form of payment. Extra handling fees may occur, especially with international purchases.

Delay in receiving goods: Although delivery of products is often quicker than expected, be prepared for delays. A snow storm in one place may throw off the shipping system across the board. There is also a chance that your product may be lost or delivered to the wrong address.

Need access to internet: Internet access is not free, and if you are using free wifi, there is the chance of information theft over an unsecure site. If you are wearing of your public library, or cannot afford the internet or computer at home, it may be best to shop locally.

Lack of personal interaction: While the rules and regulations of each e-commerce business is laid out for you to read, there is a lot to read and it may be confusing when it comes to the legalities. With large or important orders, there is no one you can talk to face to face when you have questions and concerns.

Conclusion

Today's digital marketing world, e-commerce plays a vital role in buying behaviour of customer. The e-commerce industry in India is growing at a remarkable pace due to high penetration of internet and sophisticated electronic devices. However, the recent growth rate of e-commerce in India is far lagging behind than other developed countries. There are many big problems and challenges on the way of an online merchant

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A Study on Electronic Commerce Benefits and Challenges in an Emerging Economy

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Abstract

Information Technology has been playing a vital role in the future development of financial sectors and the way of doing business in an emerging economy like India. Increased use of smart mobile services and internet as a new distribution channel for business transactions and international trading requires more attention towards e-commerce security for reducing the fraudulent activities. The advancement of Information and Communication technology has brought a lot of changes in all spheres of daily life of human being. E-commerce has a lot of benefits which add value to customer's satisfaction in terms of customer convenience in any place and enables the company to gain more competitive advantage over the other competitors. This study predicts some challenges in an emerging economy. ElectronicCommerceAStudyonBenefitsandChallengesinanEmergingEconomy Strictly as per the compliance and regulations of

Keywords : *e-commerce, information technology, customer satisfaction, business.*

Introduction

Now-a-days e-commerce is growing popular in an emerging economy. E-commerce began in1995. It requires the digital goods for caring out their transactions. Digital goods are goods that can be delivered over a digital network (Laudon and Laudon, 2013). E-commerce is rapidly transforming the way in which enterprises are interacting among each other as well as with consumers and Governments. As a result of changes in the landscape of ICTs, e-commerce is now growing rapidly in several emerging markets and developing economies (UNCTAD/IER/2015). The technologies designed to improve commercial transactions using the Internet have evolved as quickly. However, we have not yet achieved

an ideal world of painless and secure transactions utilizing the Internet, as unresolved privacy issues of the purchaser have impeded the further development of the technologies (Alberto, Avila and violeta-2007). E-commerce has been hailed by many as an opportunity for developing countries to gain a stronger foothold in the multilateral trading system. E-commerce has the ability to play an instrumental role in helping developing economics benefit more from trade (WTO-2013). The growing use of the Internet, tablet devices, and smart phones coupled with larger consumer confidence will see that ecommerce will continue to evolve and expand. With social media growing exponentially in recent years, the conversation between businesses and consumers hasbecome more engaging, making it easier for transactional exchanges to happen online. Internet retailers continue to strive to create better content and a realistic shopping experience with technologies like augmented reality. With mobile commerce gaining speed, more users are purchasing from the palm of their hand (Miva-2011). E-commerce could deliver a significant benefit to businesses in developing countries by increasing their control over its place in the supply chain, thus improving its market efficiency (Molla &Heeks, 2007). a) What is E-commerce? Electronic commerce, or e-commerce, is the buying and selling of goods and services on the Internet. Other than buying and selling, many people use Internet as a source of information to compare prices or look at the latest products on offer before making a purchase online or at a traditional store. E Business is sometimes used as another term for the same process. More often, though, it is used to define a broader process of how the Internet is changing the way companies do business, of the way they relate to their customers and suppliers, and of the way they think about such functions as marketing and logistics. For the purpose of this study e-commerce is taken to mean doing business electronically. (Lindsay P., 2002) b) Why E-commerce? With the increasing diffusion of ICTs, more specifically the Internet, the global business community is rapidly moving towards Business-to Business (B2B) e-Commerce. The buyers gain a clear advantage when the Internet gives them access to the global market, by which they can compare prices across regions, find out whether prices vary by order fragmentation and get awareness about substitute products. Due to transparency of the market, customer can compare the services of various e-commerce sites easily. For instant, in case of e-commerce the competitors are one click away from customer. If clients are not happy with the products, prices or services offered by a particular ecommerce site, they are able to change much more easily than in the physical. From the Sellers' point of view, they don't need to have physical existence of shop.

Review of Literature

Internet and e-commerce are closely wrapped towards developed countries. But they can achieve tremendous benefits to developing countries if it is applicable as an ideal business purpose. Ecommerce is a revolution in business practices (Ohidujjaman, et al 2013). The term commerce is viewed as transactions conducted between business partners. Electronic commerce is an emerging concept that describes the process of buying and selling or exchanging of products, services and information via computer networks including internet (Anupam-2011). Commercial transactions involve the exchange of value (e.g., money) across organizational or boundaries in return for products and services. Exchange of value is important for understanding the limits of e-commerce. Without an exchange of value, no commerce occurs (Loudon and Traver). E-business has changed processes within and between enterprises. Electronic Data Interface (EDI), widely introduced twenty five years ago on dedicated links between firms, showed how information could be directly passed from the operating systems of one enterprise into the order processing, production and logistics systems of another(Clayton and Criscuolo). If implemented properly, E-commerce technologies can result in business process improvements and increased efficiencies. Leveraging Ecommerce technologies should result in improvements to developing countries, but so far have not produced the desired results (Jeffrey S. Ray-2011). The development experienced in internet and other global online networks have, thus, created new commercial opportunities for e–commerce and creation of completely new sets of global and national trading relationships. This consequently, led to the perception that e-banking and e-commerce are now an inevitable aspect of financial services. It enables multiple buyers and sellers to come together on a common platform and conduct business without compromising individual requirements and relationships among the participants very quickly; (Harris and Spencer, 2002; Bairagi, 2011). Electronic commerce is creating new opportunities to the global economic, for example in global travel and tourism industry. Transforming from traditional business method to electronic commerce method is hard and there were many different factors for companies to adapt them with electronic commerce factors (Nanehkaran, 2013). (Hasan, 2010) pointed out that nowadays e-commerce industries have increasingly become a necessary component of business strategy and a strong catalyst for economic development.

Objectives of the Study

The main objectives of the study are as follows:

1. To get a full acquaintance of the E-commerce in India.
2. To identify the benefits of E-commerce.
3. To know the challenges in E-commerce.

Research Methodology

The paper has been written on the basis of secondary data. The secondary data were collected from published books, journals, research papers, magazines, daily newspaper, internet and official statistical documents. The study is qualitative in nature.

E-commerce Situation in India

In India, there is a great deal of interest in e-commerce; however, due to various economic, infrastructural and legal reasons it did not spread widely in the past. After the introduction of 3G technology, the e-commerce has been growing rapidly because people have more easy access to internet than in the past. Business people and trading houses state that the rapid growth in internet networking and mobile phone coverage induces them to meet customers online and deliver a smooth and transparent shopping experience including e-ticket sales and sales on Facebook the market has yearly transactions around Tk 10 billion (approximately DKK 700 million). Furthermore, it increases at a tremendous pace with a monthly growth of 20-25 percent according to data. Around 15 million people use the internet regularly of them,4-5 million have accounts on Facebook which is still holding the leading position for online shopping through smaller and more local businesses although the market is changing rapidly. Larger companies, domestic and international, are having success in transforming a somehow hectic shopping culture into a transparent and easy way of accessing a greats e-location of consumer goods. This trend is known to Swedish e-commerce company Bikroy.com who is doing well in India. Since their launching in 2012 Bikroy.com has experienced a significant growth and is today the largest online marketplace in India. Now they have more than 2 million unique visitors on their website. VI. Benefits

of E-commerce The main benefit from the customers' point of view is significant increase and saves of time and eases access from anywhere in the globe. Customer can place a purchase order at any time. The main benefits of ecommerce for customers are as follows: • Reduced transaction costs for participating exchange in a market. • Increased comfort - transactions can be made 24 hours a day, without requiring the physical interaction with the business organization Time saving- Customer can buy or sell any product at any time with the help of internet.

- Quick and continuous access to information Customer will have easier to access information check on different websites at the click of a button.
- Convenience-All the purchases and sales can be performed from the comfort sitting a home or working place or from the place a customer wants to.
- Switch to others companies-Customer can easily change the company at any time if the service of a company is not satisfactory.
- Customer can buy a product which is not available in the local or national market, which gives customer a wider range of access to product than before.
- A customer can put review comments about a product and can see what others are buying or see the review comments of other customers before making a final buy. The main benefits of e-commerce from sellers' point of view is increasing revenue and reducing operation and maintenance costs through internet. These include as follows: • Increases revenue.
- Reduces operation and maintenance costs.
- Reduces purchase and procurement costs.
- Raises customer loyalty and retention.
- Reduces transportation costs.
- Develops customer and supplier relationships.
- Improves speed of the process of selling.
- Improves internal and external communication. and
- Develops the company image and brand.

Challenges in E-commerce

The major challenges faced by the sellers and the buyer which carrying out business transactions through internet are as follows.

- Private and public corporation is not involved jointly to grow the business of e-commerce. Private and public joint initiative is needed to develop the ecommerce business. Joint initiatives bring credibility inside people, which is needed for flourishing the ecommerce business.
- There is a lack of system security, reliability, standards, and some communication protocol. Customer loses their money if the website of ecommerce site is hacked. Most common problem of e-commerce website is not having enough cyber security.
- Financial institutions and intermediaries: Thus far, financial institutions and banks in developing countries are hesitant to take an active role in promoting e-commerce. However, merchants need the involvement of banks to broaden the reach and appeal of ecommerce and to help prevent fraud and potential losses attributable to credit card fraud. But beyond the credit card approach, banks and other financial service intermediaries are challenged to develop alternative modalities for secure and reliable online transactions in environments where credit cards are not commonplace (Anupam-2011).
- In developing countries there is a culture of buying product by negotiating price with seller, which is not easily possible in case of e-commerce in developing countries because of lack of infrastructure facility.
- One of the biggest challenges is the cutting down the price of internet. Authorities are trying to keep low the price of bandwidth low. But the high cost of spreading networks and operating expenses hinder to keep price low for internet.
- Trust is the most important factor for the use of the electronic settlements. Traditional paper about based rules and regulations may create uncertainties the validity and legality of e-commerce transactions. Modern laws adopted and impartiality implemented in the electronic transactions form the basis of trust in the developed world. Where legal and judicial systems are not developed ecommerce based transactions are at a disadvantage because of lack of security

whether real or perceived. In many developing countries even today cash on delivery is the most accepted system, even cheque and credit cards are not readily accepted (Roni Bhowmik-2012).

- New methods for conducting transactions, new instruments, and new service providers will require legal definition, recognition, and permission. For example, it will be essential to define an electronic signature and give it the same legal status as the handwritten signature. Existing legal definitions and permissions such as the legal definition of a bank and the concept of a national border—will also need to be rethought (chavan-2013). Besides the above challenges, the emerging economy like India also faced the following challenges:
- Lack of education
- Cultural tradition
- Poor concept of online marketing
- Less marketing or promote • Political problem
- High cost of products/services comparing traditional market
- Internet coverage arena is limited
- Communication is haphazard over the country
- Lack of trustable business and enterprise and
- Lack of experience of meeting directly with merchant and customer.

Conclusions

The e-commerce industry will be a leader with popularity in electronic business world in the upcoming years. The e-commerce revolution has fundamentally changed the business of transaction by giving new opportunities and breaking borders easily. In India, it has strongly impacted the traditional business system and changing the life of people by making it easier. While it gives benefits to customer and seller, e-commerce gives challenges to traditional business for competitive position. Developing countries face many obstacles that affect the successful implementation of e-commerce with the help of comparing with developed country. When the internet cost will be low then the e-commerce will flourish easily and will make many of traditional business to run out of their business. Convenience is one of the benefits that customer gets from the e-commerce and thus increasing customer satisfaction.

This is due to customer can place a purchase an order from anywhere with internet connection. E-commerce business provider should give importance on every customer by giving smooth service and many options for payment and have more functions available online. Other benefits are expanded product offerings and expanded geographic reach. But e-commerce business faces a lot of challenges in flourishing their business.

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E-Commerce is a Catalyst of Remarkable Indian Economy

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Abstract

This paper analyze the importance of e-commerce in remarkable Indian economy people assume that ecommerce is limited to consumers' shopping online. While it's true that the public face of e-commerce is online shopping, it has far-reaching implications beyond that. let's take a look at how e-commerce has altered the very nature of businesses across the globe. A Flat World Presenting New Opportunities while Opening the Gates for passionate Competition.

E-commerce and the never-ending array of virtual companies are today challenging long-accepted economic practices and creating passionate competition like never before. While globalization and the internet open up newer markets for you to reach out to, it brings you a hoard of competitors who are all waiting to steal your market share. In this era of digitalization and online shopping, businesses that don't jump on the e-commerce platform are bound to get lost in the free-for-all. That doesn't mean you have to reach out to the first e-commerce website design services you come across to design an online shopping portal for your company. You need a well thought-out e-commerce strategy to outpace your competitors, expand your business, increase revenues and above all take your business to the next level.

E-Commerce – Shaking the very Foundations of Traditional Business. e-Commerce is here to stay. There's no use denying the obvious. And, the threat from e-commerce applies to all – from tiny startups to large corporations. Just because a company is an industry leader today, there's no guarantee that it would retain its competitive edge tomorrow. The threat from e-commerce is high, especially for old-school businesses, that aren't ready to embrace the changing commercial landscape. There's more to embracing e-commerce than updating your IT infrastructure. The changes have to come from a

grassroots level – right from how employees function to how management plans, everything has to adapt to an e-commerce-first strategy.

Keywords : *Passionate Competition, Array, Vertical Integration, Traditional Business, 24 x 7 x365, Businesses Advertise.*

Introduction

Accessibility to e-commerce platforms is not a privilege but rather a necessity for most people coming to the big question, who will win the war in the race to retain existing market shares while successfully expanding to new markets? Traditional organizations or new-age e-commerce firms?

Different Types of E-Commerce There are different types of e-commerce, we will examine five basic types of e-commerce.

1. BUISNESS – TO-BUISNESS (B2B) – it comprises of all electronic transactions of good or services conducted between 2 companies. This type of e-commerce includes intra system and electronic markets.
2. BUISNESS TO CUSTOMER (B2C) - This transaction carried out in the retail trade with individual buyers . this typical buyer of any store on the site is a consumer or a buyer
3. CUSTOMER TO CUSTOMER (C2C)- in this type of e-commerce consumer sells its product directly to consumer
4. CUSTUMER TO BUISNESS(C2B)- In this category of e -commerce , individual consumer of goods or services sells their product to organisation .
5. BUISNESS TO GOVERNMENT (B2G) – In this e-commerce section it compromises of commerce between companies and public sector is listed .

   Types of e-commerce Business models

   1- Drop shipping

   2- 2- Wholesaling and warehousing

   3- 3- White – labeling

   4- 4- Manufacturing

5- 5- Subscription – based

Product models for E-COMMERCE

1- Single product
2- 2- Single category
3- 3- Multiple category
4- 4- Affiliate
5- 5- Hybrid

M-COMMERCE

Mobile commerce is the process of buying and selling of goods and services through wireless technology i.e. devices such as cellular telephones and personal digital assistants . Japan is seen as global leader of m-commerce. This is more faster, secure and scalable. In coming years the contribution will significantly increase in global market with more and more mobile penetration in the world . With Reference Of M-Commerce In India

Businesses have to remember that old commerce rules don't apply in today's era of e-markets. Age-old business practices have been rendered obsolete, just like Newtonian physics has been replaced by the laws of Quantum physics. we are discussing following some significant ways in which traditional business practices have been put on the backburner by ecommerce strategies. The core integral of this strategies are

1. Stick to your core practices. For all other functions, outsource the task to industry experts.
2. The Scalability and Flexibility of ecommerce business model allow companies to grow quickly and profitably, without falling into the dreaded trap of decreasing returns to sale.
3. Today, a company's intellectual property, brand value and perception and customer relationships matter more, thanks to ecommerce.
4. Today, any business can reach customers from any corner of the world, thanks to the internet and ecommerce.
5. Ecommerce has made businesses affordable to all.

6. Today, small business owners can now collaborate with major online companies, thereby boosting their profits and returns.
7. Middlemen are removed from the distribution equation, small business owners are able to earn higher profits, thereby offering their products to the customers at better rates
8. Big benefit for both consumers and business owners, as the online shop is open 24 x 7.
9. The Size of company or team doesn't matter today as before
10. With the rise in ecommerce, Digital marketing has slowly replaced conventional marketing.

1. Vertical Integration is no consistent.

It's true that vertical integration was considered the best practice for several decades. The simple idea behind this concept is that – if you want to do something perfectly, get it done by yourself. As companies grew, they started doing all the processes in-house. Right from processes down the chain, including retail, everything was carried out in-house. In fact, some corporations had (or still have) their in-house legal team to help them with legal matters, even if the core expertise of the business has nothing to do with the law.

This mentality cost businesses huge overhead, making them highly inflexible and inefficient today. Today, the economy is global. And, outsourcing specific functions to specialists is a must not only to reduce overhead costs, capital expenditure and other unnecessary expenses, but also to help businesses focus on their core product, so that they deliver the best value to their customers.

An example of vertical integration gone wrong – Just because, you're developing an ecommerce site for your business doesn't mean that you have to hire a team of web developers, designers, coders and other specialists to help you with the job. Instead, you're better off outsourcing the task to a reputed Magento 2 development company, while you focus on your specialties.

2. Decreasing Returns to Scale – A Law Rendered Wrong

In economics, a classic theory is the Decreasing Returns to Scale. According to this law, even when an increase in all inputs (inclusive of capital and labor) occurs, the output is not proportional. It states that all businesses cannot grow profitably forever. However, this classic economic principle doesn't apply to the world of e-commerce. E-Businesses have proved that they can sustain incredible growth, while

continuing to offer excellent returns. One of the primary reasons for this is that ecommerce doesn't need high investments unlike traditional businesses.

On the other hand, e-Businesses rely on communication, IT and technology. The infrastructure and inventory needs are a bare minimum. The bulk of investment is made up of client relations/support, IT infrastructure and R&D. Once the initial investments are done, the cost per unit is dramatically lower when compared to traditional business models.

3. Return on Intangibles

Traditionally, while intangible assets helped businesses remain competitive in their field, other physical assets like building, equipment, IT infrastructure, proper management and customer relations helped companies to gain an edge over their competitors. With the growth in the internet and widespread availability of e-commerce, today businesses are able to make profits out of their intangible assets. Today, collaboration and communications between suppliers and vendors is easier and cost next to nothing. This means businesses can now leverage their intangible assets to a broader market. e-Commerce has removed all time and space constraints that businesses faced just a few years ago. Companies no longer have to work in a particular geographical location or time zone. They have become truly global.

An excellent example is eBay and Uber. eBay an auction site has no physical assets but is valued at nearly $2 billion. Similarly, Uber the largest ridesharing platform doesn't own a single car. E-commerce has made it possible for a company to become the biggest in its industry, without holding physical assets.

4. Easy access to reach

Just a few years ago, it was next to impossible for businesses to reach out to other customer markets. Ecommerce has now made it a cakewalk to sell your products and services, to people located anywhere on the planet. Yes, you can now sell your wares not just to your local market but to people in any corner of the world.What more, marketing your products to other markets is also a cakewalk. This means, the playing field has leveled like never before, and small businesses too can target the audience of large corporate.

5. Low Cost of Initial Business Setup

Just a few decades back, to set up a business, you required massive capital costs. However, ecommerce changed all this. Today, it's possible to set up a company out of one's garage with minimal investments. You know the story of Indian e-Commerce giant Flipkart? It was started in a 2 BHK apartment and Walmart recently bought it for $16 billion. With online selling, business owners need not carry an extensive inventory. They can add products to their inventory based on customer demand. What more, ecommerce has vastly reduced the overhead costs of running a business.

6. Bigger and Better Collaborations

Traditionally, small business owners who specialized in a particular niche were restricted to specific markets. Even though their niche was customized and distinct, they couldn't make higher profits due to the unavailability of bigger markets. An excellent example of this is the emergence of marketplaces like Amazon, Flipkart and others. Today, small business owners sign up on these platforms and pay a small fee for every product sold on the platform. In return, they get access to bigger and broader markets than ever before, thereby creating a win-win situation for all.

7. Elimination of Middlemen

Today, businesses can directly sell to customers without the need for any middlemen. Say, you're a small business owner selling local fabric. Earlier, you had to depend on vendors and brokers to distribute your fabrics to geographical locations beyond your immediate vicinity. Ecommerce has put an end to all these middlemen. Now, all you have to do is approach a Magento or commerce development company and design an online store for your business. With it, you're directly connected to your customers sans any middlemen.

8. Businesses are now Open 24 x 7 x365

In the world of ecommerce there is no downtime. Businesses are open 24 x 7, 365 days of the year. And, sales can happen at any time of the day. Traditionally, businesses had to close shop at the end of the day. This means shoppers were restricted and had to complete their purchases within a particular time.Today, with the emergence of ecommerce platforms, shoppers can shop at any time convenient for them. Be it in the middle of the night or while lounging on their couches over the weekend.

9. The Size of the Company no longer Matters

Whether you run your online business solo-handed or with the help of a hundred-member team, it makes no difference to the end consumer. This means as mentioned before, a small business owner can compete even with the large players in the market.

Traditionally, small business owners faced major drawbacks due to their lack of staff. They couldn't match the customer service provided by massive brick and mortar stores. Today, the situation has altered. The positives of running a small business far outweigh big, clunky corporations in the online world.

10. Ecommerce has changed the Way Businesses Advertise

Ecommerce has radically changed the way people purchase. With changes in the purchase tactics, it's only right that advertising techniques also vary accordingly. Today, even consumers who shop at a brick and mortar store, look up products online, read reviews and compare prices before they make the decision to buy. So, businesses today no longer can depend on traditional marketing techniques alone. They must consider digital marketing to meet the demands of the tech-savvy consumers of today. search engine optimization, paid ads, email marketing, social media optimization are some of the tactics that business owners employ to reach out to millions of potential customers online.

Conclusion

Ecommerce has rapidly changed the way in which businesses operate. Whether you run a B2C business or a B2B company, there's no escaping the reaches of ecommerce. Today, when a customer wants to shop for a particular product or service, the first thing customer does is fire up a Google search. The customer does research – right from analyzing the pros of your product to comparing the prices of your competitors, the consumer is aware and well-informed. Context of India we also try to find the upward trend of growth of e-commerce in India , and also increase in m-commence and digital penetration in India .Government policies and initiatives has also lead to increase of e-commerce in India over years . According to survey after demonization , role of cashless economy in India has increased significantly , thus the role of internet also likewise other such government policies have also had a major impact. Study impact of literacy rate and unemployment rate on the growth of ecommerce industry in India .

also there is significant need to increase the literacy rate in India and also spread awareness among rural people in India about cashless economy and role of internet in India in today's world And, one of the best e-commerce tips for businesses is to "Adapt and Evolve." In today's dynamic and hyper-competitive market spaces, it isn't sufficient for businesses to remain stable. They have to keep on evolving, introducing new technologies and other facilities to customers. Are you ready to embrace the dizzying speeds of ecommerce to take your business to further growth.

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History of Electronic Commerce

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Abstract

E-commerce is the activity of buying or selling of products on online services or over the Internet. Electronic commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems.

Modern electronic commerce typically uses the World Wide Web for at least one part of the transaction's life cycle although it may also use other technologies such as e-mail. Typical e-commerce transactions include the purchase of online books (such as Amazon) and music purchases (music download in the form of digital distribution such as iTunes Store), and to a less extent, customized/personalized online liquor store inventory services. There are three areas of e-commerce: online retailing, electronic markets, and online auctions. E-commerce is supported by electronic business.

Introduction

One of the most popular activities on the Web is shopping. It has much allure in it — you can shop at your leisure, anytime, and in your pajamas. Literally anyone can have their pages built to display their specific goods and services History of ecommerce dates back to the invention of the very old notion of "sell and buy", electricity, cables, computers, modems, and the Internet. Ecommerce became possible in

1991 when the Internet was opened to commercial use. Since that date thousands of businesses have taken up residence at web sites.

Sources

At first, the term ecommerce meant the process of execution of commercial transactions electronically with the help of the leading technologies such as Electronic Data Interchange (EDI) and Electronic Funds Transfer (EFT) which gave an opportunity for users to exchange business information and do electronic transactions. The ability to use these technologies appeared in the late 1970s and allowed business companies and organizations to send commercial documentation electronically.

Although the Internet began to advance in popularity among the general public in 1994, it took approximately four years to develop the security protocols (for example, HTTP) and DSL which allowed rapid access and a persistent connection to the Internet. In 2000 a great number of business companies in the United States and Western Europe represented their services in the World Wide Web. At this time the meaning of the word ecommerce was changed. People began to define the term ecommerce as the process of purchasing of available goods and services over the Internet using secure connections and electronic payment services. Although the dot-com collapse in 2000 led to unfortunate results and many of ecommerce companies disappeared, the "brick and mortar" retailers recognized the advantages of electronic commerce and began to add such capabilities to their web sites (e.g., after the online grocery store Web van came to ruin, two supermarket chains, Albertsons and Safeway, began to use ecommerce to enable their customers to buy groceries online). By the end of 2001, the largest form of ecommerce, Business-to-Business (B2B) model, had around $700 billion in transactions.

Ecommerce has a great deal of advantages over "brick and mortar" stores and mail order catalogs. Consumers can easily search through a large database of products and services. They can see actual prices, build an order over several days and email it as a "wish list" hoping that someone will pay for their selected goods. Customers can compare prices with a click of the mouse and buy the selected product at best prices.

Online vendors, in their turn, also get distinct advantages. The web and its search engines provide a way to be found by customers without expensive advertising campaign. Even small online shops can reach global markets. Web technology also allows to track customer preferences and to deliver individually-tailored marketing.

Marketing

History of ecommerce is unthinkable without Amazon and Ebay which were among the first Internet companies to allow electronic transactions. Thanks to their founders we now have a handsome ecommerce sector and enjoy the buying and selling advantages of the Internet. Currently there are 5 largest and most famous worldwide Internet retailers: Amazon, Dell, Staples, Office Depot and Hewlett Packard. According to statistics, the most popular categories of products sold in the World Wide Web are music, books, computers, office supplies and other consumer electronics.

Amazon.com, Inc. is one of the most famous ecommerce companies and is located in Seattle, Washington (USA). It was founded in 1994 by Jeff Bezos and was one of the first American ecommerce companies to sell products over the Internet. After the dot-com collapse Amazon lost its position as a successful business model, however, in 2003 the company made its first annual profit which was the first step to the further development.

Methods

At the outset Amazon.com was considered as an online bookstore, but in time it extended a variety of goods by adding electronics, software, DVDs, video games, music CDs, MP3s, apparel, footwear, health products, etc. The original name of the company was Cadabra.com, but shortly after it become popular in the Internet Bezos decided to rename his business "Amazon" after the world's most voluminous river. In 1999 Jeff Bezos was entitled as the Person of the Year by Time Magazine in recognition of the company's success. Although the company's main headquarters is located in the USA, WA, Amazon has set up separate websites in other economically developed countries such as the United Kingdom,

Canada, France, Germany, Japan, and China. The company supports and operates retail web sites for many famous businesses, including Marks & Spencer, Lacoste, the NBA, Bebe Stores, Target, etc.

Amazon is one of the first ecommerce businesses to establish an affiliate marketing program, and nowadays the company gets about 40% of its sales from affiliates and third party sellers who list and sell goods on the web site. In 2008 Amazon penetrated into the cinema and is currently sponsoring the film "The Stolen Child" with 20th Century Fox.

Development

According to the research conducted in 2008, the domain Amazon.com attracted about 615 million customers every year. The most popular feature of the web site is the review system, i.e. the ability for visitors to submit their reviews and rate any product on a rating scale from one to five stars. Amazon.com is also well-known for its clear and user-friendly advanced search facility which enables visitors to search for keywords in the full text of many books in the database.

One more company which has contributed much to the process of ecommerce development is Dell Inc., an American company located in Texas, which stands third in computer sales within the industry behind Hewlett-Packard and Acer.

Launched in 1994 as a static page, Dell.com has made rapid strides, and by the end of 1997 was the first company to record a million dollars in online sales. The company's unique strategy of selling goods over the World Wide Web with no retail outlets and no middlemen has been admired by a lot of customers and imitated by a great number of ecommerce businesses. The key factor of Dell's success is that Dell.com enables customers to choose and to control, i.e. visitors can browse the site and assemble PCs piece by piece choosing each single component based on their budget and requirements. According to statistics, approximately half of the company's profit comes from the web site.

In 2007, Fortune magazine ranked Dell as the 34th-largest company in the Fortune 500 list and 8th on its annual Top 20 list of the most successful and admired companies in the USA in recognition of the company's business model.

History of ecommerce is a history of a new, virtual world which is evolving according to the customer advantage. It is a world which we are all building together brick by brick, laying a secure foundation for the future generations.

Conclusion

1. Back to the invention of the very old notion of "sell and buy", electricity, cables, computers, modems, and the Internet.
2. The term ecommerce meant the process of execution of commercial transactions electronically with the help of the leading technologies.
3. According to all available data, ecommerce sales continued to grow in the next few years and, by the end of 2007, ecommerce sales accounted for 3.4 percent of total sales.
4. According to statistics, approximately half of the company's profit comes from the web site.
5. It is a world which we are all building together brick by brick, laying a secure foundation for the future generations.

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M-Commerce: The Future of E-commerce

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Abstract

M-Commerce is the buying and selling of products and services through wireless ha devices such as mobile telephone and personal digital assistants(PDAs). M-Commerce is a platform where a smartphone users can avail various banking and other related commercial facilities through his mobile phone. M-Commerce is not the transaction itself. It provides services and information, which can trigger a future transaction. The scope of m-commerce therefore goes beyond the initial one time commercial transaction. The main areas of m- commerce use are in text messaging or SMS, mobile payment, financial & banking services, logistics, goods/services buy/sell information services and wireless customer relationship management etc. In this fast moving generation, the world of technology has really improved our lives a lot. With the help of internet, everything is available on your fingertips. You do not have to even step out of your house and the desired products are available in front of you. It is just a few clicks away from you. This is being possible only because of the new technologies such as E-Commerce and M-Commerce.

Due to the popularity of m-commerce, all business organisations should grab this opportunity by exploring their smaller commercial at global platform in less cost through mobile applications. Now m-commerce has made the world a single market. Only this is the way to survive in future because m-commerce is the future of e-commerce

Introduction

'Commerce' is the trading of 'something' of value between two entities. That 'something' may be goods, services, information, money, or anything else the two entities considered to have value. Trading was the main facility in earlier times with barter facility for goods and services. Later, currency was introduced as standardized money to facilitate a wider exchange of goods and services. Today's era is an information era and the world is passing through an Information revolution. One of the profound consequences of the information revolution is its influence on how economic value is created and extracted. Today the information is more easily accessed, absorbed, arranged and is priced in different ways. Markets are expanding from regional to global. Knowledge is replacing land, labour and capital as the key value driver. Intelligent networks and virtual spaces are limiting the need for surface and air travel. With the technological progression particularly in computers and Internet field has led to the birth of electronic commerce (E-commerce) which enabled the business processes to be more simplified, efficient, quick and accurate resulting in improved productivity with higher satisfaction level of the customers. Also, improved processes resulted in reduced cost of production and transaction cost and therefore the profitability of businesses increased manifolds. The emerging wireless and mobile networks have added another dimension of mobility and extended e-commerce to another research and application subject called mobile commerce popularly known as M-Commerce.

Research methodology

This paper is basically descriptive and analytical in nature. In this paper an attempt has been taken to analyse the future of m-commerce in India. The data used in it is purely from secondary sources according to the need of this study.

Collection of data

M-commerce is a technological concept which is related with the internet hence data is available on

internet in large amount of size. Therefore, data related to e-commerce and e-commerce is collected from various websites, reference books, newspapers etc.

Objectives of study

1. To know the growth of m-commerce industry.
2. To study the factors behind the popularity of m-commerce
3. To motivate new start-ups to encash various upcoming opportunities in m-commerce.
4. To making awareness about the upcoming changes in e-commerce industry.
5. To study of various types of m-commerce applications available om mobile devices

Hypothesis of research

1. There is more business opportunities in m-commerce.
2. M-commerce is to overtake e-commerce.
3. M-commerce is a future of e-commerce.

Analysis

Concept of m-commerce

M-Commerce is the buying and selling of goods and services through wireless handheld devices such as mobile telephone and personal digital assistants(PDAs). M-Commerce is a platform where a mobile customer can avail various banking and other related commercial facilities through his mobile phone. M-Commerce is not the transaction itself. It provides services and information, which can trigger a future transaction. The scope of m-commerce therefore goes beyond the initial one time commercial transaction. The main areas of m- commerce use are in text messaging or SMS, mobile payment, financial & banking services, logistics, goods/services buy/sell information services and wireless customer relationship management etc.

In this fast moving generation, the world of technology has really improved our lives a lot. With the help of internet, everything is available on your fingertips. You do not have to even step out of your

house and the desired products are available in front of you. It is just a few clicks away from you. This is being possible only because of the new technologies such as E-Commerce and M-Commerce.

The conversion from the physical store shopping to Online Shopping might have taken hundreds of years, but the changeover, although partial, from web world (E-commerce) to mobile world (M-commerce) has simply taken place within a decade or two. M-commerce means operating business transactions on the Internet using mobile devices, while E-commerce means operating business transactions on the Internet using computers or laptops.

Although, web world and mobile world, both the technologies are based on the same fundamental principles, and aim at making consumer lives easier, there are a few key differences between them.

Differences between e-commerce and m-commerce

Both of these terms have different meanings though both aim at making consumer lives easier. To better understand the differences between E-commerce and M-commerce, please have a look at the following table:

	E-commerce	M-commerce
Definition	Electronic Commerce (or also called E-commerce) refers to the activities of buying and selling products and services with the use of electronic systems such as the internet.	Mobile Commerce (or also called M-commerce) refers to the process of buying and selling products and services with the use of internet/cellular data via wireless handheld devices.
History	1970's	1990's
Devices used	Computers, laptops…	Wireless handheld devices such as cell phones, iPads, tablets…
The use of Internet	Mandatory	Not mandatory(allow the use of offline

		mode, might not work properly though)
Connectivity	Smaller	Larger owing to the bigger number of mobile users
Mobility	Limited	Less limited because of lighter weight and smaller size leading to easier to carry
Reach	Only at the places where the electricity and the internet are available	Broader due to its portability
Payment gateway	Credit cards	Caller's rate, mobile banking or user's credit card
Usage	Less simple because of a more complicated user interface and more functions	Simple because all functions have been simplified
Platform used	Web stores	Web stores (mobile version/web app), hybrid app, native app
Cost	Less costly for the creation a web store and the use of internet	More costly for the creation of a mobile app and the use of cellular data

Number of smartphone users in India

The number of smartphone users in India is expected to rise by 84% to 859 million by 2022 from 468 million in 2017, according to a joint study by Associated Chambers of Commerce and Industry of India and PwC. Ownership of feature phones will shrink to 504 million in 2022 from 701million in 2017, the study noted. About 10% of the population will own tablets three years from now compared with 5.3% in 2017. It means, in future there is significant growth in smartphone holders.

Benefits of m-commerce:

The benefits of m-Commerce with respect to customers, merchants and banks are as below:

• Ubiquitous Personalized service – anywhere, anytime

• Remote payment for utility bills; insurance premiums; credit card bills; EMIs etc

• Integration with existing payment systems e.g. Credit/debit card payment option

• Promotion of Location based services

• Faster transaction time

• New business opportunities for stakeholders

• Point of Sale (POS) device not require

• Branding and business opportunities for banks

• Higher volume in banking with less cash transaction

• Penetration into cash dominated category

• Help developing customer loyalty

• Reduction in cost of infrastructure and usages

Types of m-Commerce applications

Various applications of Mobile Commerce are given in the table below

Application	Example of m-Commerce services offered
Mobile banking	▪ Mobile Accounting ▪ Mobile online stock transaction ▪ Mobile banking information ▪ Payment for insurance, recharge coupons etc
Mobile information services	▪ Current affairs ▪ Tour and travel information ▪ Mobile search engines and directories
Mobile shopping	▪ Purchase of goods and services ▪ Content purchase & delivery
Mobile ticketing	▪ Sports and cultural events ▪ Cinema Tickets
Mobile marketing	▪ Mobile coupons ▪ Mobile newsletters
Mobile entertainment	▪ Mobile Gaming ▪ Download of music, video and ring tones ▪ Location based entertainment services

Drivers of m-Commerce

There are various factors responsible for the growth of m- Commerce. A few of them are listed below:-

- Changing behavior pattern and expectation of consumers with regard to shopping and brand loyalty.
- The models of Businesses are changing very fast. Mobile phones are enabling these changes to happen.
- Tremendous growth in mobile telephony.

- Exponential growth of consumer interest and adoption of the Internet and e-commerce.
- Development of real-time transfer of data over 2.5G/high speed internet network. With the introduction of 3G services and with the expected private sector participation, 3G will enable faster data transmission and ubiquitous connectivity.
- The evolution of the handheld devices incorporating Wireless Application Protocols (WAP) and GPRS.

With the rise in the number of subscribers of database services, the cost of entry into m-Commerce is low for most entrants;

Because of the benefits of m-Commerce as described above it is attracting players from all economic sectors from technology, finance, retail, media, all anticipating that m-Commerce will help in increasing customer acquisition and retention and generate new revenue opportunities for them.

By 2010, more than three billion people are expected to own mobile phones in the world. India is the second largest nation in the world in terms of number of mobile subscribers and is growing at the fastest pace in terms of number of mobile subscribers. There are over 545million mobile phones (as on Jan'2009) in India and about 18 million are being added every month. As per the reports available, there are about 149 million (~25%) subscribers registered for the data services (December 2009 figure). However, as compared to number of mobile subscriber base in India, user transactions through m-Commerce per day are abysmally low (5-10 million) and it can be said that presently M-Commerce is in the nascent stage in India. However, it has great potential of expansion of business transaction particularly in non-cash category. If properly harnessed, it can help in facilitating inclusive growth particularly in rural India. These are the reasons why the present study has been proposed to be taken up.

Number of smartphone users in India

The number of smartphone users in India is expected to rise by 84% to 85.9 crores by 2022 from 46.8

crores in 2017, according to a joint study by Associated Chambers of Commerce and Industry of India and PwC. Ownership of feature phones will shrink to 50.4 crores in 2022 from 70.1 crores in 2017, the study noted. About 10% of the population will own tablets three years from now compared with 5.3% in 2017. It means, in future there is significant growth in smartphone holders.

Conclusions

As per the above analysis of data, it is clear that m-commerce is the successor of e-commerce. There are many drivers of m-commerce, which are making m-commerce more popular such as convenience in use, faster mobile applications than websites, various discounts offers etc. Considering growth rate of smartphone users, soon m-commerce will take over e-commerce.

Due to the popularity of m-commerce, all business organisations should grab this opportunity by exploring their smaller commercial at global platform in less cost through mobile applications. Now m-commerce has made the world a single market. Only this is the way to survive in future because m-commerce is the future of e-commerce

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Doing Business Post GST Era for Electronic Commerce Operator (ECO) – Opportunities & Challenges Ahead for Sustainability

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Abstract

Goods and Services Tax (GST) is one of the paradigm shifts in indirect tax structures in India. The loopholes or the ambiguities that were exist in the earlier tax structures was the critical aspect for the businesses for moving ahead and progress. The tax structure was creating many hurdles to Ecommerce Operators (ECO) due to differential state tax structure for similar products. This discourages the ECO to go for operational expansion and further the more added taxes by states such as Entry tax created a barrier to trade. GST gives the uniformity in tax structure of country. The tax thus named as "One Nation One Tax". The GST gave not only tax credits to vendor/seller selling online but also the ECO offering the services of E-market place to the vendor. The classic benefit that is the outcome of GST law is the cost efficiency achieved by the sellers as well as ECO due availability of Input Tax credit (ITC). Further many new challenges emerged post GST like pricing factor, increased compliances but also offered numerous opportunities in ease in doing business to ECO.

Keywords : *GST, ECO, Cost Efficiency, ITC*

"The sun seems to be shining brightly for the e-commerce sector in India. With its ever-growing popularity among Indian consumers, the sector is expected to perform better than ever, and the Indian e-commerce market is expected to grow the fastest globally over the next three years". According to a report from The Associated Chambers of Commerce & Industry of India (ASSOCHAM)

Emergence of E-commerce took place in India relatively late as compared to other developing nations in the world. E-commerce model acquired place pace in last 10 years. One of the most important reasons for rising popularity of ecommerce in India is the availability of high speed internet at reasonable rate to the subscribers, fast penetration of mobile phones and more importantly availability of products through ecommerce websites are heavily discounted. This can be even affordable to the buyers after paying all requisites taxes and duties applicable on these sales. The trend sets to continue even today, the online selling not only popular with respect to sale of tangible product but also intangible products in the form of e-contents as well as services has preferred selling their products through this channel.

Indirect taxes are the main source of revenue for a government. Out total revenue collected through taxes, around 80 to 90 percent of revenue is collected through the indirect taxes. Direct taxes has minimal share in the total tax collection head of Union Government. Indirect taxes also add the revenue to the treasury of State Governments as many indirect taxes are charged by the state government. Ecommerce platforms are the one which needs to fulfill all the taxes compliances as compared to brick and mortar businesses. There was always interaction between indirect taxes and ecommerce operators. The business model of ECO is already a complex and further the complexity of this business model has been intensified the changing environment of India's Indirect tax.

Pre GST era: Indirect Taxes and ECO

Prior to emergence of Goods and Services Tax (GST) in India, there were many levies and charges exist at Central level, state level even at municipal / local level in India. This made the challenges for businesses an uphill tax so as that for ecommerce business. The taxes that were exist before the GST introduction in India was:

a) Excise duty, mainly levied on manufacturing / production of goods in India & service tax charged on provision of services. These taxes were charged and collected by Central Government.
b) Value Added Tax (VAT) for goods sold in intra state and Central Sales Tax (CST) for inter-state supply of goods. This tax was collected by State Government.
c) Entry Tax is tax for entry of goods into particular state, the said tax was of State Government.
d) Custom Duty, this duty is charged on import of goods into India.

Ecommerce operators (ETO) are providing electronic market place to the seller of goods. Under this they provides certain support to the sellers such as marketing, technology support, warehousing, transportation and logistics etc. thus the ECO are providing services they are required to pay service tax, while seller who are getting support of ECO for selling their products needs to charge VAT/CST on sale of goods or service tax on provision of services. There was various time an ambiguity exist among different state VAT authorities in respect to treating ECO. Their view was ECO are providing agency services and thus should be treated as "Dealer" from VAT perspective. The VAT authorities many occasions do not comprehend that ECO are just merely providing services and not selling good on their own right.

Complexity with STATE VAT:

due to rigid approach by state VAT authorities for considering ECO as service provider in certain states, ECO were required to undertake additional indirect tax compliances for transporting and distributing goods in their states. Further to this certain state VAT authorities have posed clumsy returns to provides details of goods sold through ECO. The ECO were imposed to levy VAT due to failure to provide the information required to submit through VAT return.

Beyond this certain state also imposed entry tax for goods purchased over the internet. Certain states also suggested the imposition of a VAT withholding tax on payments made to dealers by ECO. Given the different requirements and practices followed by each state, it is easy to see that complying with all these provisions is a nightmare!

Pre GST Indirect Tax concerns for ECO:

there were such issues which unresolved on multiple occasions for ECO, the highlighted concerns are:

Reverse Logistics: the basic and very concern issue for ECO was the return the goods to the sellers, which are returned by the customers because of any reason, ECO has to return those goods to the seller despite having no rights in the goods.

Discount: discount is one of the most attractive elements of success for ecommerce platform. As product that is available offline is reasonably expensive, while the discount offered by ECO makes the goods

and services attractive. Confusing indirect tax issue is the treatment of discounts, the service tax and VAT authorities are proposing that taxes should be levied on the full value of the sale, with no regard for the discounts.

Aggregator: This levy results in multiple issues for affected e-commerce companies, including restricting the availability of credits for payment of an aggregator service, loss of credits available to the principal service provider, double taxation on the commission element and a lack of prescribed mechanism for undertaking compliance.

Goods & Services Tax:

Goods and services Tax (GST) was implemented in India on 1st July, 2017 nationwide. It is tax on supply of goods and services, or both, it value added tax on sale or services. It is destination based consumption tax, offers a comprehensive and continues chain of tax credit. GST is very helpful in eliminating cascading effect of tax and brings uniformity in tax structure all over the India. The benefits of GST are "One Nation, One Tax", removal of many indirect taxes such as VAT, CST, Service Tax, Excise etc. The implementation of this tax results aims to boost to commercial activities focusing on manufacturing and export. Lowering the cost production and thereby increasing the demand and supply to make GDP grow faster. India has adopted dual GST Model, in which tax will be levied synchronously by central and state governments. The taxes charged under GST are:

a) SGST (State Goods & Services Tax) collected by State Government
b) CGST (Central Goods & Services Tax) collected by Central Government.
c) IGST (Integrated Goods & Services Tax) collected by Central Government on Inter-state Supply of Goods and services.

The implementation of GST is with purpose. Firstly to improve the current lacunas in Indirect taxes as well as to smoothen the tax compliances. The present regime of GST is helpful in streamlining different types of indirect tax; it is further significant to make Indian Indirect tax structure compatible with international practices.

The Indirect Taxes that are subsumed under GST:

Imposed by Central Government	**Imposed by state Government**
✓ Additional Custom Duty (CVD) ✓ Special Additional Duty of Custom (SAD) ✓ Excise Duty ✓ Service Tax ✓ Central Sales Tax ✓ Surcharge and cess related to supply of goods and services	✓ Value added tax (VAT) ✓ Luxury tax, ✓ Octrai, Entry Tax ✓ Purchase Tax ✓ Taxes on lottery, betting and Gambling ✓ Surcharge and cess related to supply of goods and services

Despite the subsumed of many taxes in GST, few taxes are kept outside the preview of GST these are:

1. Basic Custom Duty
2. Stamp Duty
3. Taxes and duties on electricity
4. State Excise Duty

Beside this few commodities are continued with older tax structure until the recommendation from CST Council for inclusion. The commodities are:

1. Alcohol for human consumption
2. Petroleum Products etc.

The major outcome of GST is availability of Input Tax credit paid for acquiring Inputs. In old regime there was huge concern with respect to avail the input tax credit. Manufacture paid Central Excise duty on production, while selling the product he is liable to pay VAT or CST based on intra state or inter-state sales. In subsequent activities of chain if distributor or retailer sold the goods and they were charged by VAT during inbound activities, they were eligible for getting credit. But in situation input was charged as per CST and seller has to VAT, he was not eligible for availing such cross credit.

In current regime, when manufacturer, distributor or retailer sales any product they are in one chain of either CGST & SGST/UTGST or IGST. There is immaterial whether GST paid for services or goods while acquiring inputs. This effect is very vital in terms of pricing the products as the cascading effect gets eliminated during this process.

Process of set off of GST

Input Tax Paid	Output Tax Set-Off		
	CGST	SGST	IGST
CGST	Allowed	Not Allowed	Allowed
SGST	Not Allowed	Allowed	Allowed
IGST	Allowed	Allowed	Allowed

Scenario of Electronic Commerce Operator (ECO) post GST implementation:

Three parties are involved in ecommerce transaction viz., Seller, Buyer and Ecommerce Platform / ECO. Among them buyer is the last part of supply chain and has bound to pay the taxes imposed in a chain. Seller and ECO are the two who can make strategic tax decision with respect to pricing and available credits to make their business model either lucrative or sustainable.

Seller: Under the pre-GST regime the seller was charging VAT / CST on customer based on the movement of goods. While service tax was charged by ECO on seller and same cannot be set off while paying VAT / CST, thus service tax becomes a cost to seller. Under Post-GST regime, seller has to charge CGST + SGST/UTGST or IGST. While ECO will charge GST on Seller for providing E-marketplace; a seller under the current regime can avail credit of entire amount of GST paid to ECO. This would result in to better cost efficiency on the part of seller. Multiple registration will be required under post GST, no more centralized registration exist.

Electronic Commerce Operator: Under Pre-GST era, ECO was charging service tax for providing platform offered to seller for selling their product and at the same time can avail input service tax paid as credit. While if VAT is paid for purchase on goods, same cannot be utilized as credit to paying service tax and that becomes cost for ECO. In current tax era, ECO will charge CGST + SGST or IGST, such taxes would now be available as credit to vendor. While ECO can avail full credit of all taxes paid on input or input services. The cost efficiency will be achieved as all input credits are available.

Key Impact on ECO post GST Implementation

Pricing factor**:** the output tax is higher to the businesses as compared to pre-GST era. The rate of service tax was lower than the GST but at the same time quantum of credit available under post GST regime is higher. This resulted in to reduction in prices of its services offered to the seller.

Place of Supply in case of Business to Customer: under B 2 C transaction place of supply will the location of service provider.

Place of Supply in case of Business to Business: when goods are sold by business to other business entity, the place of supply will be the location of recipient of service, this result into additional compliance by ecommerce companies. As recipients of service (Vendor) are located in multiple states, the ECO has to take registration in almost all states where the vendor / sellers are situated.

Compliance requirement: Under pre-GST era, ECO discharge their output tax liability through centralized registration. But under GST regime, this facility is not available, that results into registration in multiple states as well as increased compliance of returns and provisions.

Opportunities for ECO in post GST regime

The major business opportunity or benefit that is available for ECO in GST regime is no trade barrier, due to Government successful implementation of GST. The "One nation One tax" ideally help the business to go beyond states freely with hassle free tax compliances. In earlier regime there was no uniformity in tax structure was there among different states, which makes each state enable to have their own rates for specific product. Due this differential state level tax structures between the states, ECO set

up their distribution centers in a state having lower VAT applicable. State having higher VAT rates imposed Entry tax on the goods sold by ECO to compensate the revenue loss no account of VAT. Entry tax was acting as trade barrier and made the product costly for both customer as well as ECO. While after implementation of GST major trade barrier arises due old tax structure is being removed. Thus makes operational freedom to Ecommerce Operator in term of doing business smoothly.

Conclusion:

India has taken reform step on July 01, 2017 by implementing most awaited Goods and services Tax (GST). The step has not only initiated the growth prospective for all businesses but also challenged the sustainability of the businesses in the regime. Ecommerce as one of the vibrant and fast moving sector in India, contributing to the nations GDP significantly, has to implement the changes in their operating model post GST implementation. Though few changes are increasing operational burden on the ECO in term of more filling formality in almost every state in which the sellers are situated makes their task cumbersome. On the contrary, the lacunas in old tax structure with respect to handling transaction may be with respect to ambiguity among the tax authorities of states as well as deciding up the tax liability with respect to certain transaction have been removed. Further the business expansion and relative saving in cost of ECO is possible due to removal of trade barriers due to GST implementation. The bottom line that emerges here is "*doing business in any economic system is always having multiple challenges and the opportunities, the perspective of business is the key to handle the challenges and leveraging opportunities is the mantra for success*".

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E-Commerce and its Impacts on Market and Retailers in India

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Introduction :

In the emerging global economy, e-commerce and e-business have increasingly become a necessary component of business strategy and a strong catalyst for economic development. The integration of information and communications technology (ICT) in business has revolutionized relationships within organizations and those between and among organizations and individuals. Specifically, the use of ICT in business has enhanced productivity, encouraged greater customer participation, and enabled mass customization, besides reducing costs. With developments in the Internet and Web-based technologies, distinctions between traditional markets and the global electronic marketplace-such as business capital size, among others-are gradually being narrowed down. The name of the game is strategic positioning, the ability of a company to determine emerging opportunities and utilize the necessary human capital skills (such as intellectual resources) to make the most of these opportunities through an e-business strategy that is simple, workable and practicable within the context of a global information milieu and new economic environment. With its effect of leveling the playing field, e-commerce coupled with the appropriate strategy and policy approach enables small and medium scale enterprises to compete with large and capital-rich businesses. On another plane, developing countries are given increased access to the global marketplace, where they compete with and complement the more developed economies. Most, if not all, developing countries are already participating in e-commerce, either as sellers or buyers. However, to facilitate e-commerce growth in these countries, the relatively underdeveloped information infrastructure must be improved. Among the areas for policy intervention are:

● High Internet access costs, including connection service fees, communication fees, and hosting charges for websites with sufficient bandwidth;

● Limited availability of credit cards and a nationwide credit card system;

● Underdeveloped transportation infrastructure resulting in slow and uncertain delivery of goods and services;

● Network security problems and insufficient security safeguards;

● Lack of skilled human resources and key technologies (i.e., inadequate professional IT workforce);

● Content restriction on national security and other public policy grounds, which greatly affect business in the field of information services, such as the media

and entertainment sectors;

● Cross-border issues, such as the recognition of transactions under laws of other ASEAN member-countries, certification services, improvement of delivery methods

and customs facilitation; and

● The relatively low cost of labour, which implies that a shift to a comparatively capital intensive solution (including investments on the improvement of the physical and network infrastructure) is not apparent.

Research Methodology:

For the said present research study is based on the secondary data. Such secondary data is collected from various reference books on E-Commerce, E-Business, Marketing Management, Marketing Research, Mobile Commerce, Internet Marketing, Electronic Advertising, Economics, Commerce, Management, Banking etc. For the said research study the secondary data is also collected from the various National and International Research Books and Journals which are related to E-Commerce, Internet, Commerce, Banking, Management and Information Technology.

The present research study the data pertaining to the following objectives was collected by the review of the literature on the subject concerned. The literature was thus collected by visiting libraries and various concerned websites.

E-Commerce Models:

Creating an e-commerce solution mainly involves creating and deploying an ecommerce site. The first step in the development of an e-commerce site is to identify the ecommerce model. Depending on the parties involved in the transaction, e-commerce can be classified into main 4 models. These are discuss as follows:

1. Business-to-Business (B2B) Model

This is said to be the fastest growing sector of e-commerce. The B2B model is predicted to become the largest value sector of the industry within a few years. The B2B model involves electronic transactions for ordering, purchasing, as well as other administrative tasks between

houses. It includes trading goods, such as business subscriptions, professional services, manufacturing, and wholesale dealings. Sometimes in the B2B model, business may exist between virtual companies, neither of which may have any physical existence. In such cases, business is conducted only through the Internet. The main two advantages of the B2B model such as it can efficiently maintain the movement of the supply chain and the manufacturing andprocuring processes, and it can automate corporate processes to deliver the right products and services quickly andcost-effectively.

2. Business-to-Consumer (B2C) Model

The B2C model involves transactions between business organizations and consumers. It applies to any business organization that sells its products or services to consumers over the Internet. These sites display product information in an online catalog and store it in a database. The B2Cmodel also includes services online banking, travel services, and health information. The B2C model of e-commerce is more prone to the security threats because individual consumers provide their credit card and personal information n the site of a business organization. In addition, the consumer might doubt that his information is secured and use defectively by the business organization. This is the main reason why the B2C model is not very widely accepted. Therefore, it becomes very essential for the business organizations to provide security mechanisms that can guarantee a consumer for securing business information.

3. Consumer-to-Consumer (C2C) Model

The C2C model involves transaction between consumers. Here, a consumer sells directly to another consumer. Online auction Web sites that provide a consumer to advertise and sell their products online to another consumer. However, it is essential that both the seller and the

buyer must register with the auction site. While the seller needs to pay a fixed fee to the online auction house to sell their products, the buyer can bid without paying any fee. The site brings the buyer and seller together to conduct deals. Any buyer can now browse the site of www.ebay.com to search for the product he interested in. If the buyer comes across such a product, he places an order for the same on the Web site of eBay. EBay now purchase the product from the seller and then, sells it to the buyer. In this way, though the transaction is between two customers, an organization acts as an interface between the two organizations.

4. Consumer-to-Business (C2B) Model

The C2B model involves a transaction that is conducted between a consumer and a Business organization. It is similar to the B2C model, however, the difference is that in this case the consumer is the seller and the business organization is the buyer. In this kind of a transaction, the consumers decide the price of a particular product rather than the supplier. This category includes individuals who sell products and services to organizations. In addition to the models discussed so far, five new models are being worked on that involves transactions between the government and other entities, such as consumer, business organizations, and other governments. All these transactions that involve government as one entity are called e-governance.

Different Markets And Retailers In India :

Markets Physical Markets–Physical Market is a market where customers come physically in the market and face-to-face interact with the seller and buys the product and service in the exchange of money. Examples of physical markets are shopping malls, department stores etc.

Non Physical Markets/Virtual Markets-Non-Physical Market is the market in which customers does not go physically to the seller and do not interact face-to-face. Customer buys the product on internet and exchange the money electronically. Examples of these markets are Flip kart, Amazon, eBay etc.

Auction Market-Auction market is the market in which the goods are sold to the highest bidder and lower bidders are ignored.

Market for Intermediate Goods-In these market raw materials are sold by using them final product is made.

Black Market - In these market illegal goods like drugs, weapons, and alcohol is sold which is supervised by illegal sellers.

Knowledge Market-In this market Information and knowledge based products are sold.

Financial Market- In this market liquid assets or money is exchanged. There are three types of financial markets: Stock market, in which stocks are exchanged; Bond market, in which Debt securities is exchanged in the form of the bond; Foreign exchange market, in which currency exchanges and it is also called currency market.

Retailers:

Department Store–Departmental store is a store which is a combination of multiple small stores under one company which offers a wide variety of products. It adds value for the customers due to offer a wide variety of products at a place.

Supermarkets–Supermarkets generally sell food and beverages but now due to customers need it also sell fashion, electronic related items. It has a good buying power that why it sells at low prices.

Warehouse Retailers–Warehouse retailers are situated at the place where the premises rent is very low so that they can store, display and sell large amount of products.

Specialty Retailers–Specialty Retailers sell a special service or product and provide expert knowledge and good service to customers. They add values by adding accessories and related products in the same outlet.

E-Tailer – E-Tailers are those sellers who provide the facility to customers to buy the product through internet and offers home delivery using which they can reach to customers within a big geographic area and can supply goods to them. They have low rent and overhead that's why they offer competitive prices.

Convenience Retailer–These retailers are available in residential areas and sells limited products at a premium price because they add value of convenience.

Discount Retailer–Discount retailers are those retailers which offer discounts on less fashionable brands by taking it from the suppliers and resell the product till end of line and return the left products at the discounted price to the supplier.

Impact On Markets And Retailers:

The internet is changing the way people do business. This article looks at how e-commerce has affected the market structures of several companies…...

Economists have theorized that e-commerce ought to lead to **increased price competition**, as it increases consumers' ability to gather information about products and prices.

Research by four economists at the University of Chicago has found that the growth of online shopping has also affected industry structure in two areas that have seen significant growth in e-commerce, bookshops and travel. Generally, larger firms have grown at the expense of smaller ones, as they are able to use economies of scale and offer lower prices. The lone exception to this pattern has been the very smallest category of bookseller, shops with between one and four employees, which appear to have withstood the trend.

There has been less research attention directed toward such questions of which businesses benefit the most, and which suffer most, from e-commerce than that applied toward the implications for prices. Straight wisdom suggests that market structure impacts could be large; the rapid growth of online travel sites at the expense of local travel agencies is one soft-cited example.

E-commerce is playing an increasingly important role in many markets. The new technologies it brings affect not just prices but also other components of market structure, with differing effects across businesses. Those that are able to operate at low cost (and pass some of this cost advantage on to their customers) can gain market share and profitability, while higher-cost firms will be hurt, perhaps fatally. The research discussed here concerns a few industries, but similar shifts are likely to have occurred in other markets.

Conclusion:

From the above it can be envisage that, e-commerce provides the wide range of products and services quality wise and rate wise with an add on service of delivery at our home. This system is helpful for the users and consumers to enhance their potentiality of business and using habits as the case may be. It helps in cutting down the unnecessary cost and saves the energy in searching the quality products and services at affordable prices and thus the new products and the new line of business can be developed. It provides the innovative ideas as well as the new avenues to the business since; it establishes the relationship with the customers even after sales by doing so the e-commerce producers or traders are getting their products customized accordingly. E-commerce eliminating the physical trade due to which it is affecting adverse situations for smaller businessmen who are not having much capital deployed in their business since the online shopping systems are not bothered about maintaining their physical shops in the market area which costs more as ownership and as rental. Due to lesser investment in purchasing or hiring the shop within a market the e- commerce providers can maintain heavy range of stocks which helps to reduce their cost of purchase as well as cost of keeping the goods physically in the costlier shops and warehouses. Similarly, the traditional business has to search the customers by spending more on advertising and display at the prominent places, on the contrary in e-commerce; the customers use to search the suppliers online. Some drawbacks are also there in E-commerce business since it requires great deal of technical IT skills, the cost of maintenance of IT professional to maintain the websites are moreMany businesses like shoes, readymade garments etc. which are required to check and test the products instantly (where and there) that, how the products are appearing or looking after wearing then the costumers have to decide on the spot to buy or not. Likewise the risk of frauds and cheatings are

very high in the online shopping which is the part of e-commerce. The hackers of IT sectors are playing major role to corrupt this line of business for their short term benefits which reduces the trustworthiness of the online business. But as compared to benefits of online business to traditional business are very much, hence, it can be concluded that e-commerce is the better option in present era.

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A Study on Impact of E-Commerce on India's Economy

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Abstract

E-commerce involves an online transaction. E-commerce provides multiple benefits to the consumers in form of availability of goods at lower cost, wider choice and saves time. The general category of ecommerce can be broken down into two parts: E-Merchandise & E-finance. Many companies, organizations, and communities in India are doing business using E-commerce and also are adopting M-commerce for doing business. Ecommerce is showing tremendous business growth in India. Increasing internet users have added to its growth. Despite being the second largest user base in world, only behind China (650 million, 48% of population), the penetration of e-commerce is low compared to markets like the United States (266 M, 84%), or France (54 M, 81%), but is growing at an unprecedented rate, adding around 6 million new entrants every month. The industry consensus is that growth is at an inflection point. India's ecommerce market was worth about $3.9 billion in 2009, it went up to $12.6 billion in 2013.

Keywords : *E-commerce, E-Merchandise, E-finance, Economy*

Introduction

India has emerged as one of the major players on the new international business scene. Its unstoppable economic growth since reforms in 1991 has become the focus of attention of researchers in the area of international business and management. The purpose of this paper is to review the impact of e-commerce on Indian Commerce that has been published in top business and management journals, with the aim of knowing what are the most influential papers, what are the issues that have received the most attention, which are the main findings or what more needs to be done in terms of research

E-Commerce

E-commerce is a paradigm shift. It is a ``disruptive" innovation that is radically changing the traditional way of doing business. Electronic commerce is a type of business model, or segment of a larger business model, that enables a firm or individual to conduct business over an electronic network, typically the internet. E-commerce is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the Internet. These business transactions are business-to-business, business-to-consumer, consumer-to-consumer or consumer-to-business. The term *etail* is used in reference to transactional processes around online retail. E-commerce is conducted using a variety of applications, such as email, fax, online catalogs and shopping carts, Electronic Data Interchange (EDI), File Transfer Protocol, and Web services. It can be thought of as a more advanced form of mail-order purchasing through a catalog. Ecommerce is the movement of business onto the World Wide Web. The effects of e-commerce are already appearing in all areas of business, from customer service to new product design. It facilitates new types of information based business processes for reaching and interacting with customers like online advertising and marketing, online order taking and online customer service.

Key Drivers In Indian E-Commerce Are

 Large percentage of population subscribed to broadband Internet, burgeoning 3G internet users, and a recent introduction of 4G across the country.

 Explosive growth of Smartphone users, soon to be world's second largest Smartphone user base.

 Rising standards of living as result of fast decline in poverty rate.

 Availability of much wider product range (including long tail and Direct Imports) compared to what is available at brick and mortar retailers.

 Competitive prices compared to brick and mortar retail driven by disintermediation and reduced inventory and real estate costs.

 Increased usage of online classified sites, with more consumer buying and selling second-hand goods

 Evolution of Million-Dollar startup like Jabong.com, Saavn, Makemytrip, Bookmyshow, Zomato Etc.India's *retail market* is estimated at $470 billion in 2011 and is expected to grow to $675 billion by 2016 and $850 billion by 2020, – estimated CAGR of 10%. According to Forrester, the e-commerce market in India is set to grow the fastest within the Asia-Pacific Region at a CAGR of over 57% between 2012 –2016. India has an internet user base of about 354 million as of June of 2015. Despite being the second largest user base in world, only behind China (650 million, 48% of population), the penetration of e-commerce is low compared to markets like the United States (266 M, 84%), or France (54 M, 81%), but is growing at an unprecedented rate, adding around 6 million new entrants every month. The industry consensus is that growth is at an inflection point. In India, cash on delivery is the most preferred payment method, accumulating 75% of the e-retail activities. Demand for international consumer products (including long-tail items) is growing much faster than in-country supply from authorized distributors and e-commerce offerings. Largest e-commerce companies in India are Flipkart, Snapdeal, Amazon India, and Paytm.

Growth and Prospects of E-Commerce in India:

Increasing internet and mobile penetration, growing acceptability of online payments and favourable demographics has provided the e-commerce sector in India the unique opportunity to companies connect with their customers, it said.

There would be over a five to seven fold increase in revenue generated through e-commerce as compared to last year with all branded apparel, accessories, jewellery, gifts, footwear are available at a cheaper rates and delivered at the doorstep, (as per industry body Assocham). It is noted that the buying trends during 2016 will witness a significant upward movement due to aggressive online discounts, rising fuel price and wider and abundant choice will hit the e-commerce industry in 2016.

It observed mobile commerce (m-commerce) is growing rapidly as a stable and secure supplement to the e-commerce industry. Shopping online through smart phones is proving to be a game changer, and industry leaders believe that mcommerce could contribute up to 70 per cent of their total revenues. In India roughly 60-65 per cent of the total ecommerce sales are being generated by mobile devices and tablets, increased by 50 per cent than in year 2015 and also likely to continue upwards. It noted that the

browsing trends, which have broadly shifted from the desktop to mobile devices in India, online shopping is also expected to follow suit, as one out of three customers currently makes transactions through mobiles in tier-1 and tier-2 cities. In 2015, 78 per cent of shopping queries were made through mobile devices, compared to 46 per cent in 2013. In 2015, the highest growth rate was seen in the apparel segment almost 69.5 per cent over last year, followed by electronic items by 62 percent, baby care products at 53 per cent, beauty and personal care products at 52 per cent and home furnishings at 49 per cent. It revealed that Mumbai ranks first in online shopping followed by Delhi, Ahmedabad, Bangalore and Kolkata.

Conclusion

Growth of e-commerce depend to a great extent on effective IT security systems for which necessary technological and legal provisions need to be put in place and strengthened constantly. While many companies, organizations, and communities in India are beginning to take advantage of the potential of e-commerce, critical challenges remain to be overcome before e-commerce would become an asset for common people. With the explosion of internet connectivity through mobile devices like Smartphone and tablets, millions of consumers are making decisions online and in this way enterprises can build the brand digitally and enhance productivity but government policies must ensure the cost effective methods/solutions. Ecommerce in India is destined to grow both in revenue and geographic reach.

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Challenges and their Remedies

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Abstract

E-commerce the user not use mobile only for chatting and SMS and listing songs and videos but it also used for other ways like sale, purchase and do many more other activities like get traveling information online, online booking etc. Before understanding of E-commerce and M-commerce first of all we understand what commerce is. Because time has changed and according to time definition of commerce also has been changed. Simply Commerce is Exchange of goods or services usually on a small and large scale from place to place or across city, state, or national boundaries

Keywords : *E-commerce*

Introduction

E-commerce is a field of commerce with the use of different networks such as the Internet so that e-commerce provides online sales support operations and customer service. E-commerce can be liked with electronic market where sellers (suppliers, or companies, or shops), intermediaries (brokers) and buyers, continue in providing products and services in the virtual or digital format, and pay the money. In general, it is a comprehensive expression that means any type of business or commercial operations involving the exchange of goods and services at any time via electronic channels and using so-called electronic payment gateways. E-commerce can be achieved through connecting to the Internet, using the credit card and having an address for shipping.

Objectives

1) To study the concept of E-commerce
2) To study the challenges before E-commerce
3) To suggest the remedies to solve the problem of E-commerce Introduction

E-commerce in spite of opportunities, hoopla and hype, also bears the connotations of challenges as well at the same time. We, therefore, enumerate the major challenges e-commerce in small enterprises is facing and also submit the remedial measures to meet these challenges.

1. Infrastructural Problems:

Internet is the backbone of e-commerce. Unfortunately, internet penetration in India is so far dismally low at 0.5 per cent of the population against 50 per cent in Singapore. Similarly, penetration of personal computer (PC) in India is as low as 3.5 per thousand of population compared to 6 per thousand in China and 500 per thousand in US. Internet is still accessible through PCs with the help of telephone lines.

Given the penetration of telephone only 2.1 per cent of population, e-commerce remains far away from the common man. It is difficult for e-commerce to reach to 1,000 million population spread over 37 million households in 6, 04,374 odd villages and 5,000 towns and cities. Besides, both cost of PCs and internet access in India are quite high.

2. Absence of Cyber Laws:

Other big challenge associated with e-commerce market is the near absence of cyber laws to regulate transactions on the Net. WTO is expected to enact cyber laws soon. The India's Information Technology (IT) Bill passed by the Indian Parliament on May 17, 2000 intends to tackle legislatively the growing areas in e-commerce.

The Bill also intends to facilitate e-commerce by removing legal uncertainties created by the new technology. As it stand today, the Bill deals with only commercial and criminal areas of law. However,

it does not take care of issues such as individual property rights, content regulation to privacy and data protection specific legislation.

3. Privacy and Security Concern:

As of to-day, quite vulnerable issues related to e-commerce are privacy and security. So far, there is no protection offered either by Website or outside watchdogs against hazard created by exploiting one's privacy.

4. Payment and Tax Related Issues:

Advertisements:

Issues related to payment and tax is yet another problem continuously hinting e-traders. The electronic payment is made through credit card or plastic money which could, however, not become popular so far in India mainly due to two reasons. First, the penetration of credit card in India is very low (2 per cent of the population).

Second, the Indian customers are quite skeptical of paying by credit card with the increasing threat of fraud played by hackers. Like elsewhere, credit card could not gain growth in India mainly because of authentification and recognition problems of electronic signatures (Dahiya and Singh 2000: 70).

Similarly, tax administration is yet another complex problem in this seamless worldwide e-commerce. As establishing incidence of tax in case of e-commerce transactions becomes difficult, this, thus, provides ample scope for tax evasion. How to get rid of this? Some suggest total tax holiday till 2010 for e-commerce in the country.

There are others who support zero duty on e-commerce to flourish it in the country. It has already been decided in US that there will be no tax on anything sold on the internet in digital form. Should India not follow US, at least for the time being? We have to ponder over it.

5. Digital Illiteracy and Consumer Psyche:

At present, digital illiteracy is one of the formidable problems e-commerce is facing in India. On the other hand, the continuous exodus of skilled computer engineers to other countries has denuded India of software engineers. This has posed a real threat to the Indian IT industry. Obviously, solution to this problem lies in curbing the computer brain – drain and uses the same in the country.

The Indian consumer is also characterised by his unique psyche. Usually, the Indian consumer does not go long distances for having any good of his choice when a neighbourhood store provides him whatever he wants.

That is why the consumer does not browse the Net knowing the consequent hassles of connectivity and other botherations. Added to this is that building trust on the electronic media also takes long time more especially when the vendor is situated at a very far off place.

6. Virus Problem:

That computer virus is also a formidable problem in the execution of e-transactions is confirmed by the computer virus originated in Manila. A computer virus lagged' I Love You' originated in Manila, Philippines on May 5. 2000 rippling across world, inflected millions of computer files causing colossal loss of US $7 billion to the governments and the businesses. The offenders causing 'virus' must be awarded deterrent punishment, otherwise similar assaults in future can cause lasting blows to the quite young e-commerce in India as well.

7. English Specific:

Last but not the least, the software so far in the country is English specific. But, in order to make e-commerce reach to the small enterprises, it needs to be available in the languages (regional) of the owners of the small enterprises to enable them to adapt e-commerce processes in their operations. Sooner it is done, better will be it for small enterprises to adapt e-commerce.

Remedies

- Change to a faster ecommerce web hosting solution
- Get a CDN service that distributes the content from the nearest server
- Install server-level cache on the ecommerce platform
- Install website cache plugins such as Breeze

Conclusion

Researcher know that surviving in the e-Commerce industry is quite competitive and has no less than war, so it requires outstanding strategies and some extra efforts for all business aspects. The above challenges would help in building the growth and ultimately help you to have a better chance to bloom shortly.

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The future road map for E-commerce

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Abstract

E-commerce involves an online transaction. E-commerce provides multiple benefits to the consumers in form of availability of goods at lower cost, wider choice and saves time. The general category of ecommerce can be broken down into two parts: E-Merchandise & E-finance. Many companies, organizations, and communities in India are doing business using E-commerce and also are adopting M-commerce for doing business. Ecommerce has a great deal of advantages over "brick and mortar" stores and mail order catalogs. Consumers can easily search through a large database of products and services.

Introduction

E-Commerce in India is still in a growing stage, but it offer tremendous opportunities for developing countries like India. The e-commerce sector in India started their operations late nineties among business to business users (B2B). Business to Consumers (B2C) e-commerce started in 1996 in the form of matrimonial portals. The cost and the speed of internet was the limiting factor for their growth at that time. The first E-Commerce website in India was rediff.com, which was one of the most trafficked portals for both Indians and non –residents Indians. Last five years have seen a rise in the number of companies enabling e-commerce technologies and the internet in India. Major Indian portal sites have also shifted towards e-commerce instead of depending on advertisement revenues. Today E-Commerce has become an integral part of our society. There are websites providing any number of goods and services. These websites provide almost all categories of goods and services on a single site. These sites target the buyers of every possible product or service. These websites are known as Multi Product E-

Commerce Sites. There are also Single Product E-Commerce Sites, which deal in specialised field only. Technology is changing the way of shopping. Out of the total internet users in India, 60% visit e-commerce sites. Favoured demographics and growing internet users' base helped in adding the growth. Growth shown by Indian players like Flipkart, India Times, Snapdeal etc. and huge investors' interest around these companies showed the immense potentials of the market. The Table 1.1 and Graph 1.1 depict the leading e-retailers in 2015 in India.

Future of E-Commerce in India:

The E-Commerce sector in India is growing rapidly in India. The internet users' base in India might still be mere 400 millions which is much less as compared to developed nations of the world, but it is expanding day by day. The accelerating growth of e-commerce in India is due to internet penetration and easily available smart phones. Furthermore the favourable demographics and government effort of digitalisation is also pushing the growth of e-commerce sector in India. Retail sector is one of the largest growing sectors in India at present, which is expected to grow in future with an increasing rate. Table 1.2 and Graph 1.2 show the growth of e-commerce sales from 2015 to 2021.

The ways in which e-commerce is expected to change in the next 5 years:-

1. Enhanced retail experiences

Virtual reality can be a boon to the industry. The brick and mortar shops are gradually replaced with smaller experience-driven retail stores. Retailers can make use of bacon technology which is a refinement of the virtual reality. This is similar to the concept of a warning system where upon reaching, the user will be alerted through apps with alerts of discounts or detailed pick-up information, utilizing Bluetooth Low Energy technology.

2. Everything on mobile

E-commerce will basically **shift towards the handheld devices** because the traffic on sites from mobiles is 10 times greater than that on desktops. The mobile devices being considered the Omnichannel

of life, brands will become more focused to develop their mobile experience, marking a new era for the industry. For example, Amazon's shopping experience boasts of seamless, hassle-free and quick shopping options. Google is also mulling the idea to make mobiles the sole of their indexing services.

3. Touch-based experiences

The entry of mobile devices and use of multiple devices have raised the bar for user experience. Handheld devices are now mostly touch-operated thus it will pave the way for the touch experience. Augmented reality will enable a user to feel an object, touch it, move it, similar to the function one does at a brick store. In the e-commerce industry, buyers have to judge on the basis of flat images provided which in the near future be changed to 3D images, providing the glimpse as if the nonexistent object is placed right in front of the user.

4. Voice assistants

The technology innovation which started with the advent of 'Siri' has escalated due to the advance in augmented reality. Top players such as **Amazon's Echo** and **Google's Home** have entered the segment and are even being gradually welcomed though the prices are still steep in nature. The possibility of this science is endless, and yet it is in the hands of the public if they want to use it or not, whether it will be beneficial to integrate with their lives.

5. Better governance

With the introduction of GST in India, e-commerce players have better governance by the government. The decrease in prices of warehousing and delivery, tax collected at source and increased outreach will boost streamlining the service. The GST will create a level playing ground for the industry giving a fair chance to all the retailers and also uphold the business growth.

6. Automatic delivery

This is already being used in Japan and China. This technique allows delivery associates to deliver parcels using delivery drones and automated shipping trucks. Amazon has already tested this feature

using to deliver a package using a drone in Bengaluru. This can reduce fuel costs and also augment customer experience.

This growth is being driven by a combination of rising internet penetration, extensive usage of smart-phones, drop in data access costs and flow of credit to consumers and micro-enterprises.

Conclusion

E-Commerce has made the shopping easy. The E-Commerce Industry in India is growing rapidly despites many challenge. E-commerce industry is one of the largest growing industries in India at present.

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Capricious Expedition from Bartering to M-Commerce

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Abstract

Surrogating the direct mode of exchange of yesteryears - the barter system, money has seen many facets. Where conventional paper money provides a feel of owner's pride to its holder, its modern form has been eventually adopted by the hesitant Indians. Vacillationsinitiated in our country right from the advent of e-money in its plastic form, its diffident acceptance entails to fight with fear of losing liquidity status and obvious likelihood of deceptions and frauds. Proper use of debit and credit cards in our country is still a mystery; especially many gets surprised how credit cards have proven costly for them. It's before Indians get acquainted with use of these cashless modes, e-commerce comes into existence in 1960s with astonishing offers to get the entire world by sitting at home. Use of e-commerce is still being encouraged by providing lucrative offers. E-Commerce is mountingexpeditious with its varied features in various spheres of business, overcoming the constraints of paper money and even before the business world sparkles the eyes of Indian economy; it has provided its alternativemanifestation in the form of M-Commerce.

The present paper is an elementary approach to appraise efficacy of M-Commerce and its prospective power to remain retained as most convenient mode of exchange than the formers. Being tagged as 'technology in hand', M-Commerce has potential to reach millions of Indians, but the journey has ofcourse many more seasons to observe yet. The paper critically assesses this mode of exchange with its companion e-commerce as well to opt thepreeminent.

Keywords : *M-Commerce, E-Commerce, Technology, cognitive commerce*

Capricious Expedition Hitherto:

Bartering was first recorded in Egypt in 9000 b.c., though it is very difficult to imagine a world of exchange beyond existence of barter system. The system facilitates direct mutual exchange of goods and services to be used to satisfy each other's livelihood needs. The system deserved to be obsolete as had numerous practical issues including providing standard of deferred payment, common measure of value, wealth storage etc. The need for search of a better mode of exchange itself would have generated a medium of exchange perhaps in the form of a distinct piece of detached paper, stone or some imprint or perhaps hallmark. It should have been the group of small societies with mutual acquiescence would have demanded communities to form universally acceptable common mediums. Surely had been the most inconvenient system for our formers, bartering was surrendered instinctively when money was evolved.

Money has seen many facets and has travelled a lot so far from its existence in Bronze Age as Commodity Money, been popularized as shekel. In around 1793, money has transformed itself in convenient form of coins, where different metals were being used. Aristotle recorded Hermodike of Kyme as the very first person to issue coins. The use of coins of varied sizes, shapes, metals provides the base for its denomination, valuation, assessment and modal status. Like the difference in Indian, Chinese and American cents could easily be observed on this basis. Alongwith use of coins, money has adopted paper look leading to evolution of bank notes. History records Song dynasty and Tang dynasty to make use of such modes contributing in its evolution as well. Coin and notes has been widely acceptable mode of exchange still today and the countries to acknowledge it adopted the gold standard. Obviously each country is having its own currency denominations encompassing coins and notes issued by its Central Bank being the Government's Bank of the country.

Paper money has still been acceptable to most of the humans as a widely recognized medium of exchange. However, none of the mediums could be considered aloof from certain drawbacks. Paper money always have a fear to get lost, stolen, torn or tampered resulting losing its value or existence. Treasures in the form of coins, notes, gems, jewelleries do suffer from storage issues and seek proper security also.

Credit goes to advent of digitization techniques since last century and a part of digitization process, digital money emerges into existence. This electronic form of intangible money has power to get transferred from one hand to another without even having a physical existence. One its most popular form being Bitcoin as cryptocurrency enabling use in credit cards, smart phones etc. It was an era of evolution of e-commerce in the economy to facilitate a convenient system. The present form is found making use of paper as well as digital money in its various forms.

EMERGENCE OF E-COMMERCE:

E-commerce has made use of e-money i.e. digital money rather than paper money. Electronic commerce provides an entire new system not only for the consumers but also for the traders and manufacturers. It enables to make use of technology for marketing, trading, selling the goods and services to its distant users without actually visiting the market physically. It is considered advantageous in many ways where no real money is necessitated to be exchanged between the parties. The amount gets transferred from one digital account to another without being emerges into its liquid form. Its existence mainly lies in the form of a legal assurance to make use of certain amount of money, which can easily be put into real existence by mere drawing such from the bank. However, earlier there existed a number of hindrances in its acceptability, mainly being reliability on its adaption and utility. One of the most common hindrance comes from normal people side is sense of pride of owning paper money, which earlier was quite difficult to realise in case of digital money. Electronic form of money needs assurance of its real existence and ofcourse reliability on banking or financial system in its actual subsistence. The economy finds e-money more economical than the paper money, as very primary it cutbacks the cost of printing paper money. It also eliminates the drawbacks of getting money torn or mutilated but the fear of getting stolen or lost is still very high.

E-commerce which encompasses online and electronic transactions can rather be referred as an activity of buying or selling goods or services over the internet. It makes use of Electronic Data Interchange, Electronic Fund Transfer, Online Transaction Processing etc. Earlier the use of e-commerce had been very difficult for its users to adopt and to rely upon. Consequently lucrative offers are being given to consumers to use and get acquainted with this new activity system. One can't deny that adoption of e-

commercehad resulted into numerous frauds and scams; and such activities are still found into picture. One of the most innovative features of e-commerce is trading of e-goods, which comprises of e-books, online courses & coaching (through computers, tablets, mobiles & kindles), virtual goods etc.

From E-Commerce To M-Commerce

With the growing use of smart phones perhaps, e-Commerce has moulded its appearance into M-Commerce to let itself remain into the handy mobile phones of the users.Electronic commerce not only deals with trading and other commercial activities related to goods and services. It also manages and transmits data, information and money as well. It remains encircled around two prime entities, business and consumers, resulting the various business transactions as business-to-business, business-to-consumer, consumer-to-consumer or consumer-to-business. In true sense, e-commerce has brought revolution in the business world where consumers are gradually being fascinated towards it enabling its mysterious services by remaining seated at one place. Today one don't have to think much what kind of business Ola, Uber, Zomato, Swiggy, Amazon, Flipkart and many such companies are doing through internet. Infact these companies economize in physical infrastructure in terms of place of production, manufacturing, warehousing, selling outlets etc. Not only trading, e-commerce is facilitating all other kinds of services which could be provided through internet. Its B2A and C2A being the indispensible part of e-commerce contributing in many areas including education, administration, government services, tax management, health, insurance, counselling etc.

Mobile has become the need of the day. For many of us, it has become extremely difficult to manage our activities/schedule without it. Obviously, e-commerce finds its own way through this convenient and fast-growing communication technology, giving birth to M-Commerce. Mobile commerce is rather than an extension of electronic commerce, to provide these facilities through an internet-enabled smartphone. It provides the various features of e-commerce handy for its customers through a small mobile to get everywhere from anywhere. Mobile commerce nowadays has large number of customers utilizing its services. Though it cannot be denied that m-commerce prove more costly in comparison to e-commerce due to development and maintenance of mobile applications. On the other, it expects its user to have an internet-ready mobile phone. Like e-commerce; m-commerce is not restricted upto

buying and selling goods. It also provides availing services through mobile, mobile banking, mobile transport ticketing, movie shows booking, generating and payment of bills. Many companies nowadays are providing extra discounts and offers for making transactions through mobile apps. Even there are companies which do provide special discounts or offers to install their apps and use it once. It is all to encourage customers to use mobile applications; rather it attracts attention of the Government also. The Government is also encouraging people to use paytm etc. to pay or receive money as it discourages cash transactions.

Stepping Towards Cognitive Commerce:

The world is witnessing dynamic upgradation, where the journey seems to be not stopping with M-Commerce. Society has already stepped ahead towards cognitive commerce where technology is dealing with much demanded discernment and use of Artificial Intelligence. It adds intelligence to machine to suggest the best to the consumers with instantaneous contentment by providing prompt customer service. It denotes a system which learns by itself. It doesn't only observe particular customer or a group but also come up with cognitive solutions. It able to provide what customer actually wants by studying his needs, tastes and fashions. Therefore in B2B as well as B2C, cognitive commerce will surely have a future.

Concluding Remarks:

Unlike other species in the world, human-being creates own opportunities not only for earning bread and butter but also for their social growth and development. Humans all over the earth seek to avail available facilities and utilize available resources, which necessitates them to transact. Coming from the world of bartering, money has really provided human society a better and convenient system of exchange. Digital money is ofcourse an add-on to earlier system overcoming its drawbacks and e-commerce should be appreciated to facilitate such provision. M-commerce has really brought the features of e-commerce in hand for the people by providing the whole world on their fingertips. Electronic and mobile commerce provide 24/7 services, brings economy cutting the cost of running physical stores, scalability, doorstep services, provide more time to customers for buy or don't buy

decisions etc. its cons include requirement of internet facility, knowledge to use these features, risks of frauds, considerably more time for delivery etc. Above all this, goods cannot be physically seen or touched through internet, though it has been overcome to a great extent.

Above all, one can't deny that technology is playing its part of role. Imminent developments are surely pointing towards the growing significance of various silhouettes of e-commerce. No doubt, who don't wish to get the world through fingertip!

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Traditional Business V/S E-Commerce

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Abstract

The present research paper based on the secondary data collected from newspapers, books, magazines and internet sources examine the benefits of e-commerce against traditional commerce. The researcher concludes that Indian traditional trading business has been facing many problems. Average consumer derives more benefits from the e-commerce than he gets from traditional stores. E-commerce will have great future in India. Internet based e-commerce has emerged as a cost – effective means of doing business.

Intronduction

The e- commerce has grown to such an extent that it attracts almost 80% of Indian population. The main reason is because of availability of different products, discount, less time and effort consuming, reaching to large number of people in lessor amount of time.

Traditional commerce is a branch of business which focuses on the exchange of products and services, and includes all those activities which encourage exchange in same way or the other. E-commerce means carrying out commercial transactions or exchange of information, electronically on the internet.

Research Objectives

- To know about the recent problems faced by traditional business.

- To study the concept and trends of e-commerce in upcoming days.
- To examine the benefits of e-commerce against traditional commerce.

Research Methodology

The research student has used library methodology for the present study. She carried out the survey of research papers, books chapters and published news reports for secondary data. She has also visited various related websites for data collection. The data was collected from newspapers, books, magazines and internet sources.

Review of Literature

"The offline physical retailing is the traditionally common form of retailing in India. Its share in the total retail market is decreasing due to the increasing potential of electronic commerce. The liberal government policy of India is leading to hyper-growth of electronic commerce players and internet users in the country. Despite many benefits of electronic commerce, there are a number of challenges before the businessmen in the field which compel them to work offline as well and opt for hybrid e-commerce modes for enhanced turnover and better customer reach," concluded Dr. Naglaxmi Tirmanwar in her Paper 'Hybrid Trend of Electronic Commerce in India.'

"A larger portion of the Indian society is middle class dominated. This clientele is very skeptical about what, how and where they spend. For this strong bastion of middle class milieu, offline models like retailer shops have mushroomed all over," said R P Yadav, CMD, Genius Consultants. (PTI, September 2015)

Traditional Business And Its Problems

Traditional commerce involves face to face and in person dealing with all the parties to perform the exchange of good and services which have predefined prices.

Traditional commerce has its origin in barter system that involved the exchange of goods with other goods instead of money where money was not available during those days. With the invention of money the trade and related services developed rapidly in the later period. Nowadays Traditional commerce makes use of different channels of marketing and different modes of payments are accepted including cheques, money orders, demand drafts, electronic cash, digital cheques and debit and credit card based payments. It can be observed that traditional stores are going out of popularity and their turnover is gradually coming down due to the rapid development of e-commerce in the present century.

Problems of Traditional stores

1) Starting and managing the physical store is the primary challenge for every small business or startup.
2) The recent era of online marketing has moved the attention of stores to new technologies and stiff competition are forcing small and medium scale traditional business dealers to leave the track.
3) Marketing challenges are faced by about 76% of small business fight digital marketing and online resources have changed the entire picture of marketing strategies.
4) Buyers have all sorts of resources for gaining knowledge about goods and services available for sale. They compare prices and features of products. It is harder to convince today's alert and skeptical buyers than ever before.
5) A U.S. Bank study has surveyed that nearly 82% of businesses fails due to narrow funding.
6) The majority of the small stores face the problem of lack of ample financial resources.

E-Commerce Concept And Trends

E-commerce is a form of online shopping where users can buy goods and services from their electronic devices such as desktop computers, laptops, tablets and smartphones.

E-Commerce Marketing Trends in 2019

A new report from 'episerver' has revealed e-commerce marketing insights from more than 4500 consumers about the current state of online shopping and how marketers need to adopt to the latest trends.

- 98% of online shoppers say incorrect or incomplete content on a brands website app has stopped them from completing a purchase.
- Consumers want guidance
- Consumers want free shipping (67%) shipping tracking (61) and information about returns (52%)
- 87% of online shoppers compare what they find on brand websites with Amazon.
- Electronic goods sells grows every year. Apparel goods market grows 33% every year.

Traditional Commerce and E-Commerce

In traditional business, the transactions are processed manually and the case of e-commerce, there is automatic processing of transactions.

Via e-commerce most of the time and money can be saved in spending on traveling and selecting the goods.

The payments can be made in any form of digital models such as credit card, debit card, digital wallets.

In e-commerce the goods can be bought round the clock without any hassles during our free time e-commerce provides greater benefits in buying goods and services easily.

Consumers can compare price and product features online.

For example, using a web site such as http://www.pricewatch.com.

Conclusion

Nowadays traditional trading business has been facing many problems. Average consumer derives more benefits from the e-commerce than he gets from traditional stores. E-commerce will have great future in India. Internet has emerged as a cost – effective mean of doing business. Online shopping has made

consumers more effective and efficient in their shopping behavior and has driven business to a new level.

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Impact of E-Commerce in Indian Economy

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Abstract

This paper reveals the importance of ecommerce in Indian economy. As we all know India is among the fastest growing economy of the world , thus it is very much important to have government intervention and huge investment inflow in form of Foreign direct investment in large economy like India to stabilise and increase the growth of ecommerce industry in the economy. In India with the digital penetration has increased significantly, according to statistical data internet use has increased to 429.23 million user in India and is expected to reach around 830m by year 2021 . There has been significant rise of e commerce in India, as India's internet economy is 125 billion dollar in 2017. In this paper we will look towards the role of government in ecommerce industry and also look towards the various barriers of e commerce in Indian aspects."In this research paper we will talk mainly about B2C Ecommerce and its percentage of gross domestic product in Indian economy. we will also talked about entrepreneurs roles and decreasing value of ease of doing business in India as India in 2017 ranked in 100th position from 132th position out of 190 countries in 2008" . For a country such as India, one of the most important advantages of e-commerce is its potential to help developing rural areas to leap-frog into the knowledge paradigm. E- Commerce is great platform not only to develop infrastructure but also increase employment rates in India and thus overall impact in increasing economic and social growth in Indian economy.

Keywords : *Ecommerce, Economic Growth, FDI, GDP*

Introduction

Today e-commerce has become an important part of daily life. Accessibility to e-commerce platforms is not a privilege but rather a necessity for most people, particularly in the urban areas. There are alternative e- commerce platforms available (instead of the traditional physical platforms) for almost every aspect of our lives, starting from purchasing of everyday household items to online brokerage As in 21st century as internet has become most important and frequently and most necessity device, it will surely race to achieve more growth and sales via internet. According to eMarketer, worldwide retail Ecommerce sales will reach $1.915 trillion by the end of 2017 . with increase in digital penetration all across the globe and cheap and frequent easy accessibly of internet , it is prone to increase the growth of ecommerce all across the world , meanwhile lot of traditional people are quite worried and tensed with change in pattern of sale via internet , with the availability of cheap and high speed internet with variety and security options , lot of individual and firms have connected their business with e-commerce. As in recent world it is highly impossible to grow without being available online . Thus to grow more and earn higher profit it is highly recommended to have proper structure availability and easy accessibility of online sites , because it not only determines profit and no. of users but also determines the ranking and position of enterprise of the firm in overall business world.

Also in this research paper I will focused about the growth and pattern of e-commerce in India and its sales and impact in Indian economy, of all different types of e-commerce , my research paper restricts its study to mainly b2c types of business , though it did cover other types of e-commerce and its social impact also in India via sales of e-commerce in India.

Literature Review

1. "Shebazbano Salim Khan , S. N. Borhade , and Mainuddin S. Shaikh in their paper "Impact of e- Commerce on Indian Market: Social and Economic Impact" study how Electronic commerce (e-commerce) as part of IT insurrection became major part in the world deal in general and Indian economy in exacting. The Paper discovers the economic and social impact of e-commerce.(E-commerce, is currently rising at 30%. shopping site ebay Inc. Is growing at 60%.

The number of customers of the company has augmented from one million users to 2.5 million in India; in the last four years. Some of the popular imported items imported by Indians include home decor, branded and unbranded apparel, accessories, and technology products.")

2. ("affreenara and Dr Kishore Kumar Das in their paper "Growth of E-Commerce in India" talked about Ecommerce one of the highest growing business, with India having great market potential for investments. There has been huge surge in investment since; last year and more, is expected in coming years. The rapid growth in use of mobile and internet users has facilitated ecommerce business in both urban and rural cities. The topics covered include the terms study of commerce, key drivers of growth, market growth potential, investment, retail market, logistics infrastructure, internet regulations, key challenges and future of ecommerce.")

Objective of Study

India is one of the largest growing economy of the world. There is heavy use of internet among Indian citizens. The main basic objective of this research paper are -

1- To analysis the present trends of e-commerce in India
2- Government initiatives and different scheme in growth of e-commerce inIndia
3- Impact of e-commerce on literacy rate and employment rate in India

Research Methodology

Secondary data – various research papers of similar type have been referred to check the for analization of data .Other than this , various scholar and data from other certified bank and source are used to collect data which is interpreted further for data analysis

Snapshot of E-Commerce Industry In India

E-commerce in India is fastest growing economy of the world. Indian E-commerce is growing at an annual rate of 51% , the highest in the world and is expected to jump from $30b in 2016 to $120billion by 2020) (source – assocham –forrester study paper).With $680b in online retail sales in 2016, china is

largest E- commerce market globally, followed by United States and then India In India though there were use of e- commerce even before 1990s, but their contribution were significantly negligible. Recently a lot of blue chip PE firms have invested a huge money on India e-commerce as there is significantly huge potential and opportunity to success. In India 100 percent FDI is permitted in B2B e-commerce and thus shows the government intention and contribution towards e-commerce industry in India . The growth of e-commerce in India highly dependent on the following sub factors that do have an impact on Indian economy when it comes about e-commerce industry in India .some of these factor are –

1- Participation of niche companies in online trading
2- Unmatched FDI
3- Uniform GST

Digital penetration in Indian economy

In India smartphone penetration rate are increasing over years , with the increasing role of and importance of internet and digitalization , it is thus very much needed to have an active smartphone with proper internet connection ,, With the increase of role of e-commerce in India , and its high contribution and increasing of e-commerce share in total retail sale .As of 2015 , 18.21% of India‟s overall population owned a smartphone that is around to be at 39% by 2019 (Source – stastia.com)This increase in smartphone penetration in India is done by the point that India‟s share of the global smartphone market is forecast to more than triple between 2013-17 to reach .

Internet Penetration In India

According to NATIONAL REPORT OF E-COMMERCE DEVELOPMENT IN INDIA, it was clearly stated that there is increase in internet penetration in India to very large extent. Internet user increases to 429.23 Million in 2017 which is expected to take a huge upward trend to 829 million in 2021 , which will thus help internet economy of India to grow significantly . With the increase of digital penetration and increase of internet penetration in Indian context, it was thus needed to link between the growth and impact of e-commerce in context of Indian scenario.

With the increase in digital buyer, it was quite clear the internet penetration will thus also ultimately rise to certain extent, also as we have studied in earlier paper that m-commerce has also increased significantly thus lead to growth in m-commerce. Thus with the advancement of technology and increase in share of smartphone and internet operators it was quite clear that internet penetration was much needed to make a more significant impact on the Indian market.

Government Initatives Supporting The E-Commerce Growth In India

The role of government in increasing the the growth of e-commerce is very important and plays huge role in the growth of e-commerce in Indian market . It is the government policies and reforms which not only affects the foreign investment and mindset of investors across the globe, but it is the people who also affects from the governmental policies. since 1991 when government of India opened its economy with the introduction of LPG (Liberalization , privatization and globalization) the Indian people started enjoying the benefits of open economy Since 1995 when internet was first introduced for e-commerce purpose in India .

Since 2014 government of India has announced various initiatives namely

- Digital India
- Make in India
- Start-up-India
- Skill India
- Innovation fund

The proper functioning of and effective implementation of these program will certainly boost the growth trend of e-commerce in India .

- In the union budget of 2017-18 government has allocated us$1.55 billion to BharatNetproject . According to which village will also be accessible to high speed internet and Wi-Fi hotspots and digital services at very low tariff in rural and panchayatlevels .
- Government of India has announced the launch of BHIM app, it will increase the digital payment in the country .it has been adopted by more than 12.5 million people of India . For

promotion of this app government of India has announced 2 scheme for promotion of this app. they are -

1- Referral bonus scheme for individual 2- Cashback scheme for merchants

- The government of India has distributed rewards worth of RS 153.5 crore to more than 1 million citizens or say customers for embracing digital payment under scheme of Lucky GrahakYojana and Digi – dhanvyaparyojana.

- Government Of India has put lot of money and reforms which have impacted in growth of e-commerce in India . Not only growth but also has increased the standard of living of people. With the unemployment rate decreasing and rate of literacy is increasing over time , one thing which Gov. of India is currently focusing is on growth of entrepreneurs in India . Thus start up India is encouraging growth young entrepreneurs. Thus government of India has also launched various initiatives like UDAAN , UMANG , START-UP INDIA PORTAL etc
- The government of India has taken steps to provide funds through " Fund of Funds" scheme which is actively working in Indian scenario and thus helping out MSME also.
- Role of FDI plays important role in the growth of e-commerce industry in India . Earlier investment rate in India was considerably very low which thus signifies low e-commerce growth across nation. Since FDI IN B2B e-commerce is 100% FDI allowance which means more investment, but FDI in B2C is still restricted because of governmental norms. Despite of all the government restrictions investments are made in Indian market because there are lot of opportunity in Indian market which can be be proper utilized can lead to more profits . thus investment and FDI polices have an huge impact . investors like –

1- Idgvc Partners
2- Tiger Global Management
3- Accel Partners
4- Index Ventures
5- Sequoia Capital
6- Alibaba
7- Temasek Holdings

8- Forerunner Ventures

Are some of the major investors in e-commerce industry in India under government e-commerce policies. In India 2015 , there was highest ever funding with $11.3B . Though in India FDI in multi brand retail companies is not allowed yet , Though some firms uses PROMOTIONAL FUNDING which is an indirect route for funding when FDI is restricted is prevalent in India . Thus 100% FDI in B2C is good start for investors to know the market size and opportunity in Indian market and thus more investment and FDI will surely increase the growth of e-commerce in Indian market .

- RESERVE BANK OF INDIA has decided to allow "inter-operability" among prepaid payment instruments (PPIs) such as e-wallets will encourage cashless economy and thus eventually more use of e-commerce in Indian market .
- TAX SYSTEM AND INTRODUCTION OF GST is another government incentive/ scheme which will increase e-commerce growth in India in coming years .with the unified tax system it decreases the cascading of tax which in return simplifies the supply chain management side of e-commerce also . thus e- tailing becomes easier and sometimes in some industry cheaper also which gives manufactures and retailer to expand their business across India . With uniformity in tax , it will help in expanding the positive side of e-commerce across India and thus will not favour any particular state . Though in India TIER1 cities are more prone of e-commerce as their average order value is RS – 1544 and in TIER 2 is RS 1157 and RS 1033 in TIER3 cities in India according to IBEF report (source – ibef.com) . Thus Tax system also plays important part in e-commerce growth in India . India ranked 119th position in 190 countries in estimator of "paying taxes" thus which needs to be decreased .thus because of which business becomes hard and difficult for retailers and thus investors doesn"t willing to invest more .
- E-GOVERNENCE is another important scheme or initiative taken by government of India . It will also boost the e-commerce growth and thus will also bring transparency among the citizens of India . India in EGDI index ranked very low were UNITED KINGDOM AND AUSTRILIA have highest rank in EGDI with index score of 0.92 and 0.91 respectively.
- Government of India to set up apex cybercrime coordination centre . – after having 1,44,496

cyber security attacks in India during 2014-16 there is plan to set up cybercrime coordination centre which will help in resolving the issues of cybercrime and thus try to nullify it . states should also open district level cybercrime coordination centre in order to increase efficiency and resolve issues and increase e-commerce growth in India . Phishing, scanning or probing, website intrusions and defacements, virus or malicious code are some types of cybercrime .After ths year budget list , there are rumors that government of India will start allocating some funds for cyber security , which will not only increase digital and internet penetration but will also aid e-commerce growth .

Findings

1- There is a increase in a digital penetration in India ie more smartphones are utilized by the people of India .which tend to increase m-commerce growth in India.
2- There is increase in internet penetration in India . India ranked 2nd in most internet users in the world
3- There is an increase in a e-commerce trend in India . With increase in a contribution of e-commerce in India‟s GDP.
4- Government are making necessary incentives and schemes to promote digitalization and thus encouraging e-commerce growth in India
5- E-commerce of the nation is linked with the literacy rate of the nation. with more literacy and educated people there will be more e-commerce growth in a country .
6- Negative correlation between unemployment and ecommerce growth in India.

Conclusion

Through the study of research paper we came to know how important is e-commerce industry currently in the world . With context of India we also try to find the upward trend of growth of e-commerce in India , and also increase in m-commence and digital penetration in India .Government policies and initiatives has also lead to increase of e-commerce in india over years . According to survey after demonization , role of cashless economy in India has increased significantly , thus the role of internet

also likewise other such government policies have also had a major impact . a lot have been done and a lot has to be done when it comes to e- commerce industry in India . Also we study impact of literacy rate and unemployment rate on the growth of e- commerce industry in India . also there is significant need to increase the literacy rate in india and also spread awareness among rural people in india about cashless economy and role of internet in India in today"s world . With need of more allocation of money towards cyber crime and strict law"s need to be made , not only to make this process more secure but also reliable . In this research paper we went through the trend of e-commerce in India which is rising significantly and also how service provider like 4G, 3G helped to increased the digital penetration in India which thus helped to increased the e-commerce and m-commerce sales in Indian economy. Likewise government had also played huge role through different laws and policies towards the growth of sales via internet.

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A Study on Awareness and Acceptance of E-Transaction

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Abstract

An electronic transaction is the sale or purchase of goods or service. Whether between individuals, households, business, governments and other public or private organizations conducted over computer mediated networks. Over the last ten years the way of buying and selling of goods and services has been altered by the internet. E-commerce is converting the shopping experience of Indian customers. It is the India's fastest evolving market with annual multifaceted growth rate 52% to touch USD 36.7 billion by 2020. The increasing perception of smart phones and internets are expressively contributing to the growth of e-commerce. The convenient payment process, speedy delivery of product, high discount, customer friendly policies and easy returns are driving more customers towards online shopping. Due to the digital revolution the e-commerce sector in India increases from $ 3.8 billion in 2009 to $ 17 billion in 2014. E-commerce provides a useful resource for the growth of MSME's. The Indian banking sector has been growing successfully, innovating and trying to adopt and implement electronic payments to enhance the banking system.

Keywords : *E-commerce, Electronic System, Digital India,*

Introduction

E-commerce means doing online business with the help of computer, fax, e-mail and mobile. It has been come out from the term 'E-mail' in 1972. The term 'E-commerce' was coined by IBM for the first time in1973 with the development of computers. An electronic transaction is the sale or purchase of goods or

services, whether between business, household, individuals, governments, and other public or private organization, conducted over computer-mediated networks. The goods and services are ordered over the networks, but the payment and the ultimate delivery of the goods or services may be conducted on or off-line. One of the most popular activities on the Web is shopping. It has much allure in it you can shop at your leisure, anytime, and in your pajamas. Literally anyone can have their pages built to display their specific goods and services.

E-commerce became possible in1991 when the Internet was opened to commercial use. Since that date thousands of businesses have taken up residence at Web-site. At first the term e-commerce meant the process of execution of commercial transactions electronically with the help of the leading technologies such as electronic data Interchange and Electronic Funds Transfer which gave an opportunity for users to exchange business information and do electronic transactions.

The Internet began to popular among the general public in 1994. In 2000 a great number of business companies in the United States and Western Europe represented their services in World Wide Web. At this time the meaning of the word e-commerce was changed. People began to define the term e-commerce as the process of purchasing of available goods and services over the Internet by using secure connections and electronic payment services. By the end of 2001 largest from commerce, Business to Business (B2B) model had around $ 700 billion in transactions. Currently there are 5 largest and most famous Worldwide Internet retailers: Amazon, Dell, Staples, Office Depot and Hewlett Packard. According to statistics the most popular categories of products sold in the World Wide Web are music, books computers, office supplies and other consumer electronics.

Objectives of the study

1. To study the most preferred E-transaction service.

2. To study the consumer's service quality in E-transaction System.

3. To give valuable suggestions to improve awareness and satisfaction about E-transaction services.

Hypothesis

1. Most of the peoples are aware about the transaction through ATMs and RTGS only.

2. People are satisfied with E-transaction.

Research Methodology

This research is based on secondary data which are collected from several sources i.e. research papers, publications from Ministry of Commerce, Govt. of India, RBI Report which is available on the internet and relevant books.

E-Transaction in India

According to survey, the ratio of e-payments to paper-based transaction has considerably increased between 2004 and 2008. This has happened as a result of advances in technology and increasing consumer awareness of the case and efficiency of internet and mobile transaction.

In India, the RBI has played a pivotal role in facilitating e-payment by making it compulsory for banks to route high value transactions through Real Time Gross Settlement (RTGS) and also by introducing National Electronic Funds Transfer (NEFT) AND National Electronic Clearing Services (NECS) which has encouraged individuals and businesses to switch to electronic methods of payments have changed the methods of payments in India. E-payments in India have been growing at a fast rate of 60% over the last three years. India is clearly one of the fastest growing countries for payment cards in the Asia-Pacific region. Behavioral pattern of Indian customers are also likely to be influenced by their internet accessibility and usage. Therefore about 32 million people are PC user. 68% people have accessed to the internet. However statistical indications are far from the reality where customers still prepare to pay 'in line' rather than online with 63% payments still being made in cash.

Due to the efforts of the RBI and the BPSS now over 75% of all transaction volume are in the electronic mode, including both large value and retail payment.

Automated Teller Machine (ATM)

ATM is a modern device introduced by the banks to enable the customers to have access to money day in, day out without visiting the bank branches in person. ATM has become the most popular and convenient delivery channel throughout entire country.

Year/ Category	Onsite	GR	Offsite	GR	Total	Off site as percentage of total ATMS	Off site as percentage of total ATMS	ATM as percentage of total branches
2014	14796	-	12292	-	27088	-	45.4	47.5
2015	18486	24.9	16303	32.6	34789	28.4	46.9	56.9
2016	24645	66.9	19006	54.6	43651	61.1	43.5	67
2017	32679	120.9	27474	123.5	60153	122.1	45.7	87
2018	40729	175.2	33776	174.8	74505	175	45.3	100.5
Average	26267		21770		48037.20			

Source: Report on Trend and Progress of Banking India 2017-18 (RBI)

Table indicates the progress made by ATMS of Scheduled Commercial Bank for the period 2014-18. In average terms onsite ATMs are more as compared to Offsite ATMs though the number of booth has increased in the period of five years. In percentage terms also onsite ATMs are more than offsite ATMs.

Transaction through Retail Electronic Payment System

The electronic payment systems such as Electronic Clearing Service credit and debit and National Electronic Fund Transfer have improved the speed of financial transactions across the country. Electronic clearing Service is one of the new electronic banking services. ECS is a non paper based movement of funds which is encouraged by the RBI on a wide scale. ECS consists of Electronic Credit Clearing Service & Electronic Debit Clearing Service. National Electronic Fund Transaction is a

deferred net settlement system and is an improvement over other modes in terms of security and processing efficiency. This facility is currently available at over 46300 bank branches throughout the country.

Volume of Electronic Transactions of Scheduled Commercial Banks

Year/ Transaction	ECS Credit		ECS Debit		NEFT	
	Volume	GR	Volume	GR	Volume	GR
2014	69	-	75.2	-	4.77	-
2015	78.3	13.48	127.1	69.01	13.3	178.8
2016	88.3	27.97	160	112.76	32.1	572.9
2017	98.1	42.17	149.3	98.53	66.3	1289.9
2018	117.3	70	157.6	108.38	132.3	2673.6
Average	90.2		133.66		49.75	

Source: Report on Trend and Progress of Banking India 2017-18 (RBI)

From above table Volume of electronic transaction of Scheduled Commercial Banks. In average terms volume of ECS Debit (133.66) is greater than ECS Credit (90.2). Growth rate in case of ECS Credit has increased whereas in case of ECS Debit has increased in 2015-16 and declined in 201-17 but again increased in 2017-18. Volume of NEFT has also increased and on average it has increased at the rate of 49.75 over the period of 5 years. Growth rate in case of NEFT has increased remarkably.

Electronic Clearing Cards

Now-days Electronic Cash is being used in place of hard cash. Electronic Clearing Cards such as debit and credit cards. Debit card allows, anywhere any time accesses to the customers with their savings or current account. Credit card also serves as convenient medium of exchange. It enables a customer to purchase goods or services within prescribed limits from certain authorized retail and service establishments without making immediate cash payments. It is also called plastic money. The most important difference between a Credit card and a Debit card is that while credit card is a post-paid and debit card is pre-paid.

Customer level of usage of technology

Sr. No.	Particular	Percentage
1	Mobile Banking	26%
2	E-mail	15%
3	ATM	28%
4	Credit Card	8%
5	Online Banking Services	17%
6	NEFT, RTGS	6%

From the above table it is found that 26 % people have Mobile banking to do their financial transactions. 15% people are using E-mail, 28% people are using ATM / Debit cards for transactions, 8% are using credit cards. 17% are using online banking services, while 6% people are using Electronic fund transfer by NEFT/ RTGS.

Demonetization and Steps towards E-Transactions

Since demonetization has come into effect mobile wallets have witnessed a massive rise in app downloads. With programs of financial inclusion, digitization of the economy and increased use of smart phones, online transaction is already quite popular among the urban Indian population. Until now, digital disconnect has been a major challenge in India as many have preferred transacting in cash instead of making use of bank transactions and plastic money. With demonetization in effect, several digital payment solution providers have created innovative ways to attract new customers. The result has been mobile wallets like Paytm witnessing 200 percent increment in wallet recharges. These digital wallets not only help in paying electricity, DTH and transport bills but they also enable payments at nearby mom and pop stores that are already registered for these services.

This vision of connecting Indians through digital media has been further encouraged by this move on the part of the government. The mobile wallet segment broadly consists of services related to banking transactions, transfer of money as well as value added services like bill payments, shopping, ticketing etc. Of these services, mobile wallets are primarily used for the transferring money followed by the payments of bills.

Conclusion

According to the study, the researcher concludes that the most of the bank customers are aware about all the banking services. In India, E-transaction is in a nascent state. Banks are making sincere efforts of popularize the e-transaction services and products. Younger generation is began to see the convenience and benefits of e-banking. In years to come, e-banking will not only be acceptable mode of banking but will preferred mode of money transaction.

1. Most of the people prefer E-transaction.
2. Maximum people use other application for day to day transaction.
3. Quality if services are most valuable attributes.
4. Lack of appropriate software in the major problem is mobile banking transaction.

5. Most of the people are satisfied with the E-transaction.

Suggestions

1. Customers should be made literate about the use of e-banking products and services.

2. Special arrangement should be made by banks to ensure full security of customer funds. Technical defaults should be avoided by employing well trained and expert technicians in field of computers, so that loss of data can be avoided.

3. Seminars and workshops should be organized on the healthy usage of E-transactions especially for those who are ATM or computer illiterate.

4. E-transaction services should be customized on basis of age, gender, occupation etc. so that needs and requirements of people are met accordingly.

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The Impact of Electronic Commerce on Business Organization

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Abstract

The said research paper involves a study of the impact of Electronic Commerce on Business. The research study has highlighted the Management Information Systems, Finance and Accounting, Marketing and Computer Sciences of E-Commerce on Business. E-commerce is a way of conducting business over the Internet. Though it is a relatively new concept, it has the potential to alter the traditional form of economic activities. Already it affects such large sectors as communications, finance and retail trade and holds promises in areas such as education, health and government. The largest effects may be associated not with many of the impacts that command the most attention but with less visible, but potentially more pervasive, effects on routine business activities. The integration of Electronic Commerce and Business will bring a renaissance in marketing function. As it present opportunities to get close to the customer to bring the customer inside the company, to explore new product ideas and pretest them against real customers.

Keywords : *Electronic Commerce, Business Organisation, Management Information Systems, Finance, Accounting, Marketing, Computer Sciences.*

Introduction

E-commerce has a significant impact on business costs and productivity. E-Commerce has a chance to be widely adopted due to its simple applications. Thus it has a large economic impact. Electronic Commerce provides the capability of buying and selling products and information on the internet and other on-line service. Electronic commerce or e-commerce refers to a wide range of online business

activities for products and services. Electronic commerce is transforming the marketplace by changing firms' business models, by shapingrelations among market actors, and by contributing to changes in market structure. Itis difficult to single out theimpact of electronic commerce. Some businesses addresses three themes associatedwith electronic commerce and the organizational changes it entails: changes in business models,changes in market structure and opportunities for economic growth created by organizational change.Electronic commerce creates the possibility of new models for organizing production and transactingbusiness, by offering inters modality and complementarily – not only substitution – in business models.

E-Commerce plays an important role in the economic growth and development of nation. It is a purposeful activity includes in planning, controlling, promotion and also distribution of various goods and services. In this research paper will describe how the Business spirit play an important role in nation's growth. It also pertains to any form of business transaction in which the parties interact electronically rather than by physical exchanges or direct physical contact. E-commerce is usually associated with buying and selling over the Internet or conducting any transaction involving the transfer of ownership or rights to use goods or services through a computer-mediated network. Though popular, this definition is not comprehensive enough to capture recent developments in this new and revolutionary business phenomenon. A more complete definition is: E-commerce is the use of electronic communications and digital information processing technology in business transactions to create, transform, and redefine relationships for value creation between or among organizations, and between organizations and individuals.While some use e- commerce and e-business interchangeably, they are distinct concepts. Ine-commerce, information and communications technology (ICT) is used in inter-business or inter- organizational transactions (transactions between among business organizations) and in business-to-consumer transactions (transactions between business organizations and also individuals).

Conceptual Background of the Research Study

Today's world is a world of IT, BT and Beauty. In the age of Globalization, tremendous progress in science and technology has brought changes in to the world of trade, commerce,banking & marketing.

Electronic commerce expands the marketplace to national and international markets. It decreases the cost of creating processing, distributing and retrieving paper based information. The Importance of E-Commerce is very wide because it reduces the transaction cost. Reduced transaction cost leads to consumer empowerment. In short E-Commerce is bringing about a very big change in commerce and marketing.

E-Commerce is the process of buying and selling or exchanging of product,, services and information via computer networks including the internet.It is the application of technology toward the automation of business transaction and work flow. It is the delivery of information; Products, Services, or payments over telephone lines, computer network, or ant other electronic means. It is a tool that addresses that desire of firms, consumers and management to cut service costs while improving the speed of service delivery. Electroniccommerce (e-commerce) remains a relatively new,emerging and constantly changing area of business management andinformation technology. There has been and continues to be much publicityand discussion about e-commerce.

For the purpose of clarity, the distinction between e-commerce and e-business in this research paper is based on respective terms commerce and business. Commerce is defined as embracing the concept of trade, 'exchange of merchandise on a large scale between different countries'. By association, e-commerce can be seen to include the electronic medium for this exchange. Thus electronic commerce can be broadly defined as the exchange of merchandise (whether tangible or intangible) on a large scale between different countries using an electronic medium – namely the Internet. The implications of this are that e-commerce incorporates a whole socio-economic, telecommunications technology and commercial infrastructure at the macro-environmental level. All these elements interact together to provide the fundamentals of e-commerce. Business, on the other hand, is defined as 'a commercial enterprise as a going concern'. E-business can broadly be defined as the processes or areas involved in the running and operation of an organization that are electronic or digital in nature. These include direct business activities such as marketing, sales, human resource accounting and human resource management but also indirect activities such as business process re-engineering and change management, which impact on the improvement in efficiency and integration of business processes andactivities.

Research Methodology

For the said present research study is based on the secondary data. Such secondary data is collected from various reference books on E-Commerce, E-Business, Marketing Management, Marketing Research, Mobile Commerce, Internet Marketing, Electronic Advertising, Economics, Commerce, Management, Banking etc. For the said research study the secondary data is also collected from the various National and International Research Books and Journalswhich are related to E-Commerce, Internet, Commerce, Banking, Management and Information Technology.

The present research study the data pertaining to the following objectives was collected by the review of the literature on the subject concerned. The literature was thus collected by visiting libraries and various concerned websites.

Objectives of the Research Study

Many E-Commerce business activities present different objectives. These may be specific and immediately measurable objectives as well as more general and complex. The most commonly cited objectives of the impact of electronic commerce on business are:

1. To study the theoreticalconcept of E-Commerce.
2. To study the E-CommerceModels of Business.
3. To study the impact of E-Commerce on Business.
4. To study the benefits of E-Commerce to Organizations, Consumers and Society.
5. To study the barriers to E-Commerce.

Hypothesis of the Research Study

Electronic Commerce (EC) is where business transactions take place via telecommunications networks, especially the Internet. Electronic commerce describes the buying and selling of products, services and information via computer networks including the Internet. It is defined as the conduct of a financial

transaction by electronic means. The present said research study was carried out with following hypothesis in view:-

1. E-Commerce reduces the time between the outlay of capital and the receipt of products and services.
2. The use of internet for business marketing the goods and services are increasing day by day.
3. The impact of E -Commerce is positivelyaffecting on business marketing.

E-Commerce Models

Creating an e-commerce solution mainly involves creating and deploying an e- commerce site.The first step in the development of an e-commerce site is to identify the e- commerce model.Depending on the parties involved in the transaction, e-commerce can be classified into main 4 models.These arediscuss as follows:

1. Business-to-Business (B2B) Model

This is said to be the fastest growing sector of e-commerce. The B2B model is predicted to become the largest value sector of the industry within a few years.The B2B model involves electronic transactions for ordering, purchasing, as well as otheradministrative tasks between houses. It includes trading goods, such as business subscriptions,professional services, manufacturing, and wholesale dealings. Sometimes in the B2B model,business may exist between virtual companies, neither of which may have any physical existence.In such cases, business is conducted only through the Internet.The main twoadvantages of the B2B model such as it can efficiently maintain the movement of the supply chain and the manufacturing andprocuring processes, and it can automate corporate processes to deliver the right products and services quickly andcost-effectively.

2. Business-to-Consumer (B2C) Model

The B2C model involves transactions between business organizations and consumers. It appliesto any business organization that sells its products or services to consumers over the Internet.These sites displayproduct information in an online catalog and store it in a database. The B2Cmodel also includes services online banking, travel services, and health information.The B2C model of e-commerce is more

prone to the security threats because individualconsumers provide their credit card and personal information n the site of a businessorganization. In addition, the consumer might doubt that his information is secured and usedeffectively by the business organization. This is the main reason why the B2C model is not verywidely accepted. Therefore, it becomes very essential for the business organizations to providesecurity mechanisms that can guarantee a consumer for securing business information.

3. Consumer-to-Consumer (C2C) Model

The C2C model involves transaction between consumers. Here, a consumer sells directly toanother consumer. Online auction Web sitesthat provide a consumer to advertise and sell their products online to another consumer.However, it is essential that both the seller and the buyer must register with the auction site. Whilethe seller needs to pay a fixed fee to the online auction house to sell their products, the buyer canbid without paying any fee. The site brings the buyer and seller together to conduct deals.Any buyer can now browse the siteof www.ebay.com to search for the product he interested in. If the buyer comes across such a product, heplaces an order for the same on the Web site of eBay. EBay now purchase the product from theseller and then, sells it to the buyer. In this way, though the transaction is between two customers,an organization acts as an interface between the two organizations.

4. Consumer-to-Business (C2B) Model

The C2B model involves a transaction that is conducted between a consumer and a businessorganization. It is similar to the B2C model, however, the difference is that in this case theconsumer is the seller and the business organization is the buyer. In this kind of a transaction, theconsumers decide the price of a particular product rather than the supplier. This category includesindividuals who sell products and services to organizations. In addition to the models discussed so far, five new models are being worked on that involvestransactions between the government and other entities, such as consumer, businessorganizations, and other governments. All these transactions that involve government as oneentity are called e-governance.

The various models in the E-Governance scenario are:

a) **Government-to-Government (G2G) model:** This model involves transactions between 2governments. For example, if the Indian government wants to by oil from the Arabiangovernment, the transaction involved are categorized in the G2G model.

b) **Government-to-Consumer (G2C) model:** In this model, the government transacts withan individual consumer. For example, a government can enforce laws pertaining to taxpayments on individual consumers over the Internet by using the G2C model.

c) **Consumer-to-Government (C2G) model:** In this model, an individual consumer interactswith the government. For example, a consumer can pay his income tax or house taxonline. The transactions involved in this case are C2G transactions.

d) **Government-to-Business (G2B) model:** This model involves transactions between agovernment and business organizations. For example, the government plans to build a flyover. For this, the government requests for tenders from various contractors. Governmentcan do this over the Internet by using the G2B model.

e) **Business-to-Government (B2G) model:** In this model, the business houses transact withthe government over the Internet. For example, similar to an individual consumer,business houses can also pay their taxes on the Internet.

The Impact of Electronic Commerce on Business

E-Commerce and E-Business are not solely the Internet, websites or dot com companies. It is about a new business concept that incorporates all previous business management and economic concepts. As such,E-Business and E-Commerce impact on many areas of business and disciplines of business management studies.

1. **Management Information Systems –** Analysis, design and implementation of e-business systems within an organization; issues of integration of front-end and back-end systems
2. **Human Resource Management –** Issues of on-line recruiting, home working and 'Intrapreneurs' works on a project by project basis replacing permanent employees.
3. **Finance and Accounting –**On-line banking; issues of transaction costs; accounting and

auditingimplications where 'intangible' assets and human capital must be tangibly valued in an increasingly knowledge based economy.

4. **Economics –**The impact of e-commerce on local and global economies; understanding the concepts ofa digital and knowledge-based economy and how this fits into economic theory
5. **Production and Operations Management –**The impact of on-line processing has led to reducedcycletimes. It takes seconds to deliver digitized products and services electronically; similarly the time for processing orders can be reduced by more than 90 per cent from days to minutes. Production systems are integrated with finance marketing and other functional systems as well as with business partners and customers.
6. **Marketing –** Issues of on-line advertising, marketing strategies and consumer behavior and cultures. One of the areas in which it impacts particularly is direct marketing. In the past this was mainly door-to door, home parties and mail order using catalogues or leaflets.
7. **Computer Sciences –** Development of different network and computing technologies and languages to support e-commerce and e-business, for example linking front and back office legacy systems with the 'web based' technology.
8. **Business Law and Ethics –** The different legal and ethical issues that havearisen as a result of aglobal 'virtual' market issues such as copyrightlaws, privacy of customer information, legality of electronic contractsetc.

The Benefits of E-Commerce to Business, Consumers and Society

The previous sections have included discussions about what e-commerce is and its impact, but what are the benefits of e-commerce? What does it offer and why do it? Thebenefits of e-commerce can be seen to affect threemajor stakeholders: Business Organizations, Consumers and Society.

1. **Benefits of E-Commerce to Business**

a) **International Marketplace -** What used to be a single physical marketplacelocated in a geographical area has now become a borderless marketplaceincluding national and international markets? By becoming e-commerceenabled, businesses now have access to people all around the world. Ineffect all e-commerce businesses have become virtual multinationalcorporations.

b) **Operational Cost Savings -** The cost of creating, processing, distributing,storing and retrieving paper-based information has decreased.

c) **Mass Customization -** E-commerce has revolutionized the way consumersbuy goods and services. The processing allows for products andservices to be customized to the customer's requirements. In the past whenFord first started making motor cars, customers could have any color solong as it was black. Now customers can configure a car according to theirspecifications within minutes on-line via the www.ford.com website.

d) **Lower Telecommunications Cost -** The Internet is much cheaper than valueadded networks (VANs) which were based on leasing telephone lines for thesole use of the organization and its authorized partners. It is also cheaper tosend a fax or e-mail via the Internet than direct dialing.

e) **Digitization of Products and Processes -** Particularly in the case of softwareand music/video products, this can be downloaded or e-mailed directly to customers via the Internet in digital or electronic format.

f) **No more 24-hour-time Constraints -** Businesses can be contacted by orcontact customers or suppliers at any time.

2. **Benefits of E-Commerce to Consumers**

a) **24/7 Access -** Enables customers to shop or conduct other transactions 24hours a day, all year round from almost any location. For example - checkingbalances, making payments, obtaining travel and other information.

b) **More Choices -** Customers not only have a whole range of products thatthey can choose from and customize, but also an international selection ofsuppliers.

c) **Price Comparisons -** Customers can 'shop' around the world and conductcomparisons either directly by visiting different sites, or by visiting a singlesite where prices are aggregated from a number of providers and compared.

d) **Improved Delivery Processes -** This can range from the immediate deliveryof digitized or electronic goods such as software or audio-visual files bydownloading via the Internet, to the on-line tracking of the progress ofpackages being delivered by mail or courier.

e) **An Environment of Competition -** Where substantial discounts can be foundor value added, as

different retailers vie for customers. It also allows manyindividual customers to aggregate their orders together into a single orderpresented to wholesalers or manufacturers and obtain a more competitiveprice.

3. **Benefits of E-Commerce to Society**

a) **Enables more Flexible Working Practices -**This enhances the quality of life for a whole host of people in society, enabling them to work from home. Notonly is this more convenient and provides happier and less stressful workingenvironments, it also potentially reduces environmental pollution asfewer people have to travel to work regularly.

b) **Connects People -** Enables people in developing countries and rural areasto enjoy and access products, services, information and other people whichotherwise would not be so easily available to them.

c) **Facilitates Delivery of Public Services -** For example, health services availableover the Internet (on-line consultation with doctors or nurses) filingtaxes over the Internet through the Inland Revenue website.

The Barriers of E-Commerce

The drivers of e-commerce were identified and summarized there are barriers to the growth and development ofe-commerce. Numerous reports and surveys identify the different kinds ofbarriers, and many of them focus on security as being one of the largestinhibitors to and problems for e-commerce. Different nations are atdifferent stages of development of e- commerce and as such the issues thatare relevant to one nation may not be relevant to another. Similarly, theissues that are relevant to the type of organization also differ. Overall, all kindsof organizations have similar barriers but with different emphases for discuss as follows:

1. **Commercial Infrastructure** - Relates to issues such as international trade agreements, taxation laws and other legal agreements that facilitate all kinds of on-line trading and so is a barrier relevant to all types of businesses.
2. **Technology Infrastructure** - Deals with issues of standardization of systems and applications, which is a particular concern for larger organizations who want to implement solutions such as

value chain integration and e-supply chain management.

3. **Internet Infrastructure** - Deals with issues such as availability and quality of the Internet in terms of speed and reliability. This barrier is of particular concern to Business to Consumer organizations, since their business relies more on general consumers, and so the ease with which the general public can connect to the Internet has a direct impact on their Web-based business.
4. **Security** -In its broadest term is one of the most significant barriers toe-commerce both within the organization and external to it. Identified as Security and Encryption; Trust and Risk; User Authentication and Lack of Public Key Infrastructure; Fraud and Risk of Loss it relates to the development of a broader security infrastructure and it also relates to the kinds of measures barriers to e-commerce businesses can take to improve security.
5. **Interoperability of systems**– This is identified as one of the major barriers for large US- based Business to Business corporations. This refers specifically to implementation and compatibility problems of integrating new e-commerce applications with existing legacy systems and resources within organizations. This problem also extends to interacting with systems of business partners and stakeholders.
6. **Lack of Qualified Personnel**- This is a particularly strong concern because internally they do not have sufficient resources to attract and maintain their own support staff to develop a sophisticated technology infrastructure. With regards to third parties, the qualified personnel tended to work for larger organizations.

Conclusion

This research paper involves a study of the inability to find the product or services of interest quickly is the biggest barrier to effective marketing this problem may be overcome through E- commerce, where number of companies offer several products thought the net. In Short, Indian e-commerce has to face many difficulties in web marketing because of infrastructural difficulties and computer illiteracy. Majority of the customers live in rural areas do not sufficient knowledge about computer and internet. Some of customers in urban areas do not have credit facilities and therefore online buying and selling of

goods is limited to urban class having knowledge of computer internet if Indian marketers take into account essentials of good website they can definitely make success marketing in international markets.

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E-Commerce in India

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Abstract

The purpose of the research paper is to identify the progress and future impact in e-commerce. In E-commerce we buy and sell goods and service online by the computer and laptop. But in E-commerce the user not use mobile only for chatting and SMS and listing songs and videos but it also used for other ways like sale, purchase and do many more other activities like get traveling information online, online booking etc.

Keywords : *E – Commerce,*

Introduction

Before understanding of E-commerce and M-commerce first of all we understand what commerce is. Because time has changed and according to time definition of commerce also has been changed. Simply Commerce is Exchange of goods or services usually on a small and large scale from place to place or across city, state, or national boundaries. In traditional commerce People can buy things easily but they face some problems like distance, time availability, not safe payments mode and cost difference. But after change in technology and environments in business strategy people think about it and overcome from these problems with the E-commerce. The number of Internet users around the world has been gradually increasing and this growth has provided opportunities for global and regional e-commerce. E-commerce provides multiple benefits to the consumers in form of availability of goods at lower cost, wider choice and saves time it also elimination of paperwork and bureaucracy and provide online services such as banking, ticketing including airlines, bus, railways, bill payments, hotel booking etc.

People do business online with the help of internet on the desktop, laptop tablets etc. online business changed a fully life style.

Objectives

- To study the present status of E-Commerce
- To study the various E-Commerce models

E-commerce has a significant impact on business costs and productivity. E-Commerce has a chance to be widely adopted due to its simple applications. Thus it has a large economic impact. Electronic Commerce provides the capability of buying and selling products and information on the internet and other on-line service. Electronic commerce or e-commerce refers to a wide range of online business activities for products and services. Electronic commerce is transforming the marketplace by changing firms' business models, by shaping elations among market actors, and by contributing to changes in market structure.

E-Commerce Models

Creating an e-commerce solution mainly involves creating and deploying an ecommerce site. The first step in the development of an e-commerce site is to identify the ecommerce model. Depending on the parties involved in the transaction, e-commerce can be classified into main 4 models. These are discuss as follows:

1. Business-to-Business (B2B) Model

This is said to be the fastest growing sector of e-commerce. The B2B model is predicted to become the largest value sector of the industry within a few years. The B2B model involves electronic transactions for ordering, purchasing, as well as other administrative tasks between houses. It includes trading goods, such as business subscriptions, professional services, manufacturing, and wholesale dealings. Sometimes in the B2B model, business may exist

between virtual companies, neither of which may have any physical existence. In such cases, business is conducted only through the Internet. The main two advantages of the B2B model such as it can efficiently maintain the movement of the supply chain and the manufacturing and procuring processes, and it can automate corporate processes to deliver the right products

and services quickly and cost-effectively.

2. Business-to-Consumer (B2C) Model

The B2C model involves transactions between business organizations and consumers. It applies to any business organization that sells its products or services to consumers over the Internet. These sites display product information in an online catalog and store it in a database. The B2Cmodel also includes services online banking, travel services, and health information. The B2C model of e-commerce is more prone to the security threats because individual consumers provide their credit card and personal information n the site of a business organization. In addition, the consumer might doubt that his information is secured

and used effectively by the business organization. This is the main reason why the B2C model is not very widely accepted. Therefore, it becomes very essential for the business organizations to provide security mechanisms that can guarantee a consumer for securing business information.

3. Consumer-to-Consumer (C2C) Model

The C2C model involves transaction between consumers. Here, a consumer sells directly to another consumer. Online auction Web sites that provide a consumer to advertise and sell their products online to another consumer. However, it is essential that both the seller and the buyer must register with the auction site. While the seller needs to pay a fixed fee to the online

auction house to sell their products, the buyer can bid without paying any fee. The site brings the buyer and seller together to conduct deals. Any buyer can now browse the site of www.ebay.com to search for the product he interested in. If the buyer comes across such a product, he places an order for the same on the Web site of eBay. EBay now purchase the product from the seller and then, sells it to the buyer. In this way, though the transaction is between two customers, an organization acts as an interface between the two organizations.

4. Consumer-to-Business (C2B) Model

The C2B model involves a transaction that is conducted between a consumer and a

Business organization. It is similar to the B2C model, however, the difference is that in this case the consumer is the seller and the business organization is the buyer. In this kind of a transaction, the consumers decide the price of a particular product rather than the supplier. This category includes individuals who sell products and services to organizations. In addition to the models discussed so far, five new models are being worked on that involves transactions between the government and other entities, such as consumer, business organizations, and other governments. All these transactions that involve government as one entity are called e-governance.

The various models in the E-Governance scenario are:

a) **Government-to-Government (G2G) model:** This model involves transactions between 2governments. For example, if the Indian government wants to by oil from the Arabian government, the transaction involved are categorized in the G2G model.

b) **Government-to-Consumer (G2C) model:** In this model, the government transacts with an individual consumer. For example, a government can enforce laws pertaining to tax payments on individual consumers over the Internet by using the G2C model.

c) **Consumer-to-Government (C2G) model:** In this model, an individual consumer interacts with the government. For example, a consumer can pay his income tax or house tax online. The transactions involved in this case are C2G transactions.

d) **Government-to-Business (G2B) model:** This model involves transactions between a government and business organizations. For example, the government plans to build a flyover. For this, the government requests for tenders from various contractors. Government can do this over the Internet by using the G2B model.

e) **Business-to-Government (B2G) model:** In this model, the business houses transact with the government over the Internet. For example, similar to an individual consumer, business houses can also pay their taxes on the Internet.

Conclusion and Future Scope

This study adds to the literature by presenting patterns of and first insights into the productivity effects of e-commerce activities. To the best of our knowledge this has not earlier been explored in these dimensions for a large group of countries. E-sales is the main variable in focus, either in the shape of the activity or as a proportion of total sales. Engaging in e-sales is still not broadly spread, although more frequently used by large firms, high productivity firms and firms with international experience. The proportion of e-sales is growing over time, but ascending from a low level. Despite variations in the intensity, there is a consistency across countries in how the different phases of ICT appear, including the not yet strongly developed e-sales.

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E-Commerce the necessity in today's life

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Abstract

E-commerce involves an online transaction. E-commerce provides multiple benefits to the consumers in form of availability of goods at lower cost, wider choice and saves time. E-Commerce or Electronic Commerce means buying and selling of goods, products, or services over the internet. E-commerce is also known as electronic commerce or internet commerce. These services provided online over the internet network. Transaction of money, funds, and data are also considered as E-commerce..

Keywords : *E – Commerce,*

Introduction

E-commerce (electronic commerce) is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the internet. These business transactions occur either as business-to-business (B2B), business-to-consumer (B2C), consumer-to-consumer or consumer-to-business. The terms e-commerce and e-business are often used interchangeably. The term e-tail is also sometimes used in reference to the transactional processes for online shopping. Online stores like Amazon, Flipkart, Shopify, Myntra, Ebay, Quikr, Olx are examples of E-commerce websites. By 2020, global retail e-commerce can reach up to $27 Trillion. Let us learn in detail about what is the advantages and disadvantages of E-commerce and its types.

The beginnings of e-commerce can be traced to the 1960s, when businesses started using **Electronic Data Interchange (EDI)** to share business documents with other companies. In 1979, the American

National Standards Institute developed ASC X12 as a universal standard for businesses to share documents through electronic networks.

After the number of individual users sharing electronic documents with each other grew in the 1980s, the rise of eBay and **Amazon** in the 1990s revolutionized the e-commerce industry. Consumers can now purchase endless amounts of items online, from e-tailers, typical **brick and mortar** stores with e-commerce capabilities and one another.

1. Benefits of E-Commerce to Business

a) International Marketplace - What used to be a single physical market place located in a geographical area has now become a borderless market place including national and international markets? By becoming e-commerce enabled, businesses now have access to people all around the world. In effect all e-commerce businesses have become virtual multinational corporations.

b) Operational Cost Savings - The cost of creating, processing, distributing, storing and retrieving paper-based information has decreased.

c) Mass Customization - E-commerce has revolutionized the way consumers buy goods and services. The processing allows for products and services to be customized to the customer's requirements. In the past when Ford first started making motor cars, customers could have any color solong as it was black. Now customers can configure a car according to theirspecifications within minutes on-line via the www.ford.com website.

d) Lower Telecommunications Cost - The Internet is much cheaper than value added networks (VANs) which were based on leasing telephone lines for the sole use of the organization and its authorized partners. It is also cheaper to send a fax or e-mail via the Internet than direct dialing.

e) Digitization of Products and Processes - Particularly in the case of software and music/video products, this can be downloaded or e-mailed directly to customers via the Internet in digital or electronic format.

f) No more 24-hour-time Constraints - Businesses can be contacted by or contact customers or suppliers at any time.

2. Benefits of E-Commerce to Consumers

a) 24/7 Access - Enables customers to shop or conduct other transactions 24hours a day, all year round from almost any location. For example – checking balances, making payments, obtaining travel and other information.

b) More Choices - Customers not only have a whole range of products that they can choose from and customize, but also an international selection of suppliers.

c) Price Comparisons - Customers can 'shop' around the world and conduct comparisons either directly by visiting different sites, or by visiting a single site where prices are aggregated from a number of providers and compared.

d) Improved Delivery Processes - This can range from the immediate delivery of digitized or electronic goods such as software or audio-visual files by downloading via the Internet, to the on-line tracking of the progress of packages being delivered by mail or courier.

e) An Environment of Competition - Where substantial discounts can be foundor value added, as different retailers vie for customers. It also allows many individual customers to aggregate their orders together into a single order presented to wholesalers or manufacturers and obtain a more competitive price.

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a) Enables more Flexible Working Practices -This enhances the quality of life for a whole host of people in society, enabling them to work from home. Not only is this more convenient and provides happier and less stressful working environments, it also potentially reduces environmental pollution as fewer people have to travel to work regularly.

b) Connects People - Enables people in developing countries and rural are as to enjoy and access products, services, information and other people which otherwise would not be so easily available to them.

c) Facilitates Delivery of Public Services - For example, health services available over the Internet (on-line consultation with doctors or nurses) filing taxes over the Internet through the Inland Revenue website.

Conclusion

This research paper involves a study of the inability to find the product or services of interest quickly is the biggest barrier to effective marketing this problem may be overcome through E- commerce, where number of companies offer several products thought the net. In Short, Indian e-commerce has to face many difficulties in web marketing because of infrastructural difficulties and computer illiteracy. Majority of the customers live in rural areas do not sufficient knowledge about computer and internet. Some of customers in urban areas do not have credit facilities and therefore online buying and selling of goods is limited to urban class

having knowledge of computer internet if Indian marketers take into account essentials of good website they can definitely make success marketing in international markets.

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Future Prospects of E-Banking: Issues & Challenges in India

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Introduction

A bank is a financial institution which deals with the monetary activities by accepting deposits, lending to the various parties against securities and performing agency service to its customers.

Banking sector is the blood vascular system of our economy. It has a positive role to play in the economic development of the country as repositories of people's savings and purveyors of credit, especially as the success of economic development depends on the mobilization of resources and its investment in an appropriate manner. The banking system of any economy is the track on which it runs. Its structure and working are integral to a country's financial performance and economic growth. Indian banking system is unique, the like of which exits nowhere in the world. The banking system in India having gone through various stages of development now consists of central bank (RBI), public sector scheduled banks and private sector, scheduled as well as non-scheduled Banks. In 21 century the Indian banking industry has experienced a series of significant transformations in the last few decades. Due to cutthroat competition and new entrants, the banks have enforced to undertake speedy changes in their operations to maintain the market share. They are using new and innovative services to retain and maintain their customer base but in comparison of urban areas they are focusing more on rural areas and providing services like merchant banking, insurance, mutual fund, any time any where banking etc. to their customers apart from borrowing and lending. But as every coin has two aspects. At one instance invention of new technology made banking sector accessible and convenient to common men but on the other instance it pose certain big challenges for banking sector.

Internet banking is the system that provides the facility to the customer to conduct the financial and non-financial transactions from his net banking account. The user can transfer funds from his account to

other accounts of the same bank/different bank using a website or an online application. The customer uses a resource and a medium to conduct financial transactions. The resource that a customer uses might be an electronic device like a computer, a laptop, or a mobile phone. The internet is the medium that makes the technology possible.

The facility of internet banking is provided through banks and the customer must be an account holder with any bank to get the facility available for him/her.

E-banking is a safe, fast, easy and efficient electronic service that enables you access to bank account and to carry out online banking services, 24 hours a day, and 7 days a week.

With this service you save your time by carrying out banking transactions at any place and at any time, from your home or office, all you need is internet access. E-banking enables the following:

- Accurate statement of all means available in your bank account
- Statement of current account, credits, overdrafts and your deposits
- Execution of national and international transfers in various currencies
- Execution of all types of utility bill payments (electricity, water supply, telephone bills, etc..)
- Carrying out customs payments
- Electronic confirmation for all transactions executed by E-banking
- Management of your credit cards

The facility of e-banking provided by the banks to their customers uses the internet as a medium. The services under this facility include funds transfer, payment of bills, opening bank accounts online, and much more.

There are mainly two methods to deliver e-banking to the customers:

1. Banks with physical presence offering electronic transaction
2. Virtual banks offering transaction services

Most of the banks have a physical presence and offer banking facility online. But, there are some banks that don't have any physical presence anywhere. They are virtual banks.

The technological innovation of electronic channel of service delivery has brought in a level playing field for businesses by eliminating geographical, regulatory, and industrial barriers . The revolution in the market place has set in motion a revolution in the banking sector for the provision of a payment system that is compatible with the demands of the electronic marketplace. According to Awad , there are four electronic commerce activities internet users perform. These activities require a banking relationship and are: shopping, banking, investing, and online electronic payment for Internet services. The enormous increase of the internet is changing the way businesses interact with consumers as most businesses are now conducted using the internet. It is this introduction of e-commerce as a means of payment that has urged banks to take a leap from the traditional banking services, offering a service strongly through the medium of internet, which has come to be known as internet banking or e-banking.

Existing literature on internet banking in India indicates that despite its growing use and adoption by many banks, no significant effort has been made to understand whether the customers whom the technology is meant for are satisfied or not and what are the demographic characteristics of the ones who have adopted the technology.

Internet banking is an electronic payment system that enables customers of a financial institution to conduct financial transactions on a website operated by the institution, such as a retail bank, virtual bank, credit union or building society. Online banking is also referred as Internet banking, e-banking, virtual banking and by some other terms. This new channel has added a new dimension to the concept of customer satisfaction and how it can be affected in a positive way. All organizations exist and strive to become an integral part of the lives of their customers and therefore always strive harder to keep satisfying their customers through better channels of delivering their offerings. There are many factors which have an impact on customer satisfaction, one of the most important being service quality. Due to the varying nature of the products offered in manufacturing sector and in the services sector the definition and measurement of service quality, it was seen could not be the same for both. Especially, in the present era, with the emergence of internet as a major channel of service delivery, the need for a

scale to measure the service quality in electronic media of services was felt strongly. Hence, service quality was taken up by the research scholars specifically in terms of the e-services which lead to the development of various models that helped in measuring e-service quality in the services sector.

Review of Literature:

With the rapid and extensive increase in technology, innovation and telecommunications, new distribution channels in the financial sector are coming up rapidly, in numbers as well as in form, from ATMs, telephone banking, with Internet Banking being one of the latest in the chain of technological wonders. According to Accenture (2005), Internet Banking was thought to signal a revolution in banking distribution. Banks invested heavily in the development of the Internet channel. Mols [11] observed that Internet Banking has experienced explosive growth in many countries and has transformed traditional banking practice inevitability. Internet Banking will continue to revolutionize the current traditional banking industry and offer more opportunity to meet better consumer services through enhanced interaction, data mining and customization in the Internet Banking services concludes.

According to Kalakota and Whinston, online banking was first introduced in the early 1980s in which consumers were provided with an application software program that operates on personal computer (PC) which could be dialled into the bank via a modem, telephone line and operated the programs remotely on the consumer PC. However, due to the lack of Internet users, and costs associated with using online banking, the growth of internet banking experienced a setback. But, in 1990s internet banking made a huge comeback as the most sought after channel of service deliver as the Internet explosion had made customers comfortable with making transactions over the internet around the world. Thus, internet banking became an important channel of delivering the services for the banks and made the transaction and other banking activities much easier for the customers. Internet Banking has been regarded as the most important way to reduce cost and maintain or enhance services for consumers, as recorded by Hua. The banking institutions aim to use internet banking as a tool to lower operational costs, improve banking services to the customers, retain them and expand the customer base. In India, the internet banking was introduced in 1995 by ICICI bank followed shortly by HDFC Bank.

Internet is the cheapest delivery channel for banking products as by using internet as a channel of delivering services banks can reduce the number of branches as well as their staff. Qureshi et al. defined Internet Banking as a process of innovation whereby customers handle their own banking transactions without visiting bank tellers. Recent evidence suggests that an Internet-based consumer banking strategy may be effective, with reports of more profitable, loyal and committed consumers compared with traditional banking consumers (ABA, 2004; Fox, 2005). Therefore, Gartner concluded that banks now regard Internet as an equally important channel as the traditional channels of branches, automated teller machines (ATM), telephone banking and call centers. In the new banking environment, Internet Banking is increasingly managed as an operational activity and an important element of a multi-channel strategy as observed by Black et al

Aggarwal (2003), in his paper 'E banking for comprehensive E-Democracy: An Indian Discernment', looked for such avenues and evaluated that e-banking could play significant role in E-democracy for successful online bill payment, online brokerage, online account management and anywhere banking and finally, concluded that e- banking services provide one stop service and informational unit that provides great benefits to banks, customers, employers and government.

Raghavan (2006), opined in his article 'Perception of Indian banks in 2020', that at present over 85% of the finished payment transactions are electronic and traditional way of doing banking at the branch level has relatively little importance to electronic banking users. Many banks including PSU banks would have online ATMs, phone banking, virtual banking, e-banking, Internet banking, etc. by 2020.

Mohan (2006), in his article titled 'Information Technology on Indian banking', remarked that Indian banking is at the threshold of a paradigm shift and a significant development has been achieved by banks in offering a variety of new and innovative e-banking services to customers today, which was not thought of before. However, public sector banks have not been able to harness the benefits of computerization.

Uppal and Chawla (2009), in their study titled 'E-Delivery channel-based banking services: An empirical study', found that the customers of public sector, private sector and foreign banks in Ludhiana district of Punjab are interested in e-banking services, but at the same time are facing problems like

inadequate knowledge, poor network, lack of infrastructure, unsuitable location, misuse of ATM cards and difficulty to open an account.

Shukla and Shukla (2011), stated in his article "E-banking: Problems and Prospects", that E-banking offers a higher level of convenience for managing one's finances even from one's bedroom. However, it continues to present challenges to the financial security and personal privacy. Customers are advised not to share personal information like PIN, passwords etc with anyone, including employees of the bank, change ATM PIN and online login and transaction passwords on a regular basis and ensure that the logged in session is properly signed out.

This paper is based on descriptive analysis and various secondary information sources and includes different literatures reviews, case studies, published sources of data collected from various research papers, journals and magazines like Journal of Electronic Commerce Research, The Journal of Internet Banking and Commerce, e-service Journal, various issues of RBI and also includes websites of banks.

Why there is a need of E-Banking?

- With the help of e-banking, the customer can operate his account remotely from his office or home.
- It lends an added advantage towards payment of utility bills and also eliminates the need to stand in long queues for the purpose of bill payment.
- Sharp growth in credit card/debit card usage can be majorly attributed to e-banking. A customer can shop globally without any need for carrying paper currency with him.
- By the help of e-banking facilities, banks are now available 24×7 and are just a mouse click away.
- The rise of e-banking has made the banks more competitive and resulted in opening of better prospects and avenues for banking operations.

E-Banking services

Categories	**Types of services**
Internet Banking Services	Balance enquiry and statement and request of Cheque book
	Online transfer of funds
	Card to card fund transfer and Bills payment
	Pre paid mobile recharge and top-up recharge
	Buy and sell Mutual Fund and Demat holdings
	Renewal/ premature closure of FD/ RD, Loan Details and Interest rate updates
	Change Password
	Online shopping, Ticket Booking and Online tax payments
Mobile Banking Services	Making Payment and details of credit card balance
	Purchase and Redemption of Mutual Fund units
ATM's Services	24 hours access to cash and transfer of funds between accounts
	View account balances and mini statement
	Pin change option

Challenges:

- Communication across an open and thus insecure channel such as the internet might not be the best base for bank-client relations as trust might partially be lost.
- The most serious threat faced by e-banking is that there may be loss of data due to technical faults as it is not safe and secure every time.
- Lack of preparedness both on part of banks and customers in the adoption of new technological changes.
- Lack of proper infrastructure for the installation of e-delivery channels.

- The ability to adopt global technology to local requirements and to strengthen public support for e-finance.
- It has created many new challenges for bank management and regulatory and supervisory authorities.

Recommendations:

In order to increase and achieve the level of mutual trust between banks, websites and customers, the following strategies should be applied by banks.

- Banks should ensure that online banking is safe and secure for financial transaction as like traditional banking.
- Banks should organize seminar and conference to educate the customer regarding the healthy usage of e-banking as well as security and privacy of their accounts.
- Employees of banks should be given special technical training for the use of e-banking so that they can further encourage customers to use the same.
- Banks must emphasize on the convenience and cost saving policy that online banking can provide to people such as avoiding long queue and reduction in transaction cost by use of e-banking.
- Government should make the required investments for building the infrastructure.

Conclusion:

The financial sector reforms have brought about significant improvements in the financial strength and the competitiveness of the Indian banking system. The e-banking revolution has fundamentally changed the business of banking by scaling borders and bringing about new opportunities. Therefore, Indian banks need to optionally leverage technology to increase penetration, improve their productivity and efficiency, deliver cost-effective products and services, provide faster, efficient and convenient customer service and thereby, contribute to the overall growth and development of the country. However, hounded by negative issues like identity theft and phishing attacks, banks must be concerned about the

attitudes of customers with regard to acceptance of online banking. In years to come, e-banking will not only be acceptable mode of banking but will be preferred mode of banking because of the computerization process adopted by banking sector with a vision to reach Indian banking to every citizen.

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Future prospects of E-commerce in India

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Abstract

Based on the review on the available literature sources, this paper comprehensively discusses the identified studies which have been done in the context of e-commerce adoption. Seventy-three (73) papers have been extracted from Elsevier's Scopus database. Those papers were analyzed based on the distribution of publication, the scope demography, the research approach and research method and the adapted theory or conceptual framework. The result of the study found that publications in e-commerce research rose to peak year in 2015.. But in E-commerce the user not use mobile only for chatting and SMS and listing songs and videos but it also used for other ways like sale, purchase and do many more other activities like get traveling information online, online booking etc.

Keywords : *E – Commerce,*

Introduction

Before understanding of E-commerce and M-commerce first of all we understand what commerce is. Because time has changed and according to time definition of commerce also has been changed. Simply Commerce is Exchange of goods or services usually on a small and large scale from place to place or across city, state, or national boundaries. In traditional commerce People can buy things easily but they face some problems like distance, time availability, not safe payments mode and cost difference. But after change in technology and environments in business strategy people think about it and overcome from these problems with the E-commerce. The number of Internet users around the world has been gradually increasing and this growth has provided opportunities for global and regional e-commerce. E-commerce provides multiple benefits to the consumers in form of availability of goods at lower cost,

wider choice and saves time it also elimination of paperwork and bureaucracy and provide online services such as banking, ticketing including airlines, bus, railways, bill payments, hotel booking etc. People do business online with the help of internet on the desktop, laptop tablets etc. online business changed a fully life style.

Objectives

- To study the present status of E-Commerce
- To Future E-Commerce models

E-commerce has a significant impact on business costs and productivity. E-Commerce has a chance to be widely adopted due to its simple applications. Thus it has a large economic impact. Electronic Commerce provides the capability of buying and selling products and information on the internet and other on-line service. Electronic commerce or e-commerce refers to a wide range of online business activities for products and services. Electronic commerce is transforming the marketplace by changing firms' business models, by shaping elations among market actors, and by contributing to changes in market structure.

E-Commerce Models

Creating an e-commerce solution mainly involves creating and deploying an ecommerce site. The first step in the development of an e-commerce site is to identify the ecommerce model. Depending on the parties involved in the transaction, e-commerce can be classified into main 4 models. These are discuss as follows:

1. Business-to-Business (B2B) Model

This is said to be the fastest growing sector of e-commerce. The B2B model is predicted to become the largest value sector of the industry within a few years. The B2B model involves electronic transactions for ordering, purchasing, as well as other administrative tasks between houses. It includes trading goods, such as business subscriptions, professional services, manufacturing, and wholesale dealings. Sometimes in the B2B model, business may exist

between virtual companies, neither of which may have any physical existence. In such cases, business is conducted only through the Internet. The main two advantages of the B2B model such as it can efficiently maintain the movement of the supply chain and the manufacturing and procuring processes, and it can automate corporate processes to deliver the right products

and services quickly and cost-effectively.

2. Business-to-Consumer (B2C) Model

The B2C model involves transactions between business organizations and consumers. It applies to any business organization that sells its products or services to consumers over the Internet. These sites display product information in an online catalog and store it in a database. The B2Cmodel also includes services online banking, travel services, and health information. The B2C model of e-commerce is more prone to the security threats because individual consumers provide their credit card and personal information n the site of a business organization. In addition, the consumer might doubt that his information is secured

and used effectively by the business organization. This is the main reason why the B2C model is not very widely accepted. Therefore, it becomes very essential for the business organizations to provide security mechanisms that can guarantee a consumer for securing business information.

3. Consumer-to-Consumer (C2C) Model

The C2C model involves transaction between consumers. Here, a consumer sells directly to another consumer. Online auction Web sites that provide a consumer to advertise and sell their products online to another consumer. However, it is essential that both the seller and the buyer must register with the auction site. While the seller needs to pay a fixed fee to the online

auction house to sell their products, the buyer can bid without paying any fee. The site brings the buyer and seller together to conduct deals. Any buyer can now browse the site of www.ebay.com to search for the product he interested in. If the buyer comes across such a product, he places an order for the same on the Web site of eBay. EBay now purchase the product from the seller and then, sells it to the buyer. In this way, though the transaction is between two customers, an organization acts as an interface between the two organizations.

4. Consumer-to-Business (C2B) Model

The C2B model involves a transaction that is conducted between a consumer and a

Business organization. It is similar to the B2C model, however, the difference is that in this case the consumer is the seller and the business organization is the buyer. In this kind of a transaction, the consumers decide the price of a particular product rather than the supplier. This category includes individuals who sell products and services to organizations. In addition to the models discussed so far, five new models are being worked on that involves transactions between the government and other entities, such as consumer, business organizations, and other governments. All these transactions that involve government as one entity are called e-governance.

The various models in the E-Governance scenario are:

a) **Government-to-Government (G2G) model:** This model involves transactions between 2governments. For example, if the Indian government wants to by oil from the Arabian government, the transaction involved are categorized in the G2G model.

b) **Government-to-Consumer (G2C) model:** In this model, the government transacts with an individual consumer. For example, a government can enforce laws pertaining to tax payments on individual consumers over the Internet by using the G2C model.

c) **Consumer-to-Government (C2G) model:** In this model, an individual consumer interacts with the government. For example, a consumer can pay his income tax or house tax online. The transactions involved in this case are C2G transactions.

d) **Government-to-Business (G2B) model:** This model involves transactions between a government and business organizations. For example, the government plans to build a flyover. For this, the government requests for tenders from various contractors. Government can do this over the Internet by using the G2B model.

e) **Business-to-Government (B2G) model:** In this model, the business houses transact with the government over the Internet. For example, similar to an individual consumer, business houses can also pay their taxes on the Internet.

Future of E-commerce in India

The Indian e-commerce industry has seen a series of devaluations and funding crunches in the past, this year has seen it all. This pattern has alarmed many and gave rise to the question, "Is this the end of this colourful industry in India?" But experts believe that we have a glowing future ahead.

The e-commerce sector is slated to increase by about 1200% to **$200 billion by 2026**, up from $15 million in 2016, according to a report by financial services expert Morgan Stanley. This is sure to bring a speck of smile to the industry waiting for any miracle to turn around.

Conclusion And Future Scope

This study adds to the literature by presenting patterns of and first insights into the productivity effects of e-commerce activities. To the best of our knowledge this has not earlier been explored in these dimensions for a large group of countries. E-sales is the main variable in focus, either in the shape of the activity or as a proportion of total sales. Engaging in e-sales is still not broadly spread, although more frequently used by large firms, high productivity firms and firms with international experience. The proportion of e-sales is growing over time, but ascending from a low level. Despite variations in the intensity, there is a consistency across countries in how the different phases of ICT appear, including the not yet strongly developed e-sales.

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An Analytical study of women user's awareness of E-Commerce in Wardha City

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Abstract

This paper present E-commerce related to women's customer awareness regarding e-commerce in Wardha city. The data collected from e-commerce women's customers who purchase various kinds of product through e-commerce websites. For the study, purpose responses from 625 women's user's e-commerce customers in different areas of Wardha City have taken. Hence, data is collected from total 625 women's user's e-commerce customers.

Introduction

Electronic commerce (or e-commerce) encompasses all business conducted by means of computer networks. Advances in telecommunications and computer technologies in recent years have made computer networks an integral part of the economic infrastructure. More and more companies are facilitating transactions over web. There has been tremendous competition to target each and every computer owner who is connected to the Web. Although business-to-business transactions play an important part in e-commerce market, a share of e-commerce revenues in developed countries is generated from business to consumer transactions. E-commerce provides multiple benefits to the consumers in form of availability of goods at lower cost, wider choice and saves time. People can buy goods with a click of mouse button without moving out of their house or office. Similarly online services such as banking, ticketing (including airlines, bus, railways), bill payments, hotel booking etc. have been of tremendous benefit for the customers. Most experts believe that overall e-commerce will increase exponentially in coming years. Business to business transactions will represent the largest

revenue but online retailing will also enjoy a drastic growth. Online businesses like financial services, travel, entertainment, and groceries are all likely to grow.

Objective of the Study

- To study women's user's customer are aware regarding e-commerce

Research Methodology

The researcher has adopted analytical, descriptive and comparative methodology for this report; reliance has been placed on books, journals, newspapers and online databases and on the views of writers in the discipline of Competition law.

Table 1: Frequency of e-commerce used by the women's user's customers in Wardha City

Frequency of E-Commerce Used	Frequency	Percentage
Once a week	32	5.0
at least once a month	155	24.9
Once in 2-3 months	31	5.0
Once in a year	63	10.0
According to the need	344	55.1
Total	**625**	**100.0**

Above Table 1 illustrates frequency of e-commerce used by the women user's customers in Wardha City. It is evident from the information that 5.0% women's users used by the e-commerce facility once in a week, which was followed by women's users doing e-commerce at least once in a month (24.9%). Furthermore, 5.0% women's user's customers do e-commerce once in 2-3 months whereas 10% and 55.1% women's users do e-commerce once in a year and according to the need respectively. Thus, it is

evident from the above information that majority of women user's customers of Wardha City do e-commerce according to their need.

Table 2: Sources used by women's users of e-commerce website customers of Wardha City for gathering information about various products

Sources of gathering information about various products	**Frequency**	**Percentage**
Search Engines	188	30.1
Friends and Family	94	15.0
Company Website	62	9.9
Advertisements	187	30.0
Promotional e-mails	31	5.0
Television Advertisements	63	10.0
Total	**625**	**100.0**

Above Table 2 illustrates sources used by women's users of e-commerce website customers of Wardha City for gathering information about various products. It is evident from the information that 30.1% e-commerce website customers use search engines for gathering information, which was followed by taking views of friends and family (15.0%). Furthermore, 9.9% e-commerce website customers use company websites whereas 30%, 5% and 10% customers use advertisements, promotional e-mails and television advertisements respectively. Thus, it is evident from the above information that majority of women's user's customers of Wardha City use search engines and advertisement for gathering information about various products.

Table 3: Payment mode normally adopted by the e-commerce website customers in Internet shopping

Payment mode normally adopted in Internet shopping	**Frequency**	**Percentage**
Credit Card	32	5.0
Debit Card	188	30.1
Net Banking	62	9.9
Cash on Delivery	343	55.0
Total	**625**	**100.0**

Above Table 3 illustrates payment mode adopted by the e-commerce website customers of Wardha City for doing internet shopping. It is evident from the information that 5.0% e-commerce website customers use credit card for the payment of online shopping, which was followed by use debit card for payment (30.1%). Furthermore, 9.9% e-commerce website customers use net banking whereas 55% customers use cash on delivery mode for payment of internet shopping. Thus, it is evident from the above information that majority of e-commerce website customers of Wardha City normally use cash on delivery as mode of payment for internet shopping.

Conclusion:-

On the basis of above results it is evident that women's user's customers are aware regarding e-commerce. But they afraid of answering too many personal questions while purchasing a product through e-commerce site; using personal information by e-commerce websites for other purpose without seeking their consent. They select e-commerce site, which is easy to use, and to find information. They are not fully aware of the security and transaction policy of e-commerce site.

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Electronic Commerce and Economy of India

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Abstract

The e-commerce has transformed the way business is done in India. The e-commerce market has changed the way business is transacted, whether in retail or business-to-business, locally or globally. E-commerce has changed the shopping patterns in India as the number of smartphone users have increased both in urban and rural markets. The Indian e-commerce market is expected to grow to US$ 200 billion by 2026 from US$ 38.5 billion as of 2017. Much growth of the industry has been triggered by increasing internet and smartphone penetration. The ongoing digital transformation in the country is expected to increase India's total internet user base to 829 million by 2021 from 604.21 million as of December 2018. India's internet economy is expected to double from US$125 billion as of April 2017 to US$ 250 billion by 2020, majorly backed by ecommerce.

Introduction

Electronic commerce is commonly known as e-commerce has developed rapidly in the last few years. E-commerce is the buying and selling of product or service over electronic systems such as the Internet and other computer networks. It provides multiple benefits to the consumers in form of availability of goods at lower cost, wider choice and saves time. Accessibility to e-commerce platforms is not a privilege but rather a necessity for most people

The e-commerce has transformed the way business is done in India. India is rapidly moving towards becoming a digitally empowered society. The push for e-governance, the proliferation of smartphones, increasing Internet access and booming digital payments are fuelling the country's journey towards a trillion-dollar digital economy by 2025. The widespread acceptance of Digital is being seen as a catalyst for overall economic growth, and with the combination of favourable demographics and policy reforms,

India presents a unique and powerful growth story. With Internet penetration expected to almost double to 60% by 2022, the country is arguably the world's most promising Internet economy, with a rapidly increasing netizen. With improving data affordability, consumption growth and newer financial products, the e-commerce market is set to grow, be it across e-tail, travel, consumer services or online financial services.

What is E-commerce

Electronic commerce or e-commerce is a term for any type of business, or commercial transaction that involves the transfer of information across the Internet. It covers a range of different types of businesses, from consumer based retail sites, through auction or music sites, to business exchanges trading goods and services between corporations. It is currently one of the most important aspects of the Internet to emerge. Ecommerce allows consumers to electronically exchange goods and services with no barriers of time or distance. Electronic commerce has expanded rapidly over the past five years and is predicted to continue at this rate, or even accelerate. In the near future the boundaries between "conventional" and "electronic" commerce will become increasingly blurred as more and more businesses move sections of their operations onto the Internet.

E-commerce Business Models

- **Business-to-Business (B2B):** This kind of e-commerce consists of all the electronic transactions and dealings related to the goods and services. These basically are conducted between companies and include conventional wholesalers and producers dealing with retailers.

- **Business-to-Consumer (B2C):** The Business-to-Consumer e-commerce is related to the transactions and relationship between businesses and the end customers. This is mainly to do with the retail e-commerce trade that takes place online. With the inception of the internet, B2C e-commerce has evolved to a great extent.

- **Consumer-to-Consumer (C2C):** This consists of electronic transactions of products and services between two customers. These are mainly conducted through a third party that provides an online platform for these transactions.

- **Consumer-to-Business (C2B):** In this, a complete reversal of the selling and buying process takes place. This is very relevant for crowdsourcing projects. In this case, individuals make their items or services and sell them to companies.

- **Business-to-Administration (B2A):** In this kind of e-commerce transaction, there are dealings between companies and public administration. It encompasses different services, such as social security, fiscal measures, legal documents, employment and so on.

- **Consumer-to-Administration (C2A):** In this e-commerce model, electronic transactions are carried between individuals and public administration. Some examples are distance learning, information sharing, electronic tax filing, and so on.

E-commerce Industry in India

The Indian e-commerce industry has been on an upward growth trajectory and is expected to surpass the US to become the second largest e-commerce market in the world by 2034. The E-commerce market is expected to reach US$ 200 billion by 2027 from US$ 38.5 billion in 2017. India's e-commerce market has the potential to grow more than four folds to US$ 150 billion by 2022 supported by rising incomes and surge in internet users. Online shoppers in India are expected to reach 120 million in 2018 and eventually 220 million by 2025. Average online retail spending in India was US$ 224 per user in 2017. E-commerce and consumer internet companies in India received more than US$ 7 billion in private equity and venture capital in 2018. Online retail sales in India are expected to grow by 31 per cent to touch US$ 32.70 billion in 2018, led by Flipkart, Amazon India and Paytm Mall. Online retail is expected to contribute 2.9 per cent of retail market in 2018.

Much growth of the industry has been triggered by increasing internet and smartphone penetration. Internet penetration in India grew from just 4 per cent in 2007 to 34.42 per cent in 2017, registering a

CAGR of 24 per cent between 2007 and 2017. As of December 2018 overall internet penetration in India was 46.13 per cent. The number of internet users in India is expected to increase from 604.21 million as of December 2018 to 829 million by 2021. Internet penetration in rural India is expected to grow as high as 45 per cent by 2021 compared to the current rate of 23.87 per cent. The e-commerce retail logistics market in India is estimated at US$ 1.35 billion in 2018 and is expected to grow at a 36 per cent CAGR over the next five years. It also received and investment of $6.25 billion from January – May 2019.

A young demographic profile, rising internet penetration and relative better economic performance are the key drivers of this sector. The Government of India's policies and regulatory frameworks such as 100 per cent foreign direct investment (FDI) in B2B e-commerce and 100 per cent FDI under automatic route under the market place model of B2C e-commerce are expected to further propel growth in the sectors. As of August 2018, the government is working on the second draft of e-commerce policy, incorporating inputs from various industry stakeholders. In February 2019, the Government of India released the Draft National e-Commerce Policy which encourages FDI in the marketplace model of e-commerce. Further, it states that the FDI policy for e-commerce sector has been developed to ensure a level playing field for all participants. According to the draft, a registered entity is needed for the e-commerce sites and apps to operate in India.

Landmark Developments in the Indian E-commerce Sector

- In May 2018, US retail chain Walmart acquired 77 percent stake in Indian ecommerce leader Flipkart for about $16 billion. Flipkart's major investor SoftBank completely exited, selling its 20 percent stake in the company for $4 billion.
- Flipkart, is expected to launch more offline retail stores in India to promote private labels in segments such as fashion and electronics. In September 2018, Flipkart acquired Israel based analytics start-up Upstream Commerce that will help the firm to price and position its products in an efficient way.

- Ebay India, which was launched in 2005 and acquired by Flipkart in 2017, got the axe in the aftermath of the acquisition. In August, Flipkart launched 2GUD, a new online platform to exclusively sell refurbished goods, thereby making the best out of its learnings from eBay India.
- Paytm has launched its bank - Paytm Payment Bank. Paytm bank is India's first bank with zero charges on online transactions, no minimum balance requirement and free virtual debit card
- As of June 2018, Google is also planning to enter into the E-commerce space by November 2018. India is expected to be its first market.
- Reliance retail is going to launch online retail this year. It has already launched its food and grocery app for beta testing among its employees.
- E-commerce industry in India witnessed 21 private equity and venture capital deals worth US$ 2.1 billion in 2017 and 40 deals worth US$ 1,129 million in the first half of 2018.
- Google and Tata Trust have collaborated for the project 'Internet Saathi' to improve internet penetration among rural women in India.
- Amazon – which has already invested around $3 billion in its second fastest growing market after the US – pumped ₹ 2,600 crore into its India operations. Amazon had already pumped ₹ 1,950 crore into its India business in January this year. In March, it invested ₹ 195 crore in its Indian payments arm Amazon Pay (India), which had received ₹ 260 crore in September 2017. August 2018 saw another ₹ 2,700 crore poured into the Indian marketplace business, followed by ₹ 2,200 crore just a few weeks ago.
- India got its first startup unicorn in online wholesale business In 2018, when Bengaluru-based B2B marketplace Udaan raised $225 million in a Series C round from DST Global and Lightspeed Venture Partners. This makes it the youngest company in India to achieve a $1 billion valuation (in just 26 months). The startup, founded by ex-Flipkart executives Vaibhav Gupta, Amod Malviya and Sujeet Kumar, had raised about $50 million in February this year.
- At the beginning of 2018, online grocery market leader Bigbasket announced it had raised funding of $300 million from Chinese e-tailer Alibaba and others, at a valuation of $950 million. A few months later, in an effort to build on its hyperlocal strategy, it acquired Pune-based hyperlocal delivery startup RainCan and Bengaluru-based MorningCart. The Bengaluru-based

company has launched BBDaily for daily hyperlocal deliveries, while its other service BBInstant serves daily needs at corporate offices and housing colonies via vending machines.

Government Initiative for E-commerce Sector

- The Reserve Bank of India (RBI) has decided to allow "inter-operability" among Prepaid Payment Instruments (PPIs) such as digital wallets, prepaid cash coupons and prepaid telephone top-up cards. RBI has also instructed banks and companies to make all know-your-customer (KYC)-compliant prepaid payment instruments (PPIs), like mobile wallets, interoperable amongst themselves via Unified Payments Interface (UPI).
- The Government of India has distributed rewards worth around US$23.8 million to 1 million customers for embracing digital payments, under the Lucky Grahak Yojana and Digi-Dhan Vyapar Yojana.
- The Government of India launched an e-commerce portal called TRIFED and an m-commerce portal called 'Tribes India' which will enable 55,000 tribal artisans get access to international markets.
- To increase the participation of foreign players in the e-commerce field, the Indian Government hiked the limit of foreign direct investment (FDI) in the E-commerce marketplace model for up to 100 per cent (in B2B models).
- The e-commerce industry been directly impacting the micro, small & medium enterprises (MSME) in India by providing means of financing, technology and training and has a favorable cascading effect on other industries as well.
- The Indian government under the portfolio of Finance Ministry has approved the creation of a "Government e-Marketplace" (GeM) through the department of Directorate General Supply and Disposal (DGS&D) for government purchases. The platform will be used to host the common used goods and services for government employees.
- The Government of India started an online trading platform for farmers in order to connect them to a network of wholesale agricultural markets. In the beginning, only 12 different farm commodities were traded on the online platform but now 21 regulated wholesale markets

(mandis) from eight different states have integrated into this platform. For the context of this agricultural e-commerce marketplace, around 7,000 mandis are in the big picture.

- The Government of India under the Ministry of Women and Child development launched an e-commerce portal for women entrepreneurs known as Mahila e-haat. This e-commerce marketplace platform allows women to enlist and showcase their products online without any additional cost. It is also planning to integrate other e-commerce portals that can provide a larger platform for the purpose of buying and selling.

Conclusion

The e-commerce industry is expected to contribute great part of GDP by coming years in Indian economy. It is a rapidly changing avenue of allied industries controlled by changing in trend and lifestyle of consumers. This industry will prove to be a big source of employment in the country. Huge spending by government in skill development and digital infrastructure will give a boost to the sector. The e-commerce industry been directly impacting the micro, small & medium enterprises in India by providing means of financing, technology and training and has a favourable cascading effect on other industries as well. The Indian e-commerce industry has been on an upward growth trajectory and is expected to surpass the US to become the second largest e-commerce market in the world by 2034. The growth in e-commerce sector will also boost employment, increase revenues from export, increase tax collection by ex-chequers, and provide better products and services to customers in the long-term.

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Application and Use of E-commerce in Library Science

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Abstract

The Internet has revolutionized the capacity to share information across the world. The world has witnessed rapid change over the last decade with globalization, increased competition and technological advances. E-commerce is the activity of buying or selling of products on online service or over the internet. Libraries also introduced itself in e-business by providing it services to their users. Marketing of Library products and services is very vital in the present information society. Marketing of information resources through web based services helps the libraries to reach users and serve more people in an interactive mode. Many libraries provide most of their services electronically, pursuing a knowledge management strategy and managing the latest information contains. This article highlighted the application and use of e-commence in library science.

Keywords : *E-commerce, Internet, Marketing of library products and information services.*

Introduction: -

E-commerce may be defined as the marketing and distribution of products and services in electronic environments, especially the internet. It is the ability to perform transactions involving the exchanges or use of goods or services between two or more parties using electronic tools and techniques. Today information environment face rapid change in technologies which compel the libraries to provide various electronic information resources and developing user friendly services. Information technology and information communication technology have given limitless opportunities for new information resources like e-journals, e-books, online databases and other portable electronic information resources.

For maximum use of electronic information resources and services, library has to take initiative in advertising the activities of the library through interactive web tools or technologies. With the advent of information technology and changing communication technologies, the librarians are stepping into the world of online services and its tools and technologies for marketing library resources. Marketing is the management process responsible for identifying, anticipating and satisfying users' requirements profitably. Marketing is useful to libraries to improve their image and to attract more users. It is essential to improve user satisfaction and promote the use of services by current and potential users.

E-commerce in libraries

Libraries have so far been very slow in adopting e-commerce. This is largely due to that fact that most libraries are originally institutionalized as non-profit organizations. Moreover the cost of setting up an e-commerce infrastructure was a barrier as libraries are generally not cash rich. However, e-commerce and internet have played a significant role in the way libraries operate and the way library services have developed and offered. Many libraries have made their presence felt on the web by making their collections searchable and their services accessible. In keeping up with the changes and advances in technology and the need to creating self sustaining entities, a large number of libraries are changing their practices and adapting to the new environment by starting to change their users for certain classes of value added services such as document delivery, reference services and information research. Following are the important areas and services of the libraries which may be improved using e-commerce technology

Sr. No.	Name	URL
1	D.K. Agencies PVT.LTD	http://www.dkagencies.com
2	InfoTechstanders India PVT. LTD	http://www.stundardsmedia.com
3	flip kart	http://www.flipkart.com
4	Viva Books	http://www.vivagooupinia.com

5	Atlantic	http://www.atalnticbooks.com
6	Gobookshopping	http://www.gobookshopping.com
7	Jain book Agency	http://www.jainbookagency.com/default.aspx

Improvement of Information services

It is most important and prime goals of libraries to improve its information services by making them easily accessible to their users. This may be achieved through the use of e-commerce by digitizing the documents and preservations and placing them on the website of the library for access by others 24*7. Through the use of e-commerce, the librarians may deliverer information ranging from information regarding the various policies to the information on the ways and procedures to access the libraries collections and services. Use of e-commerce in libraries will also result in broadening of the era of use of library services and increases in the library users which may also result in an increase in the possible donations to the library.

Collection Development

Use of e-commerce, in library acquisitions and collection development by online ordering and payment may give some relief to the libraries and may also result in decreasing the delivery cost of the materials. Moreover e-commerce sites offer very attractive discounts on making online purchases. It is quite easy to view vast collection of documents in a very short time in e-commerce websites using various search techniques and ordering online for required document. E-commerce provides easy access to far off markets and a quick delivery of foreign publication. There are a large number of electronic bookstores (e-bookstores) both Indian and foreign, available in the market which offer to search for it required documents books 24 *7 through their searching options and then order the desired documents/books online for their delivery after making either online payment for same or opting from the various available payment options on the website of e-bookstore.

Developing an E-commerce strategy for the LIS

There are number of things to consider when developing an e-commerce for the LIS.

- Determine the library's primary goal in relation to e-commerce.
- What is it the LIS to achieve?
- Do the LIS want to increase revenue or efficiency?
- Do the LIS want to be marketed?
- Decide what the goal is and should be reassessed often as they may change over time.
- Study how others have met this goal-examine the other web sites. For example, the central Washington University Library allows users to renew materials and provides individual circulation records.
- Allowing users to order articles, images, presentations and books online.
- Establish both online and offline marketing plan mail out, brochures, traditional press, register with search engines every six to eight weeks (i.e. yahoo), third party web sites and or links to your web site, and email broadcasts.

Use of e-commerce in marketing of Library Products and services with help of web tools and new technology

- Libraries on the Web

  As libraries shift more services t other internet, the library web site becomes increasingly important as a product in its own right and as a major tool in marketing other products of the library. Libraries can use the web to provide services, to market services, or as part of the marketing process. For many users, the website is the library. Some user never visits the library. For others, a website is just another branch of their favorite library and great place to shop for information 24/7. More libraries are providing services and marketing on the web as a response to changes in the way the world access information.
- E-Newsletters: - Newsletters is a menace of delivering information. A newsletter can be used to list interesting new web sites, new journals and online services, and perhaps more general science news of interest. It does not have to be long but should be produced on a regular basis. In fact, they are an excellent marketing tool because they list all the activities of a library. With ICT

facilities in the library, an e-newsletter can be produced. The text of the newsletter can also be included on the library website.

- Video library service: Library instructional video can be used in promotion and marketing the library resources to save the time of users and library personnel. Videos of library resources and services posted on the library website. The videos were shared using you tube. The campaigns received positive feedback from faculty members. Using the video the library increased the users' awareness about resources and services and communicated well.
- Discovery services: - To have relevancy in search and to increase usage especially of e-resources, library has to subscribe Ebsco Discovery services. This service is having unified index to Web OPAC, institutional repository i.e. e-resources in the form of databases-journals.
- E-Brochure: - The library should provide printed as well as downloadable copy of its brochure comprising of different services rules, subscribed e-resources and collections. It is downloadable from library the link.
- Library webpage: - Library webpage can play a crucial role in promoting reading in the digital era. It should be designed such a way that it would act as "one stop Info" for any user. It should be such that for any kind of information user should look into the webpage of the library without checking anywhere else. Now the challenge is to design such page and talking the decision as to what to include in the page and what should be excluded and how to make it attractive as well as informative.
- Web OPAC: - Web OPAC (online public access catalogue) is also important to promoting library product. This should be real time catalogue and should be accessible from web/mobile/tab etc. The page may include the new books on display (images of the books should be their). Users can easily search and get to know if any particular book is available in the library or not. If the book is out in that case one should be able to reserve the same online. When the book is back to the library a sms/email alert may be sent from the system itself. An online demo may be placed on the site to help the users to search the catalogue of the library.
- Really simple syndication: - RSS helps to syndicate the writings of millions of authors to keep track of required information. This helps the library in providing information to the users like

update user with latest information, latest books or e-resources added to the library, schedules f workshops, conducting exhibitions, Links video/audio.

- Remote Access Facility: - This facility for accessing the e-resources has been provided through VPN. Libraries can promote the uses of subscribed electronic information resources through remote login access software. The remote login access helps the library to market its electronic information resources to the users who are away from the attending workshop/conference or any research related activities and helps scientific communication and discourse from distant locations.

Conclusion: -

The Information communication Technology (ICT) is changing influenced all activities of library. With the increasing dependency on information technology, there is a need to take a bold step by the libraries and information centers in adopting and utilizing e-commerce technologies for making themselves financially self-sufficient. The increasing cost of maintaining the library and information centers need. The platform for libraries to innovate within its designated roles is reaching new heights with the aid at technology and e-commerce. E-commerce can solve the problems of transactions of Library and provides some solutions in the era of IT.

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Advantages and Disadvantages of Electronic Commerce

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Abstract

E-Commerce or Electronic Commerce means buying and selling of goods, products, or services over the internet. E-commerce is also known as electronic commerce or internet commerce. These services provided online over the internet network. Transaction of money, funds, and data are also considered as E-commerce. These business transactions can be done in four ways: Business to Business (B2B), Business to Customer (B2C), Customer to Customer (C2C), and Customer to Business (C2B). The standard definition of E-commerce is a commercial transaction which is happened over the internet.

Keywords : *E-commerce, E-transaction.*

Introduction:

E-commerce (electronic commerce) is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the internet. These business transactions occur either as business-to-business (B2B), business-to-consumer (B2C), consumer-to-consumer or consumer-to-business. The terms e-commerce and e-business are often used interchangeably. The term e-tail is also sometimes used in reference to the transactional processes for online shopping. Online stores like Amazon, Flipkart, Shopify, Myntra, Ebay, Quikr, Olx are examples of E-commerce websites. By 2020, global retail e-commerce can reach up to $27 Trillion. Let us learn in detail about what is the advantages and disadvantages of E-commerce and its types.

The beginnings of e-commerce can be traced to the 1960s, when businesses started using Electronic Data Interchange (EDI) to share business documents with other companies. In 1979, the American National Standards Institute developed ASC X12 as a universal standard for businesses to share documents through electronic networks.

After the number of individual users sharing electronic documents with each other grew in the 1980s, the rise of eBay and Amazon in the 1990s revolutionized the e-commerce industry. Consumers can now purchase endless amounts of items online, from e-tailers, typical brick and mortar stores with e-commerce capabilities and one another.

Advantages of E-Commerce

- E-commerce provides the sellers with a global reach. They remove the barrier of place (geography). Now sellers and buyers can meet in the virtual world, without the hindrance of location.
- Electronic commerce will substantially lower the transaction cost. It eliminates many fixed costs of maintaining brick and mortar shops. This allows the companies to enjoy a much higher margin of profit.
- It provides quick delivery of goods with very little effort on part of the customer. Customer complaints are also addressed quickly. It also saves time, energy and effort for both the consumers and the company.
- One other great advantage is the convenience it offers. A customer can shop 24×7. The website is functional at all times, it does not have working hours like a shop.
- Electronic commerce also allows the customer and the business to be in touch directly, without any intermediaries. This allows for quick communication and transactions. It also gives a valuable personal touch.

Disadvantages of E-Commerce

- The start-up costs of the e-commerce portal are very high. The setup of the hardware and the software, the training cost of employees, the constant maintenance and upkeep are all quite expensive.
- Although it may seem like a sure thing, the e-commerce industry has a high risk of failure. Many companies riding the dot-com wave of the 2000s have failed miserably. The high risk of failure remains even today.
- At times, e-commerce can feel impersonal. So it lacks the warmth of an interpersonal relationship which is important for many brands and products. This lack of a personal touch can be a disadvantage for many types of services and products like interior designing or the jewelry business.
- Security is another area of concern. Only recently, we have witnessed many security breaches where the information of the customers was stolen. Credit card theft, identity theft etc. remain big concerns with the customers.
- Then there are also fulfillment problems. Even after the order is placed there can be problems with shipping, delivery, mix-ups etc. This leaves the customers unhappy and dissatisfied.

Types of E-Commerce Models

Electronic commerce can be classified into four main categories. The basis for this simple classification is the parties that are involved in the transactions. So the four basic electronic commerce models are as follows,

1. Business to Business

This is Business to Business transactions. Here the companies are doing business with each other. The final consumer is not involved. So the online transactions only involve the manufacturers, wholesalers, retailers etc.

2. Business to Consumer

Business to Consumer. Here the company will sell their goods and/or services directly to the consumer. The consumer can browse their websites and look at products, pictures, read reviews. Then they place their order and the company ships the goods directly to them. Popular examples are Amazon, Flipkart, Jabong etc.

3. Consumer to Consumer

Consumer to consumer, where the consumers are in direct contact with each other. No company is involved. It helps people sell their personal goods and assets directly to an interested party. Usually, goods traded are cars, bikes, electronics etc. OLX, Quikr etc follow this model.

4. Consumer to Business

This is the reverse of B2C, it is a consumer to business. So the consumer provides a good or some service to the company. Say for example an IT freelancer who demos and sells his software to a company. This would be a C2B transaction.

Conclusions:

E-commerce is a popular term for electronic commerce or even internet commerce. The name is self-explanatory, it is the meeting of buyers and sellers on the internet. This involves the transaction of goods and services, the transfer of funds and the exchange of data. E-commerce provides the sellers with a global reach. They remove the barrier of place (geography). Now sellers and buyers can meet in the virtual world, without the hindrance of location. Electronic commerce will substantially lower the transaction cost. It provides quick delivery of goods with very little effort on part of the customer. Customer complaints are also addressed quickly. It also saves time, energy and effort for both the consumers and the company. One other great advantage is the convenience it offers. A customer can shop 24×7. Electronic commerce also allows the customer and the business to be in touch directly, without any intermediaries. This allows for quick communication and transactions. It also gives a valuable personal touch.

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Impact of Electronic Commerce on Consumer Buying Behaviour

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Abstract

With the emergence of technology the buying habits and the behaviour of the consumers has changed. The aim of the paper is to get the facts of internet shopping for the Indian consumers in order to explain the growth of internet shopping and its impact on consumer behaviour. The paper is built on the relevant literature on the research work carried out in this regard and the development of internet shopping cannot be ignored. This paper also takes help and supports the research questions that include factors affecting internet shopping, recent trends, internet shopping, demographics and its importance and principle factors for consumer behaviour. The result of the paper shows that there is a strong relationship between the consumer trust and the perceived risk on the purchasing decisions of the consumers. Consumer trust, website design, comparison between various brands, latest trends, internet speed, privacy, ease of use, security concerns, payment mode, fast delivery are the factors for using internet or e-commerce for shopping. Further the first hand result suggests that how the E-commerce companies are making marketing strategies when it comes to attracting the consumers to electronic commerce.

Keywords : *E-commerce, internet shopping, consumer behavior, privacy and security, consumer trust.*

Introduction

The experience of shopping has changed over a decade whereby customers can now make all their purchases of goods and services just by sitting at home. Consumers earlier were using laptops and desktops for shopping for e-commerce and it was not possible to sit for hours in front of laptops and

desktops where connectivity was always an issue. With the development of the internet over the last decade or two and with more emphasis on digital economy and with information technology that has been developed worldwide, the development of the internet services which has increased the web users. High speed internet connections at lower cost and with the introduction of new technology every now and then the firms are now promoting their product and services through web sites. With the introduction of the smart phones that play an active role to connect to internet from any place let it be office, house or any other place the consumers can be in touch with the e-commerce sites selling products and services. Customers find it more convenient to spend time as they have and as the new smart phone devices give them the opportunity and with net connectivity on their handset may companies have started launching their products through virtual stores. In traditional shopping all these ease are not there. The customers had lot of limitations as to how much time is to be spending during shopping and if the products are not available at one store then the customers have go to another store and search it in various shops in the market. Time is also a limitation as the markets close in the evenings but with online shopping lot of varieties are available and customers can shop for products 24 X 7 as these virtual shops are open all time. As all the product information is available and improved service attracts more and more people have changed their behaviour from the traditional mode to more convenient e-commerce shopping on the internet. The recent researchers as indicated by them that the internet shopping in case of B2C has gone up and online shopping has become more prevalent among people. Internet comes with lot of benefits and there are many reasons for such a rapid development of internet shopping. Today consumers get all the required product information as the internet can help them to search form online sites, compare between the products available on the different sites and get the most economical deal for purchases. Different search engines saves time of the consumers to access to the consumption related information in detail with sound, image and exact details which allows the consumer to select the right product form the online site. Obviously with benefits come the risks as internet shopping has a potential risk in terms of payment safety, privacy and after sale service. As the internet technology developed online payment has become a dominant way for shopping of goods from the internet.

Online V/s Offline stores

Offline shopping or we call in-store shopping gives liberty to the consumers to actually meet the seller and interact with them and do the business. The consumers can see the product, touch and feel the product before they make the buying decision. In case of online shopping the consumers are not in a position to touch or see the actual product and what they see is the image of the product and they decide whether to buy or not. In traditional shopping the consumers go to the store and buy the products they have liberty to pay for the purchase in number of ways as of cash, credit card, debit card or pay check. When the consumers shop online form the internet their only mode of payment would be digital payment either by using their credit card or debit card. As few products needs are immediate the consumer has to go to the stores and purchase the products as in case of grocery or some medicine. Shopping online normally will take few hours or even few days to or at times it will take several weeks to deliver the items depending on the terms and conditions of delivery and the distance of the website. There is a limitation in case of traditional shopping as the product range is limited as compared to online shopping were the range is large and even the selling price is much higher in case of traditional shopping as compared to online shopping. At a point we can comment that the limitations of the traditional store could be the advantage of the e-commerce store and the limitations of the e-commerce could be the advantage of traditional store. As the internet developed many corporations and companies are using e-commerce for getting competitive advantage of web selling. As many individuals are now shopping through internet it has also become the main contributors to the development of internet shopping. A very few researchers have studied the impact of online shopping on consumer behaviour. The studies conducted earlier are more focused on from the manufacturer point of view as to how to start or establish an effective channel online rather than the e-commerce business. . Therefore, this research will combines with previous studies from literature reviews, and focus on the impact of the internet shopping on consumer behavior to find out a comprehensive analytical framework which showing the essential ingredient of marketing and business to satisfying the consumer's needs, and a deeply understanding of online consumer behavior as a reference for any ecommerce company to make marketing strategies.

Impact of Internet on Consumer Behavior

Currently there are almost 2 billion active internet users every day. It is unquestionable that today people rely more on internet to communicate and they do communicate on real time basis. In this scenario it is very easy for the consumers to get information about a product they are planning to buy. There are websites who tell consumers about their interest and consumers share their feedback or experience and give recommendations to prospective buyers. The consumer behaviour gets influenced most often by external and internal factors. External factors are the environmental conditions and internal factors are usually the consumer's perceptions that come from his beliefs or his own mind. There are many factors that jointly shape the consumer behaviour. According to S. Jaideep, the external factors that influence consumer behaviour are demographics, culture, sub culture, social class, reference groups and psychological factors. The internal influences are variety of psychological processes, which include attitudes, learning, perception, motivation, self-image, and semiotics (Malcolm). In addition to these, Sheth (1983) also suggested that the consumers have two types of motives while shopping, which are functional and non-functional. The functional motives are mostly about the time, shopping place and consumer's needs, which could be like one-stop shopping to save time, the environmental of shopping place such as free parking place, lower cost of products and available to choose from widely range of products. The non-functional motives are more related with culture or social values, such as the brand name of the store. The traditional shopping is simply about the customer to purchase their needs. This behavior will be influenced by the seller's advertising and promotion which attracts customers goes there and purchase goods, afterwards a part of new products will be taken home and be used.

Internet Shopping

As the population is increasing the companies and market is growing day by day. People are thus posing threats of cheating, fraud, transactions, etc. Essentially people are not considering it really reliable and cannot fully depend on it for any purpose. (K. Aniket -) for internet firms this findings is more important because it require their efforts to communicate and educate the customers about the benefits of the online shopping if they want to increase the traffic on their websites (Dr. R. Sivanesan, IIC. Monisha, IIIP.V. Babisha, IVS. A. Abisha-2017) Internet shopping and traditional shopping are sharing many

similarities, at the same time, it still exists some differences between them, such as the Internet shopping could provide convenience and interactive services (Jarvanpaa and Todd, 1997), and the traditional shopping could give customers more comfortable shopping environment and good quality of products (Lee and Chung, 2000). Both aspect of shopping malls are trying to improving their services by learn commutatively from each other, such as traditional shopping malls provide more parking spaces, more counters, and closer to residential area in order to improve services in convenience; Internet shopping malls adopt virtual reality (Lee, 2001) and 3D techniques (Miller, 2000) to improve the presentation of products. In the following sections, the study would provide the nature of internet shopping at first, then the E-commerce web site will be indicated to comprehend the essence of internet shopping, after that, online security, privacy and trust will be discussed. All of these general overviews and discussions about the internet shopping will provide a background to the study and help to building the foundation of academic researches.

Convenience

As a first and critical step to provide more convenient e-services, identifying key convenience dimensions and their detailed aspects will help e-retailers understand on which areas they should focus to gain a competitive advantage.(Ling Jiang - 2011) The five dimensions of online shopping convenience are: access, search, evaluation, transaction, and possession/post-purchase convenience. Jiang, L., Yang, Z. and Jun, M. (2013) the researcher defines online shopping convenience as a decrease in non-monetary prices, or specifically, a decrease in time, physical energy and mental energy spent on acquiring goods or services through online shopping Li Meixian (2015). Internet provides a big convenience for shopper as the main reason for the shopping online has been agreed by most of researcher and customers (Wolhandler, 1999). Due to the feature of Internet, it allows customer to shopping online anytime and anywhere, which means customer can browse and shopping online 24-hours a day, 7 days a week from home or office, which attracts some time-starved shoppers come to Internet for save time to searching products in physical store. Additionally, Internet offers some good ways to save money and time. For example, shoppers do not need go out to the physical store and thus there is no transportation cost. Compare with the traditional shopping, there is no waiting line for

shoppers on the Internet, and some shoppers reported that they feel pressure from the sales people sometimes, but Internet offers them more enjoyable while shopping online (Wolhandler, 1999; GVU's WWW 9th User Surveys, 1998).

Technology

Use of technology has a positive and a negative impact. It is the time for every country to introduce more technologically equipped reforms in the future (R. Raja, P. C. Nagasubramani)

The changing behaviour is influenced by the changing technology. Companies not using technology will find it hard to survive in the market. Consumer behaviour will be influenced by information that is processed via internet. Companies using these technologies and who will be able to satisfy consumer needs will survive. (Julie Jose) The retail industry is witnessing a major shift and this shift or transformation is driven by the influence of digital technology on consumer shopping experience. Consumer performing shopping related task through mobile is almost 50%. Retailers are now coming up with approachable websites, free shipping offers, mobile alert and content marketing. Study and outline strategies retailers use to proactively engage this new shopper (Sue Yasav). As the internet is growing fast and the expansion of internet exercise and programmatic enhancement in this re3gard and It has modified the way stock are acquired and marketed thus there is an exponential expansion in the inter users who buy online rather than going for traditional shopping (Dr. Mahabir Narwal, Dr. Geeta Sachdeva). The convenience based on Internet is mainly according to the technology development, and which plays a key role during the development of Internet shopping. In the last decade, organizations have realized that the new technology could impact on Internet shopping deeply, and thus there are many important technologies like virtual reality and 3D techniques have adopted to gain big competitive advantages (Clark, 1989). Information technology has used in the form of the Internet improved better quality of product information, which help shopper's decision making (White, 1997).

Consumer Trust in Internet Shopping

Geetu Tuteja, Shashank Gupta & Vaishali Garg (2017) This research indicates that there are various antecedents like brand orientation, website design, prior online purchase experience, quality orientation,

perceived risk, perceived security control, perceived privacy control, perceived integrity, perceived competence, third-party integration and legal framework which affects consumer trust in Internet shopping which is positively associated with an intention to buy. Anand Thakur, Shabnam & Rupinderdeep Kaur (2017) revealed that security protection, perceived risk, and perceived benefits are very important antecedents for building trust among the consumers towards online shopping. Nguyen Thi Phi Nga (2018) the study demonstrated six factors that influence online shopping trust: reputation, website, business size, information security, reference group, and perceived service quality. Among six factors, Business size has highest impact on trust and then Reputation, Group reference, Perceived service quality, Website and lowest is Information security. Mayer, Davis, and Schoorman (1995) defined trust as, "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trust or, irrespective of the ability to E-commerce: It's Impact on consumer Behavior 135 monitor or control that other party" (p.712) (Cheung and Lee, 2006). This definition is widely recognized and the most frequently cited (Rousseau, Sitkin, Burt, & Camerer,). People purchase products and services are the most based on their level of trust in this product or services, and sellers either in the physical store or online shops. Online trust is the basic and essential element for building a relationship with customers. A present research shows that online trust is lower level than the face-to-face interactions in the physical store (Cassell and Bickmore, 2000), and the result from Cheung and Lee (2006) shows that trustworthiness of Internet merchant (perceived integrity, perceived competence, and perceived security control) and external environment (third-party recognition and legal framework) have considerable impact on consumer trust in Internet shopping (see figure 1). The trustworthiness of E-commerce web site is very relying on the how much privacy security can be provided. For example, a highly technical competence can be a factor to influence the trustworthiness.

Conclusion

This study is mainly focus on the factors from the Internet and examines those factors that affect the consumer's online shopping behavior. It starts with the current status of the Internet development, and mentioned the background of marketing as representation and its difference with physical stores which

in order to show the developing history of Internet shopping since the E-commerce become popular. In the chapter of literature review, there are three main sections have been discussed: traditional shopping behavior, Internet shopping and online consumer behaviors. Each section starts with the concept, and followed by other perspectives. The research focus on the Internet shopping (include the nature of Internet shopping, E-commerce website, and online security, privacy, trust and trustworthiness) and online consumer behaviors (include background, shopping motivation and decision making process). Those factors were looked at, and examined to reveal the influence at online consumer behaviors. In addition, the previous researches were used to help researchers understanding more comprehensively. Moreover, the customer's purchase decision making process was also examined to identify the potential factors. The information search is the most important factor that helps the customers find the suitable products or services for their needs. Therefore, the online retailers have to enhance and improve the information supporting such as provide much detailed product information and use internal search engine in order to increase the efficient of information search. For the evaluation stage, customers more think a lot of the reputation from the E-commerce website, and the payment security for the purchase stage. At the post-purchase stage, the factor of after services which is the most concerned about. Overall, the factors from the Internet that influenced or prevented online consumer behaviours need to be carefully concerned by the online retailers, who can utilize the appropriate marketing communications to support the customer's purchase decision making process and improve their performance.

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A Study of Challenges and Opportunities E- Commerce in India

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Abstract

Electronic commerce, commonly written as e-commerce is buying and selling of products and services by businesses and consumers over the Internet. Electronic commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems. Consumers take advantage of lower prices offer by wholesalers retailing their products. This trend is set to strengthen as web sites address consumer security and privacy concerns. Due to the popularity of e-commerce there is a tremendous increase exchange of goods and services both regionally and globally. Now-a-days it has become the virtual main street of the world. This online business refers to the E-commerce which is recently moved in to developing countries like India.

Today, e-commerce has grown into a huge industry. This paper is outcome of a review of various research studies carried out on E-commerce. The present study has been undertaken to analyze the present trends of e-commerce in India & examine the challenges & opportunities of e-commerce in India.

Keywords: *E-Commerce, Opportunities and Challenges, Online Retail, Increasing Internet Users.*

Introduction

E-commerce stands for electronic commerce. It means dealing in goods & services through the electronic media & internet. The rapid growth of e-commerce in India is being driven by greater

customer choice & improved convenience with the help of internet the vendor or merchant who sells products or services directly to the customer from the portal using a shopping basket system or digital cart & allows payment trough debit card, credit card or electronic fund transfer payments. In the present scenario e-commerce market & its space is increasing in demand as well as an impressive display or range of a particular type of services. Ecommerce is already appearing in all areas of business, customer services, new product development & design. E-commerce business is growing in India because of wide range of product with minimum price wide range of suppliers & customers internet. In this modern era every business units want to join online business because increasing ratio of internet users in India. E-commerce in India is still in growing stage but it offers considerable opportunity.

What is e-commerce?

E-commerce (electronic commerce) is buying and selling of goods and services or the transmitting of funds and over an electronic network, primarily the internet. E-commerce replaces the traditional business method. This can facilitate improvement in business growth leading to substantial cost saving and increased competitiveness and efficiency.

E-commerce is conducting using variety of applications. Such as email, fax, online catalogs and shopping catalogs and shopping carts, electronic data interchange (EDI), File transfer protocol and web services. In the present variety of goods and services that can be bought over the internet is making buying online more attractive and convenient for consumers all over the country. As a symbol of globalization, E- Commerce represents the cutting edge of success in this digital age and it has changed and is still changing the way business is conducted around the world. The commercialization of the internet has driven electronic commerce to become one of the most capable channels for inter-organizational business processes.

Types of e- commerce:

There are 4 types of E- Commerce

1) Business-To-Business E- Commerce: B2B E-commerce is simply defined as e-commerce between companies. This is the type of ecommerce that deals with relationships between and among businesses. About 80% of ecommerce is of this type, and most experts predict that B2B e-commerce will continue to grow faster.

2) Consumer To Business E-Commerce: Business-to-consumer commerce, or commerce between companies and consumers, involves customers gathering information; purchasing physical goods (i.e., tangibles such as books or consumer products) or information goods (such as software, or e-books); and for information goods, receiving products over an electronic network. It is the second largest and the earliest form of e-commerce.

3) Consumer To Consumer E-Commerce: Consumer-to-consumer electronic commerce involves the electronically facilitated transactions between some third party. It perhaps has the greatest potential for developing the new markets. C2C websites form a perfect platform for buyers and sellers who wish to buy and sell products of similar interest.

4) Business To Government E- Commerce: Business-to-government E- commerce or B2G is generally defined as commerce between companies and the public sector. It consists of a marketing products and services to various government levels.

Definition

The buying and selling of products and services by businesses and consumers through an electronic medium, without using any paper documents. E-commerce is widely considered the buying and selling of products over the internet, but any transaction that is completed solely through electronic measures can be considered E-commerce "E-Commerce is a concept covering any form of business transactions or information exchange executed using information and communication technology between companies and public administration."

Objectives of study

The objectives of present study are:

1) To explain the concept of E-Commerce.

2) To analyze the present trends & opportunities of E-commerce in India.

3) To examine the barriers of E-commerce in India.

4) To study the India's prospects in E-commerce.

5) To study the various challenges faced by E-commerce in India.

6) To study the various trends in E-commerce.

Limitation of the study

The study has been conducted only by collecting the secondary data.

Research methodology

The process used to collect information & data for the purpose of making business decisions. The methodology may include publication research, interview, surveys and other research techniques & could include both present & historical information. The researcher has used only secondary data that has been collected from various articles, journals, books, websites etc. This has been used to study the conceptual framework, definition, present trends and some of the challenges and opportunities of E-commerce in India. All the data included is the secondary base and proper references have been given wherever necessary.

Result & discussion

India has an internet user base of about 354 million as of June 2018. Despite being third largest user base in world, the penetration of e-commerce is low compared to markets like the United States, United Kingdom or France but is growing much faster, adding around 6 million new entrants every month. The industry consensus is that growth is at an inflection point. In India, cash on delivery is the most preferred payment method, accumulating 75% of the e-retail activities. Demand for international consumer products (including long-tail items) is growing much faster than in-country supply from authorized

distributors and e-commerce offerings. As of first Quarter, 2018, seven Indian e-commerce companies have managed to achieve billion-dollar valuation. Viz. Flipkart, Snapdeal, InMobi, Quikr, Amazon India, OlaCabs, and Paytm

Market size and growth

India's e-commerce market was worth about $3.8 billion in 2011, it went up to $12.6 billion in 2016. In 2016, the e-retail segment was worth US$2.3 billion. About 70% of India's ecommerce market is travel related. According to Google India, there were 35 million online shoppers in India in 2014 Quarter 1 and is expected to cross 100 million mark by end of year 2018. Compound Annual Growth Rate (CAGR) vis-à-vis a global growth rate of 8–10%.

Electronics and Apparel are the biggest categories in terms of sales.

Recent trends in indian e-commerce industry

India is a massive E-Commerce marketplace now with every age group comfortably transacting online – more often preferring shopping online instead of visiting offline stores for a bigger gamut of choices and offers.

E-Commerce industry is growing at an astounding rate in India and is expected to account for 1.61% of the global GDP by 2018. According to a report by Forrester, India is set to become the fastest growing market in the Asia-Pacific region with an expected growth rate of over 57% between 2012 and 2016.

1) Men in India shop 3X more than women While women continue to dominate the in-store markets, men with disposable incomes have taken it upon themselves to play the larger role in online shopping.

2) Cash-On-Delivery (COD) remains the most preferred online payment method. We Indians love the Cash-On-Delivery option; it gives us more control over online transactions since we don't have to pay until the product is at our doorstep. COD option during checkout has also been proven to boost impulse purchases.

3) 60% of online purchases happen during business hours.(9AM-5PM) This proven trend is a myth-buster that shows how integral a part online shopping has become in our day-to-day lives. Marketers can use this fact to schedule their promotions across advertising channels accordingly.

4) The Rural Pitch Ecommerce companies would emphasize more on attracting the customers from rural areas.

Along with this, traditional business houses such as Tata Group and Reliance Industries will enter more aggressively into the ecommerce business.

5) Smartphone Apps: However, users browse products on desktops or laptops, they prefer transacting via smart

phones because of their faster linkages to payment gateways. Smartphone ecommerce apps are also preferred as they offer more personalized shopping experience for customers and a better understanding of consumers for the ecommerce company. Further apps are also an opportunity to curate targeted promotions based on browsing or shopping cart history.

Opportunities and challenges

Backed by increased online user base and mobile phone penetration, Indian e-commerce has seen impressive growth in the last few years. Considering India's demographic dividend and rising internet accessibility, the sector is slated to scale greater heights. Although, India's overall retail opportunity is substantial, the sector is beset with some serious challenges. We take into the current e-commerce landscape and the sector's key drivers & challenges. Internet penetration is one if the factors affecting the growth of e-commerce. The following table provides

information about the percentage of internet penetration in different countries of the world: The above table reveals that e-commerce industry is fast rising; changes can be seen over year. A significantly low (34.8%) but fast-growing internet population is an indicator of the sector's huge growth potential in India. For developing countries like India, e-commerce offers considerable opportunity. The table shows that, e-commerce in India is still in growing stage. It

is believed that low cost of personal computers, a growing installed base for Internet use, and an increasingly competitive Internet Service Provider (ISP) market will help fuel e-commerce growth in Asia's second most populous nation. Insights into increasing demand for broadband services, rising standards of living, availability of wider product ranges, reduced prices and busy lifestyles reveal this fact more prominently thereby giving way to online deals on gift vouchers. Going by the statistics, e-commerce market in India is expected to nearly double to Rs.2, 11,005crores by December according to industry body Internet and Mobile Association of India (IAMAI). The market grew 30% between December 2011 and December 2015. Online travel which includes domestic air ticket and railway ticket booking is expected to grow around 40% by the end of 2016.

Key drivers of e-commerce in India

Large percentage of population subscribed to broadband Internet, rapidly increasing 3G internet

users, and a recent introduction of 4G across the country. Explosive growth of Smartphone users.

Rising standards of living as result of fast decline in poverty rate. Availability of much wider product range.

Competitive prices compared attractive to the customers. Increased usage of online classified sites, with more consumers buying and selling second-hand goods.

Challenges in the e-commerce sector

There are some barriers responsible for slow growth of e-commerce in India. Hamilton (2002) indicate some barrier in using e-commerce including security problems, lack of skills, cost etc.. People do not yet sufficiently trust paperless, faceless transactions. For the growth of E-business in India it needs a focus and should to make country in the lines of E-business.

1. In India, Cash on delivery is the preferred payment mode: In India, most of the people prefer to pay cash on delivery due to the low credit card diffusion and low trust in online transactions. Not like electronic payments, manual cash collection is quite perilous, expensive and laborious.

2. Infrastructural Problems: Internet is the backbone of e-commerce. Internet penetration in India is still very low (34.8%) compared to other countries. The quality of connectivity is poor in several regions. But both these are real threats for the growth e-commerce market in India

3. Incorrect postal address: When the customer places an online order, he will get a call from the company, asking about his exact location. The given address is not enough because there is always a little standardization while writing post addresses. It is also one of the biggest challenges that faced by e-commerce in India.

4. Absence of Cyber Laws: Other big challenge associated with e-commerce market is the near absence of cyber laws to regulate transactions on the Net. WTO is expected to enact cyber laws soon. The India's Information Technology (IT) Bill passed by the Indian Parliament on May 17, 2000 intends to tackle legislatively the growing areas in e-commerce. As it stand today, the Bill deals with only commercial and criminal areas of law. However, it does not take care of issues such as individual property rights, content regulation to privacy and data protection specific legislation.

5. Privacy and Security Concern: In case of start up and small business, Business owners fail to take the initial steps to secure and protect their online business through installation of authentic protection services like antivirus and firewall protection, which indeed a crucial step for successful online business players. Usage of unauthorized soft wares will not protect the customer.

6. Payment and Tax Related Issues: Tax rate system of Indian market is another factor for lesser growth rate of e-commerce in India in comparison to other developed countries like USA and UK. In those countries, tax rate is uniform for all sectors whereas tax structure of India varies from sector to sector. This factor creates accounting problems for the Indian online business companies. The Government of India is committed to replace all the indirect taxes levied on goods and services by the Centre and States and implement Goods and Services Tax (GST) by April 2017.One-Country-One-Tax is the main motive of GST.

7.Touch and Feel' factors: Indian customers are more comfortable in buying products physically. They tend to choose the product by touching the product directly. Thereby, Indian buyers are more inclined to do ticketing and booking online in Travel sectors, books and electronics. Companies dealing with

products like apparel, handicrafts, jewelry have to face challenges to sell their products as the buyers want to see and touch before they buy these stuffs.

8.Shipping Challenges:Issues related to lack of supply chain integration, high delivery charges for products, delay in delivery and lack of proper courier services in some areas also make customers frustrated.

9.Product Return, Refund etc.:Product which is not satisfactory for the customers tends to get replaced or returned. This is another major issue which leads into overall loss in revenue, loss of shipment costs and more than all these loss of your reputation

10.Customer Service:E- Marketers focuses on the website performance ignoring customer relationship and in-personal assistance.

Advantages of E-Commerce

To Consumers

The distinct advantages e-commerce can offer to the consumers include but are not confined to

the following only:

(i) Consumers have a much wider choice available on the cyber market.

(ii) They bear lower costs for products due to increased on-line competition among sellers.

(iii) Because of wide-scale information dissemination, consumers can compare products,

features, prices and even look up reviews before they select what they want.

(iv) They enjoy wider access to assistance and to advice from experts and peers.

(v) They enjoy saving in shopping time and money.

(vi) Consumers also avail of fast services and delivery of products and services.

(vii) They also have the convenience of having their orders delivered right to the door step.

(viii) Finally, consumers are driven to e-shopping in hordes as even branded goods cost less on the Net.

To Suppliers

The major advantages that e-commerce can bring to the companies/suppliers are:

1. It minimizes inventory cost

E-commerce venture need not maintain huge inventories or expensive retail showrooms. Their marketing and sales force is a fraction of that of traditional mortar-based businesses. Ecommerce can minimize inventory costs by adopting just-in-time (JIT) system enhancing the firm's ability to forecast demand more accurately.

2. It can improve customer services

It has been found that providing both customer and after-sale services account for up to 10 per cent of the operating costs. By putting these services on- line under e-commerce, these costs get reduced, on the one hand, and simultaneously the quality of services also gets improved, on the other. High quality customer relationship called" "customization" is crucial for retaining custom-ers in the e-commerce environment. That is the reason why Customer Relationship Management (CRM) has become the buzzword which everybody is talking of now. E-commerce provides ample opportunity for Customer Relationship Management solution and, in turn, in establishing better relationship with the customers. It becomes absolutely necessary for the company to enhance customer loyalty. Otherwise the customer, who is full of choices, can jump from one website to another. If company is to stay in business then it will have to deliver the products or services to customers as they want, when they want, and how they want.

3. It reduces distribution costs as well

The Electronic Data Interchange (EDI) based on Organization for Economic Co-operation and Development (OECD) study has revealed that the time needed to process an order declined abruptly by a minimum of 50 per cent to a maximum of 96 per cent. It is really amazing.

4. It helps business globalize

E-commerce by minimizing costs enables companies' especially small ones to make information on its products and services available to all the potential customers spread over worldwide. This is well

confirmed by Amazon. Com. founded by Jeff Bezos, the largest bookstore in the net by taking away a large amount of sales from the traditional booksellers. In India, the experience of reinfusion-on-the- net presents the similar case.

5. It helps market products more quickly

By taking the entire product design process online, drawing partners and customers into the process and removing the traditional communication barriers, companies can bring products and services to market far more quickly.

Internet commerce solutions allow customer to reduce the costs of sales and open new markets, speed and simplify order accuracy, approval, and processing, tracking and delivery and improve decision making, leverage existing investments in infrastructure, business systems and repositions and link manufacturers with suppliers on the same network.

Findings

The study indicates that e-commerce sector has huge growth potential in India.

The growth of mobile internet is encouraging.

There are some obstacles responsible for slow growth of e-commerce in India.

Conclusion

E-commerce is changing the way of buying & selling of product & services in India. Ecommerce is future of shopping. Due to E-commerce the gap has been reduced between manufacturer & consumer. According to Indian population their vast scope for e-commerce because currently in India only 19% people using internet for selling & buying goods & services so remaining percentage we can considered that we having scope in Indian Market. There is weak Cyber security Law in India that is why Indian People are facing challenges toward ecommerce.

The future of e- commerce e in India would be bright in the upcoming years if all essential factors would be implemented, by establishing cyber & have their benefits as per people wish. The role of government

is to provide a legal framework for e -commerce so that while domestic & international trade are allowed to expand their horizons, basic right such as privacy, intellectual property, prevention of fraud, consumer protection etc. are all taken care of.

The expansion of e -commerce has been developed in rural as well as urban area in reign able cost for consumption, because of that more people are getting linked with e-commerce & the ratio of that is getting increase day by day.

E-commerce provides tremendous opportunities in different areas but it requires careful application for consumer protection issues. Growth of e-commerce would also depend to a great extent on effective IT security systems for which necessary technological and legal provisions need to be put in place and strengthened constantly. While many companies, organizations, and communities in India are beginning to take advantage of the potential of e-commerce, critical challenges remain to be overcome before e-commerce would become an asset for common people. It is clear that in coming years customers will give orders for their products from their homes and form their office. Mobiles and computer are widely used in India now a days and user are eager to do shopping in internet. With the rapid expansion of internet, e- commerce is set to play an important role in next coming years. Metro cities and urban areas are already using the facility of internet but in coming years the rural and sub-urban area will also use the facility of internet. So, the new opportunities will be open for small and big corporations.

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A Study of E-Commerce in Today's Global Market

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Abstract

Many experts believe that in recent years, a revolution has occurred similar to the industrial revolution which the world has entered the information age. It makes large changes in the economic, social and cultural aspects. One aspect of this transformation is changes in economic relations between individuals, corporations and governments. Commercial exchange between people who had been based on paper documents to transactions of by us the systems based on electronic information.

Keywords : *E-Commerce, advantage,*

Introduction

E-Commerce stands for electronic commerce and caters to exchange of products, services and information via internet. Electronic commerce is more than just buying and selling products online. It includes the entire online process of developing, marketing, selling, delivering, serving and paying for products and services. It is doing business online. It includes any commercial activity that takes place directly between a business, its partners, or its customers through electronic communication and digital information processing technology. E-Commerce is a modern business methodology that addresses the needs of the organisations, merchants and consumers to cut costs while improving the quality of goods and services and increasing the speed of service delivery. India has shown tremendous growth in the E-Commerce segment. E-Commerce has become an important tool for small and large businesses worldwide, not only to sell to customers but also to engage them.

What Is The E-Commerce?

Electronic commerce, commonly known as E-commerce, is trading in products or services using computer networks, such as the Internet. Electronic commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems. Modern electronic commerce typically uses the World Wide Web for at least one part of the transaction's life cycle, although it may also use other technologies such as e-mail. In the simplest case, it can be defined as doing business transactions in an electronic format. The European Commission has defined the e-commerce in 1977 as follow: The April 1997 edition (ERCIM News No. 29) reported that "Europe has been lagging with respect to the rest of the world in its way towards the information society". As far as electronic commerce is concerned there is strong activity developing and a focus that is specifically European is certainly arising. This is happening on three fronts - firstly there is serious use of electronic commerce in many European countries, including France, The Netherlands, Sweden and the UK; secondly, these national activities are being brought together through a new user body, Electronic Commerce Europe (ECE); thirdly the European Commission is bringing together its various actions under a co-operative umbrella and calling for serious implementation initiatives under the latest ESPRIT Thematic Calls.

E-commerce in India

E-Commerce in India is still in a growing stage, but it offer tremendous opportunities for developing countries like India. The e-commerce sector in India started their operations late nineties among business to business users (B2B). Business to Consumers (B2C) e-commerce started in 1996 in the form of matrimonial portals. The cost and the speed of internet was the limiting factor for their growth at that time. The first E-Commerce website in India was rediff.com, which was one of the most trafficked portals for both Indians and non –residents Indians. Last five years have seen a rise in the number of companies enabling e-commerce technologies and the internet in India. Major Indian portal sites have also shifted towards e-commerce instead of depending on advertisement revenues. Today E-Commerce has become an integral part of our society. There are websites providing any number of goods and

services. These websites provide almost all categories of goods and services on a single site. These sites target the buyers of every possible product or service. These websites are known as Multi Product E-Commerce Sites. There are also Single Product E-Commerce Sites, which deal in specialised field only. Technology is changing the way of shopping. Out of the total internet users in India, 60% visit e-commerce sites. Favoured demographics and growing internet users' base helped in adding the growth. Growth shown by Indian players like Flipkart, India Times, Snapdeal etc. and huge investors' interest around these companies showed the immense potentials of the market. The Table 1.1 and Graph 1.1 depict the leading e-retailers in 2015 in India.

Impact on Markets and Retailers

Economists have theorized that e-commerce ought to lead to intensified price competition, as it increases consumers' ability to gather information about products and prices. Research by four economists at the University of Chicago has found that the growth of online shopping has also affected industry structure in two areas that have seen significant growth in e-commerce, bookshops and travel agencies. Generally, larger firms are able to use economies of scale and offer lower prices. The lone exception to this pattern has been the very smallest category of

Benefit of Electronic Commerce

The benefits of e-commerce include it's the speed of access, a wider selection of goods and services, accessibility, and international reach. It's perceived downsides include sometimes-limited customer service, not being able to see or touch a product prior to purchase, and the necessitated wait time for product shipping. To ensure the security, privacy and effectiveness of e-commerce, businesses should authenticate business transactions, control access to resources such as webpages for registered or selected users, encrypt communications and implement security technologies such as the Secure Sockets Layer.

Benefits to Organizations

E-commerce has many advantages for organizations which some of them are as follows:

Expands the marketplace to national and international markets, Decreases the cost of creating, processing, distributing, storing and retrieving paper-based information, allows reduced inventories and overhead by facilitating "pull" type supply chain management , the pull type processing allows for customization of products and services which provides competitive advantage to its implementers, Reduces the time between the outlay of capital and the receipt of products and services, Supports business processes reengineering (BPR) efforts, Lowers telecommunications cost the Internet is much cheaper than value added networks (VANs)

Conclusion

E-commerce has undeniably become an important part of our society. The World Wide Web is and will have a large part in our daily lives. It is therefore critical that small businesses have their own to keep in competition with the larger websites. Since web developers have lowered down the prices for their services, it has become more affordable for small businesses to use the World Wide Web to sell their products.

E-commerce can conduct any business online and via the Internet to express. Many techniques have been developed in recent years and are expected to grow more than this. By e-commerce, the exchange of information related to the purchase and sale, required information for the transport of goods with less effort, exchange between banks and customers will be faster. Companies to communicate with each other haven't restriction and their relation to each other can be done easier and faster. Advantages of e-commerce are cost savings, increased efficiency, and customization. In order to understand electronic commerce it is important to identify the different terms that are used, and to assess their origin and usage.

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The Traditional Business vs Electroic Commerce

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Abstract

Gone are the days when the commerecial activites like the exchange of goods and services for money, between parties, takes place only in the traditional mode,i.e. the customer has to go to the market look at the variety of products, choose the required stuff and the purchasing them by paying the specified amount. with the advent of e- commerece, people can buy goods, pay bills, or transfer money in just one click.

Many people, still prefer traditional commerece over e-commerce, due to their dogma that the latter is not safe, however, this is just a myth. Both modes have their pros and cons, so we have simplified you the difference between t raditional commerece and e-commerece.

Keywords : *e- commerce , Traditional commerce, pay bills, Transfermoney.*

Comparison Chart

BASIS FOR COMPARISION	TRADITIONAL COMMERECE	E-COMMERECE COMPARISON
Meaning	Traditional commerce is a branch of business which focuses on the exchange of products and services, and includes all those activates which encourages exchange, in some way or the other.	E- Commerece means carrying out commercial, transactions or exchange Information, electronically on the internet.

Processing of Transactions	Manual	Automatic
Accessibility	Limited Time	24 x 7 x 365
Physical Inspection	Goods can be inspected physically before purchases.	Goods cannot be inspected physically before purchases.
Customer interaction	Face – to – face	Screen - to –face
Scope of business	Limited to particular area.	Worldwide reach
Information Exchange	No unioform platform for exchange of information.	Provides a uniform platform for information exchange.
Resource focus	Supply side	Demand Side
Business Relation ship	Linear	End -to- end
Marketing	One way marketing	One - to-one Marketing
Payment	Cash, Cheque, Credit Card ,etc	Credit card , Fund transfer etc.
Delivery of goods	Instantly	Takes time

Introduction:

Definition of Traditional Commerece:

Traditional commerece or commerece is a part of business, which encompasses all those activites that facilitate exchange. Two kinds of activities are included in commerece,i.e trade and auxiliaries to trade. The term trade refers to the buying and selling of goods and services for cash or kind and auxiliaries to trade, implies all those activities like banking, insurance , transportation, advertisememnt, packaging, and so on, that helps in the successful completion of exchange between parties.

In finer terms, commerece encompasses all those activites that simplify the exchange of goods and services, from manu facturer to the final consumer. When the goods are produced, it does not reach to the customer directly rather it has topass from various activities, which are included under commerece. Its main function is to satisfy the wants of consumers by making go ods available to them, at the right time and place.

Objective of The Study:

1. To study the impact of e-commerce on traditional commerece
2. To Study the growth and contribution of e commerce.

Research Methodology:

This research is based on secondary data which are collectes from servers sources i.e. research papers publication from ministry of commerece , Govt of india etc, which is available on the internet.

The Following points are note worthy so far as the difference between traditional commerce and e-commerce is concerned:

- A part of business, that focuses on the exchange of products and services, and includes all those activities which encourage e xchange, in some way or the other, is called traditional commerece. E- Commerece means carrying out commercial transactions or exchange of information, electronically on the internet.

- In traditional commerece, the transactions are processed manually whereas, in the case of e-commerce, there is automatic processing of transactions.
- In traditional commerce, the exchange of goods and services, for money can take place, only during working hours. On the other hand, in e-commerce, the buying and selling off goods can occur anytime.
- One of the major drawbacks of e- commerce is that the customers cannot physically inspect the goods before purchases, however, if customers do not like the goods after delivery they can return it within the stipulated time. Conversely, in traditional commerce physical inspection of goods is possible .
- In traditional commerce, the interaction between buyers and sellers is direct i.e, face. As against this, there is indirect customer interaction, in he case of e- commerce, because It may be possible that the customer is miles away from where they place an order for the purchases of goods.
- The scope of business in traditional c ommerece is limited to a par ticular area , i.e. the reach of business is limited to the nearby places where it operates. On the contrary, the business has worldwide reach in case of e – commerece, due to its ease of access.
- As there is no fixed platform for information exchange in traditional c ommerece, the business has tro rely on the intermediaries for information fully. Unlike e- Commerece, wherein there is a universal platform for information exchange, i.e. electronic communication channel, wh ich lessen the dependency on personas for information.
- Traditional commerece is concerned with the supply side. In contrast, the resource focus od e-commerece is the demand side.
- In traditional commerece, the busi ness relationship is vertical or linear, while in the case of e-commerece there is directness in command leading to a horizontal business relationship.
- In traditional commerece, due to standardization, there is mass/ one way marketing. Ho w ever, customization exists in e-commerece leading to one to one marketing.
- Payment for transactions can be done by paying cash, cheque or via credit card. On the other hand, payment in e-commerece transactions can be done through online payment modes like credit card, fund transfer, etc.

- The delivery of goods is immediate in traditional commerce but in the case of e-commerece, the goods are delivered at the customer's place, after some time, usually within a week.

Conclusion :

Therefore, with the above discussion, it is quite clear that both the methods have their advantages and disadvantages. e- commerce is just like the traditional commerce, i.e when you log in to the website, you enter into the e- world for shopping, wherein you choose a category, specifications and you get the desired results. E- Commerce is not suitable for perishable goods and also for high- value items, while traditional commerce is not suitable for purchasing software or music.

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A Study of e-commerce Mechanism of e-retailing: A case of internet merchants retain promises and commitments of e-commerce Customers in Nagpur City

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Abstract

In this research paper the authors observed that e- retailers promise their customers that online experiences will be satisfying ones, understanding what creates a satisfying customer experience becomes crucial. Even though this understanding appears crucial, no studies have examined the factors that make consumers satisfied with their e-retailing experiences. The authors examine the role that consumer perceptions of online convenience, merchandising (product offerings and product information), site design, and financial security play in e-satisfaction assessments. They concluded that convenience, site design, and financial security are the dominant factors in consumer assessments of e-satisfaction.

Introduction

E-commerce is a field of commerce with the use of different networks such as the Internet so that e-commerce provides online sales support operations and customer service. E-commerce can be liked with electronic market where sellers (suppliers, or companies, or shops), intermediaries (brokers) and buyers, continue in providing products and services in the virtual or digital format, and pay the money. In general, it is a comprehensive expression that means any type of business or commercial operations involving the exchange of goods and services at any time via electronic channels and using so-called electronic payment gateways. E-commerce can be achieved through connecting to the Internet, using the credit card and having an address for shipping.

E-commerce offers many benefits; it is not only for individuals but also for the community of people and institutions to the abundance of Internet access and easy access to website through secure electronic payment channels.

One of the primary goals of e-commerce is customer satisfaction. The interested companies in customer's satisfaction are the companies that have reputation and credibility of helping spread and breadth of their business. The customer is always looking for quality and price; therefore, companies seek to earn customer satisfaction by offering affordable prices and multiple services. According to the research, the definition of customer satisfaction has been widely debated as organizations increasingly attempt to measure it. Customer satisfaction can be experienced in a variety of situations and connected to both goods and services. It is a highly personal assessment that is greatly affected by customer expectations. Satisfaction also is based on the customer's experience of both contact with the organization (the "moment of truth" as it is called in business literature) and personal outcomes. Some researchers define a satisfied customer within the private sector as one who receives significant added value in brief with a definition that may apply just as well to public.

Because customer satisfaction is important for e-commerce; many researchers conducted researches to investigate the factors influencing customer satisfaction in e-commerce. Schaupp et al. conducted a research to examine the factors influencing the website satisfactions of e-commerce and online community using DeLone and McLean information systems (IS) success model by adapting subjective norms to the model and found out that individual impacts and system quality have significant effects on website satisfaction with e- commerce. This finding indicated that services provided by website system influence on customer satisfaction with e-commerce, particularly timely and faster transaction and search for information. Nusair & Kandampully discussed customers' satisfaction through quality services in travel sites including quality service's weaknesses and strengths. In their studies, six important criteria in determining customers' satisfaction (navigability, playfulness, information quality, trust, personalization, responsiveness) were identified based on online sites.

Table 1: Opinion of e-commerce website customers of Nagpur District regarding never overcharged by Internet merchants during sales transactions

Never overcharged by Internet merchants during sales transactions	**Frequency**	**Percentage**
Strongly Disagree	16	5.0
Disagree	78	25.0
Neither Agree nor Disagree	62	20.0
Agree	94	29.9
Strongly Agree	62	20.1
Total	**312**	**100.0**
Chi-Square	**Df**	**Sig.**
281.760	**4**	**<0.05**

df- degree of freedom; Sig.- Significance

Above Table 1 illustrates opinion of e-commerce website customers of Nagpur District about satisfaction with online merchants. It is evident from the information that 5.0% e-commerce website customers strongly disagreed that they were never overcharged by internet merchants during sales transactions, which was followed by disagreement that they were never overcharged by internet merchants during sales transactions (25.0%). Furthermore, 20.0% e-commerce website customers neither agreed nor disagreed whereas 29.9% and 20.1% e-commerce customers agreed and strongly agreed that they were never overcharged by internet merchants during sales transactions. The non-parametric chi-square statistics showed that there is significant (Chi. Sq. = 281.760; $P<0.05$) difference among e-commerce website customers with respect to their opinion about never overcharged by Internet

merchants during sales transactions. Thus, it is evident from the above information that majority of e-commerce website customers of Nagpur District were never overcharged by internet merchants during sales transactions.

Table 2: **Opinion of e-commerce website customers of Nagpur District regarding internet merchants will go out of their way to help customer, if there is any problem with transaction**

If there is any problem with transaction, Internet merchants will go out of their way to help customer	**Frequency**	**Percentage**
Strongly Disagree	16	5.0
Disagree	73	25.0
Neither Agree nor Disagree	94	30.0
Agree	94	30.0
Strongly Agree	31	10.0
Total	**312**	**100.0**
Chi-Square	**Df**	**Sig.**
344.752	**4**	**<0.05**

df- degree of freedom; Sig.- Significance

Above Table 2 illustrates opinion of e-commerce website customers of Nagpur District regarding internet merchants will go out of their way to help customer, if there is any problem with transaction. It is evident from the information that 10.0% e-commerce website customers strongly agreed that internet merchants have sufficient expertise and resources to do business on internet, which was followed by agreement that internet merchants have sufficient expertise and resources to do business (30.0%). Furthermore, 35.0% e-commerce website customers neither agreed nor disagreed whereas 25.0% e-

commerce customers disagreed and 5.00% customers strongly disagreed that internet merchants have sufficient expertise and resources to do business. The non-parametric chi-square statistics showed that there is significant (Chi. Sq. = 344.752; P<0.05) difference among e-commerce website customers with respect to their opinion regarding internet merchants will go out of their way to help customer, if there is any problem with transaction. Thus, it is evident from the above information that majority of e-commerce website customers of Nagpur District feel that internet merchants will go out of their way to help customer, if there is any problem with transaction.

Table 3: **Opinion of e-commerce website customers of Nagpur District regarding always-keeping promises and commitments by internet merchants**

Internet merchants always keep promises and commitments	**Frequency**	**Percentage**
Strongly Disagree	31	10.0
Disagree	62	20.0
Neither Agree nor Disagree	62	20.0
Agree	141	45.0
Strongly Agree	16	5.0
Total	**312**	**100.0**
Chi-Square	**Df**	**Sig.**
595.752	**4**	**<0.05**

df- degree of freedom; Sig.- Significance

Above Table 3 illustrates opinion of e-commerce website customers of Nagpur District regarding always-keeping promises and commitments by internet merchants. It is evident from the information

that 10.0% e-commerce website customers strongly disagreed that internet merchants keep promises and commitments, which was followed by disagreement that internet merchants keep promises and commitments (20.0%). Furthermore, 20.0% e-commerce website customers neither agreed nor disagreed whereas 45.0% and 5% e-commerce customers agreed and strongly agreed that internet merchant always keep promises and commitments. The non-parametric chi-square statistics showed that there is significant (Chi. Sq. = 595.752; $P<0.05$) difference among e-commerce website customers with respect to their opinion regarding e-commerce website customers of Nagpur District regarding always-keeping promises and commitments by internet merchants. Thus, it is evident from the above information that majority of e-commerce website customers of Nagpur District are agreed that internet merchants keep promises and commitments.

Conclusion

It is evident from the study results that according to significant (Chi. Sq.- 281.760; df- 4; $P<0.05$) no. of e-commerce website customers (50.0%) of Nagpur District were never overcharged by internet merchants during sales transactions (Table 1). The e-commerce website customers of Nagpur District feel that internet merchants will go out of their way to help customer, if there is any problem with transaction(Table 2) and e-commerce website customers of Nagpur District are agreed that internet merchants keep promises and commitments (Table 3).

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Impact on e-commerce of women user's in India: A Case of women perception of online shopping in Nagpur city

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Abstract

This research paper is pointed out, that there are factors associated with women user's perception of online shopping. Among those factors the risk perception of users was demonstrated to be the main discriminator between people buying online and people not buying online. Other discriminating factors were control over, and convenience of, the shopping process, affordability of merchandise, customer service and ease of use of the shopping site.

Introduction

Basically, e-commerce is in the industrial economy to a "knowledge economy" in transition to developed countries led to new enterprises as the main driving force, arising from an industrial structure, enterprise structure changes.

November 6, 1997 in Paris of France at the World e-commerce conference that "e-commerce refers to the realization of electronic trade. from the coverage area can be defined as: parties to the transaction by electronic means rather than through direct face to face exchange or conducted interviews of any form of commercial transactions; from the technical aspects can be defined as: a collection of multi-technology, including the exchange of data (such as electronic data, e-mail), access to data (shared databases, electronic bulletin boards), and automatically capture Data (bar codes), etc.. "Although this definition of the most authoritative, but so far, people's understanding of e-commerce still has not been uniform.

As electronic-commerce (e-commerce) grows and further exploits the attributes of the Internet, it will likely have significant effects on national economies and industry structure. E- commerce has come to take on two important roles; first as a more effective and efficient conduit and aggregator of information, and second, as a potential mechanism for the replacement of many economic activities once performed within a business enterprise by those that can be done by outside suppliers that compete with each other to execute these activities. In response to this increased level of outsourcing opportunities, businesses will exploit the benefits of e-commerce by decoupling as many links of their production chain as possible in order to seek the most efficient and low cost supplier within the e-marketplace. Given as the Internet has a global reach, these new e-marketplaces have fast become a product of globalization, leading the Internet and e-commerce to further the process of global integration. In its most basic form, e-commerce is any transaction made over the Internet. Most often this involves the transfer of goods, services, or information. Common e-commerce models include.

Table 1: Association among gender of respondent and feeling fear of misuse of credit card information by them

Gender	**Fear of Misuse of credit card information**					**Total**
	Strongly Disagree	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**	
Male	125 (10.0)	63 (5.0)	125 (10.0)	249 (19.9)	- -	**562** **(45.0)**
Female	- -	124 (9.9)	250 (20.0)	252 (20.2)	62 (5.0)	**688** **(55.0)**
Total	**125** **(10.0)**	**187** **(15.0)**	**375** **(30.0)**	**501** **(40.1)**	**62** **(5.0)**	**1250** **(100)**

Values in the parenthesis shows percentage

Chi-Square Tests			
	Value	df	Sig.
Pearson Chi-Square	238.304	4	0.000

df- degrees of freedom; Sig.- Significance

Pearson's Correlation R	Value	Sig.
	0.225	0.000

Tables 1 shows results of the data about association between gender of e-commerce customers in Nagpur city and feeling fear of misuse of credit card information by them. Results showed that Pearson Chi-square value for association between gender of e-commerce customers in Nagpur city and feeling fear of misuse of credit card information by them is 238.304 which is significant ($P<0.05$) at df = 4. This result indicates significant ($P<0.05$) association between the factors, gender of e-commerce customers in Nagpur city and feeling fear of misuse of credit card information by them. Furthermore, Pearson's correlation statistics showed that there is very strong positive ($r=0.225$; $P<0.001$) correlation among gender of e-commerce customers in Nagpur city and feeling fear of misuse of credit card information by them. Hence, it is evident that significantly ($P<0.05$) more female e-commerce customer have fear of misuse of credit card information, while internet shopping.

Table 2: Association among gender of respondent and their worry about giving out their credit card no. to e-commerce merchant

Gender	**I am worried about giving out my credit card number**					**Total**
	Strongly Disagree	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**	
Male	125 (10.0)	124 (9.9)	124 (9.9)	126 (10.1)	63 (5.0)	**562** **(45.0)**
Female	- -	124 (9.9)	251 (20.1)	251 (20.1)	62 (5.0)	**688** **(55.0)**
Total	**125** **(10.0)**	**248** **(19.8)**	**375** **(30.0)**	**377** **(30.2)**	**125** **(10.0)**	**1250** **(100)**

Values in the parenthesis shows percentage

Chi-Square Tests			
	Value	df	Sig.
Pearson Chi-Square	198.783	4	0.000

df- degrees of freedom; Sig.- Significance

Pearson's Correlation R	Value	Sig.
	0.225	0.000

Tables 2 shows results of the data about association between gender of e-commerce customers in Nagpur city and their worry about giving out their credit card no. to e-commerce merchant. Results showed that Pearson Chi-square value for association between gender of e-commerce customers in Nagpur city and their worry about giving out their credit card no. to e-commerce merchant is 198.783

which is significant (P<0.05) at df = 4. This result indicates significant (P<0.05) association between the factors, gender of e-commerce customers in Nagpur city and their worry about giving out their credit card no. to e-commerce merchant. Furthermore, Pearson's correlation statistics showed that there is very strong positive (r=0.225; P<0.001) correlation among gender of e-commerce customers in Nagpur city and their worry about giving out their credit card no. to e-commerce merchant. Hence, it is evident that significantly (P<0.05) more female e-commerce customer are worried about giving out their credit card no. to e-commerce merchant.

Conclusion

The Pearson's Chi square test and Pearson's correlation test is used to evaluate association and correlation among gender of e-commerce customers and there insecurity about giving credit card details online. It is evident from the study result of Table 1 that there is significant (P<0.05) association between the factors, gender of e-commerce customers in Nagpur city and feeling fear of misuse of credit card information by them. Furthermore, Pearson's correlation statistics showed that there is very strong positive (r=0.225; P<0.001) correlation among gender of e-commerce customers in Nagpur city and feeling fear of misuse of credit card information by them. Hence, it is evident that significantly (P<0.05) more female e-commerce customer have fear of misuse of credit card information, while internet shopping. In addition to this, there is significant (P<0.05) association between the factors, gender of e-commerce customers in Nagpur city and their worry about giving out their credit card no. to e-commerce merchant. Furthermore, Pearson's correlation statistics showed that there is very strong positive (r=0.225; P<0.001) correlation among gender of e-commerce customers in Nagpur city and their worry about giving out their credit card no. to e-commerce merchant. Hence, it is evident that significantly (P<0.05) more female e-commerce customer are worried about giving out their credit card no. to e-commerce merchant (Table 2).

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Impact of E – Commerce on Indian Economy

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Abstract

This paper explains the economic impacts of e-commerce in India. It is the India's fastest evolving market with annual multifaceted growth rate (CAGR) 52% to touch USD 36.7 billion by 2020. The increasing perception of internets and smartphones are expressively contributing to the growth of e-commerce. Speedy delivery of products, process of Convenient payment , high discount on festivals or non festival days, friendly policies with customers and easy returns of products are driving more customers towards online shopping. Due to the digital revolution, the e-commerce sector in India increasing rapidly. The 'Digital India' project which aims to offer a one - stop shop for Government services will absolutely boost this sector by introducing the internet to remote corners of India.

Keywords : *E-commerce, E- commerce impact on various sector*

Introduction:

Over the last ten years, the way of buying and selling of goods and services has been altered by the Internet. E-commerce is converting the shopping experience of Indian customers. The introduction of electronic data interchange spreads into producers , retail traders, stock market operations and travel reservations etc., which ensued in a higher growth of the economy. The term 'E-commerce' means doing online business with the help of computer, fax, e-mail and telephone. It has been come out from the term 'E-mail'. In 1972, the term 'Ecommerce' used by IBM for the first time. In 1973 with the development of computers, the first successful transaction was carried out between the European Union and the USA. in 1995. Internet and

Mobile Association of India states that Indian online retail market is anticipated to grow at the rate of 52 % and will reach USD 36.7 billion in 2020

Mode of E-commerce:

E-commerce can be categorised into three modes or segments -

1) Consumer-to-Consumer (C2C): It finds innovative ways to allow the consumer to interact with each other and by doing so they can sell goods or services to each other.

2) Business-to-Consumer (B2C): B2C transaction is conducted over the internet between Assets side business and a consumer. E.g. an online publisher may sell his book to a customer and receive payment without meeting him/her.

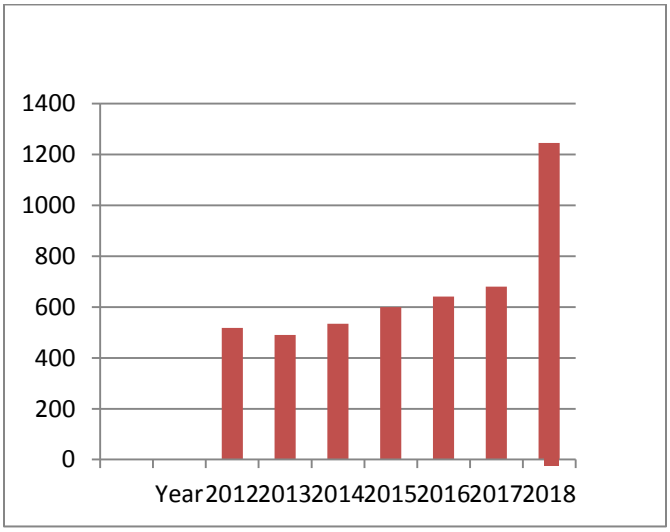
3) Business-to-Business (B2B): It refers to a situation in which one business make a transaction with other.

A. Internet users in India:

Recently the Statista Research Department provides information on the numbers of internet users in India from 2015 to 2023 (Expected Numbers). In 2018 India had 483 million internet users in India. The figures is projected to grow to 666.4 million internet users in 2023. Despite the unpapped potential, India alredy the second largest online market worldwide. The majority of India's internet users are mobile phone internet users are who take advantages of cheap alternative to expensive landline connections that requires to desktop PC's and infrastructures. As of 2016 India had 320.57 million mobile phones internet users and the forecast estimate 492.68 million Indian Mobile phones Internet users by 2022.

No. of internet users in India (*Years are estimate)

Year	No. of internet users in India
2015	259.88 millions
2016	295.39 millions
2017	437.4 millions
2018	483 millions
2019	525.3 millions
2020*	564.5 millions
2021*	601 millions
2022*	634.9 millions
2023*	666.4 millions



Reasons of Increasing Internet Users in India :-

- Increase in Literacy
- Development of Rural Area
- Increase in No. of Using Smartphone's
- Good No.'s of Young Generation
- Data becomes cheapest day to day

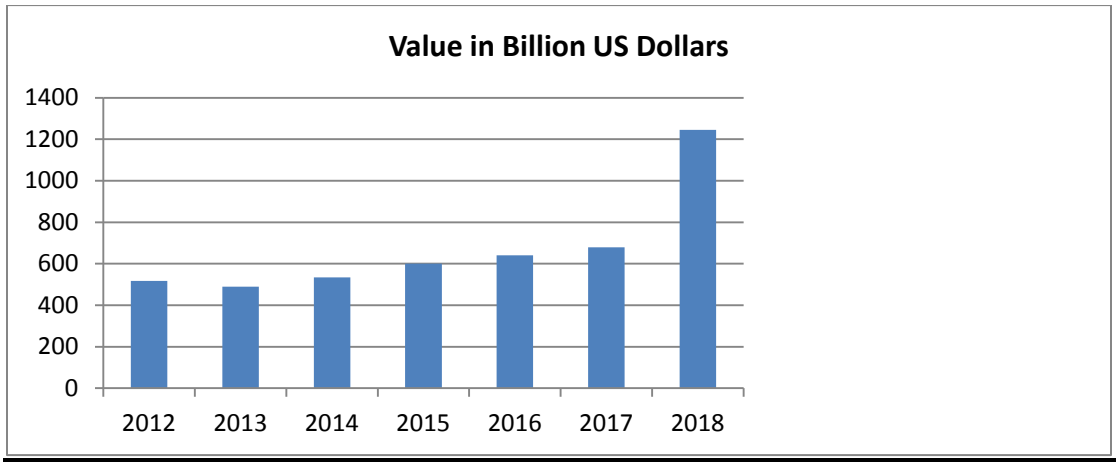
B. Recent Trends in E – Commerce:

- Industry studies by IAMAI show that online travel dominates the e-commerce industry in India with 70% of the market share.
- Online promotions of products, Online ordering, Electronic shopping, new pattern of advertisement of Corporate sector, recruitment publishing through social media etc. work take through online.
- Online retailer major categories include laptops and computers, smartphones, cameras, clothes, books, home and kitchen appliances, movie tickets etc
- Changes the lifestyle of Indian consumers by seeking comfort, convenience, and variety.

C. Online retail in India

Statista Research Department represents the value of organized retail market in India from 2012 to 2018. The value of organized retail market was estimated to be 1.2 trillion U.S. dollars in the financial year 2018, up by almost double from the previous fiscal year.

Value of online retail market in India from 2012 to 2018 (in billion U.S. dollars)



D. **Most popular specific E-Commerce in India :**

Most popular specific e-tailer focuses on a niche product or service as their services are different from other mainstream e-commerce players. The value addition by taking this venture helps them to raise funds. The critical aspect of this industry specific risk offers a user-friendly experience driven by convenience, more information and cost effectiveness. e.g. Ola Cabs, a cab service provider, differentiates its services by providing a great user-friendly experience to people looking for car rentals and cab service. The Following shows the Most popular specific e-commerce in India.

Most popular specific e-commerce in India.

Fashion	Real Estate	Travel	Education	Health	Furniture
Jabong	Magic Briks	Make my trip	BYJU's	Netmeds	Flipkart
Myntra	99 Acers	Goibibo	Shiksha	Medecure	amazon
Yepmi	Makan.com	Yaatra	Educard	Lenskart	Wooden street
Koovs	Housing.com	IRCTC	Topper	Healthkart	Homeshop 18
Voonik	Indiaproperty.com	Travelguru	Edurekha	Dialhealth	snapdeal

E. E-commerce: challenges and risks

The threat landscape is always evolving and increasingly challenging. The phenomenal growth of the e-commerce sector is accompanied by various challenges mentioned below :

- Lack of to cyber security risk
- No specific e-Commerce laws in India.
- Taxation Challenges
- Rapidly changing business models
- Shortage of good manpower

F. Economic and social impacts:

With the growing competition in the e-commerce market, players who are able to adapt and innovate quality products will gain profit and enhance the economy of the country.

- Mobile banking reduces the transaction cost of banks which increases access to financial services through rapidly growing mobile market.
- The rise of online sales in the developing markets will encourage retailers to go online for global expansion.
- E-marketplaces are working well in India due to high fragmentation on the supply side.
- Rural areas which are too costly or unprofitable for business development might be a focus of investment and market expansion.

G. Conclusion:

After taking a complete view of the industry trends, it is seen e-commerce is emerging as an important tool to certify exploding growth of Indian economy. It has the scope to lead India into an Economic superpower. With a rapidly growing internet penetration e-commerce offers an attractive option for the retailers to expand. To achieve this, there should be more investments in supporting infrastructure and innovative and game changing business models in India.

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A Comparative Study On Customer Satisfaction Between Amazon And Flipkart With Special Reference Towards Nagpur District

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Abstract

Flipkart and Amazon are the two top leading online shopping websites in India. In this paper, an attempt to find customers satisfaction about amazon and flipkart. Samples of 200 respondents were conveniently selected from Nagpur District. The findings were analyzed using percentage method, chi-square test and P-value, and Friedman's ranking test. Statistical analysis with the help of excel window 7. The research concludes that amazon is offering branded and quality product but customer are very much attracted to flipkarts excellent services.

Keywords : *Amazon, Flipkart, Online Shopping & Customer Satisfaction*

Introduction:

The internet becomes a more powerful and fundamental tool for everyone's needs and people affairs. By integrating various online innovative companies have established systems for ordering customers, facilitating payments, collecting customer service, collecting marketing data and online feedback respectively. These activities have collectively known as electronic commerce. Online shopping made it so much easier for everyone to differentiate their product and make it easier to buy items. An attempt was made to compare the customer satisfaction of the two largest e-retailers that is flipkart and amazon. Both are big player made their own status in india. A comparative study of customer satisfaction

between amazon and flipkart provides information of factors affecting customer satisfaction to succeed in the e-commerce market.

Amazon:

It is an American electronic commerce company with headquarters in Seattle, Washington. Amazon. Com founded by Jeff Bezos on July 5, 1994. Amazon has separate retail websites for the United States, the United Kingdom and Ireland, Canada, France, Germany, Italy, Netherlands, Spain, Australia, Brazil, Japan, China, India, and Mexico. Most of all product available at its website include books, DVDs, music CDs, software, video games, apparel, baby products, customer electronics, beauty products, furniture and food, toy and jewelry, groceries, health and personal-care items, kitchen items, watches, lawn and garden items, sporting goods, tools, and toys & games. It is the reputed online e-commerce platforms acknowledged at a large scale all over the world.

Flipkart:

It is an internet based company was founded by Sachin Bansal and Binny Bansal on oct.2007 and headquartered in Bengaluru, India. It is illustrious e-commerce platforms used simply to access all over the country. Flipkart company product list are available at its websites include electronics goods, appliances, anything related to men and women, baby and kids products, home and furniture, books and any other etc., it is the better platform to look for.

Review of Literature:

Pant Ashish (2014) In their paper, An online shopping change the traditional path of consumer purchasing revealed that a successful web store improved the dynamic technical features and emphasis on building the relationship with customer with making money. The success of e-commerce companies in India is depending upon its popularity, its branding image, unique and fair policies and its customer relation etc.

Bhatt Ashish (2014) Studied customer attitude towards online shopping in selected region of Gujrat study concludes that Internet shopping is gaining popularity among people specially the younger

generation but the present scenario to become equally popular among all age groups online marketing will have to cover a longer distance. Many people from different age groups are doing online shopping regularly. Customer's attitude is changing with the time because online shopping very fast and convenient.

Singh Prashant (2014) Customers buying behavior towards online shopping concluded in his research article that future of e-commerce companies in India looking very bright. Now days e-retailers give customers the better way to save money and time through online shopping within the range of budget. Flipkart company offering some of the best prices and hassle-free shopping experience. The research revealed that whole concept of online shopping has transform in India in terms of customer's buying behavior.

Saha Amit (2015) Studied impact of the increasing trend of online shopping over the various settled shop retailers. This study shows that a variety of factors releted to how retail is impacting businesses, as well as the various recovery mechanisms that are coming to counter those e-stores in their race to exist. Also found the increasing trend of online shopping has also affected the profitability of various goods.

Objectives of the Study:

- To study the demographic profile of the online shopping customer in Nagpur District.
- To compare the customer satisfaction towards Amazon and Flipkart e-retailing company.

Hypothesis:

- **Null Hypothesis:** There is no significant relationship between customer's demographic profile and level of satisfaction towards amazon and flipkart.

Limitations:

- The study is the selected sample of Amazon and Flipkart customer in Nagpur District and therefore, the result of the study cannot be generalized.

- The statistical methods used to analyze the data have their own limitation.
- All the limitations of primary data apply to this study.

Research Methodology:

Amazon and Flipkart customers in Nagpur District are taken for the research paper. A total sample of 200 respondents includes each of Amazon and Flipkart 100 customers. These respondents were conveniently selected from Nagpur District. Primary data is collected through internet structured questionnaire. The secondary information needed for the study was collected from magazines, journals, books, and websites. Data were further processed using statistical tools for the purpose of analysis. The statistical tools are Percentage method, Chi-Square Test & P-Value and Friedman Ranking Test

Data analysis and Interpretation:

Demographic Profile of the Respondents:

Table no.1- Describes the demographic profile of the internet shopping customer. Out of 200 respondents who were taken for the study: it has been identified that most (62%) of the respondents are female, (46%) of the respondents age is up to 25 years, most (48%) of the respondents are graduates, maximum number (39%) of respondents are employees, the annual income of (56%) respondents is Rs.1 Lakh to Rs.2.50 Lakh, (61%) belongs to nuclear family, 58% of the respondents number of members in family are between 2 to 5, (43%) respondents purchase are influenced through friends & Relatives and (35%) of the respondents buy clothes and accessories through online.

Table 1: Demographic Profile of the Respondents

Variables	No.of Respondents' N=200	Percentage	**Variables**	No.of Respondents' N=200	Percentage
Gender			**Type of Family**		
Male	76	38	Nuclear	122	61
Female	124	62	Joint	78	39
Age			**Members of the Family**		
Up to 25	92	46	Up to 2	40	20
25 to 45	58	29	2 to 5	116	58
45 & above	50	25	5 & above	44	22
Education			**Influence to Purchase**		
Up to high school	24	12	Family	60	30
Graduate	96	48	Advertisement	54	27
Post Graduate	80	40	Friends & Relatives	86	43
Occupation			**Online shopping**		
Professional	42	21	Clothes & Accessories	70	35
Employee	78	39	All type of Tickets	52	26
Business	52	26	Electronic Goods	48	24
Others	28	14	Books & Medicines	30	15
Annual Income					
Up to 1 Lakh	44	22			
1 Lakh to 2.50 Lakh	112	56			
2.50 Lakh & above	44	22			

Table 2: Relationship between Customer Demographic Profile and Level of Satisfaction towards Amazon

Factors	Level of Challenge			Total	X^2 Value	Table Value	P-Value	Remark
	Low	Moderate	High					
Gender								
Male	24	36	16	76	0.8779	5.0991	0.6447	N. S.
Female	32	66	26	124				
Age								
Up to 25	32	40	20	92	4.6435	9.488	0.3259	N. S.
25 to 45	12	28	18	58				
45 & above	14	20	16	50				
Education								
Up to high school	4	12	8	24	3.8043	9.488	0.4331	N. S.
Graduate	36	36	24	6				
Post Graduate	28	32	20	80				
Occupation								
Professional	10	20	12	42	2.3719	12.458	0.8825	N. S.
Employee	28	30	20	78				
Business	18	22	12	52				
Others	8	12	8	28				
Annual Income								
Up to 1 Lakh	16	14	14	44	6.0881	9.488	0.1927	N. S.
1 Lakh to 2.50 Lakh	38	42	32	112				
2.50 Lakh & above	8	16	20	44				
Type of Family								
Nuclear	14	46	18	78	3.3917	5.0991	0.1834	N. S.
Joint	36	62	24	122				

(Note- Chi Square And P- Value : significant at 5% percent level)

Table no.2- Describes the relationship between customer's selected demographic factors and Level of satisfaction towards amazon and flipkart. It is observe that, the calculated Chi-square value and P-value is lesser than the table value at five percent level, there is no significant relationship between gender, age, annual income, occupation, educational qualifications, type of family of the customers and level of satisfaction towards amazon and flipkart. Thus the null hypothesis is accepted.

Table 3: Customers Satisfaction – Friedman Rank Test

Factors	Amazon		Flipkart	
	Average Rank	Rank	Average Rank	Rank
Reasonable price	3.3	3	3.1	3
Good service	2.5	4	4.9	1
Suitability	1.8	5	2.3	4
Variety of Choice	3.8	2	1.4	5
Quality of the product	4.7	1	3.8	2

The above table shows about the Friedman Rank Test for customer's satisfaction observe that there is a association between the ranks given. The satisfaction factor of the customers towards the internet shopping through Friedman rank test, it is found that most of the amazon customers are satisfied with quality of the product, variety of choice, reasonable price, good service and suitability. It is also found that majority of the flipkart customers are satisfied with the good service, quality of the product, reasonable price, suitability and variety of choice. Therefore, it is

clear that most of the amazon customers are satisfied with the quality of the product and lots of the flipkart customers are satisfied with the good service for their product.

Conclusion:

The e-commerce has been in the top in India during past 10 years. The fast developing technological changes has opened an option of internet marketing for a common man in India. Online shopping the most attractive, widely, accepted, highly appreciated shopping trend in present era. Amazon and flipkart are the two top most online shopping websites. Most of the people preferred and satisfied towards them. The consumers are satisfied with online shopping but they also face some problems due to new technological changes and incorrect advertisement. This problem can be overcome by educating the customers. The research concludes that amazon is offering branded and quality products but customers are very much attracted towards the better services of flipkart. Also this study observes that many Nagpur customers have a habit of buying by looking at the product and touching it.

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A Study on Impact of E-Commerce on India's Economy

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Abstract

E-commerce involves an online transaction. E-commerce provides multiple benefits to the consumers in form of availability of goods at lower cost, wider choice and saves time. The general category of ecommerce can be broken down into two parts: E-Merchandise & E-finance. Many companies, organizations, and communities in India are doing business using E-commerce and also are adopting M-commerce for doing business. Modern electronic commerce typically uses the World Wide Web for at least one part of the transaction's life cycle although it may also use other technologies such as e-mail.

Keywords : *E-commerce , Consumers*

Introduction

Ecommerce has a great deal of advantages over "brick and mortar" stores and mail order catalogs. Consumers can easily search through a large database of products and services. They can see actual prices, build an order over several days and email it as a "wish list" hoping that someone will pay for their selected goods. Customers can compare prices with a click of the mouse and buy the selected product at best prices. There are alternative e-commerce platforms available (instead of the traditional physical platforms) for almost every aspect of our lives, starting from purchasing of everyday household items to online brokage . Mail order or catalogue shopping has been in existence in the United States since 1980. This was the predecessor of online commerce, which started in India post 2000.

Objectives

1) To study the concept of E-commerce
2) To study the effect of E-commerce on consumers

1. Categories/Models of E-Commerce:

The different categories or Models of E-Commerce are as follows:

B2B (Business to Business):

Under B2B model one business sells to other business. Companies doing business with each other such as manufacturers selling to distributers, wholesalers selling to retailers are the examples of B2B e-commerce model. Pricing under this model is based on quantity of order and is often negotiable. Chinese E-Commerce Giant Alibaba is the example of B2B model.

B2C (Business to Consumers):

This is the usual from of E-Commerce. In this model business sells products and services directly to consumers over the internet. They display their products or services on their Websites or Apps and the consumers can order the product or service directly on their Websites or Apps. If an individual is buying a pair of shoes by placing an order to Flipkart.com is an example of B2C model.

C2B (Consumer to Business):

Consumer to Business E-Commerce model involves consumers selling products or services to business. In C2B consumers create value and business consume that value. For example, when a consumer writes, reviews or when a consumer gives a useful idea for new product development than consumer is creating value for the business if the business adopts that inputs. In C2B consumers can offer products and services to companies and the company pay the consumers. We can see the C2B model at work in blogs or internet forums in which the author offers a link back to an online business thereby facilitating the purchase of a product, for which the author might receive affiliate revenues from a successful sale.

C2C (Consumers to Consumers):

C2C is a business model that facilitates the transaction of products or services between customers. C2C provide an innovative way to allow customers to interact with each other. C2C involves the electronically facilitated transactions between consumers through some third party. A common example

is the online auction, in which a consumer posts an item for sale and other consumer bid to purchase it, the third party generally charge a flat fee or commission. The sites are only intermediaries, just there to match consumers.

2. Benefits of E-Commerce to Consumers

a) 24/7 Access - Enables customers to shop or conduct other transactions 24hours a day, all year round from almost any location. For example - checkingbalances, making payments, obtaining travel and other information.

b) More Choices - Customers not only have a whole range of products thatthey can choose from and customize, but also an international selection ofsuppliers.

c) Price Comparisons - Customers can 'shop' around the world and conductcomparisons either directly by visiting different sites, or by visiting a single site where prices are aggregated from a number of providers and compared.

d) Improved Delivery Processes - This can range from the immediate delivery of digitized or electronic goods such as software or audio-visual files by downloading via the Internet, to the on-line tracking of the progress of packages being delivered by mail or courier.

e) An Environment of Competition - Where substantial discounts can be foundor value added, as different retailers vie for customers. It also allows many individual customers to aggregate their orders together into a single order presented to wholesalers or manufacturers and obtain a more competitive price.

Conclusion

E-Commerce has made the shopping easy. The E-Commerce Industry in India is growing rapidly despites many challenge. E-commerce industry is one of the largest growing industries in India at

present. The sale of e-commerce industry is expected to grow by almost 4 times by 2021 than the sales of 2015. This unprecedented growth in E-Commerce is due to increase in smart phones and internet users, 3G/4G internet services, awareness in public, government initiative of digitalisation, advanced shipping and payment options, entry of foreign e-business players etc.

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A study on adopted E-commerce of small family Business in Nagpur city

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Abstract

The study covered Nagpur district of Maharashtra state. The Nagpur district was picked using purposive sampling technique in consideration of issues such as area balance, rural vs. urban areas and population density. The SFBs were selected in each region to participate in the study. A total of 500 respondents were used. This sample was in line with Roscoe (1975) sampling rule that stipulates that a sample size of 30-500 is adequate. Out of the 500 sample, a total of 421 questionnaires were returned, representing 84.2% response rate.

Introduction:-

Family businesses (called family-type enterprises) in our society and economy have strong historical presence and widespread presence, as well as vital economic and social contributions. The prevalence of family firms as the most prevalent business structure in the USA has been documented worldwide. Throughout history, families have been critical to the creation and operation of businesses. Families are the most important sources of human capital, social capital, financial capital, and physical capital. Worldwide, from ancient to modern times, and from agricultural and cottage industries to multinational corporations, family ownership is pervasive, Morck and Yeung (2004).

E-commerce possess the potential to contribute significantly to economic growth. Given their many benefits, small and large businesses are adopting E-commerce to support their competitiveness, productivity and profitability. However, E-commerce adoption in small family business (SFBs) differs from that of larger organizations because of the specific characteristics of SFBs, such as resources constraints. It is therefore important to understand the theoretical models used to explain E-commerce adoption in SFBs, to better appreciate the key factors that influence the adoption and use of such

technologies by these businesses. The technology innovation literature to explore two of these theoretical models –the diffusion of innovation theory and the technology, organization and environment framework –in proposing an integrated theoretical model ofE-commerce adoption by SFBs. This integrated model includes an overarching typology, which classifies some of the key internal and external factors that influence SFBs a sound framework for future search on E-commerce adoption by SFBs in both developed and developing countries.

The contribution of family-type enterprises to the economic development in Maharashtra State is very significant. Undoubtedly, the history of family-type enterprises can be regarded as the evolution of economic development in Maharashtra State. Thus facing the dynamic and keenly competitive environments, we envision the possible trends for the government and private enterprises to formulate the appropriate strategies. Facing the dynamic and keenly competitive environments, therefore, this study will explore the organizational evolutions in structure and the following appropriate strategies for the family businesses.

Family businesses differ from other firms in terms of ownership, management and social philosophies, approach to leadership and relationships. The involvement of the family is the key defining issue that differentiates family business from non-family business. There are many definitions of a family business. The definitions take into account many aspects, such as family ownership, involvement of the management, strategic control, the main source of income for the family and intergenerational transfers. The European Commission Report also notes that self-employed/one-person enterprises are considered as family businesses in approximately one-third of the countries surveyed.

Descriptive statistics were also used to determine the suggested solutions for better adoption of E-commerce in organizations. The data was analyzed using means on a 5 point scale where means close to 5 represented strong agreement, while the means close to 1 represented strong disagreement.

Table 1: Suggested solutions for better E-commerce adoption

Challenges of E-commerceadoption	N	Min	Max	Mean
There is need to sensitize our staff to embrace change	421	1	5	4.46
There is need to sensitize our customers to embrace change	421	1	5	4.18
There is need for staff training to improve their E-commerceskills	421	1	5	4.45
This organization should acquire computers and software for implementing E-commerce	421	1	5	4.36
Management should design a policy to guide E-commerceusage in this organization.	421	1	5	4.22
This organization should develop and deploy a website	421	1	5	4.43
Our clients should be told the benefits of using E-commerce	421	1	5	4.41
The cost of IT technology should be reduced	421	1	5	3.88
Government should enact E-commerce/e-business laws in this country.	421	1	5	4.18
There is need for information E-commerce	421	1	5	4.31
Our clients should be trained about E-commerce	421	1	5	3.88
Top management should champion the implementation of E-commerce	421	1	5	4.47
N	421			

Results show that the respondents strongly agreed that the solutions for better adoption of E-commercewere that there was a need to sensitize staff and customers to embrace change (Mean=4.46 and Mean=4.18 respectively) and also that there was need for staff training to improve their E-commerce

skills (Mean=4.45). The respondents also strongly agreed that organizations should acquire computers and software for implementing E-commerce(Mean=4.36), and also that management should design a policy to guide E-commerce usage in their organizations (Mean=4.22). The respondents further strongly agreed that for better adoption of E-commerce, organizations should develop and deploy websites (Mean=4.43), and also that their clients should be told the benefits of using E-commerce(Mean=4.41). Finally, respondents strongly agreed that the government should enact E-commerce/e-business laws in the country (Mean=4.18), and also that top management should champion the implementation of E-commerce in their organizations (4.47). In addition to the above suggested solutions, the respondents agreed that clients should be trained about IT (Mean=3.88) and also agreed that the cost of E-commerceshould be reduced (Mean=3.88).

Table 2 : Suggestions to overcome barriers in adoption and use of E-commerce

Suggestion	No.	%
Expanding funding to SFB's in order to upgrade E-commerce	352	83.5
Training more E-commercetechnicians through opening more training centers	318	75.5
Reducing cost of technological infrastructure by lowering tax charged on them	314	74.5
Setting proper Government policies/regulations on adoption and use of E-commerce	284	67.5
Developing support mechanisms that can train SFB's on usage of E-commerce	269	64.0
Creating awareness of opportunities offered by E-commercein SFB's	246	58.5
Sharing of E-commerce infrastructure among businesses	213	50.5

The respondents who participated in this study suggested some valuable recommendations on how to overcome barriers affecting adoption and use of E-commerceby SFB's.

As indicated in table, 83.5% suggested expanding funding to SFB's in order to upgrade E-commerce. This finding had indication that most concerns of the respondents were the fear of E-commercebecoming obsolete, hence requiring frequent updates. Indeed, in the highly competitive and cash-poor context in which SFB's operates, concerns in funding for updates was a real one. Training of more E-commercethrough opening of more training centers was recommended by 75.5% . SFB's frequently encounter operational problems with E-commerceexacerbating their reliance on external vendors or consultants. Therefore, this finding had indication that with more trained E-commerceexperts, SFB's can tab from their expertise in adoption and use of E-commerce. Reducing cost of technological infrastructure by lowering tax charged on them was suggested by 74.5%, government to set proper policies and regulations on adoption and use of E-commerce was proposed by 67.5%, developing support mechanisms that can train SFB's on usage of E-commercewas suggested by 64.0% , while creating awareness of opportunities offered by E-commerce in SFB's was suggested by 58.5% and sharing of E-commercestructure among businesses was proposed by 50.5%.

Conclusion

Although we inclusively discussed that how distinguished influencing factors affect the E-commerceadoption decision, acceptance, satisfaction, and usage, we did not categorized the reviewed influencing factor in term of different adoption concepts, the issue which can be addressed by future research. This study might not cover all aspects of E-commerce adoption process in the literature. Likewise and based on unique characteristics of each organizations and its specific conditions of technological innovation diffusion, it has not been claimed that this framework is applicable for all firms and is able to deal with all of their issues. For this reason, these findings require empirical testing to determine its relevancy and conformity in a practical environment. In addition, more comprehensive study of E-commerceadoption within Small Family Businesses investigating SFBs-related influencing factors simultaneous with other aspects (drivers, enablers and inhibitors) of E-commerce adoption seems to be necessary.

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Issues & Challenges of E-commerce In Indian Banking System

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Abstract

E-commerce stands for electronic commerce. E-commerce is improving standard among the business community in worlds, about the opportunities offered by E-commerce. E-commerce as part of the information technology revolution became widely used in the world trade in general and Indian economy in particular. With advancements in technology, there have been many changes has been occupied. Indian banks have been playing an essential role with the e-commerce. Present scenario Banks are facing many issues and challenges by the e-commerce.

In the backdrop of all these developments the present paper makes an attempt to: highlight the challenges of e-commerce in Indian banks, and to understand the issues of e-commerce in Indian banks.

Keywords: *Electronic commerce, Issues, Challenges, Banking system*

Introduction:

Here the increasing global economy, e-commerce and e-business have progressively more become a required component of business approach and a strong procedure for economic development. The incorporation of inclusion and communications technology in business has drastically change relationships within organizations and those between and among organizations and individuals. Particularly, the use of ICT in business has better productivity, encouraged greater customer participation, and enabled mass customization, in addition less costs.

As far as progress in the Internet and Web-based technologies is concerned, differences connecting traditional markets and the worldwide electronic market place, like business capital size, with others, are slowly being narrowed down. The name of the game is strategic positioning, the skill of a company to

determine emerging opportunities and employ the essential human resources skills to create the most of these opportunities during an e-business strategy that is simple, workable and practicable within the context of a global information setting and new financial environment.

Developing nations are given increased access to the worldwide marketplace, where they compete with and complement the further developed economies. Largely, if not all, developing countries are already participating in e-commerce, whichever as sellers or buyers. However, to facilitate e-commerce increase in these countries, the relatively underdeveloped information infrastructure should be better. With the areas for policy interventions are:

1. High Internet access costs, with connection service fees, communication fees, and hosting charges for websites with enough bandwidth;

2. Restricted availability of credit cards and a countrywide credit card system;

3. Undersized transportation infrastructure follow-on in slow and uncertain delivery of goods and services;

4. Internet security problems and not enough security safeguards;

5. Shortcomings of skilled human resources and key technologies

6. Substance limits on national security and other public policy grounds, which very much affect selling in the field of information services, such because the media and entertainment sectors;

7. Cross-border issues, such as the recognition of transactions underneath convention of other certification services, ASEAN member-countries, improvement of delivery systems and customs facilitation; and

8 The comparatively low cost of labour, which implies that a shift to a comparatively capital exhaustive solution

Objective of Study:

The study has following objectives

- To understand the concept of Electronic Commerce
- To study the Issues of E-commerce

- To highlight the challenges of E-commerce in Indian Banking

Research Methodology:

The researchers used an explanatory research technique based on past literature from respective journal, annual reports, newspaper, magazine, internet sites of academic literature of Electronic Commerce. Considering the objectives of the study descriptive type research design is adopted to have more accuracy and rigorous analysis of research study. The accessible secondary data is extensively used for research paper.

Importance of E-commerce:

E-commerce, which factually means business trading via the Internet, has been around the world since mid nineties. But, until the recent few years, E-commerce is getting more and more attention on local, national and international entrepreneur and consumers. One of the major reasons is due to the highly successful operations of some well known names on the Internet, such as Yahoo, eBay and Dell. The sales returns these companies shown in their yearly reports are without doubt, one of the largest factors why E-commerce is important in the commercial market these days. E-commerce proved its value based on the fact where time is essence. In the commercial markets, time plays an important role to equally the business and consumers. From the business approach, with less time spent during every transaction, more transaction can be achieved on the equal day. As for the consumer, they will save more time during their transaction. Because of this, E-commerce steps in and replaced the traditional commerce system where a sole transaction can cost both parties a lot of valuable time. With only a few clicks in minutes, a transaction or an order can be placed and completed through the internet with ease. For example, a banking transaction can be completed through the Internet in a few minutes compared to the traditional banking system which may take up to hours.

From the business perspective, E-commerce is much more cost effective compared to traditional commerce system. This is due to the fact where through E-commerce, the price for the middlemen to sell their products can be saved and diverted to another aspect of their business. One illustration is the giant computer enterprise, Dell, which practice such a system by running most of their business by

internet without inclusion any third parties. Apart from that, marketing for E-commerce can reach a better customer to price ratio as put an advertisement on the internet is relatively a lot inexpensive than putting up a wayside banner or filming a television advertisement. For E-commerce, the total on costs needed to run the business is significantly much less compared to the traditional commerce system. The reason due to that is where most of the cost can be cheap in E-commerce. For instance, in running an E-commerce business, only a head office is required rather than a head office with a few branches to run the business. Consumers and business, connectivity plays an important part as it is the key part determining the entire business. In the point of view of business, E-commerce provides superior connectivity for its probable customer as their respective website can be accessed virtually from anywhere throughout the Internet. This system, more probable customers can get in touch with the company's business and thus, eliminating the limits of geographical location. In the point of view of customer, E-commerce is greatly further comfortable as they can browse through a entire directories of catalogues without any hassle, compare prices among products, buying from another country and on top of that, they can do it while at home or at work, without any requirement to move a single inch from their chair. In worldwide market sense, the appearance of E-commerce as a pioneer has opened up a choice of windows of opportunities for a variety of other companies and investors. For example, due to the growth of E-commerce, maximum resources are being focussed into internet services, electronic securities, business policy and latest technologies grown-up in the worldwide market and in the end, it will become necessary business plan for a company in order to stay alive and stay competitive in the ever shifting market.

Issues of E-commerce:

Institution of a successful e-commerce industry is not limited to simply putting an idea on a website. There are many more issues that are required to be addressed by an e-commerce entrepreneur before his/her e-commerce endeavour becomes a successful one. These include lawful issues as well that range from e-commerce compliances to brand promotion and protection. Even the domain name protection strategy is a necessary element of successful e-commerce endeavour. E-commerce is one of the most beneficial business ventures in India these days. Not only its current augmentation is good but even its

future and proposed growth is tremendous. But, e-commerce in India is also necessary to be conducted in a lawfully permissible manner.

A dominant majority of e-commerce endeavour never live the second year of their establishment. Further, a lot of e-commerce websites are shut down due to legal violations. For example, many Bit coins exchanges in India have provisionally suspended their services due to legal doubts in this field. Some of them have even been targeted by ruling enforcement agencies of India for possible desecration of Indian laws.

E-commerce websites operating in India are required to follow various laws of India as well as the Information Technology Act, 2000. As per these Act e-commerce websites functioning in India are Internet mediators and they are necessary to comply with cyber law due diligence desires as well.

The legal wants for undertaking e-commerce in India also engage fulfilment through other laws similar to Indian contract law, Indian penal code, etc. more, online shopping in India also engage fulfilment with the banking and economic norms applicable in India. For example, take the illustration of PayPal in this regard. If PayPal has to allow online payments receipt and distributions for its alive or projected e-commerce activities, it has to obtain a license from Reserve Bank of India in this regard. Further, cyber due diligence for PayPal and other online payment transferors in India is also requisite to be observed.

Among the active use of e-commerce in India the e-commerce dispute solution in India is also required to be strengthened. The current procedures scheme of India is not conducive for the development of e-commerce in India and online argument resolution in India is more suitable for such purposes.

At last, for those who wish to engage in cloud computing, virtualisation and other Internet based services in India, they comply with techno legal rules of India. Cloud computing legal and regulatory needs in India for businesses and entrepreneurs are silent evolving. But they must be followed by the cloud computing business commune of India. Virtualisation and cloud computing service providers in India ought to not only follow the encryption laws of India but they should also ensure cyber law due diligence in India. That is further so when the cyber rules due diligence for companies in India has become very stringent and foreign companies and websites are regularly prosecuted in India for non use of cyber due diligence. In short, the highly advantageous e-commerce part of India must be explored only after complying with the laws governing the respective e-commerce segment. There is no single set

of laws and regulations that administrate all e-commerce segments and all e-commerce segments are governed by different laws.

Challenges of E-commerce in Indian banking system:

Indian e-commerce industry is growing at a remarkable pace due to high access of internet and sophisticated electronic devices. However, the current growth rate of e-commerce in India is far away lagging behind than other developed countries in the world. In the online merchant way have big problems and challenges. Security and safety of online money transaction being the large problem along with others have curbed the smooth development of the online industry in the country. Because, key factor of e-business sectors have affected by the followings given challenges however still there are some online companies like Makemytrip.com, flipkart.com, Snapdeal.com who have conquer the challenges and representation the ideal growth trends of e-commerce in India.

1) Poor Knowledge and Awareness: Most of the Indian rural population are lack of awareness of internet and it uses. Unexpectedly, urban population are also suffering from poor awareness on online business and its functionalities. A small number of are aware of the online corruption and fraud and thus darkness still exists. A reliable survey reveals that fifty percents of Indian online users are unaware of the solution of online security.

2) Online Transaction: The majority of Indian customers do not possess plastic money, credit card, debit card and net banking system, which is one of the main reasons to restrict the growth of ecommerce. However, in current years, a few of the nationalized banks have started to issue debit cards to all its account holders.

3) Cash on Delivery: In India, Cash on Delivery has evolved out of less penetration of credit cards. Generally of Indian E-commerce companies are offering cash on delivery as one of mode of payment for the purchase. Thirty to fifty percent of buyers are also taking benefit of this mode of payment while making purchase of any product and service over internet. Cash on Delivery has been introduced to counter the payment security issues of online transaction, but this mode has been proving to be loss and costly to the companies. It is seen that majority of the buyers denied to make the payment at the time of

delivery of the product. Therefore, companies tend to lose the sale along with product transportation fees.

4) Online Security: In case of commencing and small business, Business owners are ignoring the value of authentic software due to financial limitations. They are even failing to take the initial steps to make safe and protect their online business through installation of authentic protection services like antivirus and firewall protection, which definitely an important step for successful online business players. Maximum number of business entrepreneurs used illegal software in their server, which generally does not come with upgraded online security in India. Such pirated or illegal software leaves scope for virus, malwares and Trojan attacks and it is very dangerous task to make online transactions in the systems, which may divulge or to drop out sensitive information of credit cards, debit cards and online banking of the users.

5) Logistics and Shipment Services: In India, logistics and courier services obligatory a lot of improvement. Whereas, perfect and strong logistics service is one of the main reasons behind the accomplishment of any online company, India is lagging distant behind in this sector as most of the cities and small villages are still not covered under serviceable area of many of the courier and logistic companies. E-commerce is hampered in a big way due to the limited services offered by the courier service companies or providers.

6) Tax Structure: Indian Tax rate system is another factor for smaller growth rate of e-commerce in India in parallel to other developed countries like USA, UK and Japan. In those countries, tax rate is the same for all sectors while tax structure of India varies from sector to sector. This factor creates accounting issues for the Indian online business companies.

7) 'Touch and Feel' factors: Most of Indian customers are more comfortable and secure in buying products physically. They have a tendency to choose the product by touching the product directly. Thus, Indian buyers are more tending to do ticketing and booking online in Travel sectors, books and electronics.

Conclusion:

Banks are responding to various opportunities created by the increase of e-commerce. Several banks have beforehand put in place a cost-efficient electronic access channel used for traditional banking products. Furthermore, some banks are planning to offer new products designed specifically for e-commerce. At present banks are playing important role in the competition directly e-commerce.

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E-Commerce in India: Challenges and Opportunities

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Abstract

E-Commerce is the future of shopping. E-commerce is also one of the business options that one will have to explore in future. E-Commerce is growing with swift pace in our country. Backed by increasing internet users' base and favourable demographics, Indian E-Commerce Industry has registered impressive growth in the last few years. There are tremendous opportunities of growth in E-Commerce in future also. But there are certain challenges which need to be addressed properly. In the present paper an attempt has been made to study the present status of E- Commerce in India, examine the challenges of E-Commerce and discuss the future of E-Commerce in India.

Keywords : *E-Commerce, Growth, Online, India, Internet.*

Introduction

E-commerce stands for electronic commerce and caters to exchange of products, services and information via internet. Electronic commerce is more than just buying and selling products online. It includes the entire online process of developing, marketing, selling, delivering, serving and paying for products and services. It is doing business online. It includes any commercial activity that takes place directly between a business, its partners, or its customers through electronic communication and digital information processing technology. E-Commerce is a modern business methodology that addresses the needs of the organisations, merchants and consumers to cut costs while improving the quality of goods and services and increasing the speed of service delivery. India has shown tremendous growth in the E-Commerce segment. E-Commerce has become an important tool for small and large businesses

worldwide, not only to sell to customers but also to engage them. Although the transition from traditional purchasing to online purchasing was very slow initially in Indian market because of less number of internet users due to lack of internet facility and awareness in public. But now the situation has changed and the e-commerce industry is growing rapidly in our country.

Objectives of The Present Paper:

- To study the present status of E-Commerce in India.
- To examine the barrier of E-Commerce in India.
- To discuss the future of E-Commerce in India

Research Methodology:

Research Methodology is the systematic and theoretical analysis of the methods applied to a field of study. It includes the process used to collect information and data for the purpose of making decisions. In the present paper, the secondary source of information has been used. The data has been collected from journals, books and websites.

Categories/Models of E-Commerce:

The different categories or Models of E-Commerce are as follows:

B2B (Business to Business):

Under B2B model one business sells to other business. Companies doing business with each other such as manufacturers selling to distributers, wholesalers selling to retailers are the examples of B2B e-commerce model. Pricing under this model is based on quantity of order and is often negotiable. Chinese E-Commerce Giant Alibaba is the example of B2B model.

B2C (Business to Consumers):

This is the usual from of E-Commerce. In this model business sells products and services directly to consumers over the internet. They display their products or services on their Websites or Apps and the consumers can order the product or service directly on their Websites or Apps. If an individual is buying a pair of shoes by placing an order to Flipkart.com is an example of B2C model.

C2B (Consumer to Business):

Consumer to Business E-Commerce model involves consumers selling products or services to business. In C2B consumers create value and business consume that value. For example, when a consumer writes, reviews or when a consumer gives a useful idea for new product development than consumer is creating value for the business if the business adopts that inputs. In C2B consumers can offer products and services to companies and the company pay the consumers. We can see the C2B model at work in blogs or internet forums in which the author offers a link back to an online business thereby facilitating the purchase of a product, for which the author might receive affiliate revenues from a successful sale.

C2C (Consumers to Consumers):

C2C is a business model that facilitates the transaction of products or services between customers. C2C provide an innovative way to allow customers to interact with each other. C2C involves the electronically facilitated transactions between consumers through some third party. A common example is the online auction, in which a consumer posts an item for sale and other consumer bid to purchase it, the third party generally charge a flat fee or commission. The sites are only intermediaries, just there to match consumers.

Review of Literature:

(Elizabeth & McGregor, 2000) in their paper analysed the impact of e-commerce on consumers, public policy, business and education. A discussion of public policy initiatives, research questions and ideas for future research was given.

(Dasgupta & Sengupta, 2002) in their paper examined the future and prospects of e-commerce in Indian Insurance Industry.

(Abhijit, 2013) in his paper opined that e-commerce has unleashed yet another revolution, which is changing the way businesses buy and sell the products and services. New methodologies have evolved. The role of geographic distances in forming business relations is reduced. With the development of 3G and 4G wireless communication technologies, the internet economy will continue to grow robustly.

(Raghunath & Panga, 2013) concluded that initially, new internet users would be reluctant to conduct any kind of business online, citing security reasons as their main concern. In order to increase consumer adoption of e- services, the source of consumer confusion, apprehension and risk need to be identified, understood and elevated. E-Commerce provides tremendous opportunities in different areas but it requires careful application for consumer protection issues.

(Madhukar Sarode, 2015) in his paper concluded that ecommerce is future of shopping and gap has been reduced between manufacturer and consumer due to e-commerce. There is vast scope for e-commerce in India but due to weak cyber law, people are facing challenges in India.

(Saxena, 2015) in her paper concluded that e-commerce plays a pivotal role in Indian society. It plays an important role in upgrading and developing the Indian economic system. It provides support to small and medium enterprises to flourish their business. E-commerce also faces some challenges like lack of cyber laws and lack of computer education etc.

(H. Ramchandani, 2016) in her paper concluded that the retail e-commerce sales in 2015 as a percentage of total retail sales in India accounted for approximately 0.9% of all retail sales in India. However this figure is expected to grow in near future and is estimated to reach 1.4% in 2018. E-Commerce has greatly impacted the business of physical retailers' especially small retailers. International e-retailers are giving a strong competition to domestic ones. However physical retailers still have a very good standing in the Indian market as Indian consumers generally like to inspect the goods before making any purchase.

Present Scenario of E-Commerce in India:

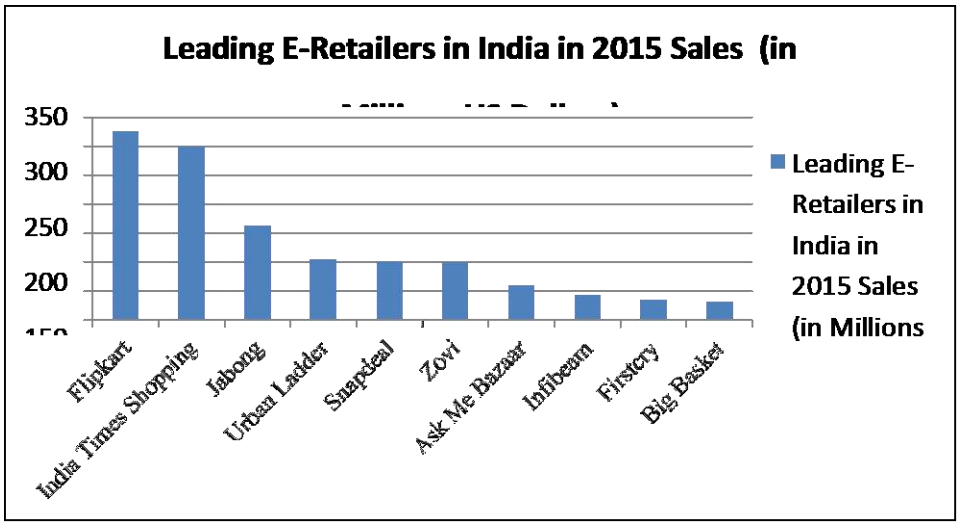
E-Commerce in India is still in a growing stage, but it offer tremendous opportunities for developing countries like India. The e-commerce sector in India started their operations late nineties among business to business users (B2B). Business to Consumers (B2C) e-commerce started in 1996 in the form of matrimonial portals. The cost and the speed of internet was the limiting factor for their growth at that time. The first E-Commerce website in India was rediff.com, which was one of the most trafficked portals for both Indians and non – residents Indians. Last five years have seen a rise in the number of companies enabling e-commerce technologies and the internet in India. Major Indian portal sites have also shifted towards e-commerce instead of depending on advertisement revenues. Today E-Commerce has become an integral part of our society. There are websites providing any number of goods and services. These websites provide almost all categories of goods and services on a single site. These sites target the buyers of every possible product or service. These websites are known as Multi Product E-Commerce Sites. There are also Single Product E-Commerce Sites, which deal in specialised field only. Technology is changing the way of shopping. Out of the total internet users in India, 60% visit e-commerce sites. Favoured demographics and growing internet users' base helped in adding the growth. Growth shown by Indian players like Flipkart, India Times, Snapdeal etc. and huge investors' interest around these companies showed the immense potentials of the market. The Table 1.1 and Graph 1.1 depict the leading e-retailers in 2015 in India.

Table 1.1: Leading E-Retailers in India in 2015

E-Retailer	Sales (in Millions US Dollers)
Flipkart	325.96
India Times Shopping	300
Jabong	163.06
Urban Ladder	105.68
Snapdeal	101.52
Zovi	100
Ask Me Bazaar	60.5

Infibeam	43.78
Firstcry	35.74
Big Basket	31.71

Source: (Statista, 2017)



Graph1.1

Source: (Statista, 2017)

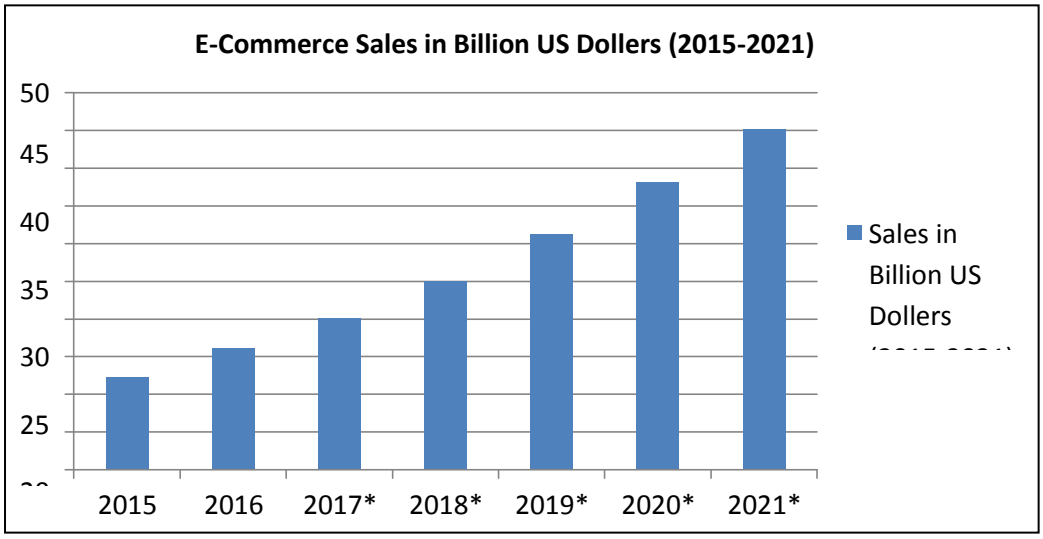
Future of E-Commerce in India:

The E-Commerce sector in India is growing rapidly in India. The internet users' base in India might still be mere 400 millions which is much less as compared to developed nations of the world, but it is expanding day by day. The accelerating growth of e-commerce in India is due to internet penetration and easily available smart phones. Furthermore the favourable demographics and government effort of digitalisation is also pushing the growth of e-commerce sector in India. Retail sector is one of the largest growing sectors in India at present, which is expected to grow in future with an increasing rate. Table 1.2 and Graph 1.2 show the growth of e- commerce sales from 2015 to 2021.

Table 1.2

Years	E-Commerce Sales in Billion US Dollars (2015-2021)
2015	12.19
2016	16.08
2017*	20.01
2018*	24.94
2019*	31.19
2020*	38.09
2021*	45.17

Source: (Statista, 2017)



Graph 2.2

Source: (Statista, 2017)

Table 1.2 and Graph 1.2 highlights the growth of e-commerce sales from 2015-2021. It is clear from the table and the graph that the e-commerce sale is showing an increasing trend. It was 12.19 Billion Dollars in 2015 which rose to 16.08 in 2016. It is expected to grow with an increasing pace in the

coming years also. It is expected to reach at 45.17 Billion Dollars in 2021, which is almost 4 times the sale of 2015.

Barriers of E-Commerce in India: Poor Internet Facilities:

Internet is considered the backbone of the e-commerce. But the penetration of internet facilities in India especially in rural area is very less. Speed of Internet is also the major challenge in our country. No doubt we are moving towards 4G internet services but still a lot has to be done.

Feeling Unsecure:

Feeling unsecure by customer is one of the major and continuing challenges for e-commerce in our country. Customers have to be confident about the integrity of the e-dealers and payment process before making any purchase order online. Risk of hacking and cyber crimes are also there. Privacy has also become a major concern for consumers with identity theft and impersonation. Security challenges are not restricted to consumers only in e-commerce, corporate firms also face security challenge as their vital information, records and reputation is at stake.

Logistic and Supply Chain:

Logistics and supply chain has been the major challenge to the e-commerce companies. Most of the population in India lives in villages. To reach the consumer in the village is a big challenge. The e-commerce companies' needs to invest more on setting up warehouse and signing up more suppliers across the country to ensure customers get order delivered by nearest suppliers.

Cash on Delivery (COD):

Cash on delivery is big problem for e-commerce companies. In the era of digital payments, cash on delivery is still the most favoured mode of payment used by the consumers. This mode is very expensive for e-commerce companies. Sometime courier companies take 30-40 days to return the cash collected from customers to dealers. If the customer return the product than it becomes very expensive for the company as the company pay two way courier charges.

High Competition:

There is a cut throat competition among the player in the e-commerce market. With intense competition, the profitability of the of the companies decreases as they use aggressive pricing strategy and offer huge discounts and commissions.

Tax Structure:

Tax structure is another factor for lesser growth of e-commerce sector in India in comparison to other developed countries like USA and UK. In India there are different types of taxes and these taxes create accounting problems to online business. Some states are even charging separate tax on e-commerce transactions. Government has implemented the GST Act, which is expected to solve this problem to great extent.

Absence of Cyber Laws:

Absence of cyber laws to regulate the online business transactions is another bottleneck to e-commerce in India. The new technology has created huge legal uncertainty in our country. The existing Consumer Protection Act 1986 needs to be amended to update and widen the scope of the Act.

Physical Purchase:

Most of Indian customers are more comfortable in buying product physically. They want to see and touch the product before buying. So they do not prefer to buy product online.

Conclusion:

E-Commerce has made the shopping easy. The E-Commerce Industry in India is growing rapidly despites many challenge. E-commerce industry is one of the largest growing industries in India at present. The sale of e- commerce industry is expected to grow by almost 4 times by 2021 than the sales of 2015. This unprecedented growth in E-Commerce is due to increase in smart phones and internet users, 3G/4G internet services, awareness in public, government initiative of digitalisation, advanced shipping and payment options, entry of foreign e-business players etc. Government should take steps to provide a proper legal framework so that hurdles in the growth of e-commerce are reduced to minimum.

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The Impact of E-Commerce on Small Business

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Abstract

E-Commerce is a phenomenon that is emerging rapidly between businesses all over the world and it has affected the businesses at all sizes in many aspects it has highlighted the management information System. E-Commerce is a way of conducting businesses over the internet. Though it is relatively new concept. It has the potential to you alter the traditional from of economic activities. it can be broadly defined as the process of buying or selling of good or services using an electronic medium. Already it asset such large sector as communication, finance, trade, education, health and government. The integration of E-Commerce and businesses will bring a renaissance in marketing function as it present opportunities to get close to the customer to bring the customer inside his business to explore new product ideas and pretest them again real customer. A small business may is a business with small number of employees. These businesses are normally privately owned Corporation, partnership, sole. They play a very important role in economics. Small businesses are source of new jobs.

Keywords : *E-commerce, small business, management information system, marketing etc.*

Introduction

E-commerce e or electronics commerce is a methodology of modern business which address the requirement of business organizations. It can be broadly defined as the process of buying or sailing of goods or services using an electronic medium such as internet. A client who purchase on the internet is called cyber consumer. E-commerce is not only limited to online sale but also cover preparation of

estimate online consulting of user, provision of an electronic catalog, access plan to point of sale, real time management of product availability, online payment delivery tracking and after sale-service.

Objectives:

The most commonly cited objective of the impact of Electronic Commerce on small business are -

1) To know the theoretical concept of E-commerce.
2) To know the e-commerce model of businesses.
3) To study the impact of e commerce on small businesses
4) To study the benefits of E-commerce to small businesses as well as consumer.
5) To study the barriers to E-commerce.

Positive Impact of E-Commerce on Small Businesses:-

The fast expansion of E-commerce is the most important recent trade in small businesses start ups it has helped firms to expand and create new businesses much easier and faster than before as it has provided new way of doing business.

1) **International Reach :**

   It has helped businesses to reach domestic and international market with minimum cost to find the best and most efficient suppliers, expand the businesses, attract more customers and collaborate and find the best suitable partners for the business.

2) **Reduces Expenses:-**

   This is also the main advantage of website designing as once the website is design for you it greatly reduces the cost of hiring and offline organization for marketing websites design also promote your businesses without customer charges, such as electricity bills, in house expenses associate to offline marketing, when you decide to use website designing all work is being done for you. You do not have to go to any specific location to promote your business as the design website is accessible all over the world.

3) **Mass Customization:-**

E-Commerce has revolutionized analyze the way consumer by good and services. The processing allow for product and services to be customize to the customer requirement.

4) **Lower Telecommunication Cost:-**

The internet is much cheaper than value added network (VAN) It is also chipper to send tax or email via the internet than direct dialing.

5) **No more 24-hour time constraint:-**

Businesses can be contractual or contact customer a supplier at any time.

6) **Tracking Progress and Stocks is Easier:-**

Thanks to the various E-Commerce tools available to small businesses tracking of stock and progress of business is way easier than and it was before since almost all the transaction are digitalized tracking the progress of the businesses is way easier than it used to be. This means that owners can understand the condition commodities and services which are on demand and focus more on them for the better of their business.

7) **Easy and Sustainable Scalability: -**

E-Commerce has readily made it very easy for small businesses to scale and sustained their growth. the availability of informatics and data make it very easy to businesses to track their growth and predict their growth or lack thereof.

8) **Improve Delivery Process:-**

This can range from the immediate delivery of digitalize or electronic goods such as software for audio visual files by downloading via the internet to the online tracking of the progress of packages being delivered by mail or courier.

9) **More Choices:-**

customers not only have a whole range of product that they can choose from and customize but also an international selection of supplier.

Negative Impact of E-Commerce on Small Businesses: -

1. The risk for small businesses is particularly higher they suffer from lack of capital and knowledge. There are also many problems with the security problem with ordering and delaying of order.
2. One of the major barrier is the lack of innovation culture due to insufficient reward from the market business are not simulated enough to introduce innovation.
3. Stated that many small businesses operate in an environment that does not encourage the process of innovation and development of the strategy at the same time E-Commerce can be irrelevant to businesses and manager feel that it is not appropriate to participate in the E- Marketplace.
4. Low access and increasing cost of capital is major obstacles.
5. Insufficient awareness and skill in the small businesses for implementation of e-commerce as a major obstacle.
6. In small businesses the power decisions are concentrate in the hand of owner or the manager and their understanding of the potential benefits is crucial for implementing the E-Commerce.
7. Small businesses are bad prepared for the introduction of e-commerce. They make insufficient planning processes and underestimate the technological sophistication and complexity of the process.
8. The lack of long-term businesses strategy.
9. Lack of investment on training programs to successfully implement of e-commerce strategy
10. The security risk is increasing with the openers of the businesses to the world and with the fear affect negatively the internal environment can terminated the process of e-commerce adoption.
11. Because E-Commerce interaction is a virtual and personal contact is missing the parties are suffered from Lack of trust.

Conclusion:-

Today most of the small businesses are use E-Commerce as a marketing tool and putting much importance on the information exchange and informing customers for the product and services. It show that the improve internal efficiency and increase information exchange are main benefit from E-

Commerce for the small businesses. By increase in information exchanges it cover much larger customer area and it attract new customers. It highlights that it is the new way of finding customer which allow decreasing of their expenses for advertisement and at the same time businesses experience cost saving by improved day to day operations.

But many of small businesses will not gain substantial benefit for there improvement because of the character of there businesses or market which does not encourage the process of innovation.

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Study of the Factors influencing Online Buying Behaviour of Customers

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Abstract

Online shopping is a phenomenon that is growing rapidly nowadays. Web based business advertising in India is developing at a quick pace. The purpose of this paper is to look at the factors driving online shopping and to develop an understanding of the factors influencing the online shopping by the consumers. This study is aimed to look into how consumers' loyalty, trust, service quality and other related factors affects the online buying behaviour of customers and the selection of a seller. With the rapid development of network technology and electronic commerce, e- marketing had been formed and developed gradually. The number of Internet users are increasing at a very rapid rate which ultimately increasing the size of online purchasing of goods and services but there are certain factors which affects the buyers buying behaviour, which every e-commerce business need to understand in order to attract new customers as well as to retain the existing.

Keywords : *Online Shopping, Consumer Buying Behaviour, Influencing Factor, E-Commerce*

Introduction

Web based business is one approach to do e-business. Web based business is a plan of action that makes correspondence, data combination; exchange and information trade digitised and diminishes the points of confinement of the reality. Contrasted with the customary plan of action, internet business has incredible preferences. For instance, the whole procedure including the transportation of merchandise and ventures is completely automated; in this manner, the expense might be extraordinarily decreased. Client Loyalty is reliant on trust and satisfaction. Trust fulfilment of a client is reliant on after deal

administrations. Trust is likewise reliant on information security and payment techniques. Satisfaction is affected by giving e-services like comparison-shopping and user interface. Fulfilment of a client is additionally subject to value, item quality, administration quality, and conveyance time and merchandise exchange.

Advantages and Disadvantages of E-commerce

ADVANTAGES:

• Faster purchasing/selling methodology, just as simple to discover items.

•Buying/selling 24/7.

•There is no limitation for any business of land limits. In this manner furnishing themselves with the gigantic reach to their clients.

•The operational expenses are exceptionally low with better nature of administrations.

•No need of physical organisation set-ups because of which it is anything but difficult to begin and deal with a business.

•Customers can undoubtedly choose items from various sellers without going to any place physically.

DISADVANTAGES:

- Need For a device with internet access.
- Credit Card fraud
- Security Issues
- Inability To Identify Scams
- Expense and Expertise Needed For Ecommerce Infrastructure

E-commerce Market in India

These are three major players in the Indian e-commerce market having the maximum share and customer base.

1. **Amazon.in**

   Fundamentally, Amazon is an American based internet business organization having it's headquarter in Washington. It is the biggest Internet-based retailer in the world by complete deals and market capitalization.Amazon.in caters a wide scope of item classifications including clothing, hardware things, software, and videos, books and so Forth. All clients on Amazon.in and the Amazon versatile shopping application have a simple and advantageous access to more than 160 million items crosswise over many classes.

2. **Flipkart.com**

   Flipkart is Bengaluru based biggest Indian e-commerce website. Sachin Bansal and Binny Bansal Together established the organization in October 2007. Principally, the site is prevalent For books, motion pictures, music, gaming items, mobiles, versatile adornments, cameras and so on. Likewise, it sells PCs, PC accessories, network segments, software, peripherals, home and kitchen machines, TV and video items, clothing, personal and medicinal services items.

3. **Snapdeal.com**

   In February 2010, Kunal Bahl and Rohit Bansal established Snapdeal. The organization has the head office in Delhi. At first, the organization began as a daily deals stage however extended in September 2011 to turn into an online commercial centre. The site has more than 300000 merchants' crosswise over India. Additionally, the organization offers more than 30 million items crosswise over 800+ various classes from more than 125,000 regional, national, and global brands and retailers.

There are a lot more organizations in a similar portion like ebay.in, India.alibaba.com. Paytm, headquartered in Delhi NCR, has fundamental business of Paytm instalment gateway and Paytm wallet administrations. Paytm is additionally into internet business For the sake of Paytm Mall. It sells a wide scope of items including clothing, gadgets, sports things, books, motion pictures, stationery and so Forth.

In the service segment, there are players like bookmyshow.com, makemytrip.com which give ticket booking administrations. They additionally contain an immense share in the Indian E-commerce websites.

Online Shopping

Online shopping is a standout amongst the most widely recognized types of web based business. As per the kind of web based business exercises' articles, web based business has three modes.

Competition

Now there is immense competition in e-commerce market as we see new players emerging every day. As a result, consumers can compare or differentiate between two competing products and services. To survive the hard e-commerce competition, companies must enhance e-loyalty.

Loyal Customers

Steadfast clients are normally prepared to pay a more expensive rate and are even more understanding when something turns out badly, and their needs can be effectively fulfilled because the seller knows better what the clients' desires are. Along these lines, the accomplishment of some outstanding sites can be portrayed to some extent to their capacity to keep up the pinnacle of client dependability. Some portion of the accomplishment of Amazon.com, the main online book-selling webpage, For instance, is described by its high level of client steadiness, with 66% of buys made by returning client. Faithful clients are likewise more ready to prescribe the seller to different clients, expanding the client base at no extra publicizing expense. The accomplishment of some outstanding sites has been a result of their capacity to cut down the expenses of drawing in new clients through such a referral framework. In reality, one of the manners in which trust is fabricated is through a procedure of transference whereby people start confiding in others and these others start trusting an individual they trust.

E-commerce

E-commerce is the purchasing and selling of goods and administrations, or the transmitting reserves or information, over an electronic network, fundamentally the web, or in other words it straight forwardly supports the commerce by methods of Electronic (networked) connections. It is reclassifying the very foundations of competitiveness in wording of information content and information conveyance components. To compete successfully, firms need a helpful classification plot for the e-commerce showcase on the products and administrations that they offer. The e-commerce industry is comprised of an assortment of products and administrations, including: equipment components; software products; network components; other transmission network administrations (Storey, et.al (2000)), business exercises, For example, retail shopping, banking, contributing and rentals are also included as a section of E-commerce. Indeed, even organizations that are running on a little scale level which provide personal administrations, For example, hair and nail salons can profit from e-commerce by providing a site to maintain their business. Other basic components incorporate scholarly administrations, frameworks integration, and consulting (Niranjanamurthy, et.al 2013).

According to (Niranjanamurthy, et.al 2013) electronic commerce is fast growing field in today's scenario and has changed the way of doing business in a modern world, though it has its own advantages and disadvantages.

On each progressive day slowly and continuously E-commerce is playing a major role in online retail business and people utilizing this technology step by step are expanding all over the world. It is a dynamic, rapidly evolving phenomenon. In such an environment, directors need to rapidly survey where the business is going and learn how to compete, form key coalitions, and make and dissolve virtual organizations (Gefen, 2002).

E-loyalty

Sensible evidence has shown that customer e-loyalty has a prompt impact on the profitability and survival of online companies (Reichheld and Schefter, 2000). Satisfaction and trust are both important factors to make commitment on customer loyalty (Norizan and Nor Asiah, 2010). Customer loyalty, when all is said in done, increases profit and growth from various perspectives (Chow and Holden, 1997) to the degree that extending the rate of the business. Nowadays, e-commerce companies have become more and more keen on recognizing, understanding and holding their profitable customers since they are confronting strong competition. Building superior customer loyalty is basic to the profitability and survival of the online environment. The essential for another customer becoming a loyal return customer is his satisfaction. Anderson and Srinivasan, (2003) characterized customer satisfaction as "the contentment of the customer with deference to his or her prior acquiring knowledge with a given electronic commerce firm". One way of expanding customer satisfaction is through superior administration quality. Since quality administration is something that customers normally need and esteem, customers show the longing to come back to the vendors who provide Top notch administration. Fulfilled customers are more willing to recommend that administration to others and spread positive word of mouth. A more elevated amount of customer satisfaction will lead to more noteworthy dimension of customer loyalty (Zins, 2001).

Seen administration quality has a noteworthy effect on customer satisfaction. Thusly customer satisfaction has a noteworthy impact on trust. Word of mouth (WOM) is a precursor of rehash visits or repurchase intentions as loyalty is constructed through WOM which is essentially influenced by customer satisfaction and trust. (Norizan and Nor Asiah, 2010)

E-Satisfaction

Satisfaction or fulfilment response involves two helps a outcome and comparison referent. Conceptually it might be portrayed as a judgment of a consumer's web retail understanding as compared to traditional retail experience. The essential difference between an E-commerce setting and traditional business functionality is in a traditional business the interaction occurs between two people while in E-commerce individuals participate with the machines.

Same as traditional business the accomplishment of an E-commerce platform is seriously destitute on the overall satisfaction of the customer and relationship upkeep with the customer. Rust and Lemon, 2001 battle that the relationship of an E-commerce platform with its customers depends seriously on its E-organization capacities. Anderson and Srinivasan, 2003 Conclude that the impact of e-satisfaction on e-loyalty is profound in the proximity of consumer-level moderator factors, For instance, convenience motivation and purchase size, and business-level factors, For instance, trust and saw regard.

Various interviews held with online shoppers recommended that e-satisfaction was the result of online shopping convenience, advancing (product information and product offerings), site plan, and money related security. (Szymanski and Hise, 2000) found that product offerings had a basic impact on e-satisfaction. Similar results were also obtained in a substitute context by (Burke, 2002) who found that online shoppers felt most content with the convenience, product quality, regard provided, and product selection offered by the online shopping information. Considering the effect of return policy, it affects both on satisfaction and overall loyalty (Ivan, Ilenia, and Borghesi, 2018).

Return Policy

Market policy changes give retailers the opportunity to rethink how they handle returns. According to late research from Royal Mail, practically half of shoppers (47 percent) said they would be doubtful to shop with a retailer again if it charged for returns, and 60 percent would be progressively dubious to shop with them again following a troublesome returns association.

Doubtlessly a well thought-out returns policy is fundamental to good customer relations. Vendors need to pick whether to offer one return policy – for point of reference, Amazon's – or unmistakable policies for each business focus/channel or for various product offerings (for show: low-end versus Top notch).

Some associations set policies based on the most generous business focus policy. If merchant's choose an 'Amazon-style' return policy with minute returns and free conveying, this can be promoted up front as part of a company's picture. Unquestionably, a direct online returns process helps drive arrangements and bond customer loyalty – and overlooking the impact of a poorly considered returns opportunity can be costly.

Product Quality

So far, much of the organization displaying composing has focused only on organization quality, and has not taken into consideration the way that the majority of organization organizations in reality provide both slippery organizations and unquestionable products. The importance of product quality in customers' getting decisions has, however, been totally recognized in the district of solid goods (Brucks, Zeithaml, and Naylor, 2000). (Cronin Jr, Brady, and Hult, 2000) prescribed that future research should fuse some consideration of the quality of the products associated with the organizations, thusly underlining the significance of product quality in consumers' decision-creation process.

Delivery Time

Order fulfillment and quick movement structures are basic to e-loyalty growth as the other factors A thoughtful logistics system that guarantees a snappy movement after the checkout process contributes to customer satisfaction which in this manner adds to good behavior(Gommans, Krishman, and Scheffold, 2001)

E-Services

In electronic commerce there are various tools being used by the organization provider in order to provide e-organizations which fuse after arrangement organizations, advanced product look, comparison shopping, and portion methods.

1. **After Sale Services**

   E-rear ends pass on advantages in two stages: before the arrangement occurs, and after the arrangement is over.After-sales organization quality impact satisfaction, which in this manner impacts behavioural intentions. Along these lines, after-sales organizations impact the overall offering and as such, the quality of the relationship with customers. (Rigopoulou et.al ,2008)

2. **Comparison Shopping**

   With number of stores online and many more included constantly it is troublesome for customers to find what they need and make a decision to buy E-organization functions

incorporated on e-commerce goals that can easily provide online shoppers with decision making (For instance, dell.com) by providing joins to viable web crawlers win e-customers and get them to make a purchase. (Turban et.al, 2002)

3. Payment Methods

Providing important Payment administrations like E-portion mechanized cash guaranteed transactions in secure way with information encrypting data on security similarly cash on transport makes customer comfortable making a transaction online.

Quality of Service

The factor of administration quality or satisfaction of the customer from a business generally comprises of two major concepts. One of them is that is the customer satisfied at an individual measurement and the other concept is what driven to the perception of the customer which will lead to word-of-mouth.

1. The main factor generally comprises of five variables like significant quality, reliability responsiveness, and empathy. Presently, when we talk with regards To web based business there is various assortment with regards To online business. The Factors will in general change. In internet business the variables that suggest consumer loyalty are - convenience, web engineering, responsiveness personalization customization and confirmation.

Hence, the manner in which a client checks an item relies upon the limit To which it is undeniable vague (Rushton and Carson, 1989). In an internet business setting, saw organization is portrayed as the customer judgment of the superbness and the nature of electronic organization contributions in the Virtual business focus where there is no eye To eye connections

2. The straight Forwardness of utilization measurement is one of the fundamental measurements to wrap up the preventions of Tangibility since it is something that online business is insufficient concerning when contrasted with conventional business. Notwithstanding, convenience is a factor that gives web based business influence above over conventional business. This measurement consolidates things, For instance, usefulness, Accessibility of data, and simplicity

of requesting and route (Reibstein, 2002). This measurement likewise reflects the organization supplier's ability and thusly induces trust (et.al 2004).

3. Web composition is another essential factor this measurement consolidates substance, association, ostensibly captivating, charming, and fulfilling It is similarly expected that a website interface frequently clearly impacts the reliability of the system (Bhattacharya and Luo)

4. Responsiveness can be comprehended as the organization's will To stay in contact with those clients who have a few inquiries and request understanding client necessities and building up the organization dependent on responsive analysis updates organization fulfilment and furthermore trust (Gummerus et.al 2004).

5. Customization can be seen as an agent of sympathy criteria of customary business. It overwhelmingly demonstrates how a stage can satisfy the individual solicitations of the client. The idea of personalization comprise of four segments in a web based business setting: individual consideration, tendencies understanding the needs of clients and data as For the items change. At last, the affirmation measurement tends to the client's clear security. In conclusion, the confirmation dimension addresses the customers' apparent security and protection. Protection and morals are viable components in an e-commerce settings

Price

Cost is one of the major persuasive factor attracting shoppers to partake in any kind of development on the E-business stage. Honestly, 85% of the buyers slant toward shopping web based relying on the cost data that they get from a particular website

Cost can be described as the purchaser's perceptual portrayal or unique impression of the target cost of the item (Jocoby and Olson, 1977). As per (Reichheld and Schefter, 2000), any e-business that has esteem reach out of a focused sort (i.e: neither Too high nor excessively low) are bound To create and keep up client faithfulness. Zeithaml, (1988) Proposed that buyers understands and unravels cost in different ways that are noteworthy To them. Agreeing To(Karlsson, Kuttainen, Pitt, and Spyropoulou, 2005), observations For the greater part of the shoppers identifying with the refinement between the

conventional arrangements channels and online arrangements channels is that the expenses are typical To be lower on the online channel when contrasted with customary channel because of its lower exchange costs and the disposal of centre individuals.

Moreover, buyers are skilled To acquire more cost data on the web and contrast crosswise over other online retailers and few ticks which even more turns on the fulfilment of the purchasers Towards internet shopping and trusting in the E-trade stage.

User Interface

Purchasers are in contact with the internet business organization supplier through the UI (Gummerus, et.al (2004)). Consumer loyalty is unequivocally identified with UI (Alam and Yasin, 2010)

Nature of the User interface honestly impacts the consumer loyalty as it enables easy utilization of the organization and gives the physical verification of how skilled is the internet business organization supplier in the market (Park and Kim, 2003). Shoppers trust is developed on an online business webpage when there is simplicity of route, great interface structure and customer course present (Roy, Dewit, and Aubert, 2001).

Instinct of the web based business application is emphatically identified with client dedication (Srinivasan, Anderson, and Ponnavolu, 2002). Great UI engages basic item determination To the watchers of the site or application. Data structure, route plan, and visual structure are UI structure factors, which are key precursors To trust and fulfillment Towards site crosswise over social orders.

Data Security and Privacy

Trust of the e-commerce consumers is affected by the taking care of their private information by the administration provider (Flavia 'n and Guinalý'u, 2006)]. Sites can expand trust by raising security and giving a confirmation of information wellbeing To the customer (WarringTon, Caldwell, and Abgrab, 2000).

Conclusion

Building superior customer trust is basic for profit earning, survival of the online environment. Therefore; administrators should have the required knowledge and abilities To exploit of this factor. This investigation created a superior comprehension about which predictors influence e-loyalty, legitimately and in a roundabout way, as the factors not only influence e-loyalty, yet also affect each other. Overall, the conclusions of this investigation is based on a set of hypothesis which was made amid the exploration and according To The sexual orientation has a positive relationship with various sites/applications utilized by the customer and the amount they spend on the E-commerce platforms however here sex and acquiring behavior of the consumer are autonomous factors. There is a relationship between the occupation of the consumer and their duration of first buy, their purchasing behavior and the amount spent on E-commerce platforms. Customer's family income is reliant on their loyalty towards a specific site/application after a satisfactory buy, their purchasing behavior and the amount spent by them on E-commerce platforms. By encouraging rehash buys among a core of profitable customers companies can start a winding of economic preferences. This loyalty impact empowers them To compensate their employees more generously, provide investors with superior money flows, and reinvest more Forcefully To further improve the esteem conveyed To customers.

Future Scope

A brand's thriving depends energetically on the faithfulness of its clients, a prize that has turned out to be dynamically troublesome To ensure. With so various brands and mechanized experiences promptly accessible, retailers must concentrate on isolating from the challenge inside their online proximity To keep clients interested, associated with and returning.

Conveying pertinent and new substance keeps clients returning. While a definitive objective is to build transformation rates, retailers need a superior comprehension of how clients are shopping. Regularly, clients are visiting a web based business webpage for motivation or instruction and might be keen on hearing what your image needs to state. Not all customers have an item at the Top of the priority list and giving drawing in, crisp substance can enable a customer to choose or drive them To find another item.

Nevertheless, if a customer is seeing the equivalent, static item framework each time they click onto your site, they may lose enthusiasm for your image

Today, shopping ought to be more than acquiring. In the occasion that obtaining was the main target, Amazon might be the main web based business website around. Clients need more; they need regard. This can come in various structures, as how-To recordings and all around requested assistants that give productive data To buyers that are excited For instructive substance. A client can decide not To make a purchase and still leave your site feeling satisfied. This regard is what makes a connection between your image and the buyer, and manufactures the chances that customer will return.

Beneficial substance changes your image into a confided in asset, not just an automated deals rep. So also as you need an essential discussion with someone else, purchasers are hoping To set up huge associations with brands. Steadfastness and arrangements change are the prizes For making that relationship. Buyers can buy an item from wherever, yet they acquired from brands that get them. As we move into 2018, retailers need To organize building client dedication through attracting content For long haul development and accomplishment.

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E-Commerce: An Analytical Review

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Abstract

E-commerce stands for electronic commerce. E-commerce is improving standard among the business community in worlds, about the opportunities offered by E-commerce. E-commerce as part of the information technology revolution became widely used in the world trade in general and Indian economy in particular. With advancements in technology, there have been many changes has been occupied. Indian banks have been playing an essential role with the e-commerce. Present scenario Banks are facing many issues and challenges by the e-commerce.

In the backdrop of all these developments, the present paper attempts to highlight the challenges of e-commerce in Indian banks, and to understand the issues of e-commerce in Indian banks. E-commerce is a boom in the modern business. E-commerce means electronic commerce. Ecommerce (Electronic commerce) involves buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, predominantly the Internet. E-commerce (Electronic commerce) is a paradigm shift influencing both marketers and the customers. Rather e-commerce is more than just another way to boost the existing business practices. It is leading a complete change in traditional way of doing business. This significant change in business model is witnessing a tremendous growth around the globe and India is not an exception. A massive internet penetration has added to growth of E-commerce and more particularly start-ups have been increasingly using this option as a differentiating business model.

Introduction

In the emerging global economy, e-commerce and e-business have increasingly become a necessary component of business strategy and a strong catalyst for economic development. The integration of information and communications technology in business has revolutionized relationships within organizations and those between and among organizations and individuals. Specifically, the use of in business has enhanced productivity, encouraged greater customer participation, and enabled mass customization, besides reducing costs.

With developments in the Internet and Web-based technologies, distinctions between traditional markets and the global electronic marketplace-such as business capital size, among others-are gradually being narrowed down. The name of the game is strategic positioning, the ability of a company to determine emerging opportunities and utilize the necessary human capital skills to make the most of these opportunities through an e-business strategy that is simple, workable and practicable within the context of a global information milieu and new economic environment.

What is E-COMMERCE?

Electronic commerce (or e-commerce) encompasses all business conducted by means of computer networks. Advances in telecommunications and computer technologies in recent years have made computer networks an integral part of the economic infrastructure. More and more companies are facilitating transactions over web. There has been tremendous competition to target each and every computer owner who is connected to the Web.

E-commerce means electronic commerce. It means dealing in goods and services through the electronic media and internet. E-commerce involves carrying on a business with the help of the internet and by using the information technology like Electronic Data Interchange (EDI). ECommerce relates to a website of the vendor on the Internet, who trades products or services directly to the customer from the portal. The portal uses a digital shopping cart or digital shopping basket system and allows payment through credit card, debit card or EFT (Electronic fund transfer) payments. A more complete definition is: E-commerce is the use of electronic communications and digital information processing technology

in business transactions to create, transform, and redefine relationships for value creation between or among organizations, and between organizations and individuals (C. Nisha and G. Sangeeta, 2012). The main types of electronic commerce are: business-to-business (B2B); business to- consumer (B2C); business-to-government (B2G); consumer-to-consumer (C2C); and mobile commerce (mcommerce).

E-commerce business models:-

To get the maximum benefit from eCommerce business, a large number of companies are adopting different innovative ideas and operating models including collaborating with online marketplaces or setting up their own online stores. Some key operating models include the following:

1. Marketplace and pick-up & drop is a model where sellers often partner with leading marketplaces to set up a dedicated online store on the latter's website. Here sellers play a key role of managing inventory and driving sales. They leverage on high traffic on the marketplaces' website and access their distribution network. However, the sellers have limited say on pricing and customer experience.

2. Self-owned inventory is a model where the e-Commerce player owns the inventory. The model provides better post purchase customer experience and fulfilment. It provides smoother operations due to ready information on the
inventory, location, supply chain and shipments, effectively leading to better control over inventory. On the flipside, however, there are risks of potential mark downs and working capital getting tied up in inventory.

3. Private label reflects a business where an eCommerce company sets up its own brand goods, which it sells through its own website. This model offers a wide-ranging products and pricing to its customers and competes with branded labels. Here, margins are typically higher than third-party branded goods. White label involves the setting up of a branded online store managed by the eCommerce player or a third party.

4. The brand takes the responsibility of generating website traffic and providing services by partnering with payment gateways. It helps build trust, customer affinity and loyalty and provides better control of brand and product experience.

E-Commerce Facilitators:

(1) Internet:

A massive internet penetration has added to growth of E-commerce. Internet and smart phones are becoming an integral part of every life. Internet is no more a source of information but has become an important tool for shopping, learning, communicating and even getting service from plumbers, carpenters, doctors etc. Supply chain is also becoming leaner and smarter as digital platforms are helping to better connect with the customers which significantly reduces the waste and supporting to green businesses. Over the past 15 years the ICT revolution has driven global development in an unprecedented way. With an immense progress in technology, internet and its services have led to creation of new markets

(2) Payment Gateways:

A payment gateway is an e-commerce application service provider service that authorizes credit card payments for e-businesses, online retailers, bricks and clicks, or traditional brick and mortar. The life blood of online business is the payment routes which comprises credit card, debit card, online banking payments, electronic funds transfer. The world is transforming from cash to digital money and thus there is a need of payment gateways for sustainable future ecommerce.

(3) Analytics:

Analytics is the scientific process of transforming data into insight for making better decisions. Analytics helps businesses to gather, organize, analyze, and report on everything their customers do. The massive increase in the volume of data has forced the businesses to focus on analytics to understand the behavior of the customer. E-tailor need to have real time access to information to 4 measure return on online investments and optimize the channel mix. There are basic analytics capabilities available with

the ecommerce players like basket size analysis, average order value, conversion ratio but we need deeper analytics solution for actionable insights of the consumer.

(4) Social Media

Businesses are increasingly making use of social media in order to market their goods and services. Social media refers to websites and computer programs that allow people to communicate and share information on the internet using a computer or mobile phone. Social media has played a great role in brand building and informing various offers to the customers. It also helps in getting the feedback about the product or service. It provides a platform for brand building, advertisements, developing a community of trusted users, spreading word of mouth etc.

(5) Autonomous Vehicles

An autonomous vehicle is a motor vehicle that uses artificial intelligence, sensors and global positioning system, coordinates to drive itself without the active intervention of a human operator. The age of the autonomous car is coming, and it's coming fast. Purchasers of autonomous vehicles will have more time to view emails, search the web, buy new products, and see advertisements all around them. With autonomous cars, vast digital marketing experience will present itself. These purchases and search patterns can be tracked to help companies tailor their marketing campaign to capture this new segment. The scope of big data just got much bigger, but will become so tailored and predictive in the years to come that we may never have to manually adjust anything again.

(6) 3D Printing

A 3D printer is a device that's capable of making a three-dimensional object from a digital design. It uses something called "additive manufacturing" -- a layered process that bears some similarity to the way an ink-jet printer sequentially layers its colors on a flat piece of paper. It is expected that 3D printing, might one day blow away manufacturing of the kind we've been used to since the Industrial Revolution shook up agrarian life in the early 19th century. 3D printing is creating a market in designs that are meant to be printed by the buyer -- or a third-party manufacturer unrelated to the designer. The end product isn't sold -- it's the design that's sold, along with a license for it to be printed. Buried in

corners of the Internet are marketplaces where budding designers are selling their plans for printing at home or in the workplace. Customers can 5 use their own printers or they can buy the design and have it printed on the marketplace's printer and then delivered.

E-Commerce Trends -A New Business Revolution in India:

E-commerce is a boom in the modern business. It is a paradigm shift influencing both marketers and the customers. Rather e-commerce is more than just another way to boost the existing business practices. It is leading a complete change in traditional way of doing business. This significant change in business model is witnessing a tremendous growth around the globe and India is not an exception. Moreover, E-Commerce has every potential to curb the pollution and thus producing significant influences on the environment. Buying goods and services via E-Commerce allows consumers the freedom to choose when and where to shop and the opportunity to research the product, the seller, and any other available options. Shopping has been revolutionized through the availability of online information. Just about anything that can be bought in a merchandise store can be bought via E-commerce, even perishables like groceries. And consumers have embraced these possibilities around the globe. The effects of e-commerce are already appearing in all areas of business, from customer service to new product design. It facilitates new types of information based business processes for reaching and interacting with customers like online advertising and marketing, online order taking and online customer service. In now days E-commerce uses the WWW at least some point in transaction lifecycle. It can also reduce costs in managing orders and interacting with a wide range of suppliers and trading partners, areas that typically add significant overheads to the cost of products and services. For developing countries like India, e-commerce offers considerable opportunity. In India it is still in nascent stage, but even the most-pessimistic projections indicate a boom. There has been a rise in the number of companies' taking up e-commerce in the recent past. Major Indian portal sites have also shifted towards e-commerce instead of depending on advertising revenue.

Types of E-Commerce

Classifying Ecommerce Business Based on Nature of Participants. The two most common participants in ecommerce are businesses and consumers. Based on this we can come up with four primary ecommerce types:

1. Business to Business Ecommerce (B2B Ecommerce)

In this type of ecommerce, both participants are businesses. As a result, the volume and value of B2B ecommerce can be huge. An example of business to business ecommerce could be a manufacturer of gadgets sourcing components online.

2. Business to Consumer Ecommerce (B2C Ecommerce)

When we hear the term ecommerce, most people think of B2C ecommerce. That is why a name like Amazon.com pops up in most discussions about ecommerce. Elimination of the need for physical stores is the biggest rationale for business to consumer ecommerce. But the complexity and cost of logistics can be a barrier to B2C ecommerce growth.

3. Consumer to Business Ecommerce (C2B Ecommerce)

On the face of it, C2B ecommerce seems lop-sided. But online commerce has empowered consumers to originate requirements that businesses fulfill. An example of this could be a job board where a consumer places her requirements and multiple companies bid for winning the project. Another example would be a consumer posting his requirements of a holiday package, and various tour operators making offers.

4. Consumer to Consumer Ecommerce (C2C Ecommerce)

The moment you think of C2C ecommerce eBay.com comes to mind. That is because it is the most popular platform that enables consumers to sell to other consumers. Since eBay.com is a business, this

form of ecommerce could also be called C2B2C ecommerce (consumer to business to consumer ecommerce).

5. M-commerce (mobile commerce)

M-commerce (mobile commerce) is the buying and selling of goods and services through wireless technology-i.e., handheld devices such as cellular telephones and personal digital assistants (PDAs). Japan is seen as a global leader in m-commerce.

Challenges & Opportunities

Though the e-commerce sector is growing exponentially in India, it faces several challenges like customer mindset, high cash on delivery (COD) based orders, reach ability, poor courier services and other policy-related issues.

High competition:

There are several players doing the same business in almost the same way. With intense competition the profitability is decreasing due to aggressive pricing strategies, heavy discounts and offers, free delivery, high commissions to affiliates and vendors during sale period to name a few. Online retailers lost around ` 10 billion because of heavy discounts to attract customers.

Poor logistic & supply chains:

E-commerce companies live on the reach and the ability to stock more items than physical stores as these are their biggest differentiators. With this benefit also comes the challenge of robust supply chains and logistics networks, which are not comparable and developed to global standards in India. The courier companies do not have nationwide delivery networks and also do not have the skills of handling commercial value goods. They also do not have the skills for handling COD, recheck return parcels, and

other complexities related to digital sale. This is forcing several e-tailers to establish their own delivery network across the country.

Payments:

E-commerce companies have to offer a wide variety of payment options including COD, credit and debit card, internet banking, among others. 60-70% of the payments are made using the COD option in India as customers fear to share information online and do not trust the website for secure payments. Moreover, the return percentage of orders in COD is much higher compared to online payments.

Conclusion:

Banks are responding to opportunities created by the rise of on-line commerce. Many banks have already put in place a cost-efficient electronic access channel for traditional banking products. In addition, a number of banks are planning to offer new products designed specifically for e-commerce. Now a day's banks are playing vital role in the competition towards e-commerce.
According to the PwC report Future of India - The Winning Leap, emergence of new technologies, especially mobile, in India has sparked a social change that's difficult to quantify. While mobile, internet, and social media penetration and growth can be quantified, describing the changes in social values and lifestyles that have accompanied those trends is far more challenging. New technologies such as virtual walls and virtual mirrors will further help improve the retail customer experience, thereby encouraging greater consumption. Virtual mirrors let shoppers 'try on' clothes and accessories virtually before making buying decisions. Virtual walls help customers scan barcodes for items on an electronic wall using their mobile phones and place orders with retailers.

Our study, being conceptual in nature, raises a number of opportunities for future research, both in terms of theory development and concept validation. More empirical research will in fact be necessary to refine and further elaborate findings in the area of ecommerce. The study is an eye opener for the researchers who have ample interest in E-commerce. This review paper will offer them the leads

towards the better understanding of the key variables of the recent E-commerce platform that is revolutionizing the business

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E-commerce: Issues and Challenges in Indian Society

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Abstract

Gone are the days when the commercial activities like the exchange of goods and services for money, between parties, take place only in the traditional mode i.e. the customer has to go the market, look at the variety of products, choose the required stuff and the purchasing them by paying the specified amount. But with the advantage of E-Commerce. People can buy goods. Pay bills or or transfer money in just one click. Many people still prefer traditional business over E-Commerce, due to their dogma that the latter is not safe; however, this is just a myth. Both modes have their pros and cons, so we have simplified you the traditional business Vs E-Commerce.

Keywords : *Electronic commerce, Issues, Challenges, Indian Society*

Introduction

In the changing economy, e-commerce, e-business and e-banking have increasingly become a required part of business community in world. E-commerce means electronic commerce which include trading and facilitation of trading in product such as mobile banking, electronic fund transfer, internet marketing, online transaction processing, reselling of product, electronic data interchange, inventory management system and automated data collection systems. It implies overseeing the merchandise and service throughout the electronic media and web. Who offer items or services directly to the client from the gateway with the facilitated of a digital shopping cart or digital shopping basket scheme and permits payment through internet banking or credit or debit cards, e-commerce or e-business includes carrying on a business with the assistant of the web and by utilising the various information technology.

Objective of Study:

The study has following objectives

- To understand the concept of Electronic Commerce
- To study the Issues of E-commerce
- To highlight the challenges of E-commerce in Indian Society

Research Methodology:

The researchers used an explanatory research technique based on past literature from respective journal, annual reports, newspaper, magazine, internet sites of academic literature of Electronic Commerce. Considering the objectives of the study descriptive type research design is adopted to have more accuracy and rigorous analysis of research study. The accessible secondary data is extensively used for research paper.

Models of E-commerce:

There are four main models of E-commerce, which are available in the existing literatures which are as follows:

Business to Business Model (B2B):

In this type of E-commerce, together participants are businesses. The B2B model is predicted to become the biggest value sector of the industry within a few years. B2B model involves electronic transactions for ordering, purchasing, selling and reselling between houses.

Business to Consumer Model (B2C):

This is famous type of E-commerce. In this type of E-commerce, involves transaction between business organisation and consumer. These model any Business organisation that sells its product and service to consumer with the help of internet. In this model business organisation display the price catalogue on the internet, consumer have been searching various sites, ordering the product after comparing the product with other company assist of debit/credit cards or cash on delivery.

Consumer to Consumer Model (C2C):

In this model involves transaction between consumers. In the C2C model a consumer sells directly to another consumer. Online sale web sites that make available a consumer to advertise and sell their product online to another consumer. However, it is necessary that both the seller and the buyer must register with the transaction site. While the sell wants to pay a fixed fee to the online sale house to sell their products, the buyer can offer without paying any fee. The site brings the purchaser and seller together to conduct deals.

Consumer to Business Model (C2B)

In this model transaction created between consumer and a business organisation. It is similar to the B2C model, the dissimilarity is that in this case the consumer is the seller and the business organisation is the buyer. In the C2B transaction, has been determination of the price of particular product by the consumer.

Issues of E-commerce:

E-commerce is especially significant for increasing for expending to local customer reach. Also export their product easily with the help of e-commerce websites. But for sure, seller can't just setup their online store and wait for customer to do shopping without providing any good service. One of the mainly significant problems of e-commerce is customer satisfaction.

Customer satisfaction is required to make the potential customer faithful customers being aware of the problems they face with that case them not to revisit their sites would be good for them. Here are some of the issues that the customers face with and the things you should do.

Wrong product delivery:

The basically huge complaint of the customers is the wrong product delivery. If they haven't got too many orders, it would be good to check each order one by one. If they have sent more than 20 order a day, it would be good to use computerization systems or to employ additional staff.

Shipping damage product:

When each order should be check before shipping they can gain the customer trust by informing then about the possible problems which may occurred during the shipping. Also giving information about

their rights if any problem occurred will be a good idea. Customer had an agreement with the shipping company to be much more alert with their products, with every damage which may occur during the shipping process, we can give penalty to the shipping company. By this way they will be more careful and we will be able to send undamaged product.

The importance of delivery time:

The delivery time is generally standard for e-commerce stores. Seller should inform to the customers about minimum and maximum delivery times of the products they want to buy. If this standard time is exceeded for the reason that of shipping company, informing the customer about the issue and presenting a gift or a coupon to them would be nice calling them by way of phone and telling that the problem is occurred because of the shipping company will make them trust.

Technical problem on e-commerce site:

Every e-commerce sites should be online twenty four hours. Some of the customers do online shopping at night. So sellers should be able to serve all day. This depends on the number of staff they have. Also a night shifter would be pleasant for giving online support. Running twenty four hours online is also based on their infrastructure.

Extra expenses for your customers:

It is very crucial to point to all of the costs that the customer would pay before the ordering process. Most of the time, the supplementary expenses are the shipping expenses. Try to provide a free shipping service for their customer. But if they can't just inform the customers about the shipping the expenses (or any other) providing more payment gateways to the customers is also another option.

Reduce return problems:

Products return is always irritating for e-commerce website managers, for the reason that it cost a lot of time and money. If the customer has so much return problem, possibly they want visits their store again for sure it is very normal to have return problem. But the key part is holding it as minimum. If protect the customer rights and help them in this return period without any problem. They can increase their sale thanks to their approach.

Insufficient product descriptions:

The product description is most significant for search engine and the customers. Every sellers have been try to give every information of the product such as the size, weight, features and technical details also the warranty and support information is very important other than that using high declaration and high qualities photos will assist the customer to provide the right decision.

Challenges of E-commerce:

E-commerce is present situation in the selling and buying of goods and services. The sellers and the buyers had been faced major challenges which carrying out business transactions through internet is as follows

Lack of Internet Infrastructure:

Electronic device and internet is the backbone of e-commerce. Unfortunately internet access in India is so far cheerlessly low down against other developed country, e-commerce remains far absent from the common man. It is difficult for e-commerce to reach last people in the country.

Digital illiteracy:

Digital illiteracy is one of the major challenge in the India, because need of digital literacy have been must to user for e-commerce. On the other hand, the continuous migration of skilled computer engineers to other countries has demanded India of software engineers. This has posed a real risk to India information technology industry. Noticeably, answer to this problem lies in curbing the computer brain drain and uses the same in the country.

Virus problem:

With the reason of computer virus is also a formidable problem in the execution of e-transactions is confirmed by the computer originated as Manila. The offenders causing virus must be awarded prevention punishment, otherwise related assaults in future cause lasting blows to the quite young e-commerce in India as well.

Lack of security:

This is a big challenge of the e-commerce. E-commerce market is the near lack of cyber laws to control transaction on the net. The India's Information technology bill passed by the Indian parliament on 17 May, 2000 intends to get legislatively the rising areas in e-commerce. The bill also intends to assist e-commerce by removing lawful uncertainties formed by the new technology.

Conclusion:

From the above research article we can conclude that e-commerce plays an essential role in Indian society. It plays an important role in upgrading and developing the Indian economic system. It provides support to small and medium enterprises to do well their business. On the other hand e-commerce faces some challenges also which we need to work on like of cyber laws, lack computer education, lack of proper infrastructure etc.

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Pros and Cons of E-commerce

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Abstract

E - Commerce allows consumers to electronically exchange goods and services with no barriers of time or distance. Electronic commerce has expanded rapidly over the past five years and is predicted to continue at this rate, or even accelerate. In the near future the boundaries between "conventional" and "electronic" commerce will become increasingly blurred as more and more businesses move sections of their operations onto the Internet..

Keywords : *E – Commerce, Pros and Cons*

Introduction

E-Commerce stands for electronic commerce and caters to exchange of products, services and information via internet. Electronic commerce is more than just buying and selling products online. It includes the entire online process of developing, marketing, selling, delivering, serving and paying for products and services. It is doing business online. It includes any commercial activity that takes place directly between a business, its partners, or its customers through electronic communication and digital information processing technology. E-Commerce is a modern business methodology that addresses the needs of the organisations, merchants and consumers to cut costs while improving the quality of goods and services and increasing the speed of service delivery. India has shown tremendous growth in the E-Commerce segment.

Objectives

- To study the present status of E-Commerce
- To study the Pros and cons of E-Commerce

Pros of E-commerce

Increasing customer base: The customer base is every business's main concern, online or off. When online, a business doesn't have to worry about getting the best property in town, people from around the world have access to their products and can come back at any time.

Rise in sales: By not managing a storefront, any business will have more sales online with a higher profit margin. They can redistribute money to make the consumer shopping experience faster and more efficient. While being available to international markets, more products will sell.

24/7, 365 days: If it's snowing and the roads are closed, or it's too hot and humid to even step outside in the summer, or a holiday that every store in town closes, your online business is open for consumers 24/7 every day of the year. The doors never close and profits will keep rising.

Expand business reach: A great tool on the internet is…translation! A business online does not have to make a site for every language. With the right marketing, every consumer around the globe can find the business site, products and information without leaving home.

Recurring payments made easy: With a little research, every business can set up recurring payments. Find the provider that best suits your needs and billing will be done in a consistent manner; payments will be received in the same way.

Instant transactions: With e-commerce there is no more waiting for the check to clear or a 30-day wait for certain other types of payment. Transactions are cleared immediately or at most two to three days for the money to clear through the banking system.

Cons of E-commerce

Privacy and security: Before making instant transactions online, be sure to check the sites certificates of security. While it may be easy and convenient to shop, no one wants their personal information to be stolen. While many sites are reputable, always do your research for those with less than sufficient security.

Quality: While e-commerce makes everything easily accessible, a consumer cannot actually touch products until they are delivered to the door. It is important to view the return policy before buying. Always make sure returning goods is an option.

Hidden costs: When making purchases, the consumer is aware of the product cost, shipping, handling and possible taxes. Be advised: there may be hidden fees that won't show up on your purchasing bill but will show up on your form of payment. Extra handling fees may occur, especially with international purchases.

Delay in receiving goods: Although delivery of products is often quicker than expected, be prepared for delays. A snow storm in one place may throw off the shipping system across the board. There is also a chance that your product may be lost or delivered to the wrong address.

Need access to internet: Internet access is not free, and if you are using free wifi, there is the chance of information theft over an unsecure site. If you are wearing of your public library, or cannot afford the internet or computer at home, it may be best to shop locally.

Lack of personal interaction: While the rules and regulations of each e-commerce business is laid out for you to read, there is a lot to read and it may be confusing when it comes to the legalities. With large or important orders, there is no one you can talk to face to face when you have questions and concerns.

Security issues: While businesses make great efforts to keep themselves and the consumer safe, there are people out there that will break every firewall possible to get the information they want. We have all seen recently how the biggest and most renowned business can be hacked online.

Credit card issues: Many credit card businesses will take the side of the consumer when there is dispute about billing—they want to keep their clients, too. This can lead to a loss for e-commerce business when goods have already been delivered and the payment is refunded back to the consumer.

Extra expense and expertise for e-commerce infrastructure: To be sure an online business is running correctly, money will have to be invested. As an owner, you need to know transactions are being handled properly and products are represented in the most truthful way. To make sure you get what you need, you will have to hire a professional to tie up any loose ends.

Needs for expanded reverse logistics: The infrastructure of an online business must be on point. This will be another cost to the business because money will need to be invested to ensure proper handling of all aspects of buying and selling, especially with disgruntled consumers that want more than a refund.

Sufficient internet service: Although it seems that everyone is now on the internet all the time, there are still areas in which network bandwidth can cause issues. Before setting up an e-commerce business, be sure your area can handle the telecommunication bandwidth you will need to run effectively.

Constant upkeep: When a business has started as e-commerce, they must be ready to make changes to stay compatible. While technology grows, the systems that support your business must be kept up to date or replaced if needed. There may be additional overhead in order to keep data bases and applications running.

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A study on impact of E-Commerce on Indian economy

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Abstract

This paper exposes the economic as well as social impacts of e-commerce in India. India's e-commerce market has the potential to grow than four folds to US$ 150 billion by 2022 supported by rising incomes and surge in internet users. The increasing perception of smartphones and internets are expressively contributing to the growth of e-commerce. Convenient payment process, speedy delivery of product, high discount, customer friendly policies and easy returns are driving more customers towards online shopping. With growing internet penetration, internet users in India are expected to increase from 445.96 million in 2017 to 829 million by 2021. As of December 2018, internet subscribers in India stood at 604.21 million people. Each month, India is adding approximately 10 million daily active internet users to the internet community supporting the ecommerce industry which is the highest rate in the world. Online shoppers in India are expected to reach 220 million by 2025. India's internet economy is expected to double from US$125 billion as of April 2017 to US$ 250 billion by 2020, majorly backed by E-commerce. Digital transactions are expected to reach US$ 100 billion by 2020. Through its 'Digital India' campaign the Government of India is aiming to create a trillion dollar online economy by 2025.

Keywords : *e-commerce, Digital India, Internet subscribers*

Introduction

In a nutshell, e-commerce is just the process of buying and selling produce by electronic means such as by mobile applications and the Internet. Ecommerce refers to both online retail as well as electronic

transactions. Ecommerce has hugely increased in popularity over the last decades, and in ways, it's replacing traditional brick and mortar stores. Ecommerce enables you to buy and sell products on a global scale, twenty-four hours a day without incurring the same overheads as you would with running a brick and mortar store. For the best marketing mix and the best conversion rate, an Ecommerce venture should also have a physical presence; this is better known as a click and mortar store.

What are the Major Types of E-commerce?

There are six types of e commerce which are briefly explained below

1) **Business-to-Business (B2B):** Quite self-explanatory, **B2B ecommerce** occurs when a transaction is made between two businesses.
2) **Business-to-Consumer (B2C):** This is when stores sell products to consumers. Online retail usually works on a business to consumer model.
3) **Consumer-to-Consumer (C2C) :** C2C e commerce occurs when consumer sells directly to consumers. Eg : ebay.
4) **Consumer-to-Business (C2B) :** Consumer to business models is slightly less common in **ecommerce**. This materializes when a consumer sells or contributes money to a company.
5) **Business-to-Administration (B2A) :** This type of ecommerce happens when transactions are carried out online between companies and public administration.
6) **Consumer-to-Administration (C2A) :** Lastly, this type of **ecommerce** involves all transactions between individual people and public administration.

Overview of the e-commerce retail supply chain

E-commerce retail supply chain contains of numerous stages such as procurement, bar-coding, quality checking, storage of goods, packaging, dispatch and return to vendor etc.

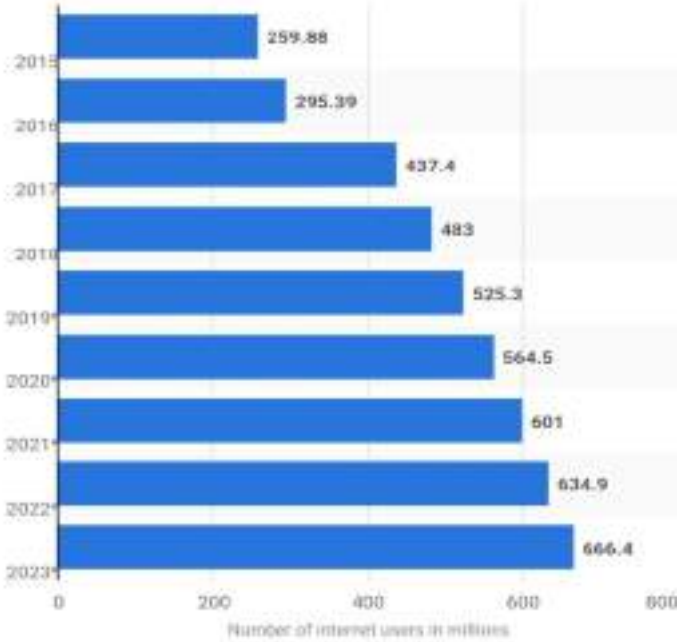
Research Methodology

This research is based on secondary data which are collected from several sources i.e. research papers, publications from Ministry Of Commerce, Govt. of India etc. which is available on the internet.

Analysis of Data

A. Internet users in India

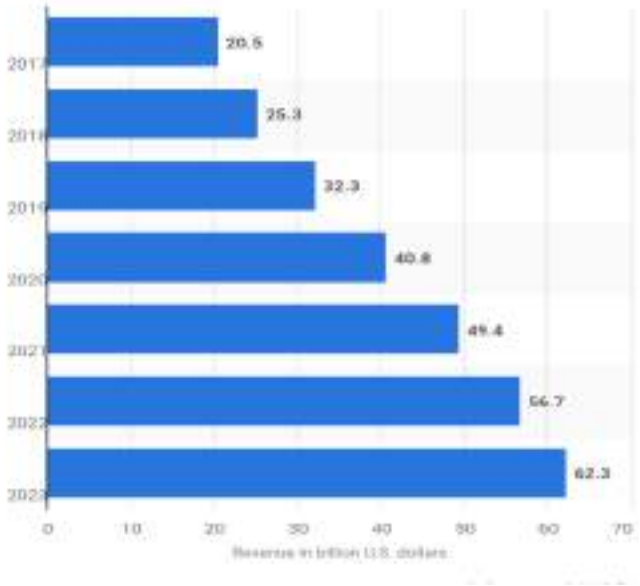
The statistic provides information on the number of internet users in India from 2015 to 2023. In 2018, India had 483 million internet



users. This figure is projected to grow to 666.4 million internet users in 2023. Despite the untapped potential, India already is the second-largest online market worldwide. The majority of India's internet users are mobile phone internet users, who take advantage of cheap alternatives to expensive landline connections that require desktop PCs and infrastructure. As of 2016, India had 320.57 million mobile phone internet users and forecasts estimate 492.68 million Indian mobile phone internet users by 2022.

A. Revenue of e-commerce from 2017 to 2023

The graph presents the e- commerce market revenue in India in 2017, and provides a forecast until 2023. E-commerce revenue in India is expected to grow to 62.3 billion U.S. dollars in 2023 rising by staggering 204 percent from 2017.



E-TAILING MARKET BY BUSINESS MODEL

E-COMMERCE

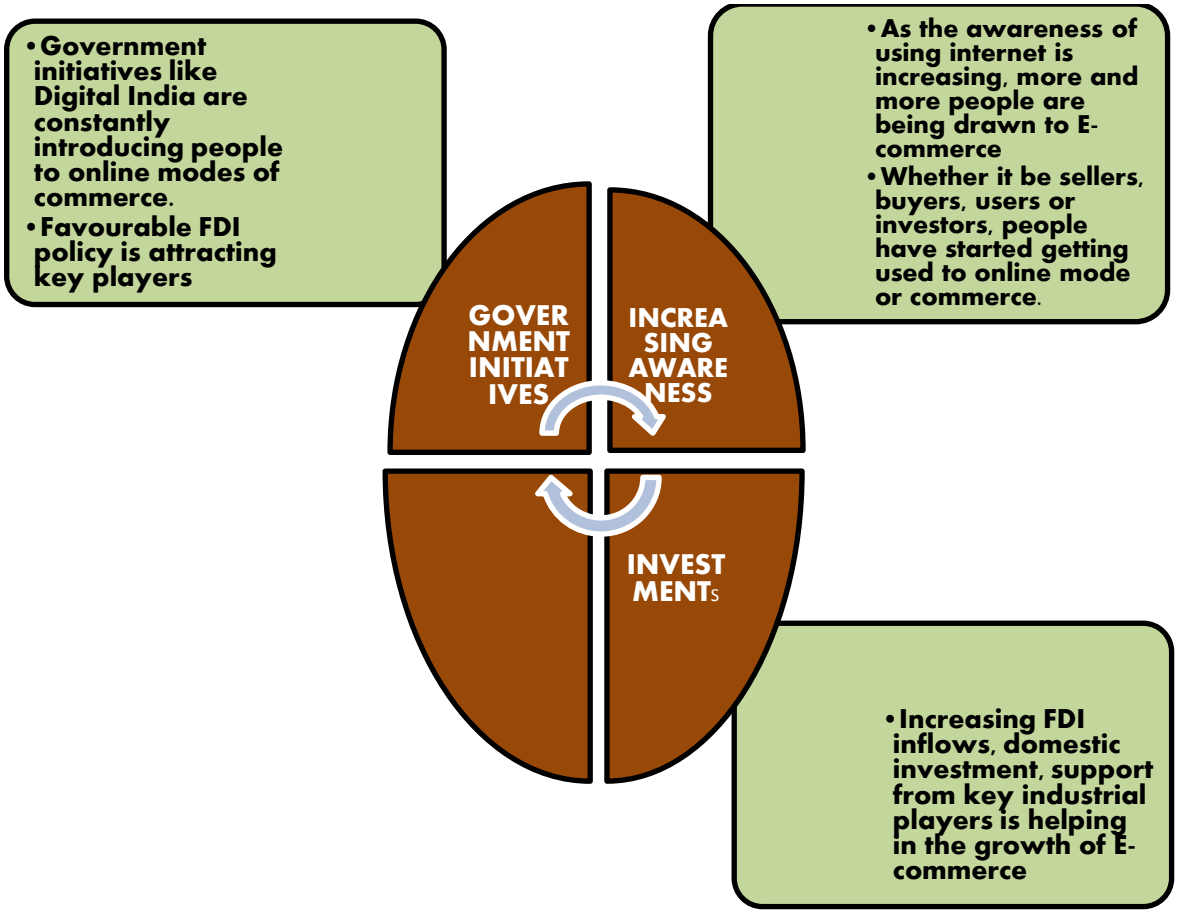
MARKETPLACE MODEL

- **Marketplace model adheres to the standards and directions of a zero inventory model. For example Naaptol, eBay and Shopclues.**
- **The E-commerce marketplace becomes a digital platform for consumers and merchants without warehousing the products. Marketplaces do offer shipment, delivery and payment help to merchants by tying up with some selected logistics companies and financial institutions.**
- **The new FDI policy rules and regulations in the E-commerce market have permitted 100 percent FDI in the E-commerce marketplace model under the automatic route.**

INVENTORY-LED MODEL

- **Inventory led models are those shopping websites where online buyers choose from among products owned by the online shopping company or shopping website take care of the whole process end-to-end, starting with product purchase, warehousing and ending with product dispatch.**
- **A few examples of such are Jabong, Yepme and LatestOne.com**

GROWTH DRIVERS FOR E-COMMERCE



DEMOGRAPHIC FACTORS AFFECTING E-COMMERCE

Convenience of E-commerce	• Use of chatbots and personal assistant • Discounts and EMIs • Choice of different options to buy/sell same product without being limited by geographic area.
Tier II and Tier III cities provide major sales	• Metro cities account for most online shopping in absolute numbers. • Less densely populated regions generated a larger proportion of online sales. (60%)
Millennials are the most active	• shoppers between 25 and 34 years of age were most active on E-commerce portals • most mobile and internet users are youths

FACTORS DRIVING E-COMMERCE GROWTH

Increasing Investments	• In December 2018, Flipkart's parent company invested Rs 1,431 crore (US$ 201 million) in its wholesale entity in India . • In March 2019, Paytm is about to raise US$ 1.5-2 billion from its existing investors SoftBank Vision Fund and Alibaba's financial affiliate Ant Financial .
Cashless Transactions	• Paytm logs 400 million plus transactions in a month. • Value of Unified Payments Interface (UPI) transactions grew to more than Rs 1.33 trillion (US$ 19.10 billion) in March 2019.

Mobile Commerce	• Online retailers' growing reach in town and cities beyond metros is driven by an increasing in usage of mobile internet in the country. • Rise in smartphone usage is expected to reach 50 per cent penetration by 2020.
Internet content in local languages	• incremental growth in mobile subscribers can be credited mainly to people who are comfortable with languages other than English. • In August 2018, Flipkart acquired an artificial intelligence company Liv.ai, which converts speech to text in 10 Indian languages.
Growth of logistics and warehouses	• Indian warehousing sector is expected to grow by at least 100 per cent by 2021. • With logistics and warehouses attracting an estimated investment of nearly US$2 billion by 2020, the reach of online retailers to remote locations is set to increase.

GOVERNMENT AND PRIVATE INITIATIVES INFLUENCING E-COMMERCE

Indian Government must have to play a significant role in the promotion and growth of these technologies throughout Indian industries.

Internet Saathi	Under this project Google and Tata Trust have collaborated to improve internet penetration among rural women in India.
E-commerce draft policy	In February 2019, the Government of India released the Draft National e-Commerce Policy which encourages FDI in the marketplace model of e-commerce. Further, it states that the FDI policy for e-commerce sector has been developed to ensure a level playing field for all participants. According to the draft, a registered entity is needed for the e-commerce sites and apps to operate in India.

Udaan	Udaan is a B2B online trade platform to connect small and medium size manufacturers and wholesalers with online retailers and also provide them logistics, payments and technology support.
Bharat Net	In the Union Budget of 2018-19, government has allocated Rs 8,000 crore (US$ 1.24 billion) to BharatNet Project, to provide broadband services to 150,000 gram panchayats. The project has a target to connect 250,000 gram panchayats by March 2019. The government has also planned to set up 500,000 Wi-Fi hotspots for providing broadband service to 50 million rural citizens.
Digital India	The government has also allocated Rs 3,073 crore for the Digital India Mission in 2018-19. Under the Digital India movement, government launched various initiatives like Udaan,Umang, Start-up India Portal etc.
Make in India	By providing various educational and skills development resources.

Economic and social impacts

- With the growing competition in the e-commerce market, players who are able to adapt and innovate quality products will gain profit and enhance the economy of the country.
- Both electronic learning and mobile learning enhances the access of the good educational institutions in remote areas

- The rise of online sales in the developing markets will encourage retailers to go online for global expansion
- Mobile banking reduces the transaction cost of banks which increases access to financial services through rapidly growing mobile market.
- E-marketplaces are working well in India due to high fragmentation on the supply side.

Conclusion

After taking a complete view of the industry trends, it is seen e-commerce is emerging as an important tool to certify exploding growth of Indian economy. It has the scope to lead India into an Economic superpower. With a rapidly growing internet penetration e-commerce offers an attractive option for the retailers to expand. To achieve this, there should be more investments in supporting infrastructure and innovative and game changing business models in India.

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E-Commerce New Trends, Strategies, Issues, Challenges and Best Practices

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Abstract

The use of electronic commerce by business in developed countries has grown considerably in the past few years. This paper examines how e-commerce applications, issues, challenges, new trends, strategies. The findings from this paper demonstrate both the challenges face in using e-commerce in developing countries and the opportunities emerging from this new Internet platform for development. E-commerce stands for electronic commerce. E-commerce is improving standard among the business community in worlds, about the opportunities offered by E-commerce. E-commerce as part of the information technology revolution became widely used in the world trade in general and Indian economy in particular. With advancements in technology, there have been many changes has been occupied. Indian banks have been playing an essential role with the e-commerce. Present scenario Banks are facing many issues and challenges by the ecommerce. In the backdrop of all these developments the present paper makes an attempt to, highlight the challenges of e-commerce in Indian banks, and to understand the issues of e-commerce in Indian banks. It raises key challenges that are being faced by consumers relating to ecommerce Ethical issues. Finally many companies, organizations, and communities in India are beginning to take advantage of the potential of e-commerce; critical challenges remain to be overcome before e-commerce would become an asset for common people.

Keywords : *Electronic commerce New Trends, Challenges, Issues and Banks.*

Objectives :

To highlight the challenges of ecommerce. .

• To understand the issues of e-commerce.

The E-commerce strategy:

It may be useful for development organizations to consider the many issues involved before embarking on an ecommerce initiative, in relation to the organization's mandate, development goals, and organizational structure. The primary it involved,

1. Resource Expansion: The organization may have to approach e-commerce as a resource expansion activity that uses business strategies and a full marketing approach.

2. Capital Costs: A development organization undertaking e-commerce activities should consider whether it wants to incur higher costs, with the possibility of cost recovery from an expected higher level of sales. Development organizations pursuing ecommerce activities may have to decide between varieties of options for their online selling activities, depending on their financial capacities. These options can be divided into, 1. Technical hardware. 2. Site design and maintenance. The organization will have to decide whether it wants to invest in setting up its own in-house server, depending on the organization's size and computing requirements, or find a third party that is willing to host the site on its server

3. Staffing/Training: Along with the capital costs comes the assessment of whether the organization has trained staff that can maintain an e-commerce site, including both the technical staff mentioned above, and the administrative staff that can process and fulfill the orders. Is the current staff able and willing to take on these activities? Will capacities be taken away from other projects and activities? Will the organization have to employ new staff to concentrate on e-commerce? Would it be cheaper/more effective to hire an outside company to do this? Can the organization afford these costs? Will the staff have to receive training? All of the above questions are important, not only for the success of the e-commerce initiative, but also to ensure that capacities are not taken away from other development activities.

4. Marketing: As good marketing strategy forms the basis of the operational strategy, in order to attract customers to the e-commerce site and ensure a steady pattern of sales. Development organizations often need not employ capital-intensive marketing programs in order to have a successful marketing campaign. The marketing strategy can be divided into two main categories: 1) online markets and 2) offline markets.

A). **Online markets**: It includes those customers that have already used, or are able to use, e-commerce for purchasing products. The Internet can be used as a tool in itself in order to capture online markets. Techniques include identifying other sites that would be willing to link to the organization's e-commerce site, or cross selling on these sites. These sites include organization partners and sites that offer links to development information and online resources

B)**. Offline markets**: include those individuals and organizations that have access to the Internet, but have never used e-commerce or are unlikely to do so. In these cases, "traditional" means of marketing can be employed to attract the potential customer to the e-commerce site. This includes advertisements in publications, newsletters, announcements at conferences and events, mailings to members, and supporters. Other innovative means of marketing can be employed, such as advertising promotional offers (e.g., "buy one, get one free," or announcements of discounted items) on the home page of the development organization's website.

6. Types of products offered for sale online: These products could include general information and educational publications on a particular development theme (e.g., a survey of regional environmental issues). Such products could draw in new markets, such as schools and libraries.

Human skills required for E-Commerce: It's not just about E-commerce. It's about redefining business models, reinventing business processes, changing corporate cultures, and raising relationships with customers and suppliers to unprecedented levels of intimacy.

Internet-enabled Electronic Commerce:

1. Web site development

2. Web Server technologies

3. Security

4. Integration with existing applications and processes Developing Electronic Commerce solutions successfully across the Organization means building reliable, scalable systems for,

• Security

• E- commerce payments

• Supply- chain management

• Sales force, data warehousing, customer relations

• Integrating all of this existing back-end operation.

Issues:

This massive increase in the uptake of ecommerce has led to a new generation of associated security threats, but any ecommerce system must meet four integral requirements:

a. **Privacy** – information exchanged must be kept from unauthorized parties.

b. **Integrity** – the exchanged information must not be altered or tampered.

c. **Authentication** – both sender and recipient must prove their identities to each other.

d**. Non-repudiation** – proof is required that the exchanged information was indeed received.

Ethical issues: The following ethical issues related to ecommerce.

1**. Privacy** : Privacy has been and continues to be a significant issue of concern for both current and prospective electronic commerce customers. With regard to web interactions and e- commerce the following dimensions are most salient.

a. Privacy consists of not being interfered with, having the power to exclude; individual

b. Privacy is a moral right. Privacy is "a desirable condition with respect to possession of information by other persons about him/herself on the observation/perceiving of him/herself by other persons".

2. **Security concerns**

In addition to privacy concerns, other ethical issues are involved with electronic commerce. The Internet offers unprecedented ease of access to a vast array of goods and services. The rapidly expanding arena of "click and mortar" and the largely unregulated cyberspace medium have however prompted concerns about both privacy and data security.

3**. Other ethical issues**

Manufacturers Competing with Intermediaries Online."Disintermediation," a means eliminating the intermediary such as retailers, wholesalers, outside sales reps by setting up a Website to sell directly to customers.Disintermediation include music being downloaded directly from producers 2) authors distributing their work from their own Web sites or through writer co-operatives.

Challenges of E-commerce:

Persistent connection with customers

New value for customers

Access to new customers

Scalability

Challenges

Channel conflict

Customer confusion

Investor confusion

Technical Challenges: •

There is a lack of standards for quality, security, and reliability.

• The telecommunications bandwidth is insufficient.

• Software development tools are still evolving.

• There are difficulties in integrating the Internet and software with some existing (especially legacy) applications and databases.

Special Web servers in addition to the network servers are needed. Internet accessibility is still expensive and/or inconvenient.

1) **Poor Knowledge and Awareness**: When it comes to ratio of internet consumers, scenario is not so admirable one. Majority of Indian rural population are unaware of internet and it uses. Surprisingly, most of internet users suffering from poor knowledge on online business and its functionalities A reliable survey reveals that 50% of Indian online users are unaware of the solution of online security. Online Transaction: Most of Indian customers do not possess plastic money, credit card, debit card and net banking system, which is one of the prime reasons to curtail the growth of ecommerce. Nevertheless, in recent years, some of the nationalized banks have started to issue debit cards to all its account holders. This is undoubtedly a positive sign for Indian online entrepreneurs.
2) **Online Security:** In case of start up and small business, Business owners are ignoring the importance of authentic software due to budget constraints. They are even failing to take the initial steps to secure and protect their online business through installation of authentic protection services like antivirus and firewall protection, which indeed a crucial step for successful online business players. In India, maximum number of business entrepreneurs used unauthorized software in their server, which usually does not come with upgraded online security. Affiliation to SSL certificate should be imposed as a mandatory action for every owner.
3) **Cash on Delivery**: Cash on Delivery (COD) has evolved out of less penetration of credit card in India. Most of Indian E-commerce companies are offering COD as one of mode of payment for the buyers. 30%-50% of buyers are also taking advantage of this mode of payment while making purchase of any product and service over internet. COD has been introduced to counter the payment security issues of online transaction, but this mode has been proving to be loss and expensive to the companies. It is seen that majority of the customers denied to make the payment at the time of delivery of the product. Hence, companies tend to lose the sale along with product transit fees.
4) **Logistics and Shipment Services**: In India, logistics and courier services required lots of improvement. While, perfect and strong logistics service is one of the key reasons behind the success

of any online company, India is lagging far behind in this sector as most of the town and small villages are still not covered under serviceable area of many of the courier and logistic companies.

5) **Tax Structure**: Tax rate system of Indian market is another factor for lesser growth rate of e-commerce in India in comparison to other developed countries like USA and UK. In those countries, tax rate is uniform for all sectors whereas tax structure of India varies from sector to sector. This factor creates accounting problem
6) **'Touch and Feel' factors**: Indian customers are more comfortable in buying products physically. They tend to choose the product by touching the product directly. Thereby, Indian buyers are more inclined to do ticketing and booking online in Travel sectors, books and electronics
7) **Fear factor**: Fear of making online payment is a universal psychological factor of Indian customers. With the spread of knowledge on online transactions and its reliability, some percentages of customers have overlooked this fear and they are fearlessly engaging themselves in online shopping. But still, majority of customers are not aware of online transactions and its security.

Best Practices: Business objectives interact with web based applications. What is a web-based business. Business that uses the WWW to fulfill its business process Four basic business processes:

• Information dissemination

• Data capture

• Promotions and marketing

• Transacting with stakeholders

1) Information dissemination

a. Can publish relevant information

b. Can be used in crisis mode

c. Identifying worst case scenarios and providing details

2**) Data capture**

a. Collect information about customers. Two methods.

1. manual input

2. automated

3) **Promotions and Marketing Banner advertising**

a. Affiliate programs

b. Registration with directories

c. Traditional marketing

4) **Transacting with stakeholders**

a. Can display products and services

b. Cross-selling can be implemented

c. Can customize website

d. Can react to competition

e. Can improve relationship

1. Naukri.com – India's premier recruitment site has captured around 50% of the recruitment market.

2. ICICI DIRECT.com - Stock trading simplified, Icicidirect.com is today the country's premier trading portal.

3. Baaze.com -The country's premier shopping site started as an auction site and graduated to be the most popular platform-shopping site.

4. Irctc.com - One of the best things about this site is that a credit card is not an essential requirement for buying tickets here. Instead the site offers a direct debit facility having tied with most of the popular banks.

Conclusion:

Banks are responding to opportunities created by the rise of on-line commerce. Many banks have already put in place a costefficient electronic access channel for traditional banking products. In

addition, a number of banks are planning to offer new products designed specifically for e-commerce. Now a day's banks are playing vital role in the competition towards ecommerce. In conclusion the e-commerce industry faces a challenging future in terms of the security risks it must avert. With increasing technical knowledge, and its widespread availability on the internet, criminals are becoming more and more sophisticated in the deceptions and attacks they can perform. Novel attack strategies and vulnerabilities only really become known once a perpetrator has uncovered and exploited them. In saying this, there are multiple security strategies which any ecommerce provider can instigate to reduce the risk of attack and compromise significantly. Awareness of the risks and the implementation detailed and open privacy policies and strong authentication and encryption measures will go a long way to assure the consumer and insure the risk of compromise is kept minimal.

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"Micro, Small & Medium Enterprises (MSME) and E – Marketplace" Prospects and Potential

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Abstract

India's economic growth story has been written by the two prominent players in the economy in last decade or so. The emergence of Ecommerce is as big fish, while growth & development of MSME is as an economic stabilizer. Both the sectors were mutually exclusive up till long period of time. But the success of both cannot guarantee unless both joined the hands together. The present scene of MSME is one of the highly recruitment potential as well as growing sector, while ecommerce is one growing at rapid pace in Indian commerce space. Various initiatives are initiated by Ministry of MSME to boost the sector through Ecommerce Platform. Still there are immense potential available for MSME for achieve growth and sustainability using Ecommerce.

Keywords : *MSME, E-commerce*

Introduction

Micro, Small and Medium Enterprises (MSME) are the recent game changers in Indian Economy. The growth of the sector has witnessed rapid rise in the latest past. The sector is full of opportunities and timely government support programs also help the sector at large extent.

In India Enterprises have been classified in to two categories:

a) Manufacturing
b) Enterprises engaged in providing or rendering services

Both categories have been further classified in to Micro, small and medium enterprises based on their investment in plant and machinery or equipment's.

Definitions of Micro, Small & Medium Enterprises :In accordance with the provision of Micro, Small & Medium Enterprises Development (MSMED) Act, 2006 the Micro, Small and Medium Enterprises (MSME) are classified as below:

Enterprise Category	Investment in Plant & Machinery for Manufacturing Sector	Investment in equipment for Service sector
Micro Enterprises	Does not exceeds 25 lakh rupees	Does not exceed 10 lakh rupees
Small Enterprises	More than 25 lakh rupees but does not exceed 5 crore rupees	More than 10 lakh rupees but does not exceed 2 crore rupees
Medium Enterprises	More than 5 crore rupees but does not exceed 10 crore rupees	More than 2 crore rupees but does not exceed 5 crore rupees

The MSME sector has not only the contributor for economic development of a country but also plays a significant role in socio – economic development of Indian economy due their in-built advantage like low capital requirement, high employment generation, decentralization of industrial activity, utilization of resources available at local level and encouraging entrepreneur base in a country (Mohanty, 2018).

Growth and Performance of MSME Sector in India:

MSME sector exhibited growth rate of around 13%, this is an impressive growth rate compared to other vibrant sectors in India. 59.7 million Employees are employed in the sector, which are spread over

around 26.1 million enterprises. In terms of value, MSME sector has contribution of 45% of manufacturing output and export contribution is around 40% of the total export made by the country. Establishment of specific Funds for the promotion, development and enhancing competitiveness of these enterprises, notification of schemes for this purpose, progressive credit policies and practices, preference in Government procurement to products and services of the micro and small enterprises, more effective mechanisms for mitigating the problems of delayed payments to micro and small enterprises and assurance of a scheme for easing the closure of business by these enterprises are some of the other features of the Act. ((Syal, 2015).

Boost to the Sector:

Promoting the sector and increase its contribution in the economy, Government of India has notified 'The Micro, Small and Medium Enterprises Development (MSMED) Act in the year 2006 to facilitate the development of those enterprises affected by the issues such as inter-alia the coverage and investment ceiling of the sector and to enhance their competitiveness. Key features of MSMED Act are:

- Establish the national board for MSME headed by Ministry of MSME to examine the factors affecting the promotion and development of MSME's, also to review the programmes and policies of Central Govt. and make recommendation to enhance their competitiveness.
- Provide legal framework for recognition of the concept of 'Enterprise' and to integrate the three tiers of these enterprises namely. Micro, small and medium.
- Empowers Central Govt. to undertake and develop the programmes and enhance the competitiveness of MSME.

Contribution of MSMEs in Country's Economy at Current Price

(Figures in Rs. Crores adjusted for Financial Intermediation Services Indirectly Measured at current prices)						
Year	**MSME GAV**	**Growth (%)**	**Total GVA**	**Share of MSME in GVA (%)**	**Total GDP**	**Share of MSME in GDP (in %)**
2011 – 12	2523263	-	8106946	31.86	8736329	29.57
2012 – 13	2977623	15.27	9202692	32.36	9944013	29.94
2013 – 14	3343009	12.27	10363153	32.26	11233522	29.76
2014 – 15	3658196	9.43	11481794	31.86	12445128	29.39
2015 – 16	3936788	7.62	12458642	31.60	13682035	28.77

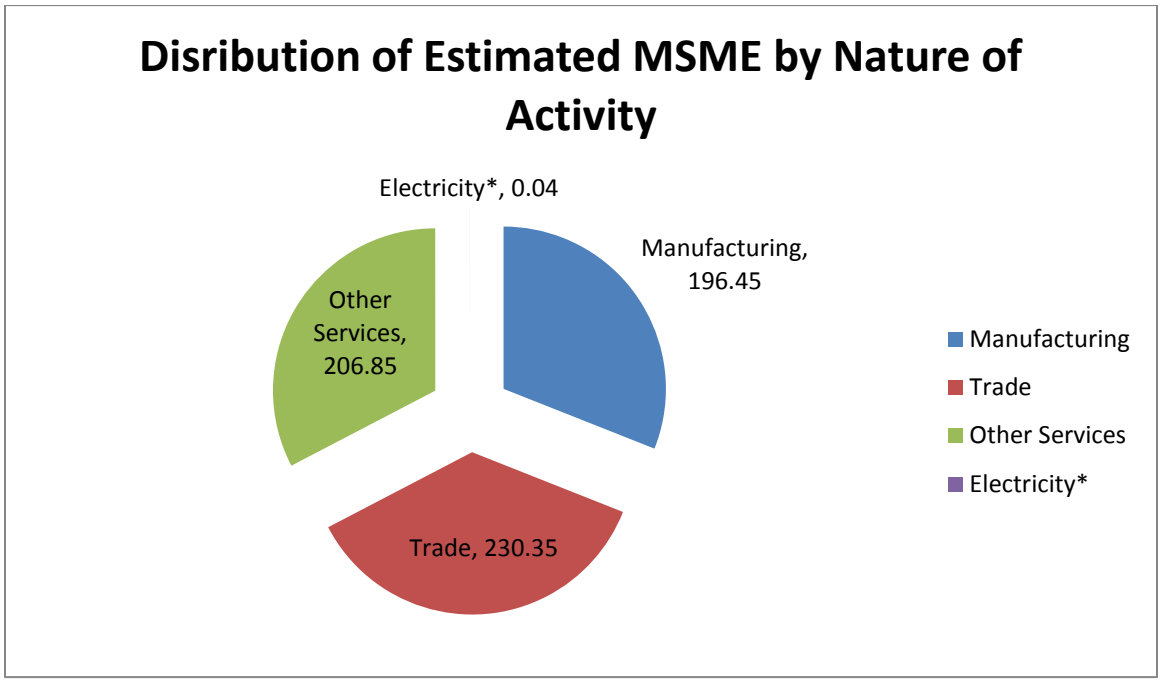
Source: Central Statistics Office (CSO), Ministry of Statistics & Programme Implementation

Key Results of NSS of 73rd Round Survey (2015 – 16) on MSME

Estimated Number of MSME (activity wise)

Activity Category				Share (%)
	Rural	Urban	Total	
Manufacturing	114.14	82.50	196.45	31
Trade	108.71	121.64	230.35	36
Other Services	102.00	104.85	206.85	33
Electricity*	0.03	0.01	0.04	0
All	324.88	309.00	603.88	100

*Non-captive electricity generation and transmission and distribution by units not registered with the Central Electricity Authority (CEA)



Electronic Commerce:

India's economic growth and development is emerged faster after Electronic Commerce. E-commerce has spread its root in India during last decade as compared to the previous periods, where ecommerce was at nascent stage. Ecommerce has provided potential opportunities to Indian supplier/sellers. It has created a model for business to go beyond the limitation and to explore new market as well as new customers for their business expansion.

Ecommerce platform is the key strategic tool of business development for Indian Entrepreneurs. Especially start-ups in India find this channel as one of the most favored to make their business grow. As majority of business organizations have got benefit form Ecommerce platforms. India's Micro, Small and Medium Enterprises (MSMEs) are also the key beneficiary of Ecommerce. Majority start-ups emerged are of this categories. The e-commerce sector in India is projected to cross USD80 billion by 2020 and USD300 billion by 2030 and is already changing the way small and medium businesses operate in India (India internet – Unlocking the potential of a billion digital users', Goldman Sachs, 04 May 2015).

Ecommerce has provided as still providing an immense opportunities to MSME over past few year. The benefits that are enjoyed by the MSME are mostly with respect to growth in the business, improved channel of distribution, cost saving and operational efficiency. Going beyond this it helps the businesses to focus on their core competencies such as specialized manufacturing techniques and such likes. The platforms also provided businesses huge potential for new investment in to their existing set ups as cross section of customers are accessible to them. It also creates an opportunities for the existing MSME to look form diversification into their business based on the responses available through ecommerce platforms.

The feedback system plus analytics used by the ecommerce platforms are the base for various decisions with respect to any changes and modernization in the product or even to change in the product as the case may be. The basic of ecommerce platforms provides the various descriptive stats of any specific products sale using business analytics techniques. This data enables the businesses to use predictive or prescriptive tools for business expansion and growth.

Initiatives by the Government to introduce the further usage of ecommerce platforms for MSEM; It will give access to cross nation access and exposure to international market as well as customers. Ministry of MSME has already started working on the said issue.

Benefits to MSME from Ecommerce Boost

The key benefits from Ecommerce boost shall be increased revenues and margins, improved market reach, access to new markets, cost saving in marketing, promotion and communication spend, better customer acquisition and further improved customer experience.

The extensive advantage that MSME will get is in the area of export, using ecommerce platform MSME can export the double of its existing export as a result of easy access to the both parties (Buyer and supplier)

The initiatives taken by the Government by implementing various projects and schemes for overall economic development as well as for the development of MSME can be beneficial to MSME by using potentials of Ecommerce.

The decision with respect to change in buying behaviour of customers and the changes in preference of customer can be easily identified using the analytics adopted by the Ecommerce player. Which will further enables the MSME to keep them updated as well as competitive in the market locally as well as globally.

Conclusion:

It has been seen from many evidences that India's present economic riders are MSME and Ecommerce. Both are the important in developing as well as achieving the desired growth and development of the nation. One (MSME) is operating on lesser internet technology as per the report of KPMG (only 43% of SME's in India have online presence for their sale in India), whereas other (Ecommerce Platforms) have business model purely depends upon internet. Hence to make write blend into them needs the constructive initiative from both sides. The role of Ministry has increased in this connection to make more sustainable model for MSME sector to operate online and give the further boost to the sector and ultimately to economic growth and stability of nation.

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लघु उद्‌योगावर ई–कॉमर्स चा प्रभाव

डॉ. दिनेश डोहळे
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सारांश :–

आजच्या आधुनिक युगात वस्तुंची खरेदी – विक्री करण्यासाठी इंटरनेटच्या सेवेचा उपयोग करण्यात येत आहे आणि त्याव्दारे देशातील शेवटच्या ग्राहकापर्यंत पोहचणे हा उद्देश आहे. इलेक्ट्रानिक माध्यमांव्दारे वस्तुंची खरेदी–विक्री करणे म्हणजे ई–कॉमर्स होय. आज जगात ई–कॉमर्सच्या माध्यमातून वस्तूंची खरेदी–विक्री करण्याची पध्दती प्रचलीत होत आहे. यात पैशाची बचत, वेळेचा अभाव, वेळेची बचत, वस्तू बद्दल संपूर्ण माहिती. लगेच पैसे देण्याची आवश्यकता नाही. वस्तु आवडली नाही तर परत करण्याची सोय हया सगळया सोयी मुळे ई–कॉमर्स पध्दत प्रचलीत होत आहे. भारता सारख्या विकसनशिल देशात ज्या देशाची अर्थव्यवस्था कृषी प्रधान आहे आणि तेथील 70 ते 75 टक्के लोक शेती करतात, लघु उद्योग करतात आणि गाव खेडयात राहतात. त्या देशात ई–कॉमर्सच्या प्रसिध्दीमुळे लहान उद्योगांवर काय परिणाम होईल हे अभ्यासने गरजेचे आहे.

प्रस्तुत लघु शोध निबंधात ई–कॉमर्सचा लघु उद्योगावर काय परिणाम होईल याचा अभ्यास करण्यात आला आहे.

मुख्य शब्द :–

ई–कॉमर्स, इलेक्ट्रॉनिक, इंटरनेट, खरेदी विक्री, भारतीय अर्थव्यवस्था.

प्रस्तावना :–

ई–कॉमर्स म्हणजे इलेक्ट्रॉनिक कॉमर्स, ही एक आधुनिक संकल्पना आहे. यात उत्पादक व ग्राहक इलेक्ट्रॉनिक माध्यमांव्दारे केल्या जाणाऱ्या व्यवहारांनी जोडले जातात. इंटरनेट सेवेचा वापर करून यात खरेदी–विक्रीचे व्यवहार पूर्ण केले जातात. तसेच व्यवहार झाल्यानंतर शोधन इलेक्ट्रॉनिक पध्दतीने सुध्दा केले जाते.

आपल्या देशात इंटरनेट सेवा 1990 पासून सुरू करण्यात आली. आज ती घरा–घरात पोहचली आहे. त्यामुळे ई–कॉमर्सच्या माध्यमातून व्यवसाय करणे सोपे (सहज) झाले आहे. यामध्ये व्यवसाय ते व्यवसाय (B 2 B), आणि व्यवसाय ते ग्राहक (B 2 C), ग्राहक ते ग्राहक (C 2 C) ग्राहक ते व्यवसाय (C 2 B) या चार माध्यमाने व्यवसाय केला जातो.

ई–कॉमर्स म्हणजे असा इलेक्ट्रॉनिक व्यवसाय होय ज्यात मुद्रा, सेवा, वस्तु तसेच माहितीची देवाण–घेवाण संगणकाच्या माध्यमातून घडून येते.

ई–कॉमर्स चे उदाहरण :–

1) Amazon 2) Flipkart 3) e-Bay 4) Fiverry 5) Upwork 6) Olx 7) Quikr 8) Sanpdeal

ई–कॉमर्स चा बाजार गावातून शहरापर्यंत, शहरातून राज्यापर्यंत, राज्यातून केंद्रापर्यत, केंद्रातुन आंतरराष्ट्रीय स्तरापर्यंत पोहचला आहे. आज ई–कॉमर्सचा बाजार $ 27 ट्रिलियन पर्यंत पोहचला आहे.

उद्देश :–

1) ई–कॉमर्स चा लहान व्यवसायावर होणारा परिणाम अभ्यासने.

2) ई–कॉमर्स बद्दल ग्राहकांची जागरूकता अभ्यासने.

3) ई–कॉमर्स व्दारे मिळणारी मुद्रा, सेवा, वस्तु यांचा अभ्यास करणे.

लघु उद्योगः–

जे उदयोग किंवा व्यवसाय लहान प्रमाणावर केले जातात. ज्याकरीता कमी जागा लागते किंवा घरात ही सुरू करू शकतात. भांडवल कमी लागते. त्याकरीता लागणारी मशिन, कच्चामाल, मजूर कमी प्रमाणात लागतात त्या उदयोगाला लघु उदयोग असे म्हणतात.

लघु उद्योगाला सरकार कडून मदत मिळत असते. लघु उदयोजकांना जर पैशाची अडचण असेल तर सरकार लोन देऊन त्या सब्सिडी सुध्दा देत असते.

लघु उदयोगाला दोन क्षेत्रा मध्ये विभागण्यात आले आहे.

1) निर्माणी क्षेत्र

2) सेवा क्षेत्र

हया दोन्ही क्षेत्राला तीन श्रेणी मध्ये विभागण्यात आले आहे.

1) सूक्ष्म लघु उदयोग

2) लघु उदयोग

3) मध्यम उदयोग

निर्माणी क्षेत्र

1) सुक्ष्म लघु उदयोग :– 50 हजार ते 25 लाखापेक्षा कमी गुंतवणुक

2) लघु उदयोग :– 25 लाख ते 5 कोटी पेक्षा कमी गुंतवणूक

3) मध्यम उदयोग :– 5 कोटी ते 10 कोटी पेक्षा कमी गुंतवणूक

(यात जमीन आणि इमारतीवर केलेला खर्च समाविष्ट नाही)

सेवा क्षेत्र

1) सुक्ष्म लघु उदयोग :– 10 लाखापेक्षा कमी गुंतवणुक

2) लघु उदयोग :– 10 लाख ते 2 कोटी पेक्षा कमी गुंतवणूक

3) मध्यम उदयोग :– 2 कोटी ते 5 कोटी पेक्षा कमी गुंतवणूक

(यात जमीन आणि इमारतीवर केलेला खर्च समाविष्ट नाही)

जर उदयोजकांना सरकारी योजना आणि सहाय्यतेचा लाभ घ्यावयाचा असेल तर त्यांना एस.डी.आई. (State Directorate of Industries) कडून रजिष्ट्रेशन करने अनिवार्य आहे. काही लघु उदयोग असे असतात ज्यांना वस्तु उत्पादन करण्याकरीता राज्य सरकार आणि केंद्र सरकार दोन्ही कडून अनुमती घेणे अनिवार्य असते. लघु उदयोगाचे रजिष्ट्रेशन दोन प्रकारे करता येते.

1) अस्थाई रजिष्ट्रेशन

2) स्थाई रजिस्ट्रेशन

अस्थाई रजिष्ट्रेशन :– उदयोगाच्या स्थापनेपूर्वीच रजिष्ट्रेशन केले जाते. तसेच प्रमाणपत्राची वैधता दोन वर्षाची असते. दोन वर्षात कोणत्याही प्रकारचे कोणतेही उत्पादन नाही झाले तर तो उदयोजक त्या प्रमाणपत्राला दुसऱ्यांदा रिन्युवल करू शकतो.

स्थाई रजिष्ट्रेशन :– अस्थाई रजिष्ट्रेशन च्या दोन वर्षानंतर स्थाई रजिष्ट्रेशन प्राप्त होत असतो. जेव्हा अस्थाई प्रमाणपत्राची वैधता संपते आणि लघु उदयोग पुर्णपणे उत्पादन करू लागतो.

स्थाई रजिष्ट्रेशन राज्य उदयोग निर्देशालय व्दारे केला जातो.

वर्तमान काळात लघु उदयोगाचे रजिष्ट्रेशन यु.ए.एम. (UAM) च्या पोर्टेल वर जावून आपल्या उदयोगाचे रजिष्ट्रेशन करू शकतो. परंतु हयाकरीता आधारकार्ड असणे आवश्यक आहे.आधारकार्ड च्या आधारावर ऑनलाईन रजिष्ट्रेशन भरता येते.

रजिष्ट्रेशनचे लाभ :–

1) बॅके कडून कर्ज मिळण्यास सोपे होते.

2) बॅके चा व्याज दर कमी लागतो.

3) एक्साईज, टॅक्स मध्ये सूट ची योजना

4) कायदया नुसार प्रत्यक्ष सुट

5) आरक्षणाचा प्रावधान

लहान व्यवसायावर ई–कॉमर्स चा प्रभाव :–

सेवा क्षेत्र

1) विक्रीवर परिणाम :–

ई–कॉमर्स च्या माध्यमातून ग्राहकांची खरेदी वाढल्यामुळे लघुव्यवसायीकांच्या विक्रीवर परिणाम जाणवू लागला आहे. त्यांच्या विक्रीमध्ये घट झालेली आहे. गावातील व शहरातील ग्राहक इलेक्ट्रानिक माध्यामातून वस्तुची खरेदी करू लागले आहेत.

2) ग्राहकांची कमी :–

इंटरनेटच्या माध्यमातून वस्तुची खरेदी ग्राहक करीत असल्यामुळे लहान व्यवसायिकांचे ग्राहक कमी झाले आहेत. याचा परिणाम त्यांच्या व्यवसायावर होत आहे. पुढच्या पाच वर्षात भारतीय ई–कॉमर्स ग्राहकांची संख्या 17 कोटी होण्याची संभावना आहे.

3) नफ्यावर परिणाम :–

इलेक्ट्रानिक माध्यमाव्दारे वस्तूंची खरेदी मध्ये वाढ झाल्यामुळे लहान व्यवसायिकांची विक्री कमी होत आहे. त्यामुळे त्याच्या नफ्यावर परिणाम जाणवू लागला आहे. नफा दिवसेंदिवस कमी होत असल्यामुळे त्यांना व्यापार करणे कठीण झाले आहे.

4) गुंतवणूक :–

लहान किंवा मोठा व्यापार करतांना भांडवलाची आवश्यकता असते. लहान व्यवसायीकांना आपल्या विक्रीत वाढ करण्यासाठी वस्तुची जाहिरात करावी तसेच वस्तु प्रदर्शित करावी लागते त्याकरीता वेगळा खर्च करावा लागतो. हयामध्ये बराच पैसा गुंततो. जर त्या प्रमाणात ग्राहक मिळाले नाही तर त्यांच्या गुंतवणुकीचा काहीच फायदा होत नाही.

5) कर्जबाजारी :–

आजच्या स्पर्धेच्या युगात व्यवसाय करतांना आपलं व्यवसाय आकर्षित बनवून ग्राहकांना आकर्षित करण्यात येते परंतु हया करीता बराच पैसा लागतो. हयाकरीता विविध मार्गाने पैसे उसने घेतले जाते. जर व्यवसाय चालला नाही तर व्यवसायीकावर कर्जबाजारी होण्याची पाळी येते.

6) बाजारावर परिणाम :–

इलेक्ट्रानिक माध्यमाने ग्राहकांनी वस्तुंची नेहमी खरेदी केल्यास त्याचा परिणाम बाजारावर होईल. लहान व्यवसायीकांना ग्राहक नसल्यामुळे बाजारातील भांडवल कमी होईल. बाजारात मंदीची परिस्थिती

निर्माण होईल. मोठया प्रमाणावर सुट (डिस्काउंट) देणारी ई–कॉमर्स कपंनीची संख्या दिवसेंदिवस वाढत आहे.

7) बेरोजगारीत वाढ :–

इलेक्ट्रानिक माध्यमाने वस्तुंची खरेदी केल्यास लहान व्यवसाय चालणार नाहीत त्यामुळे त्यांना आपला व्यवसाय बंद करण्याची वेळ येवू शकते. व्यवसाय बंद पडल्यास बेरोजगारीत वाढ होईल.

निर्माणी क्षेत्र :–

1) विक्री करणे सोयीचे :– ई–कॉमर्स व्दारे वस्तूची विक्री करण्याची पध्दत लहान उदयोगांना फायदयाची असते. त्यांना घाऊक व्यापारी, किरकोळ व्यापाऱ्यांवर अवलंबून राहावे लागत नाही. ई–कॉमर्स व्दारे खरेदी विक्री करणारी कंपनी त्यांचा पूर्ण माल खरेदी करीत असते. त्यामुळे लघु उदयोगांना वस्तु विक्रीची अडचण नसते.

2) जाहीरात खर्चात बचत :– वस्तुचे उत्पादन केल्यानंतर तिच्या विक्री करीता तिची जाहिरात करावी लागते. त्या करीता जाहिरातीचा खर्च फार येतो. इलेक्ट्रानिक माध्यमाने विक्री करण्याकरीता जाहिरात करण्याची जवाबदारी खरेदी करणाऱ्या कंपनी वर असते त्यामुळे लघु उदयोजकांचा जाहिरत खर्चाची बचत होते.

3) कमी परिव्यय खर्च :– लघु उदयोगांना आपल्या उत्पादित वस्तु घाऊक, किरकोळ व्यापाऱ्यांना विक्री करीता जाहीरात खर्च, पेकिंग खर्च, विक्री वरील गाडी भाडा खर्च करावा लागतो त्यामुळे वस्तुच्या परिव्यय किंमतीत वाढ होत असते. इलेक्ट्रॉनिक माध्यमाव्दारे खरेदी–विक्री करणाऱ्या कंपनीला जर वस्तु विकल्या तर परिव्यय खर्च कमी येतो. त्यामुळे ग्राहकांना स्वस्त दरात वस्तु उपलब्ध होतात.

4) कमी किंमत :– लघु उदयोगांना वस्तु उत्पादन करतांना परिव्यय किंमतीत बचत होत असल्यामुळे आपला माल विक्री करतांना वस्तुची किंमत कमी ठेवतात त्यामुळे ग्राहकाला वस्तु स्वस्त दरात प्राप्त होतात.

5) विक्रीत वाढ :– इलेक्ट्रॉनिक माध्यमाने ग्राहकांना वस्तु स्वस्त दरात प्राप्त होत असल्यामुळे वस्तु करीता मागणी वाढते. त्यामुळे लघु उदयोजकांच्या विक्रीमध्ये दिवसेंदिवस वाढ होत आहे.

6) नफ्यात वाढ :– इलेक्ट्रॉनिक माध्यमाने वस्तुची विक्री करणाऱ्या कंपनीला वस्तुची विक्री केल्यामुळे लघु उदयोजकांच्या विक्रित वाढ होत असते. तसेच इलेक्ट्रानिक माध्यमाव्दारे विक्री करणाऱ्या कंपनीच्या विक्रीत सुध्दा वाढ होत असते. त्यामुळे दोघांच्या नफ्यात वाढ होत असते.

7) ग्राहक संख्येत वाढ :– इलेक्ट्रॉनिक माध्यमाव्दारे वस्तुची विक्री होत असल्यामुळे त्यांचे ग्राहक देश–विदेशात असतात. त्यामुळे लघु उदयोजकांच्या ग्राहक संख्येत दिवसें–दिवस वाढ होत असते जर त्यांनी स्वतः विक्री केली असती तर त्यांना ऐवढे ग्राहक प्राप्त करने कठीण झाले असते आणि जर मिळाले असते तर त्याला बराच वेळ लागला असता.

निष्कर्ष :–

सेवा क्षेत्र :–

लहान व्यवसायीकांना हया अडचणीतून बाहेर पडायचे असेल तर त्यांनी आपल्या व्यवसायाची व्यवसाय करण्याच्या पध्दतीत थोडा फार बदल केला पाहीजे. त्यांनी आपल्या व्यवसायाबद्दल माहिती फेसबुक, इंस्टाग्राम हया सारख्या सोशल साईटवर टाकावी. त्यामुळे त्यांच्या विक्रीत वाढ होईल. कारण शहरी भागातील 93 टक्के लोक फेसबुक चा वापर करतात. त्यापैकी काही टक्के ग्राहक हे फेसबुक पासून मिळू शकतात. फेसबुक चा उपयोग व्यवसायाच्या खरेदी–विक्री करीता केला तर त्याला खर्च सुध्दा येत नाही. देशात 27 कोटी लोक हया सोशल साईट चा उपयोग करतात. कोणीही आपल्या व्यवसायाला समोर वाढविण्याकरीता फेसबुक आणि इंस्टाग्राम वर प्रोफाईल बनवु शकतो.

निर्माणी क्षेत्र :–

ई–कॉमर्स मुळे उत्पादक आपला माल देश–विदेशात कुठे ही विक्री करू शकतो त्याकरीता लहान उत्पादकांनी आपल्या मालाचा दर्जा उच्च ठेवायला हवा. जेणे करून त्यांचा माल कुठे ही विकला जाऊ शकेल. त्यांच्या मालाला विदेशात हि बाजारपेठ उपलब्ध होईल. त्यामुळे त्यांच्या नफ्यात वाढ होऊन व्यवसायाचा विकास होईल.

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3) व्यवसाय संदेशवहन आणि व्यवस्थापन – एस. एम. कोलते

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"भारतीय कंपन्यांचे ई–कॉमर्स मध्ये वर्चस्व ! ई–कॉमर्स झाला मोठा"

प्रा. डॉ. पवन र. नाईक
केवळरामजी हरडे महाविद्यालय चामोर्शी,
जिल्हा. गडचिरोली

प्रस्तावना :–

इलेक्ट्रॉनिक कॉमर्स किंवा ई–कॉमर्स, म्हणजे इंटरनेटाद्वारे उत्पादन आणि सेवांची करता येणारी खरेदी आणि विक्री होय. इंटरनेटाच्या वाएत्या व्यापामुळे आणि त्याचा लोकप्रियतेमुळे इंटरनेटावरील व्यापाराला कमालीची चालना मिळालेली आहे. इलेक्ट्रॉनिक निधी स्थानांतर, पुरवठा व्यवस्थापन करणे, इंटरनेट–आधारित विपणन, ऑनलाइन ट्रान्झॅक्शन प्रक्रिया इलेक्ट्रॉनिक डेटा आंतरबदल, वस्तुसूची व्यवस्थापन प्रणाली आणि स्वयंचलित डेटासंग्रहण या नव्या इंटरनेट–आधारित सुविधांचा इलेक्ट्रॉनिक वाणिज्याच्या प्रसारात महत्वाचा वाटा आहे.

इलेक्ट्रॉनिक वाणिज्याच्या वापराचा मोठा हिस्सा फक्त आभासी किंवा संकेतस्थळावर उपलब्ध्ण असणाऱ्या अशा गोष्टींसाठी वापरलाजातो. उदाहरणार्थ एखादा लेख किंवा एखादी महत्वाची माहिती जी फक्त ई–पेमेंट केल्यावरच पाहता येते. बऱ्याच वेळेला इलेक्ट्रॉनिक वाणिज्याबरोबर वस्तू किंवा माल हयांची वाहतुकीद्वारे पोचही जोडली गेलेली असते. ऑनलाईन किरकोळ विक्रेत्यांना इ–टेलर म्हणतात आणि किरकोल विक्रीला इ–टेल म्हणतात. जवळपास सगळेच मोठे किरकोळ व्यापारी आजह इलेक्ट्रॉनिक वाणिज्याद्वारे आंतरजालाशी जोडले गेले आहेत.

एका व्यापाराऱ्याने दुसऱ्या व्यापाऱ्याबरोबर केलेल्या इलेक्ट्रॉनिक वाणिज्याला बिझनेस–टू–बिसनेस इलेक्ट्रॉनिक वाणिज्य (बी–टू–बी इलेक्ट्रॉनिक वाणिज्य) म्हणतात. बी–टू–बी इलेक्ट्रॉनिक वाणिज्य कधी कधी सर्वांसाठी खुले असते, तर कधी विशिष्ट व्यापाऱ्यापर्यंत सीमित असते. एका व्यापाऱ्याने आपल्या ग्राहकाबरोबर केलेल्या बी–टू–बी इलेक्ट्रॉनिक वाणिज्य करतात. ऑनलाईन खरेदीच्या वेळेस ग्राहक विक्रेत्याच्या संगणकाशी इंटरनेटाद्वारे थेट संपर्कात असतो. त्यात अन्य घटकांची मध्यस्थी नसते. खरेदी आणि विक्री या प्रक्रिया पूर्णपणे इंटरनेटावरच पार पडतात.

इलेक्ट्रॉनिक वाणिज्य केवळ खरेदी आणि विक्रीशी संबंधित नसून त्याचा वापर माहितीची देवाणघेवाण करण्यातही होतो. बऱ्याचदा आर्थिक माहितीची देवाण घेवाण इलेक्ट्रॉनिक वाणिज्याद्वारे होत असते.

गृहितके :–

कंपन्या आंतरराष्ट्रीय बाजारात झपाट्याने पुढे सुरसावत आहेत.

उद्देश :–

भारतीय कंपन्यांचे ई–कॉमर्समुळे होणारे परिणाम शोधणे.

संशोधन पद्धती :–

प्राथमिक व द्वितीयक स्त्रोताद्वारे माहिती संकलित केली आहे व विश्लेषणात्मक अध्ययन पद्धतीचा वापर प्रस्तुत शोधनिबंधात केला आहे.

मर्यादा :–

प्रस्तुत शोध निबंध फक्त भारता पुरतेच मर्यादित आहे.

ई–कॉमर्स चा व्यवसाय :–

ई–कॉमर्सचा व्यवसाय दरवर्षी ३० टक्क्यांनी वाढतो आहे. लबाजरन सर्वात मोठी उछयोन्मतुख बाजारापेठअसलेल्या भारतात बेंगलुरू, मुंबई, आणि दिल्ली सारख्या शहरात ई–कॉमर्सच्या ४० टक्के ऑर्डर्स इतके प्रमाण आहे. तरीही

ई–कॉर्सला अनेक अडचणडींचा सामना करावा लागतो. या कंपन्यांसाठी पारंपारिक आव्हाने पेलणे कठीण होऊन जाते. या सर्व बाबी लक्षात घेऊनही काही कंपन्या जोमाने मोठ्या होत असून भविष्यात बक्कळ नफा कमावू शकतात. ई–कॉमर्स व्यवसाय सध्या महत्वपूर्ण परिस्थितीतून जात आहे. कारण कंपन्या आंतरराष्ट्रीय बाजारात झपाट्याने पुढे सरसावर आहेत.

देशातील मुलभूत सेवा–सुविधा ज्यात तुम्ही वितरण व्यवस्था करत आहात, याच मूलभूत सेवा–सुविधा पुरेशा नसून ई–कॉमर्स कंपन्यांसाठी हा चिंतेचा विषय ठरत आहे. एका कंपनीची मूलभूत सेवा–सुविधा असणे आवश्यक आहे. स्वत:च्या ग्राहकांना उत्पादन घरपोच देण्यासाठी फक्त मूलभूत सोयी–सुविधा असून उपयोग नाही. जर तुमच्याकडे सुरूवातीपासूनच ग्राहक नाहीत. ई–कॉमर्स कंपन्यांसमोर फक्त ग्राहक शोधणं किंवा त्यांना लक्ष्य करणं हे आव्हान नाही तर ण्योग्य ग्राहक शोधणं ही अडचण आहे. आणि भारतात ई–कॉमर्स कंपन्या वेगळया नाहीत. जसजशी भारतात मध्यमवर्गीय लोकांची संख्या वाढते आहे. फेसबुक, युट्यूब सारखी नव्या जाहिरात माध्यमांचा आधार घेऊन Quantified Commerce ग्राहकांन थेट लक्ष्य करत जाहिरात करत आहे. अशा प्रकारची लक्ष्यकेंद्रित जाहिरात क्लिक्स वाढविण्यासाठी आणि लोकांना ग्राहक बनविण्यासाठी खूपच प्रभावशाली आहे.

Quantified Commerce फक्त फेसबुक आणि युट्यूब सारखे नवीन प्रभावी जाहिरात माध्यमांचीच नव्हे तर सोशल मीडिया प्रभावीपणे भागीदारी करून फनंदजपपिमक ब्वउउमतमबम संभाव्य ग्राहकांसोबत विश्वास संपादन करतात तसेच ग्राहकांना आकर्षित करण्यासाठी सोशल प्रुफिंगच्या नव्या पद्धतीचा फायदा घेत आहेत. हा कमाईचाच एक भाग आहे. ९२ टक्के युर्जस जाहिरातीच्या पारंपारिक पद्धतीवरच जास्त विश्वास ठेवतात.

इलेक्ट्रॉनिक बाजारपेठ :–

१९९६ च्या मध्यमापासूनच ई–कॉमर्स भारतात आलं. त्यावेळी काही जॉब फाइंडर, कलसिफाइड्स आणि मॅट्रीमुनियल साईट्सचा उगम झाला होता. परंतु या वेबसाइट्सची माहिती अगदीच थोडया लोकांना होती. तसंच इंटरनेटचं लोणही फार कमी होतं. परिणामी लवकरच या वेबसाइट बंद केल्या गेल्या. २००० साली इंटरनेटशी संबंधित कंपन्यांमधील गुंतवणूक कमालीची वाढली. या घटनेला ऐतिहासिक 'डॉटकॉम बर्स्ट' असं संबोधलं जातं. या डॉटकॉम बर्स्टमुळे टूरिझम क्षेत्राने

ई–कॉमर्सचा वार सुरू केला. 'ओ.टि.ए.' म्हणजे ऑनलाईन ट्रूवल एजंद या सेवेद्वारे ऑनलाईन फ्लाइट बुकिंग, हॉटेल बुकिंग होऊ लागलं, असं करता करता हे क्षेत्र वाढतच गेलं. २००९ साली देशातील या क्षेत्राचा महसूल १६ हजार ६०० करोड रूपये होता आणि २०१५ साली १ लाख करोड रूपयांचा टप्पा पार करेल इतकी प्रचंड या क्षेत्राची व्याप्ती वाढली आहे. भारतातील ई–कॉमर्समधील ७५ टक्के जागा टूरिझम आणि रिटेल कंपन्यांनी व्यापलेली आहे भारतातील आजच्या काही आघाडीच्या 'टॉप ५' पर्सनल ई–कॉमर्स कंपन्या...

१) फ्लिपकार्ट.कॉम (Flipkart.com)

फ्लिपकार्ट.कॉम ही भारतातील सर्वधिक लोकप्रिय ई–शॉपिंग साइट आहे. या वेबसाइटवर सर्वाधिक प्रॉडक्टस विकली जातात. याचं कारण आहे, मोठी प्रॉडक्ट रेंज आणि अनुभव. सर्वात जुनी ई–शॉपिंग वेबसाइट असल्याने सर्वाधिक कस्टमर फ्लिपकार्ट कडे आहेत. वेगवान डिलिवरी सीस्टीम, ५०० हुन अधिक खरेदी असेल तर फ्री डिलीवरी, कॅश–ऑन–डिलीवरी ही महत्वपूर्ण सेवा, ३० दिवसांच्या आत रिप्लेसमेंट या सर्व गोष्टींमुळे सर्वात मोठा ग्राहकवर्ग फ्लिपकार्टला प्राधान्य देतो. फ्लिपकार्टची लोकप्रियता लक्षाता लक्षात घेऊन 'मोटोरोला' या कंपनीने फक्त याच वेबसाइटमार्फत भारतात एक्सक्लुसिव्ह कमबॅक केलं. त्यानंतर 'झियोमी' या कंपनीने त्यांचा एम–आय ३ हा फोन याच वेबसाइट मार्फत भारतभर विकाला. यामुळे ही वेबसाइट खूपच लोकप्रिय झाली.

२) जबाँग.कॉम (Jabong.com)

जबाँग ही भारतातील दुसऱ्या क्रमांकावर असणारी शॉपिंग साइट आहे. या कंपनीचं वैशिष्टय म्हणजे सर्वात चांगली कस्टमर सर्विस. चांगली आणि वैयक्तिक ऑनलाईन मदत देण्याची सुविधा जबाँगने आणली. 'जबाँग.कॉम वर स्त्री–पुरूष आणि मुलं यांच्यासाठी वेगवेगळया प्रकारची चांगल्या क्वालिटीची प्रॉडक्ट्स तर आहेतच, परंतु महत्वाचं म्हणजे त्यांची वेबसाइट खूप कस्टमर फ्रंडली आहे. वापरण्यास आणि ब्राउझ करण्यास इझी असलेला इंटरफेस यामुळे त्यांना कस्टमर सॅटिसफॅक्शन मध्ये अव्वल मानंल जातं. तसंच आपण डीलिवर करणाऱ्या प्रॉडक्टची क्वालिटी अगदी प्रीमी यम असेल, याची काळजी ते घेतात.

३) मिंत्रा.कॉम (myntra.com)

अझिम प्रेमजी यांची 'मिंत्रा.कॉम' तुमच्या फॅशन रीलेटेड सर्व गरजा पूर्ण करण्यासाठी ऑल–इन–वन वेबसाइट आहे. तुम्हाला सर्व प्रकारच्या ओकेजन्यसाठी अथे कपडे आणि ॲक्सेसरीज मिळतील. कपडयांचा एक साइझ चार्ट पाहून कपडे ऑर्डर केल्यावर ते घरी येतील. घरीच त्यांची ट्रायल घोऊन नको असलेले कपडे परत करण्याची आणि साइझमध्ये बदल करण्याची मोफत सुविधा 'मिंत्रा.कॉ' देऊ करतं. 'मिंत्रा.कॉम' वर ५०० हून अधिक भारतीय आणि आंतरराष्ट्रीय ब्रॅड्सची प्रॉडक्ट उपलब्ध आहेत. प्युमा, आदिदास, नायके असे स्पेर्टस् ब्रॅडस, तसेच यु.एस.पी., यु.सी.बी., लिवाईस, रॅगलर असे अनेक कॅलुअल्सचे ब्रॅड्ससुद्धा आहेत. साहजकिच तरूणाई इर्थ आककर्षित होते. त्यामुळे या वेबसाइटचे ७० टक्के कस्टमर १८–३० वयोगटातील आहेत.

४) स्नॅपडिल.कॉम (Snapdeal.com)

२०१० मध्ये रोहित बन्साल व कुणाल बहल यांच्या नेतृत्वाखाली स्नॅपडिल ही वेबसाइट सुरू झाली आणि चांगल्या प्रॉडक्ट कलेक्शनमुळे आज ती टॉप–५मध्ये समाविष्ट झाली आहे. फॅशन, इलेक्ट्रॉनिक्स, गेमंग, इटेबल्स्, चॉकलेटस्, ग्रूमिंग आणि पुस्तकं अशा मोठया कॅटेगरी लिस्टमध्ये ३००० ब्रॅड्सची २ लाख ५० हजार प्रॉडक्ट्स इथे आहेत.

'स्नॅपडिल.कॉम'चे देशातील अव्वल कुरीयर कंपन्यांसोबत टाय–अप आहे, ज्यामुळे फास्ट डिलीवरी करणं त्यांना शक्य होतं. तसंच कास्टमरला जर प्रॉडक्ट नाही आवडलं, तर त्यांची 'फ्री रिटर्न' ही सुविधा चांगली आहे.

५) ॲमेझॉन.कॉम. (Amazon.in)

१९९५ ला अमेरिकेत सुरू झालेली ही कंपनी आज संपूर्ण जगात पसरलेली आहे. तसंच :जगातील सर्वात मोठं सिलेक्शन असणारी मानाची ई–कॉमर्स कंपनी' हा किताब ॲमेझॉनकडे आहे. ही कंपनी ई–शॉपिंग सोबत ई–बुक, किंडल फायर टॅबलेट आणि फायर फोन यांचचं उत्पादन करते. १०० टक्के परचेस प्रोटेक्शन. हे फीचर तुम्हाला सेफ ॲड सिक्युर ऑर्डर प्लेसिंग, सोपे पेमेंटचे पर्याय, कॅश ऑन डिलिवरी, इझरू रिटर्न असे पर्याय देते. काही चांगल्या

प्रोडक्ट्सवर सुट देखील इतरांच्या तुलनेत ॲमेझॉन चांगली देते. भारतात ५ व्या क्रमांकावर असणारी ॲमेझॉन कंपनी अनेक देशात वर्षानुवर्षे क्रमांक १ टिकवून आहे.

ई–कॉमर्सचे ग्राहक

बाजारात जाऊन शॉपिंग करायचे दिवस सध्या इतिहासजमा होत आहेत. हातात मोबाईल व इंटरनेट असल्याने सध्या ई–कॉमर्स हाताच्या बोटावर आले आहे. फक्त एका क्लिकवर वस्तू आपल्या घरात हजर होते. हे ई–कॉमर्सचे वेड संपूर्ण भारतात लागले आहे. छोटया छोटया शहरातूनही 'ई–कॉमर्स' द्वारे खरेदी वाढत आहेत. या ई–कॉमर्सबाबत नियमन यंत्रणा अस्तित्वात नाही. त्यामुळे ग्राहकांची फसवणूक होऊ शकते. त्यासाठी ग्राहकांनी दक्ष राहणे गरजेचे आहे.

जगभरामध्ये ई–कॉमर्सचा प्रसार अधिकाधिक वेगाने होतो आहे. दर सहा महिन्याला तंत्रज्ञान बदलत आहे. विशेषत: मोबाईल, संगणक क्षेत्रात दर महिन्याला नवनवीन बदल घडत आहेत. तरूण पिढीही स्वत:ला तातडीने अपडेट करत नवीन गॅझेट्स खरेदी करत आहेत.

आताच्या टेक्नोसॅव्ही पिढीला बाजारात जाण्याचा कंटाळा येत आहे. तसेच ई–कॉमर्सवरील उत्पादने बाजारातील उत्पादनांपेक्षा कमी किमतीत उपलब्ध आहेत. त्यामुळे आपल्या देशात ई–कॉमर्स वाढण्यासाठी अत्यंत अनुकूल अशी परिस्थिती आहे.

सरकारी यंत्रणा, नगरपालिका, जमिनीचे कागदपत्रांचा रेकॉर्ड, स्टॅप फी भरणे, इ. अनेकानेक कामांमध्ये संगणकीय प्रणालींचा विशिष्ट प्रमाणात वापर सुरू ओ. तसेच तो भविष्यात वाढतच जाणार आहे.

आपल्या देशातील प्रचंड मोठया रेल्वे आस्थापनाच्या बुकिंग/रिझर्वेशन इ. चे काही दशकापूर्वी सुरू झालेले ई–बुकिंग, आता सर्वसामान्यांच्या अंगवळणी पडले आहे.

स्वत:चे एस.टी. पासून विमानपर्यंतचे सर्व प्रवासाचे तिकीट संगणक किंवा मोबाईलवरून काढणाऱ्यांची संख्या दिवसेंदिवस वाढत आहे.

निष्कर्ष :–

एकविसावं शतक हे इलेक्ट्रॉनिक युग आहे. इंग्रजीत त्याला म.बमदजतलन किंवा मकृमतं म्हणता येईल. सकाळी सहावाजता चहासोबत उपलब्ध होणारे वर्तमानपत्र आता पाच सहा तास अगोदर रात्रीच ई–पेपर म्हणून उपलब्ध होऊ लागले आहे. शिवाय इंटरनेटवर त्या वर्तमानपत्राच्या संकेतस्थळावर जिल्हानिहाय, प्रदेशनिहाय असलेल्या त्यांच्या विविध आवृत्याही उपलब्ध आहेत. अकोल्यासारख्या विकसनशील शहरामध्ये नजीकच्या काळात मध्यमवर्गीयांच्या घरापर्यंत पोहचणारी ब्रॉडबॅन्ड सेवा आपल्याला इंटरनेटच्या महाजालाशी जोडणारा आहे. इलेक्ट्रॉनिक मिडियाच्या तुलनेत प्रिंट मिडियाचे महत्व कमी होणारे नसले तरी या बदलाच्या स्वागताकरिता अपल्याला तयार रहावे लागणार आहे.

शिक्षिण, ग्रंथालय, प्रशासन, आरोग्य, विमा, बॅकिंग, परिवहन, सिनेमा ही सगळी सेवा क्षेत्रे आता ई–आद्याक्षरापासून सुरू होऊ लागली आहेत. संगणकीय साक्षरतेपाठोपाठ येणारी ई–साक्षरता वतर्द्यमान युगात आपली महत्ता गाजवू लागली आहे. शिक्षणाकडे फार मोठे सेवा–व्यवसाय क्षेत्र म्हणून अख्या जगाचे डोळे लागले आहेत. खाजगी विद्यापीठे आणि परदेशी गुंतवणुकीने स्थापन होऊ लागलेली परदेशी विद्यापीठे e-education मधून फारमोठी उलाढाल करणार आहेत. आपल्याकडे शिक्षण क्षेत्रात प्रवेश, निकाल, मार्कशीटस् हे ऑनलाईन सुरू झाले आहेत. यशवंतराव चव्हाण महाराष्ट्र मुक्त विद्यापीठाचे आभासी वर्ग – virtue classes हा या प्रवासातला महत्वाचा टप्पा आहे. प्रज्ञा प्रबंधन – talent management ही नवी ज्ञान शाखा आपल्या उंबरठयावर उभी आहे. ई–लायब्ररी, ई–बुक्स, ई–जरनल्स हे तर ज्ञानदानाच्या क्षेत्रात दृकश्राव्य वरदानच म्हणावे लागेल.

संदर्भग्रंथ :–

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भारताच्या विकासात ई – कॉमर्सचे योगदान

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सहयोगी प्राध्यापक
संताजी महाविद्यालय, नागपूर – १५

सारांश :–

संपूर्ण जगामध्ये विज्ञानाचे क्रांती केली आहे याचाच एक भाग म्हणून संगणक उदयास आला आणि त्याला मिळालेल्या ईंटरनेटच्या जोडीमुळे ईकॉमर्सची संकल्पना आली आणि समाजाला सोई यामधुन प्राप्त झाल्या याचा नेहमी सकारात्मक उपयोग घेणे अत्यंत गरजेचे आहे. याचा नकारात्मक उपयोग झाल्यास संपूर्ण समाजावर आणि पर्यायाने देशावर त्याचा विपरीत परिणाम होऊ शकतो. याचा विचार करणे देखील महत्वाचे ठरते.

प्रास्ताविक :–

आजचे युग हे संगणकीय युग म्हणुन ओळखले जाते. संगणकामुळे अनेक बदल सर्व क्षेत्रामध्ये झालेले आहे. वाणिज्य क्षेत्र हे देखील त्याला अपवाद नाही. वास्तविक पाहता, संगणकामुळे वाणिज्य क्षेत्रात खूपच बदल झालेला आपल्याला दिसून येतो. त्यामध्ये प्रामुख्याने दळणवळणाच्या संदेशवहनाच्या, संगणकलेखांकनाच्या, वस्तु वितरणाच्या अद्यावत सोयीमुळे संपूर्ण उद्योग क्षेत्रामध्ये खूपच कायापालट झाल्याचे चित्र आपल्याला दिसून येते. संपूर्ण जगामध्ये संगणकाने प्रचंड क्रांती केलेली आहे. Start up India, Make in India या संकल्पनेमुळे व त्याला मिळणाऱ्या प्रचंड प्रतिसादामुळे व्यवसाय क्षेत्राचा खऱ्या अर्थाने चेहरा बदलला आहे.

ई– कॉमर्स म्हणजे काय?

ई– कॉमर्स म्हणजे ईलेक्ट्रॉनिक्स वाणिज्य किवा कॉमर्स असा अर्थ अभिप्रेत होतो. परंतु इतका त्याचा संकुचीत अर्थ नाही. व्यापक अर्थाने याचा विचार करावयाचा झाल्यास ईंटरनेटच्या माध्यमातुन उत्पादन आणि सेवांची करता येणारी खरेदी आणि विक्री होय. ईंटरनेटच्या अधिकाअधिक वापरामुळे किंवा त्यांच्या वाढत्या लोकप्रियतेमुळे ईटरनेटमधील व्यापाराला कमालीची चालना मिळालेली आहे. भीम ॲप, पेटीएम, ॲमेझॉन अशी अनेक उदाहरणे आहेत की ज्यामुळे ई– कॉमर्सचा एक नवीन अध्याय सुरू झाला आहे.

ई– कॉमर्सचा इतिहास :–

ई–कॉमर्स ची सुरवात १९८० च्या दशकात झाली. त्यावेळी व्यवसायामध्ये अन्य कंपनी सोबत कागदपत्र देण्यासाठी; Electronic Data Interchange(EDI) याचा उपयोग करण्यात आला.

१९७९ मध्ये अमेरिकेमध्ये नॅशनल स्टॅडर्ड इंस्टिटयुट नी ASCX12 ला इलेक्ट्रॅनीक कागदपत्र देण्यासाठी सर्वप्रथम युनिवर्सल स्टॅडर्डचे तंत्र विकसित केले.

१९९० च्या दशकामध्ये C.Bay आणि Amazon मुळे ई– कॉमर्स मध्ये क्रांतीकारी बदल घडून आला आणि याकडे सर्वाचा पाहण्याचा दृष्टीकोन बदलला.

१९९६ च्या सुमारास ई–कॉमर्सचे भारतात आगमन झाले. त्यावेळी जॉब फाईंडर, क्लासिफाईड यासारख्या साईडचा उदय झाला होता. परंतु याची माहीती फार कमी लोकांना होती. त्यामुळे लवकरच या वेबसाईट बंद झाल्या.

मात्र २००० मध्ये भारतात ई– कॉमर्सला खऱ्या अर्थाने सुरूवात झाली असे आपल्याला म्हणता येईल. कारण या काळात भारतामध्ये टूरीझम क्षेत्राने ई–कॉमर्सचा उपयोग मोठया प्रमाणावर केला. त्यामधुनच विमानाचे तिकीट,

रेल्वेचे तिकीट, हॉटेलचे तिकीट ची संकल्पना सुरू झाली. भारतामध्ये यासाठी विप्रोचे अझिम प्रेमजी आणि इन्फोसिसचे जनक एन आर नारायणमूर्ती तसेच रतन टाटा यांनी यात पूढाकार घेतला.

ई – कॉमर्सचे प्रकार :–

१) Business to Consumer (B2C)

(व्यवसाय ते ग्राहक)

२) Business to Business (B2B)

(व्यवसाय ते व्यवसाय)

३) Consumer to consumer (C2C)

(ग्राहक ते ग्राहक)

४) Consumer to Business (C2B)

(ग्राहक ते व्यवसाय)

ई–कॉमर्सचे फायदे :–

(१) सोयी प्राप्त होतात.

(२) वेळेची बचत होते.

(३) श्रमाची बचत होते.

(४) वस्तुची आणि किंमतीची योग्य तुलना करता येते.

(५) घरपोच सेवा

(६) देशाचा विकास होण्यास मदत

(७) बॅंकेच्या व्यवहारासाठी अधिक फायदेशीर आहे

(८) परकीय चलनात वाढ होते.

(९) वस्तु कमी किंमतीत मिळतात.

ई –कॉमर्स तोटे :–

(१) सदोष गुणवत्तेचे उत्पादन ग्राहकांना मिळते.

(२) ग्राहक गरजेपेक्षा जास्त खरेदी करतात.

(३) ग्राहकांची फसवणुक होण्याची दाट शक्यता असते.

(४) वस्तुच्या प्रदानाला वेळ लागु शकतो.

(५) सुरक्षेचा अभाव असतो.

(६) माहीती दुसरी कडे गेल्यास त्याचा दूरउपयोग होण्याची दाट शक्यता असते.

ई–कॉमर्सची उपयोगीता :–

ई–कॉमर्सची उपलब्धता सगळया ठिकाणी सगळया वेळेत अगदी सहजपणे उपलब्ध असते. ग्राहक कोणत्याही वेळी अगदी घरी बसल्या ईंटरनेटच्या माध्यमातून वस्तुची खरेदी किंवा विक्री करू शकतो.

भारतातील सर्वात लोकप्रिय शॉपिंग साईट :–

(१) फ्लिपकार्ट कॉम (Flipkart.com)

(२) जबॉग.कॉम (Jabong.com)

(३) मित्रा.कॉम (myntra.com)

(४) स्नॅपडिल.कॉम (Snapdeal.com)

(५) ॲमेझॉन.कॉम (amazon.in)

ॲमेझॉन बाबतीत सांगायचे झाल्यास संपूर्ण जगामध्ये या ई–शॉपिग वेबसाईटचा पहिला नंबर लागतो. परंतु भारतामध्ये याचा पाचवा नंबर लागतो.

या व्यतीरिक्त ई–वे, जंगली, नापतोल, येमि,शॉपक्लुस, इंडिया टाईम्स शॉपिंग, चिपरक्राय, बेबी ओम या साईट भारतात कार्यरत आहेत.

भारतामध्ये ई–कॉमर्सची वार्षिक उलाढाल :–

भारतामध्ये २००९ मध्ये ई–कॉमर्सची उलाढाल जवळपास ३.९ अरब डॉलर इतकी होती.

२०१३ मध्ये ही वार्षिक उलाढाल वाढून १२.६ अरब डॉलर झाली.

२०१६–१७ मध्ये यात अजुन १९ टक्के वाढ झाली.

भारतामध्ये जुलै २०१७ मध्ये ४५० मिलियन ईंटरनेटचा वापर करणारी संख्या होती. जी एकुन लोकसंख्येच्या ४० टक्के ऐवढी आहे. संपूर्ण जगामध्ये ईंटरनेचा वापर करणाऱ्या संख्येत भारत ५ व्या क्रमांकावर आहे. परंतु असे असुन सुध्दा चीन,अमेरिका , फ्रांन्स यांच्या तुलनेत भारतात ई– कॉमर्सचे कमी प्रमाण आहे.

चीन मध्ये ६५० मिलियन एकून लोकसंख्येच्या ४८ टक्के, अमेरिकेमध्ये २६६ मिलियन एकुन लोकसंख्येच्या ८४ टक्के आणि फ्रान्स ५४ मिलियन एकुन लोकसंख्येच्या ८१ टक्के इतकी आहे.

परंतु सध्या भारतात ई–कॉमर्स अतिशय मोठया प्रमाणावर वाढत आहे. जो जवळपास दर महिन्याला ६ मिलियन वाढत आहे.

निष्कर्ष :–

संगणकाच्या जगामध्ये वाढत्या लोकप्रियतेचा आणि उपयोगाच्या पातळीवर भारतात देखील वाढ होत आहे. इतर प्रगत देशाच्या तुलनेत हा दर कमी आहे हे निश्चित आहे. याला अनेक कारणे आहेत. परंतु याचा वापर ई –कॉमर्स मध्ये घेताना अनेक अडचणी आहेत त्यांची सोडवणुक झाल्यास त्याचा जास्त फायदा लोकांना आणि पर्यायाने देशाला होईल हे वेगळे सांगण्याची आवश्यकता नाही.

उपाययोजना :–

(१) देशात साक्षरतेचा दर वाढला पाहीजे.

(२) सायबर लॉ मध्ये अजुन संशोधनाची गरज आहे.

(३) मोठया उदयोगासोबत छोटया उदयोगांना देखील ई– कॉमर्सचा वापर व्हावा याकरिता सरकारने प्रयत्न करायला हवे.

(४) यास अजुन सखोल संशोधनाची आवश्यकता आहे.

(५) भारतातील ईंटरनेटची गती इतर देशाच्या तुलनेत कमी आहे ती वाढविणे आवश्यक आहे.

(६) हॅकिंग चे उच्चाटन झाले पाहिजे तसेच न झाल्यास त्यावर नियंत्रण ठेवण्यासाठी प्रयत्न केले पाहीजे.

संदर्भग्रंथ :—

(१) https//mr.m.wikipedia.org

(२) https//hi.m.wikipedia.org

(३) mrvikaspedia.org

(४) https//maharashtratimes.indiatimes.com

(५) https//www.lok-satta.com

(६) https//www.lokmat.com

(७) https//computer hindinotes.com

(८) https//Indian Market.com

(९) व्यावसायीक कायदा — डॉ. प्रकाश देहलीवाल

(१०) विपणन व्यवस्थापन —डॉ. प्रभाकर देशमुख

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आधुनिक भारताच्या व्यवसायामध्ये ई–कामर्स ची भूमिका

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प्रस्तावना:–

मानवी संस्कृतीला प्रगल्भ करणकरिता मानवाने अनेक क्षेत्रामध्ये आपल्या तार्कीकतेचा उपयोग करून अनेक शोध लावलेत. जेव्हा मुद्रेचा शोध लागला तेव्हापासून मानवाच्या सामाजिक अस्तित्वाची व्यापारविषयक बाजू अधिक भक्कम होत गेली. मुद्रेच्या वापरामुळेच विविध वस्तुचे उत्पादन, विनिमय, वाटणी व उपयोग इत्यादी क्षेत्रात सततच वाढ होत आहे. मुद्रेचा शोध लागण्यापूर्वी वस्तुविनिमय प्रचलित होता. वस्तुविनिमामध्ये उद्भवत असलेल्या अडचणीना दुर करण्याकरिता पैशाचे माध्यम स्विकारण्यात आले. मानव शिकारी अवस्थेमध्ये असतांना त्याने गायी,बैल,शेळया,मेंढया इत्यादी जनावरांचा पैसा म्हणून वापर केला आहे. त्याचबरोबर बदलत्यापरिस्थितीनुसार मानवाने कधी गहु,तांदुळ,कवडया,लाकुड इत्यादी वस्तुंचा सुध्दा पैसा म्हणून उपयोग करण्यात आला. या पैशाच्या प्रकारामध्ये चलनी पैसा व हिशेबी पैसा,कायदेशीर व ऐच्छिक पैसा,धातू व कागदी पैसा,प्रधान व गौन नाणी,प्रमाप व प्रतीक नाणी, पत्रमुद्रा,पतपैसा आणि आजच्या युगात आपणाला ई–कामर्सचे अस्तित्व दिसायला लागले. इंटरनेटवरती आपणाला वस्तूंच्या खरेदी–विक्रीचे व्यवहार दिसायला लागले. हे आधुनिक भारताच्या व्यवसायामध्ये ई–कामर्स चे एक नविन स्वरूप आहे. सन १९९६ च्या मध्यापासूनच ई–कामर्स भारतामध्ये आले. काही जाब फाइडर, क्लासिफाइडस आणि मॅट्रिमोलियल साइट्चा उगम झाला होता. परंतू हयाविषयीची माहीती अगदी फार थोडया लोकांना होती. त्याचा परिणाम असा झाला की त्या वेबसाईट बंद केल्या गेल्या. सन २०००मध्ये इंटरनेटशी संबंधित कंपण्यामधील गुंतवणूक फार वाढायला लागली. या घटनेला 'डॉटकॉम बर्स्ट' असे म्हटल्या जाते. टूरिझम,प्लाइट बुकिंग,हॉटेल बुकिंग अश्याप्रकारे या इंटरनेटचा व्यवसाय वाढत गेला. २००९ या कालावधीमध्ये या क्षेत्राचा महसूल १६ हजार ६०० करोड रूपये होता. आज या क्षेत्राची झेप बरीच वाढलेली आहे. २०१५ मध्ये १ लाख करोड रूपयांचा टप्पा पार झाला.

ई–कॉमर्सचा अर्थ व प्रकार:–

इलेक्ट्रीक कॉमर्स ला ई–कॉमर्स असे संबोधले जाते. आपल्याला हव्या असलेल्या ब–याच वस्तू हया आपण इंटरनेटच्या माध्यमातून प्राप्त करून घेत असतो. इंटरनेटवर वस्तूच्या खरेदी–विक्रीचे जे व्यवहार होतात ते ई–कामर्स म्हणून ओळखल्या जाते. दिवसेंदिवस व्यापारी व ग्राहक यांच्यातील व्यवहार हे इंटरनेटच्या माध्यमातून संकलीत आहे. इतर कोणत्याही प्रकारच्या कॉमर्स प्रमाणेच इलेक्ट्रॉनिक कॉमर्सला व्यापारी व ग्राहक या दोन्ही पक्षांची गरज असते.

इलेक्ट्रानिक कॉमर्सचे प्रकारः–

1.B2C - Business to Consumer

2.C2C - Consumer to Consumer

3. B2B - Business to Business

वरिल रेखांकित केलेल्या प्रकाराची थोडक्यात माहीती खालीलप्रमाो सांगितलेली आहे.

1. Business to Consumer (B2C) -

या प्रकारच्या पध्दतीमध्ये उत्पादनांची विक्री ही जनतेला होत असते. वस्तूचा उत्पादक किंवा निर्माता हा आपली वस्तू प्रत्यक्षपणे ग्राहकाला विकत असतो. खरेदी आणि विक्रीच्या व्यवहारामध्ये मध्यस्थांचा अभाव आपल्याला दिसून येत असतो हेच या पध्दतीचे वैशिष्टे होय.

2. Consumer to Consumer (C2C) - या प्रकारच्या पध्दतीमध्ये व्यक्ति आपला माल किंवा वस्तू विकत असतात. उत्पादनाच्या वर्गीकृत जाहिराती किंवा लिलाव हा त्याचाच एक भाग आहे. हया पध्दतीमध्ये खरीदीदार किंवा विक्रेते हयांची एकमेंकांसमोर भेट होत नाही.

3. Business to Business – या प्रकारच्या पध्दतीमध्ये उत्पादनाची विक्री ही एका उद्योगातून दुस–या उद्योगात होते. निर्माता व पुरवढा करणारा हयातील एक वैशिष्यपूर्ण असा संबंध (Relationship) आहे. हा संबंध स्पष्ट करण्याकरिता उदाहरण म्हणजे फर्निचर निर्मात्याचे होय. फर्निचर तयार करणा–याला ताकूड पेंट,वार्निश इत्यादींची आवश्यकता असते. हा B2B E-Commerce मध्ये फर्निचर निर्माता इलेक्ट्रानिकव्दारे आवश्यकता वस्तुंची ऑर्डर पुरवठाकर्त्याकडे देतो व बरेचदा हा बिलाचे पैसे इलेक्ट्रानिकच्या साहयानेच दिले जातात. सर्वात अधिक लोकप्रिय

B2B E-Commerce हे ऑटोमोबाइलचे सुटे भाग, कॉम्प्युटर्स प्रकृती स्वास्थाकरिता आवश्यक अशी औषधी हया करिता असते.

Web Store Fronts - हे B2C इलेक्ट्रानिक कॉमर्सकरिता आवश्यकता असणारे स्टोअर्स आहेत. खरेदी करू इच्छिणारे दुकानदार मालाची पाहणी करण्याकरिता वेबचा वापर करून पसंत पडलेला माल खरेदी करतात. उद्योग धंदेवाल्यांना स्टोअर्स निर्मितीत मदत करणकरिता "Web Storefront Creation Packages" किंवा Commerce Servers हया नावाचा नविन प्रकारचा एक कार्यक्रम नुकताच सुरू करण्यात आला आहे. अश्याप्रकारचे कार्यक्रम Web Sites निर्माण करतात. हया Web Sites मुळे देणारे आवश्यक वस्तू हया शॉपिंग कार्डसमध्ये ठेवू शकतात तसेच माल व सेवांची खरेदी करू शकतात. हयाशिवाय विविध प्रकारचे कर, शिपिंग खर्च, विविध प्रकारच्या पेमेंट सवलती इत्यादीबद्दल माहिती पुरवितात हयाचबरोबर Store Front Sites हया भेट देणा–यांविषयी माहिती ही गोळा करतात.

Web Auction –C2C E-Commerce ची विशेषपणा ही आहे की, Web Auctions ची सतत 'लोकप्रियता' वाढत आहे. Web Auctions म्हणजे वेब लिलाव हे पारंपारिक लिलावासारखे आहेत. फक्त फरक इतकाच आढळून येतो की, Web Auctions मध्ये खरेदीदार व विक्रेते हयांची समोरासमोर भेट अगदी क्वचितच होत असते. विक्रेते हे Web Site वर आपल्या उत्पादनाचे (विक्रय मालाचे) वर्णन करतात व खरेदीदार हे आपली लिलावातील बोली इलेक्ट्रानिक्सव्दारे लावतात. पारंपारिक लिलावाप्रमाणेच येथे सुध्दा कधी कधी लिलावाची बोली ही अतिशय स्पर्धात्मक सुध्दा बनते.

ई–कॉमर्सचे प्रकार्य (लाभ) –

१.श्रमाची बचत,वेळेची बचत होÅन सोयी व सुविधा प्राप्त होतात.

२.वस्तुची आणि किंमतीची आपल्याला तुलना करता येते.

३.वस्तु आपणाला घरपोच उपलब्ध होतात.

४.वस्तु आपणाला हया कमी किमतीमध्ये मिळतात.

५.बॅकेच्या व्यवहाराकरिता E-Commerce अधिक फायदेशीर आहे.

६.विदेशी चलनामध्ये वाढ होते.

ई–कॉमर्सचे अपकार्य (दोष)–

१.अशा प्रकारच्या व्यवहारामध्ये ग्राहकांची फसवणूक होण्याची शक्यता टाळता येत नाही.

२.कधी कधी माहिती ही दुसरीकडे जाण्याची शक्यता असते.

३.E-Commerce मध्ये सुरक्षितता पाहिजे त्या प्रमाणात आढळून येत नाही.

४.दोषपूर्ण उत्पादन ग्राहकांना मिळते.

५.वेळेविषयी निश्चितता राखल्या जात नाही.

ई–कॉमर्सची उपयोगिता–

इंटरनेटवरती वस्तूंचे जे खरेदी–विक्रीचे व्यवहार होतात. सगळया ठिकाणी सहजपणे अगदी वेळेमध्ये उपलब्ध होत असतात. या तंत्रयुगामध्ये ग्राहकाला कोणत्याही वेळी स्वतःच्या घरी सुध्दा बसून वस्तूची खरेदी–विक्री करता येते. विक्रेता व खरेदीदार यांच्या व्यवहारामध्ये कोणीही मध्यस्थी नसतो. कधी कधी चिल्लर विक्रेते सुध्दा E-Commerce चा वापर करीत असतात. त्या माध्यमातून तो आपल्या ग्राहकांशी संपर्कात राहत असतो व व्यवहारामध्ये संबंधाचे स्वरूप हे अधिक स्पष्ट होत असते.

निष्कर्ष–

आधुनिक भारताच्या व्यवसायामध्ये ई–कॉमर्सची भूमिकांविषयी जेव्हा आपले विचार हे निष्कर्षाकडे पोहचतात तेव्हा आपणाला असे म्हणता येते की, या युगामध्ये मानवी समाजामध्ये जे काही बदल घडून येतात. त्या बदलांचा स्विकार करित असतांना अपकार्यापेक्षा प्रकार्याचा विचार अधिकाअधिक होणे हे जास्त महत्वाचे असते. कोणत्याही कार्याचा प्रकार्यात्मक बदल समाजामध्ये होत असेल तर समाजाचा दर्जा हा अधिक उंचावतो. तंत्रज्ञानाच्या युगामध्ये तंत्रज्ञानाचा वापर करणे योग्यच ठरते. परंतू त्या देशाचा इतिहास कसा आहे हे समजून घेणे अतिशय महत्वाचे आहे. E-Commerce चा उपयोग हा योग्य त्याच ठिकाणी करून मानवी समाजामध्ये त्याचे महत्व टिकवून ठेवणे हे ही, तितकेच महत्वाचे असते. अन्यथा या व्यहारांचा मानवी समाजावर अप्रकार्यात्मक परिणाम दिसून येतो.

संदर्भ:—

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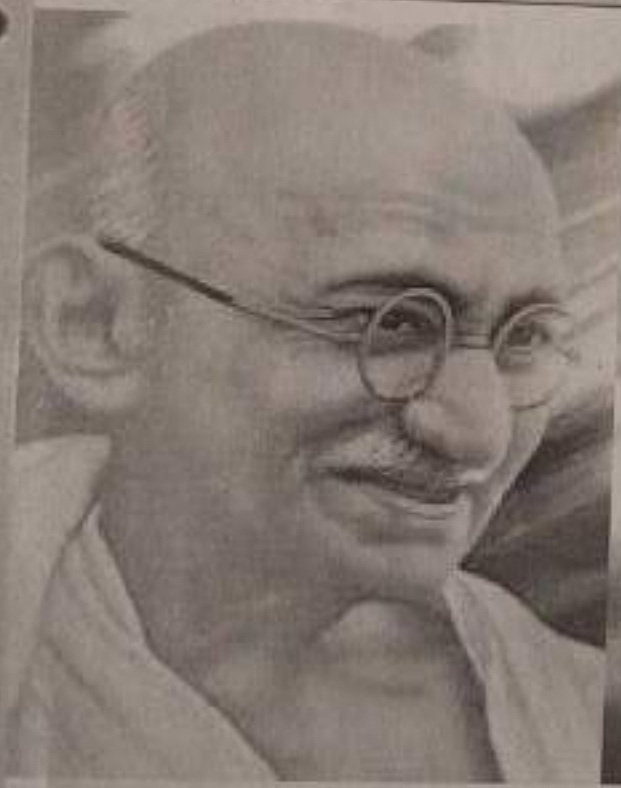

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महात्मा गांधी एवं सर्वोदय

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सर्वोदय का दर्शन अंग्रेज लेखक जॉन रस्किन की एक पुस्तक है– अन्टू दिस लास्ट। जिसका अर्थ है– इस अंतवाले को भी। रस्किन की इस पुस्तक का गाँधीजी ने गुजराती में अनुवाद 'सर्वोदय' नाम से किया। सर्वोदय अर्थात् सबका उदय, सभी का विकास। सर्वोदय भारत का पुराना आदर्श है। हमारे ऋषियों ने गाया है– "सर्वेपि सुखिनः संतु"। सर्वोदय शब्द भी नया नहीं है। जैन मुनि समन्तभद्र कहते है–

सर्वापदामंतकरं निरंतं सर्वोदयं तीर्थमिदं तवैव।

"सर्वं खल्विदं ब्रह्मा", "वसुधैवकुटुम्बकम्" अथवा सोहम् और "तत्वमसि" के हमारे पुरातन आदर्शों में सर्वोदय के सिद्धांत अंतर्निहित है।

सर्वोदय समाज गाँधीजी की कल्पनाओं का समाज था, जिसके केन्द्र में भारतीय ग्राम व्यवस्था थी। उनके अनुसार सर्वोदय अभियान का अर्थ है, आर्थिक व सामाजिक क्षेत्र में भारत की आत्मा की खोज एवं उसकी प्रतिष्ठा की पूर्णता के दर्शन करना। यह प्रतिपादित करता है भूमि संबंधी पुनर्निर्मित परम्पराओं और व्यवहार के भारतीय आदर्शों के आधार पर सामाजिक और राजनैतिक गढ़ों, ईर्ष्या और गले काटने की प्रतियोगिता का स्थान पारस्परिक सहयोग और सभी की भलाई की भावना प्रमुख रूप से ले।विनोबा जी ने कहा है, सर्वोदय का अर्थ है– सर्वसेवा के माध्यम से समस्त प्राणियों की उन्नति। सर्वोदय के व्यावहारिक स्वरूप को हम बहुत हद तक विनोबा जी के भूदान आंदोलन में देख सकते है।

दादा धर्माधिकारी ने अपने सर्वोदय दर्शन में लिखा है, सुख वाले को जितना, दुःखवाले को भी उतना ही, प्रथम व्यक्ति को जितना, अंतिम व्यक्ति को भी उतना ही, इसमें समानता और अद्वैत का यह तत्व समाया है, जिस पर सर्वोदय का विशाल प्रासाद खड़ा है।

सर्वोदय के उद्देश्य:

- व्यक्ति में आत्म–संयम की भावना विकसित करना।
- शोषणहीन समाज की स्थापना के प्रयास करना।
- मानव समाज के सर्वांगीण विकास के प्रयास करना।
- लोकनीति के आधार पर शासन संचालन किया जाये।
- सत्ता के विकेन्द्रीकरण के प्रयास सुनिश्चित हो।

सर्वोदय का आदर्श है 'अद्वैत' और उसकी नीति है 'समन्वय'। मानवकृत विषमता का यह अन्त करना चाहता है और प्राकृतिक विषमता को यह घटाना चाहता है। जीवमात्र के लिये समादर और प्रत्येक व्यक्ति के प्रति सहानुभूति ही सर्वोदय का मार्ग है। जीवमात्र के लिए सहानुभूति का विचार जब जीवन में प्रवाहित होता है, तब सर्वोदय की सत्ता में सुखपूर्ण सुमन खिलते है। आर्किन ने कहा– "प्रभुता का निकष है, बड़ी मछली छोटी मछली को खाकर जीवित रहती है।" इसलिये ने

कहा– "जीओ और जीने दो।" परंतु सर्वोदय कहता है– "तुम दूसरों को जिलाने के लिये जीओ। "दूसरों को अपना बनाने के लिये प्रेम का विस्तार करना होगा, अहिंसा का विकास करना होगा और शोषण को समाप्त कर आज के सामाजिक मूल्यों में परिवर्तन करना होगा।

'सर्वोदय ऐसे वर्गविहीन, जातिविहीन और शोषण मुक्त समाज की स्थापना करना चाहता है, जिसमें प्रत्येक व्यक्ति और समूह को अपने सर्वांगीण विकास का साधन और अवसर मिले। विनोबा भावे कहते है– जब हम सर्वोदय का विचार करते है, तब ऊँच–नीच भाववाली वर्णव्यवस्था दीवार की तरह सामने खड़ी हो जाती है। उसे तोड़े बिना सर्वोदय स्थापित नहीं होगा। इसे सफल बनाने हेतु जातिभेद मिटाना होगा और आर्थिक विषमता दूर करनी होगी।

सर्वोदय ऐसी समाज रचना चाहता है जिसमें वर्ण, वर्ग, धर्म, जाति, भाषा आदि के आधार पर किसी समुदाय का न तो संहार हो, न बहिष्कार हो। सर्वोदय की समाजरचना ऐसी होगी, जो सर्व के निर्माण और सर्व की शक्ति से सर्व के हित में चले, जिसमें कम या अधिक सामर्थ्य के लोगों को समाज का संरक्षण समान रूप से प्राप्त हो और सभी तुल्य पारिश्रमिक के हकदार माने जाये। विज्ञान और लोकतंत्र के इस युग में सर्व की क्रांति का ही मूल्य है और वही संपूर्ण विकास का मापदण्ड है। सर्व की क्रांति में पूँजी और बुद्धि में परस्पर संघर्ष की गुंजाइश नहीं है। वे समान स्तर पर परस्पर पूरक शक्तियाँ है। स्वभावतः सर्वोदय की समाज रचना में अंतिम व्यक्ति समाज की चिंता का सबसे पहले अधिकारी है।

सर्वोदय समाज की रचना व्यक्तिगत जीवन की शुद्धि पर ही हो सकती है। जो व्रत नियम व्यक्तिगत जीवन में 'मुक्ति के साधन है वे ही जब सामाजिक जीवन में भी व्यवहृत होंगे, तब सर्वोदय समाज बनेगा। सर्वोदय की दृष्टि से जो समाज रचना होगी, उसका आरंभ हमें अपने जीवन से करना होगा। निजी जीवन में असत्य, हिंसा, परिग्रह आदि हुआ तो सर्वोदय नहीं होगा, क्योंकि सर्वोदय समाज की विषमता को अहिंसा से ही मिटाना चाहता है। साम्यवादी का ध्येय भी विषमता मिटाना है, परंतु इस अच्छे साध्य के लिए वह चाहे जैसा साधन प्रयोग में ला सकता है, परंतु सर्वोदय के लिये साधन शुद्धि भी आवश्यक है।

गाँधीजी कहते है– "समाजवाद का प्रारंभ पहले समाजवादी से होता है। यदि एक भी ऐसा समाजवादी हो, तो उस पर शून्य बढ़ जाएगी, लेकिन यदि पहला अंक शून्य हो तो, उसके आगे कितने ही शून्य बढ़ाए जाएँ, उसकी कीमत फिर भी शून्य ही रहेगी।इसीलिये गाँधीजी सत्य, अहिंसा, अस्तेय, अपरिग्रह, ब्रह्मचर्य, अस्वाद, शरीरश्रम, निर्भयता, सर्वधर्म समन्वय, अस्पृश्यता और स्वदेशी आदि व्रतों के पालन पर इतना बल देते है।

सर्वोदय के प्रमुख तत्व :

1. **पारिश्रमिक की समानता–** जितना वेतन नाई को उतना ही वेतन वकील को। "अनटू दिस लास्टस का यह तत्व सर्वोदय में पूर्णतः गृहित है।
2. **प्रतियोगिता का अभाव–** प्रतियोगिता संघर्ष को जन्म देती है, परंतु सर्वोदय संघर्ष नहीं, सहकार को मानता है। सर्वोदय का संपूर्ण भवन ही अहिंसा की नींव पर खड़ा है।
3. **साधन शुद्धि–** सर्वोदय में साधन शुद्धि प्रमुख तत्व है। साध्य भी शुद्ध और साधन भी शुद्ध।
4. **आनुवांशिक संस्कारों से लाभ उठाने के लिये ट्रस्टीशिप की योजना–** शरीर, बुद्धि और संपत्ति इन तीनों में से जो जिसे प्राप्त हो, उसे यही समझना चाहिए कि वह सबके हित के लिये ही मिली है। यही ट्रस्टीशिप का भाव है। अपनी शक्ति और संपत्ति का ट्रस्टी के नाते ही मनुष्य मात्र के हित के लिए प्रयोग करना चाहिए।

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5. विकेन्द्रीकरण– सर्वोदय सत्ता और संपत्ति का विकेन्द्रीकरण चाहता है। जिससे शोषण और दमन से बचा जा सके। केन्द्रीकृत औद्योगिकीकरण के इस युग में तो यह और भी आवश्यक हो गया है। गाँधीजी ने आदि, मध्य और अन्त तीनों स्थितियों में विकेन्द्रीकरण और शासनमुक्तता की बात कही है। यही सर्वोदय का मार्ग है। वर्तमान विश्व राजनीति में गाँधीजी की सर्वोदय की विचारधारा उन राष्ट्रों के लिये बहुमूल्य सिद्धांत साबित होगी जो अपने को आंतरिक दृष्टि से असमान, असहाय एवं असहज महसूस करते है। क्योंकि विश्व में समानता तभी लायी जा सकती है जब सभी वर्गो का उदय समान रूप से हो।

निष्कर्ष :

सर्वोदय का आदर्श है अव्दैत और उसकी नीती है समन्वय। मानवकृत विषमता का वह अंत करना चाहता है और प्राकृतिक विषमता को घटाना चाहता है। जीवमात्र के लीए समादर और प्रत्येक व्यक्ति के प्रती सहानुभुती ही सर्वोदय का मार्ग है। जीवमात्र के लीए सहानुभुती का यह अपुत जिवन मे प्रभावित होता है तब सर्वोदय की लता मे सुरभिपूर्ण सुमन लिखते है।

सर्वोदय ऐसी समाजरचना चाहते है जिने वर्ण, वर्ग, धर्म, जाती, भाषा आदी के आधार पर किसी समुदाय का न हो संहार हो न बहिष्कार हो। जो व्रत नियम व्यक्तिगत जिवन मे "मुक्ति" के साधन है वे ही जब समाजिक जिवन मे भी व्यवहृत होगे तब सर्वोदय समाज बनेगा।

संदर्भसूची

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डॉ. सुधाकर धूल
डॉ. अमोल राऊत

मुख्य संपादक
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INDEX

Our Editors have reviewed papers with experts' committee, and they have checked the papers on their level best to stop furtive literature. Except it, the respective authors of the papers

स्त्री सशक्तिकरण और महात्मा गांधी

प्रा. डॉ. अल्का दहीकर
यशवंतराव चव्हाण कॉलेज
लाखांदूर जि.भंडारा
(गृहअर्थशास्त्र विभाग प्रमुख)

सर्वविदीत है कि नारी ही पृथ्वी की आदिशक्ती है । सृष्टी, वृध्दी, ईश्वर प्रदत्त पुरूष और नारी के सम्मेलन का परिणाम है । तात्पर्य यह है की पुरूष के साथ –साथ नारी का योगदान, जीवन के प्रत्येक पहलुओ में रहा है तथा प्रत्येक क्षेत्र का विकास परस्पर सहयोग द्वारा ही हुआ किंवं दन्तियो के आधार पर ही सही परंतु यह सभी जानते है की, जब देवतागन दैत्यो के अत्याचारो से त्रस्त हो गये थे तब ब्रम्हा, विष्णू, महेश के तेज से नारी रूप मे महाशक्ती दुर्गा का अवतरण हुआ जिन्होने दैत्यो का संहार कर देवताओ की रक्षा की।

महिला या नारी अनेक रूप के माँ, बहण, पत्नी, भाभी अथवा दाई से महान बनी । मनू ने मनुस्मृती में नारी का विवेचन करते हुए स्पष्ट लिखा है की, जहाँ नारियो की पुजा होती है, वहा देवता निवास करते है । प्राचिन काल के महिला में सशक्तिकरण दिखता है । जैसे उनका व्यक्तित्व सुरक्षित था, वे अपना जीवनसाथी स्वयं चुनती थी । सीता हो या कुंती अथवा कोई भी महिला जीवनसाथी स्वयं चुनती थी । प्राचिनकाल मे महिला की स्थिती अच्छी थी मगर अचानक भारत की परतंत्रता के साथ साथ महिला की परतंत्रता शुरू हुयी, महिला को चार दिवारी में बंद करा दिया, अज्ञान के अंधकारो ने ढकेल दिया, पग पग पर अपमान होता रहा, सामाजिक यातनाओंको चुपचाप सहन करती रही । बालविवाह, पर्दाप्रथा, सतीप्रथा, कन्यावध, उच्चशिक्षा का बहिष्कार उत्तराधिकारी से वंचित इस प्रकार की राक्षसी प्रथा ने महिलाओ को जकड लिया और महिला को अबला कहा जाने लगा ।

सबसे पहले छत्रपती शिवाजी महाराज ने महिला के सशक्तिकरण का बहुत प्रयास किया परंतु उनके जाने के बाद पेशवाओ ने महिलाओ पर फिरसे जुल्म उठाना शुरू किया । अंग्रेज काल मे राजा राममोहन रॉय, महात्मा गांधी, महात्मा फुले जैसे अनेक युगपुरूषो ने सामाजिक बुराइयोंका नाश करके महिला को अच्छा व्यवहार देने का प्रयास किया इसलिये हजारो महिलाएँ स्वतंत्रता आंदोलन मे आगे आयी थी ।

भारत को 15 अगस्त 1947 को आजादी मिली । आजादी मिलने के बाद 21 वी सदी मे भी भारतीय समाज मे महिला को आज भी वह दर्जा प्राप्त नही हुआ है । भारतीय समाज में नारी आज हर क्षेत्र मे आगे है । सामाजिक, शैक्षणिक, फौज, खेल, अग्नीशमन, रेल्वे, पुलीस विभाग इ. सभी जगह महिलाएँ कार्यरत है, मगर महिलाओं का यह विकास काफी धीमा है ।

सशक्तिकरन यह एक प्रक्रिया है जिसमें अनेक घटकों का समावेश होता है

1. समाज मे संसाधन का उपयोग करने के लिए महिलाओं को समान संधी होनी चाहीए ।
2. विचार एंवम कृती करते समय लिंग भेदभाव न हो ।
3. हिंसाचार से मुक्ती हो ।
4. आर्थीक स्वातंत्र्य हो ।
5. सभी महत्वपुर्ण निर्णय में महिलाओका सहभाग हो ।
6. जीवन से संबंधीत सभी महत्वपुर्ण निर्णय मे आझादी हो ।

महिला सशक्तिकरन एक दृष्टिकोन

1. दुनिया में 1 बिलीयन अनपढोमे 67: महिलाएँ है ।
2. दुनिया मे 1.3 बिलीयन गरीब लोगो मे 70: महिलाएँ है ।
3. दुनिया मे सभी सासंद मिलके सिर्फ 11: महिलाएँ है ।
4. पिछले शतक मे केवल 24 महिलाएँ सरकारी कार्यालयो मे उच्च पद पर थी ।
5. महिलाएँ पुरूषो की तुलना में दुगना वक्त ऐसे कामो मे व्यतीत करती है जिसका उन्हें आर्थिक लाभ
6. नही मिलता ।
7. GDP का 35 प्रतिशत हिस्सा उन कामो का है । जो महिलाएँ करती है और उससे कोई अर्थार्जन
8. नही होता ।
9. दुनिया मे कुल 13 करोड बच्चो मे से 2/3 बच्चीया स्कुली शिक्षा से वंचित रह जाती है ।
10. दुनिया में 2 करोड 70 लाख शनार्थियोंमें 75 से 80 फिसदी महिलाएँ एंवम बच्चे है ।
11. विकसनशिल देशो मे 55 फिसदी ग्रामीण महिलाएँ अनाज उत्पादन के कार्य करती है ।
12. 1990 मे दुनिया मे कुल मंत्रीयो मे महिला मंत्रियो का प्रमाण केवल 3.5: था ।

महात्मा गांधी के दृष्टी से

महात्मा गांधी ने स्वतंत्रता आंदोलन के नेतृत्व में महिलाओ के सवाल उठाए । 30 एप्रिल 1930 को यंग इंडिया में म. गांधीने भारत के सभी महिलाओं को आवाहन किया था की, सविनय अवज्ञा आंदोलन में सहभागी हो , चरखा पे सुत कलाई करे., घर से बाहर निकलकर विदेशी चीज और नशा बेचनेवाले दुकानो के सामान पॅकेटिंग करे । गांधीजीके आवाहनो पे सभी वर्गो की महिलाओ ने आंदोलन में सहभाग किया था ।

महात्मा गांधीजीके अनुसार अगर हमारे समाज मे सबसे अधिक कोई हताश हुआ है तो वे महिलाएँ ही है । इस वजह से हमारा अधःपतन भी हुआ है । गाधीजीने समाज में महिलाओंका दर्जा कैसा होना चाहिए, इसकी अच्छी मिसाल कायम की है । महिला को मताधिकार होना चाहिए, कानुन समान दर्जा कैसा मिलना चाहिऐं ऐसा गांधीजीका का कहना था । आजादी का आंदोलन व गांधीजी नेतृत्व इन दो शक्तीयो ने भारत की महिला को राजनितीक रूप मे समान दर्जा दिया है ।

भारत के संविधान ने महिलाओ के लिये उनका विकास और स्थिती को सुधारने हेतु विशेष प्रावधान किये है । पंचवार्षिक योजना द्वारा महिला के सशक्तिकरण हेतू विविध कार्यक्रमो को शामिल किया गया । सरकार के द्वारा भी समय समय पर महिला विकास व सशक्तिकरन हेतू इंदिरा महिला योजना, बालिका समृध्दी योजना, स्वर्णीय योजना, राष्ट्रिय महिला कोष स्त्री शक्ती पुरस्कार, राष्ट्रिय महिला आयोग इत्यादी विभिन्न योजनाएँ और कार्यक्रम कार्यान्वीत हो रहा है । मगर गांधीजी के समकालीन समाज में महिलाओं की हिन स्थिती थी ।

महिला सशक्तिकरन में गांधीजीका दृष्टिकोन :-

महात्मा गांधी के अनुसार समाज में महिलाओ की हीन स्थिती के लिए पुरूष वर्ग जिम्मेदार है। पुरूषाने स्वरचित शास्त्रोने, नियमो और कानुन परपराओ के आधार पर महिला को डरपोक, आश्रित वस्तु बना दिया है । उनके स्वतंत्र अस्तित्व, सोच व चिंतन पर कुठाराघात किया है। महिला और पुरुष वर्ग में समानता हो जाऐ तो महिला सशक्तिकरण का मुलभूत उद्देश साध्य हो सकता है । पुरूष और महिला में समानता को स्विकृती प्रदान करते वक्त गांधीजी कहते है की पुरूष और

महिलाओ मे एक आत्मा निवास करता है । और वे एक ही प्रकार का जीवन जीते है, एक दुसरे के पुरक है, एक दुसरे के सक्रिय सहयोग के बिना नही रह सकते है । पुरूष और महिला दोनो को उन्होने समान दर्जा दिया ।

सेवाग्राम (वर्धा जिल्हा – महाराष्ट्र) मे महात्मा गांधीजीने आश्रम की नीव रखी, इस आश्रम मे महिला और पुरूष दोनो को समानता का अधिकार प्रदान किया था । महिलाओ को सम्मानजनक स्थान प्रदान किया मिस स्लेड यानी मीरा बहन का ग्रामीणोकी सेवा करनेका अधुरा काम पुर्ण कराने के लिए महात्मा गांधी को निसकोच मदद देकर महिला आश्रम की स्थापना करके महिला शिक्षा का स्तर बढाया महात्मा गांधीने महिला शिक्षा को आवश्यक बनाया था शिक्षा प्राप्त करने से ही महिला अपना प्राकृतिक अधिकार प्राप्त कर सकती है यह महिला सशक्तिकरण के प्रति गांधीजीका दृष्टिकोन था ।

गांधीजी महिलाओ के विवाह के बारे मे कहते है की, महिलाओ की शादी की उम्र 16 इया 18 साल होनी चाहीए ताकी बालविवाह और सतीप्रथा खत्म हो सके । बाल विवाह होने से विधवाओ की समस्या बढती है । विधवा महिलाओं को पुनर्विवाह का अधिकार नही था मगर गांधीजीने पुनर्विवाह का समर्थन किया । दहेज प्रथा का विरोध किया । विधवा महिला इच्छानुसार पुरूष साथी ढुढकर पुनःविवाह कर सकती है । विवाह के अभियान से महिला सशक्तिकरन हो सकता है ।

महात्मा गांधी का महिला सशक्तिकरन हेतु अगला दृष्टिकोन यह भी था की महिला सामाजिक क्षेत्र में से समर्पित हो सकती है । रचनात्मक कार्यक्रम को अपनाकर वह आत्मनिर्भर हो सकती है । महिला अगर आत्मनिर्भर हो जाए तो वह सशक्तिकरण का अगला अभियान होगा ।

महिला सशक्तिकरन हेतू महात्मा गांधीजीने महिला शिक्षा को आवश्यक बताया । शिक्षा प्राप्त करके महिला से अपने प्राकृतिक अधिकारो को प्राप्त करने, उनके रक्षा करने तथा उनमे उपेक्षित सुधार करने मे सक्षम और समर्थ हो पाएँगी ।

महात्मा गांधीने विश्वास प्रकट किया की शिक्षा प्राप्ती से महिलाओ को मानसिक गुलामी व दास्यता की बेडियो को तोडना संभव होगा, इसलिए 14 वर्ष की आयु तक मुक्त और आवश्यक शिक्षा की सिफारस की । गांधीजी के अनुसार योग्यता को पहचानकर समानता, भेदभाव व शोषण की दिवारो को समूल उखाडने के लिए संकल्पित व जागरूक हो जायेगी ।

केवल पुरूषो के बलबुते पर महिलाएँ सबल व सशक्त नही बन सकती उन्हे शिक्षा देकर आर्थिक दृष्टिसे आत्मनिर्भर बनकर विवाह, पुनर्विवाह का अधिकार देकर ही महिला सबला बन सकती है । महिला को प्रेम, त्याग, करूणा और संयम जैसे मानविय गुणो की प्रतिमुर्ती मानते हुये स्त्री शक्ती का मुकाबला आज नही किया जा सकता । संसार केवल स्त्री या पुरूष से अकेले नही चलाया जा सकता । गांधीजीने महिलाओ को सशक्तिकरन हेतू उनकी शक्ती, सामर्थ्य व योग्यता से अवगत कराकर समाज मे उनके सम्मानजनक व बराबरी का दर्जा हासिल करवाने हेतू भगीरथ प्रयास किये जो की निःसंदेह रूप मे अमुल्य व सराहनीय है ।

संदर्भ ग्रंथ :–

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2. डॉ. उज्वला वैरागडे – सामुदायिक विकास, विस्तार शिक्षण व महिला सबलीकरण
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भारतातील खादी उद्योगाचे अर्थविश्लेषण

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सारांश

भारतीय जनतेनी 1920 मध्ये स्वदेशी चळवळीअंतर्गत उपासमारी आणि बेरोजगारी यावर मात करण्यासाठी महात्मा गांधी यांनी खादी उद्योगाची संकल्पना उदयास आणली. तेच स्वप्न भारताचे पंतप्रधान नरेंद्र मोदी यांनी धारण करून महात्मा गांधीजींच्या 68 व्या पुन्यतिथीनिमीत्त संपूर्ण भारताला खादी वापरण्यास प्रोत्साहित केले. खादी उद्योगाला चालना मिळाल्याचे गावामध्ये बेरोजगारी दूर होईल आणि आत्मनिर्भरतेची भूमिका वाढीस लागेल असे नरेंद्र मोदी यांनी प्रतिपादन केले होते. खादी केवळ एक शब्द नसून एक चळवळ आहे. या चळवळीमूळे परदेशावरील अवलंबत्व संपून स्वावलंबन निर्माण होते. खादी उद्योगामूळे देशाच्या अर्थव्यवस्थेत वाढ होते. ग्रामीण भागातील लोकांना रोजगार मिळतो. त्यांचे आर्थिक स्थैर्य वाढते. पर्यायाने त्यांच्या राहणीमान सूधारून जीवनमान उंचावते. खादी इको फ्रेन्डली असून त्याला जास्त किंमत प्राप्त होते. सध्या सुक्ष्म, लघु आणि मध्यम उद्योगांमुळे भारताच्या जिडीपीत 29% योगदान आहे. नितीन गडकरी यांनी पूढील पाच वर्षात याचे प्रमाण 50% वाढविण्याचा मानस ठेऊन ई कॉमर्स मधील अलीबाबा, ॲमेझॉन इ. पोर्टल च्या सहाय्याने हा व्यापार वाढविण्याचा प्रयत्न करित आहेत

प्रस्तावना

2014 मध्ये भारतात एकूण 71 क्लस्टर निर्माण झाले होते. त्यांच्या विकासाकरिता एकूण 149. 44 करोड रूपये SFURTI scheme अंतर्गत देण्यात आले होते. 2004–14 मधील खादीची सरासरी विकी रू 44.77 करोड होती या तुलनेत 2015–18 मध्ये सरासरी विकी रू 120.09 करोड झाली. या वाढीचे प्रमाण 168.24% आहे. सध्या सुक्ष्म, लघु आणि मध्यम उद्योगांमुळे भारताच्या जिडीपीत 29% योगदान आहे. नितीन गडकरी यांनी पूढील पाच वर्षात याचे प्रमाण 50% वाढविण्याचा मानस ठेऊन ई कॉमर्स मधील अलीबाबा, ॲमेझॉन इ. पोर्टल च्या सहाय्याने हा व्यापार वाढविण्याचा प्रयत्न करित आहेत. मागील 10 वर्षात 30% वार्षीक सरासरी वाढ या उद्योगात झाली आहे.

प्रस्तूत संशोधनात मागील 10 वर्षातील विकीचा अभ्यास करण्यात आला आहे. या संशोधनाचा मूख्य उद्देश खादी उद्योगाची सध्याची वाटचाल जाणून घेणे आणि उद्योग वाढीकरिता शिफारशी करणे होय.

खादी उद्योगाची निर्मीती

मुंबई येथे खादी आणि ग्रामोद्योग आयोगाच्या अधिनीयम 1956 च्या वैधानिक तरतुदीनुसार भारत सरकारच्या सुक्ष्म, लघु आणि मध्यम उद्योग मंत्रालयअंतर्गत खादी उद्योगाची स्थापना करण्यात आली. या योजनेचा मुख्य उद्देश म्हणजे ग्रामीण भागात खादी तसेच ग्रामोद्योगांची स्थापना करणे, त्यांचा विकास, प्रचार, विस्तार करणे आणि सहायता करणे हा होता. दिल्ली, भोपाल, बंगलोर, कोलकाता, मुंबई और गुवाहाटी येथे उपशाखा आहेत

3. शासकीय, निमशासकीय आणि गैरशासकीय विभागात अधिकारी, शिक्षक, विद्यार्थी इ. विविध घटकांना खादी वापरण्यावर कडक नियम बनविण्यात यावे. त्याची काटेकोर अंमलबजावणी करण्याकडे लक्ष पूरविण्यात यावे.
4. खादीला किंमत आणि मागणी प्राप्त करण्याकरिता त्याचा प्रचार, प्रसार आणि विकास घडवून आणावा लागेल.
5. खादी उद्योग हा राजकीय ईश्यू न ठेवता त्याला अर्थव्यवस्थेच्या वाढीच्या दृष्टीने विकसीत करावे. त्यामुळे ग्रामाचा विकास होईल आणि पर्यायाने देशाची अर्थव्यवस्था वाढेल आणि सुदृढ बनेल.

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The level of Haemoglobin in wild-caught females of the Emballonurid bat, *Taphozous kachhensis* (Dobson) during reproductive cycle

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Abstract
Haemoglobin level in female *Taphozous kachhensis* was investigated to find out the significant differences in haemoglobin level during different stages of reproductive cycle. Monthly changes in haemoglobin level was analysed for twelve months representing entire reproductive cycle. During lactation and quiescence the mean haemoglobin level was found to be 14.52 ± 0.25 and 13.86 ± 0.31 gm/dl respectively. Significant increase ($P < 0.01$) in haemoglobin level was noted during recrudescent stage. However significant decline ($P< 0.01$) in haemoglobin level was observed during all stages of pregnancy. During entire reproductive cycle in female, haemoglobin level was found in the range of 11.9 to 17.6 gm/dl.

Keywords: *Taphozous kachhensis*, bat, haemoglobin, anaemia, deficiency of iron

1. Introduction

Taphozous kachhensis is an emballonurid insectivorous bat. The reproductive cycle of *Taphozous kachhensis* was identified into seven stages viz. quiescence, recrudescent, oestrous, early pregnancy, mid pregnancy, advanced pregnancy and lactation. Insectivorous bats plays a key role in keeping the night flying insects in balance which are among the agricultural pests and vectors of diseases that may cause considerable damage to economy. Haemoglobin is a conjugated protein containing iron and globin molecule. Haemoglobin level in animals is directly proportional to iron content in the diet. Normal haemoglobin level is a sign of good health status in animals. Decreased haemoglobin level is termed as anaemia. Anaemia condition in animals may occur due to deficiency of iron in the diet of animals. In females, during pregnancy haemoglobin variability may be observed, because of increased demand of iron for placental growth, foetal development and uterine growth [1]. Haemodilution also occur during pregnancy which leads to physiological anaemia in females. Bats have higher respiration and metabolic rate as compared to terrestrial mammals [2]. To meet the oxygen demand for higher respiration, bats have higher haemoglobin level. Many studies on variability of haemoglobin level in different species of bats exist in the literature [3, 4, 5, 2, 6, 7, 8, 9, 10]. Thus in the present study, attempt was made to observe the variations in haemoglobin level in wild caught female *Taphozous kachhensis* during different stages of reproductive cycle.

2. Materials and methods

A. Collection of Specimen: In present study, specimens of *Taphozous kachhensis* were collected
on monthly basis to represent all the stages of reproductive cycle in females. Six female bats were collected during every month for this study. Overall 72 female bats were collected during entire reproductive cycle throughout the year from Ambai Nimbai caves which is 45 kilometers away from Bramhapuri (M.S.) with the help of mist net of the mesh size (10 mm). Identification of the specimen was done using standard monograph [11]. After collecting, these were brought to the laboratory. These female bats were anesthetized with ether and weighed on the electronic weighing balance.

B. Collection of Blood Sample: From these bats, blood samples were collected from the pectoral and subclavian veins in EDTA thoroughly mixed or double oxalated anticoagulated Eppendorf tube, without hurting the animal. All the specimens were released back to the nature after recovery from the anesthesia. Haemoglobin estimation of each sample was done by using Sahli's acid hematin method. N/10 HCl was added to the tube with markings of Hb% upto 2gm% and 20 µl of blood sample was added to this tube with the help of micropipette. Solution was kept undisturbed for 10 minutes. This results in the conversion of haemoglobin into brown coloured acid hematin. This solution was mixed with glass rod and then was diluted with distilled water till the colour of the solution matches with the brown coloured comparator box which is present on both the sides of hemocytometer graduated tube. Stirrer was removed from the tube and readings were noted directly from the tube and expressed in gm/dl.

C. Statastical Analysis: All the observations were analysed to get mean, standard error, standard deviation and variance. One way ANOVA with post – hoc Tucky HSD was calculated to observe the significant differences in haemoglobin level by using Statistical Package for Social Sciences (SPSS 10.0).

3. Observations and results

The observed values for haemoglobin concentrations in females during every month are presented in the table 1. The ANOVA with post-hoc Tucky HSD for comparison of significant changes in haemoglobin percentage in *Taphozous kachhensis* during different stages of reproductive cycle is presented in table 2 and the P-value

corresponding to F-statistic of one way ANOVA (P =1.2135e-12) which is lower than 0.05 suggesting significant differences in the means of seven groups is shown in table 3. Histograph showing mean haemoglobin concentration level in female *Taphozous Kachhensis* during different stages of reproductive cycle is presented in figure 1.

In the present investigation mean haemoglobin concentration found to be 14.52 ± 0.25 gm/dl during the lactation stage. During the sexually quiescence stage the non significant decrease was observed in the haemoglobin concentration in females. The mean haemoglobin concentration during quiescence stage was found to be 13.86 ± 0.31 gm/dl. During recrudescent stage the haemoglobin concentration was found to be 17.11 ± 0.45 gm/dl. Significant increase at $P < 0.01$ in the haemoglobin concentration was observed during recrudescent stage, when compared with lactation, quiescence, early, mid and advanced pregnancy stages. The mean haemoglobin concentration during the oestrous stage was found to be 16.41 ± 0.53 gm/dl. Non-significant decrease in haemoglobin level during oestrous stage was observed when compared with recrudescent stage. Haemoglobin concentrations reported during early pregnancy, mid pregnancy and advanced pregnancy were 15.50 ± 0.15 gm/dl, 13.85 ± 0.12 gm/dl and 13.05 ±0.20 gm/dl respectively. During early pregnancy, non-significant decrease in haemoglobin level was observed when compared to oestrous stage. However significant decrease at $P < 0.05$ in the haemoglobin level was noticed when compared with the haemoglobin level of recrudescent stage. At the mid pregnancy, the haemoglobin concentration significantly decreases at $P < 0.01$ when compared to early pregnancy and recrudescent stage. During advanced pregnancy, no significant differences were observed in the mean haemoglobin level when compared with haemoglobin values of mid pregnancy and lactation. Pooled total mean haemoglobin in females during entire reproductive cycle was reported to be 14.71 ± 1.17 gm/dl.

Table 1: Comparison of Haemoglobin (grams/dl) in female *Taphozous kachhensis* during different stages of life cycle.

Month of Collection	Reproductive status	No. of Bats	Hb Range in (grams/dl)	Mean ± S.E.	Variance	Standard Deviation
August	Lactation	06	12.3 to 14.5	13.63 ± 0.32	0.64	0.80
September	Quiescence stage	06	12.7 to 15.6	14.03 ± 0.42	1.07	1.03
October	Quiescence stage	06	11.9 to 15.1	13.66 ± 0.49	1.46	1.21
November	Recrudescent	06	15.2 to 18.3	17.11 ± 0.45	1.22	1.10
December	Oestrous	06	14.7 to 18.0	16.41 ± 0.53	1.68	1.29
January	Early Pregnancy	06	14.7 to 16.3	15.4 ± 0.24	0.35	0.59
February	Early Pregnancy	06	14.9 to 16.4	15.6 ± 0.21	0.28	0.53
March	Mid Pregnancy	06	13.5 to 14.6	14.08 ± 0.15	0.14	0.38
April	Mid Pregnancy	06	12.9 to 13.9	13.61 ± 0.16	0.15	0.39
May	Advanced Pregnancy	06	12.5 to 13.9	13.05 ± 0.20	0.26	0.51
June	Lactation	06	13.8 to 15.7	14.33 ± 0.28	0.49	0.70
July	Lactation	06	14.8 to 16.3	15.6 ± 0.24	0.36	0.60

Table 2: One-way ANOVA with post- hoc Tukey HSD showing comparison of haemoglobin (grams/dl) in female *Taphozous kachhensis* during reproductive cycle.

Reproductive status	No. of Bats	Haemoglobin Range in (grams/dl)	Mean ± S.E.	Variance	Standard Deviation
Lactation	18	12.3 to 16.3	14.52 ± 0.25^{a}	1.14	1.06
Quiescence	12	11.9 to 15.6	13.86 ± 0.31^{ab}	1.19	1.19
Recrudescent	06	15.2 to 18.3	17.11 ± 0.45^{c}	1.22	1.22
Oestrous	06	14.7 to 18.0	16.41 ± 0.53^{acd}	1.68	1.68
Early preganacy	12	14.7 to 16.4	15.50 ± 0.15^{ad}	0.30	0.30
Mid preganacy	12	12.9 to 14.6	13.85 ± 0.12^{ab}	0.19	0.19
Advanced Pregnancy	06	12.5 to 13.9	13.05 ± 0.20^{abe}	0.26	0.26
Pooled Total	72		14.71 ± 1.17	2.09	1.44

Table 3: One-way ANOVA of seven independent groups showing p- value corresponding to F- statistic.

source	sum of squares SS	degrees of freedom NN	mean square MS	F statistic	p-value
treatment	94.6360	6	15.7727	19.0058	1.2135e-12
error	53.9428	65	0.8299		
total	148.5787	71			

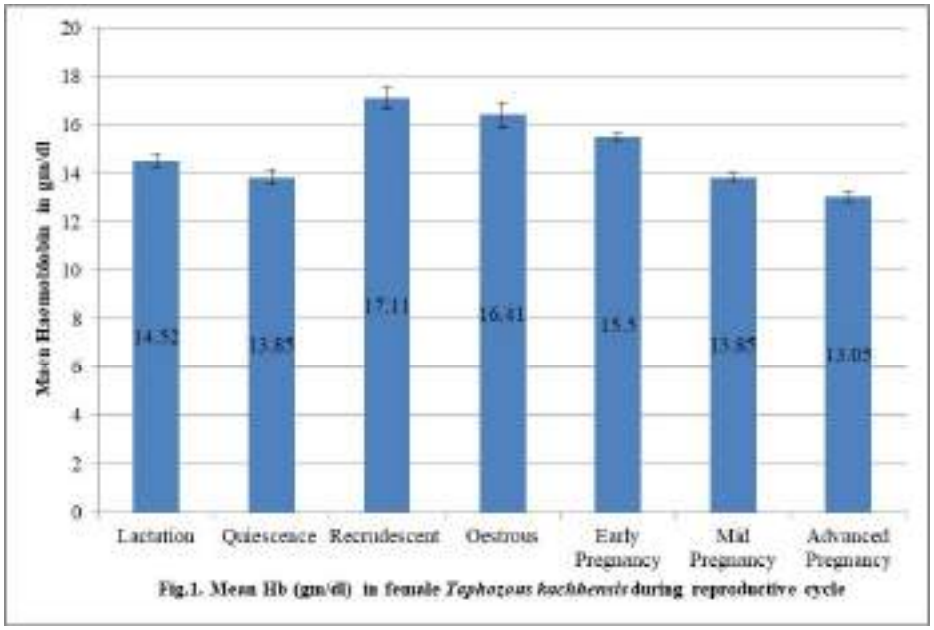

Fig 1: Mean Hb (gm/dl) in female *Taphozous kachhensis* during reproductive cycle

4. Discussion

Haemoglobin is a respiratory pigment in mammals. Functionally it is important for the transport of respiratory gases that are O_2 as well as CO_2, which is required by living organisms for survival [12]. Biochemically haemoglobin is a metalloprotein containing globin molecule with Fe^{2+} ion. During binding of oxygen Fe^{2+} ion gets oxidized into Fe^{3+} ion. Increased level of haemoglobin increases the oxygen binding capacity in an organism. Bats are the only mammals capable of flight which help them to exploit diffuse resources and diverse array of feeding habits. Flight adaptations in bats results in increased requirement of oxygen to cope with increased metabolic rate in them. These all adaptive features for flying and diverse feeding habits, affects the haematological parameters in bats [13, 14]. Hematological parameters are affected by season, availability of food, quality of food, different metabolites, age, gender and reproductive stage in animals [15, 16]. Bats have significant higher levels of haemoglobin than the terrestrial mammals [3, 4, 17, 2]. There is a correlation between body size and rate of metabolism and the haemoglobin levels in animals. Small sized mammals have higher metabolic rate and haemoglobin concentration [18]. Many studies have been conducted on haemoglobin level in bats, which indicates the usefulness of this parameter to decide the general health status of the bats and phylogenetic analysis [19]. Schinnerl *et.al.* [7] have studied the haematological parameters in 26 species of bats belonging to five families that are, Emballonuridae, Molossidae, Mormopidae, Phyllostomidae and Vespertilionidae. Heard and whittier [5], in three species of *Pteropus*, Viljoen et. al., [2] in *Miniopterus schrebersii natalensis*, Arevalo *et.al*., [3, 4] in Vespertilionidae bats and in *Rhinolophus ferrumequinum* and *Miniopterus schrebersii* respectively, Ratnasooriya *et.al*., [6], in *Miniopterus schrebersii and Taphozous melanopogon*, Bhatkulkar and Sastry [20] in *Rousettus leschenaulti*, Hossain *et.al*., [8] in *Pteropus giganteus*, Abdel- Rachied *et.al*., [21] in *Rousettus aegyptiacus*, Rashid *et.al*., [9] in *Scotophilus heathii* and *Pipistrellus pipistrellus*, Rahma *et.al*., [10] in *Cynopterus tithaecheilus* has described the haemoglobin level from 8.0 to 22.22gm/dl in different species of bats. Abdel- Rachied *et.al*. [21] has shown the effect of flying stress on haematological parameters in *Rousettus aegyptiacus* and reported the significant increase in haemoglobin level in bats under flying stress when compared with non-stressed bats. During present investigation observed mean haemoglobin range in females was 13.05±0.20 to 17.11±0.45 gm/dl. Bhatkulkar and Sastry, [20] in *Rousettus leschenaulti* and Rashid *et.al*, [9] in *Scotophilus heathii* and *Pipistrellus pipistrellus* had not observed the significant differences in the mean haemoglobin level between male and females. However Sealander [18] had reported the significant differences in haemoglobin concentration in *Eutamias minimus* and *Clethrionomys gapperi*. Bhatkulkar and Sastry, [20] had reported the mean haemoglobin concentration in the range of 8.8 to 13.4 gm/dl in males and 8.0 to 14.9 gm/dl in females of *Rousettus leschenaulti*. Rashid *et.al*., [9] had studied the haematology of two bats, *Scotophilus heathii* and *Pipistrellus pipistrellus* belonging to family Vespertilionidae and observed the mean haemoglobin concentration 15.83 gm/dl during spring and 19.44 ± 0.5 gm/dl during summer in *S. heathii*. However haemoglobin concentration reported in *P. pipistrellus* were 18.17 ± 0.40 gm/dl in spring and 22.22 ± 0.52 gm/dl during autumn. Non-significant differences were observed by them with respect to gender and season. Our reported concentrations of haemoglobin in emballonurid bat, *Taphozous kachhensis* are less than the vespertilionid bats. Ratnasooriya *et.al*, [6] had studied the haemoglobin concentration in microchiropteran bats *Miniopterus schrebersii* and *Taphozous melanopogon* and reported the haemoglobin concentration in the range of 16.5 to 19.0 gm/dl and 14.5 to 18.0 gm/dl. respectively. The reported haemoglobin concentration range in *Taphozous melanopogon* is similar with our study. Rahma *et.al*. [10] had studied the mean haemoglobin concentration in *Cynopterus tithaecheilus* and observed the haemoglobin concentration as 15.36 ± 1.16 gm/dl in males and 15.08 ± 1.13 gm/dl in females. A higher level of haemoglobin fulfils the energy demand of *Cynopterus tithaecheilus* to fly.

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Sulfamic acid promoted one-pot multicomponent reaction: a facile synthesis of 4-oxo-tetrahydroindoles under ball milling conditions†

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We report an efficient and facile one-pot synthesis of 4-oxo-tetrahydroindoles using sulfamic acid under ball milling conditions. The present protocol for preparation of biologically important 4-oxo-tetrahydroindoles offers several advantages such as mild reaction conditions, improved selectivity and higher isolated yields. Moreover, solvent-free reaction conditions and the use of ball milling make the present protocol environmentally friendly in nature.

Introduction

Ball milling is a mechanochemical procedure that is mainly used to grind minerals and prepare and modify inorganic compounds.[1a] Nowadays, its application in synthetic organic chemistry has become an emerging field of research. Examples of the recent applications of ball milling in organic synthesis[1b] include C–C bond forming reactions, metal-catalyzed C–N, C–C and C–F bond development,[1c,d] organo-catalyzed C–C bond formation,[1e] cycloaddition reactions,[1f] synthesis of heterocycles,[1g] protecting group chemistry,[1h] redox processes,[1i] reactions with fullerenes and bromination reactions.[1j] Compared to conventional solution phase reactions, ball milling conditions commonly yield increased selectivity and reactivity, and thus there should be further exploration of applications of ball milling in organic synthesis.[1k]

On the other hand, multicomponent reactions (MCRs)[2a] provide attractive synthetic approach in the fields of organic and medicinal chemistry[2b] due to their higher atom economy, structural variability, selective bond formation ability and simplicity to perform relative to the conventional multistep reactions.[2c] Further, the MCR is performed in a single step which does not require isolation of the intermediates, leading to a favourable reduction of the reaction time and energy. Additionally, solvent-free reaction is a promising approach in organic synthesis it does not produce unwanted solvent waste.[2d] Conventionally, solvent-free reactions have been performed *via* a mortar and pestle, but recently high-energy ball milling (HEBM) was realized as a more attractive alternative. Although ball milling is a technique that works according to the same principles as traditional mortar and pestle, its mechanical energy is usually high enough to facilitate a chemical reaction.[2e] Many reports have demonstrated the effectiveness of HEBM for organic transformations and development of environmentally benign synthetic processes.[2f] Due to the aforementioned advantages, MCRs found numerous applications[2g] in the synthesis of drugs and new biologically important active organic scaffolds.[2h]

Heterocyclic motifs are critical in drug discovery because of their vast array of applications in the agrochemicals, pharmaceuticals and veterinary fields.[3a] Among others, tetrahydroindole[3b] and indole related moieties[3c] impart distinct and interesting structural features with various biological characteristics such as progesterone receptor agonist,[3d] inhibitor at vanilloid receptor-1, MDM2-p53 interaction inhibitor,[3e] antimalarial, antituberculotic,[3f] CR TH_2 receptor antagonist and Satavaptan. Representative bioactive molecular structures are provided in (Fig. 1).

Because of these important applications of heterocyclic compounds, different synthetic methods were developed for their production.[4a–d] However, most the methods are metal catalysed[4e] and have several limitations such as harsh reaction conditions, employment of toxic and expensive metals as catalysts, longer reaction time, non-reusability of catalysts *etc.*[4f,g] The dimedone reacts with α-chloroacetaldehyde in sodium

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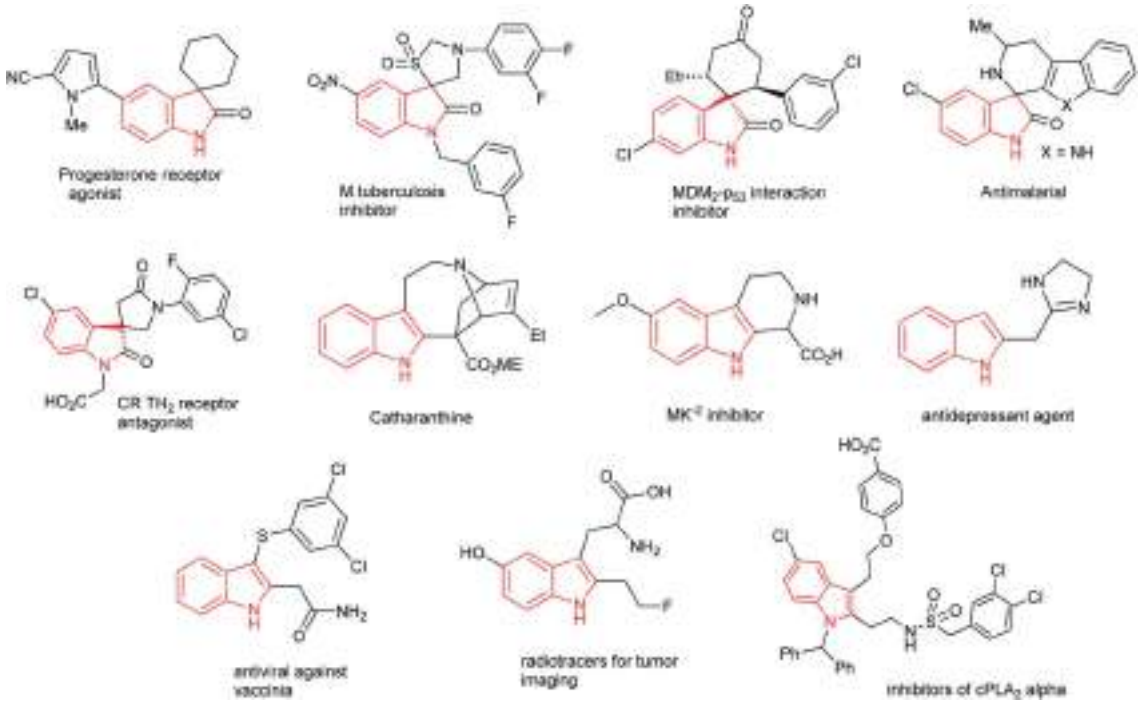


Fig. 1 Biologically important compounds possessing 2-oxoindole and indole scaffolds.

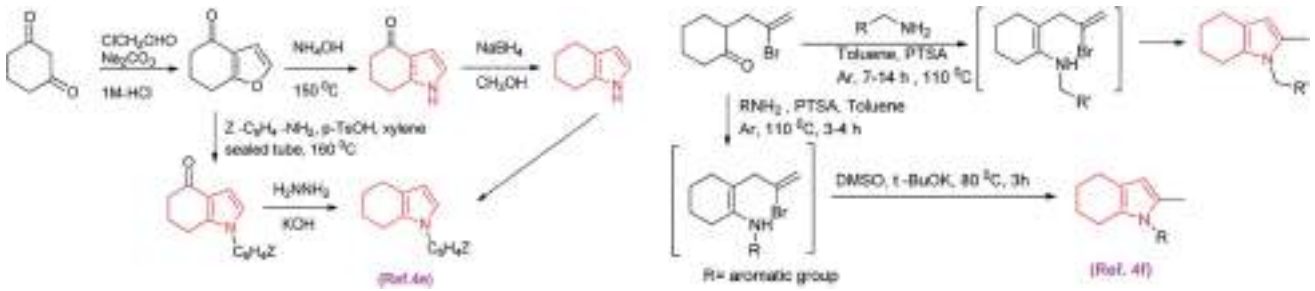
carbonate to produced 4-oxo tetrahydrofuran which reacts with ammonium hydroxide to gives 4-oxo tetrahydroindole in another route depicted in (Scheme 1).[4e,f]

Therefore, the design of effective and facile approaches for creation of these derivatives is of utmost importance.[5a] Moreover, heterogeneous acidic catalysts are more successful than their homogeneous counterparts because of their ease of separation and retrieval for cyclic use making the process more economical.[5b] On the other hand, sulfamic acid (H_2NSO_3H, sulfamic acid)[5c] has been recently proven as very effective in promoting acid-catalyzed reactions due to its low cost, higher stability, resistance to corrosion, non-hygroscopic, and non-volatile nature.[5d,e] In addition, miscibility of sulfamic acid with water makes it easily recyclable. Sulfamic acid is used as promoter for protection of aliphatic substrate, Beckmann rearrangement,[5f] Hantzsch reaction,[5g] Biginelli reaction,[5h] Pechmann condensation,[5i] Michael addition[5j] and Mannich reactions.[5k]

In contribution to development of environmentally benign protocols for bioactive heterocyclic compounds synthesis, we report a facile, low-cost and green approach to synthesize 4-oxo-tetrahydroindoles using sulfamic acid under ball milling condition following (Scheme 2).

Result & discussion

To begin the study, the reaction of dimedone (**1**), phenacyl bromide (**2**), and aniline (**3**) was chosen as a model substrate in the ball mill. In our first attempt the reaction was conducted in the absence of catalyst by milling for 60 min at a milling rotational speed of 600 rpm, the product, 6-dimethyl-1,2-diphenyl-1,5,6,7-tetrahydro-4*H*-indol-4-one (**4a**) was isolated with 10% yield (entry 1, Table 1). Then different types of catalysts like SiO_2, PMA–SiO_2, Amberlite, Montmorillonite K10, Indion resin, and Wang sulfonic acid were incorporated and milled for 60 min at 600 rpm. The isolated product revealed a yield



Scheme 1 Conventional approach for the synthesis of tetrahydroindole derivatives.

Scheme 2 General reaction scheme of sulfamic acid catalyzed for synthesis of 4-oxo-tetrahydroindoles scaffolds under ball milling conditions.

increase up to 24–62% (entry 2–7, Table 1). However, the product yield using sulfamic acid was significantly higher (entry 8, Table 1). A mixture of model substrate and sulfamic acid (15 mol%) milled for 60 min at rotation speed of 600 rpm yielded 92% (**4a**) without column chromatography.

In order to study the effect of ball milling conditions and amount of sulfamic acid on the yield, sulfamic acid loading was varied between 5 to 25 mol% and the ball milling speed was varied between 400–600 rpm and the reaction time was either 60 or 90 minutes. Therefore, following the experimental procedure (ESI† for detail experimental procedure) and the aforementioned conditions, the yield of (**4a**) using sulfamic acid varied between 88–98% with the optimum conditions at loading of 20 mol% (Fig. 2).

With the optimal conditions, we investigated possible scopes of reactants as revealed in (Table 2). All of these 4-oxo-tetrahydroindoles are identified motifs and were simply recognized by assessment of their spectroscopic information with those previously reported[4g] (ESI for spectroscopic data; S2†). The phenacyl bromide consists of both electron withdrawing (*e.g.* –CN group) and electron donating (*e.g.* –Cl, –OCH_3 *etc.*) groups participated proficiently in the reaction not together with a few electronic effects. The aromatic amine having presence of electron donating groups (*e.g.* –Me, –naphthyl, –F, –Cl,

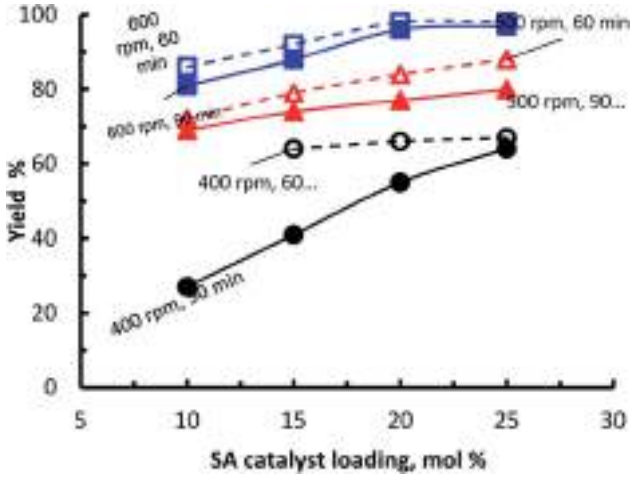


Fig. 2 Effect of sulfamic acid loading and reaction conditions on the yield of (**4a**).

–Br, –cyclopropyl, –*n*-butyl *etc.*) increase the reaction rate as well as the product yields. The findings were depicted in (Table 2). The synthesized 4-oxo-tetrahydroindoles were purified by recrystallization from hot ethanol and thus, column chromatography is not required in the present protocol. Their structure was confirmed by measuring the melting points (MP °C) followed by spectroscopic characterization using nuclear magnetic resonance (^{1}H NMR, ^{13}C NMR and mass spectra); spectra were provided in (ESI for copies of spectra; S3†).

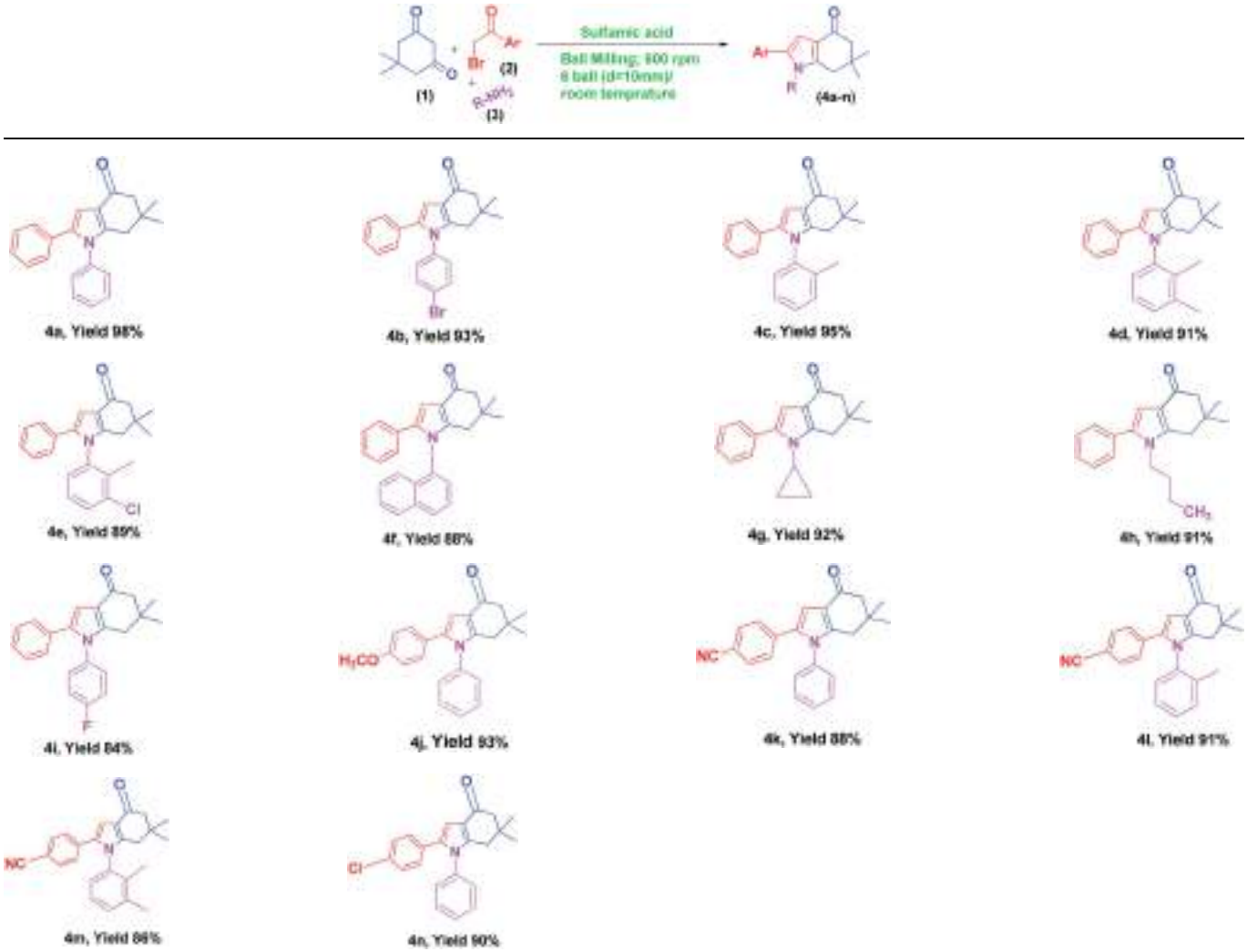
The plausible mechanistic pathway for this three-component one-pot reaction is revealed in (Scheme 3). In the first step, dimedone (**1**) containing active methylene group undergoes alkylation with the phenacyl bromide (**2**) to produced tricarbonyl compound (**A**). In the existence of the sulfamic acid, primary amine (**3**) can react with one of the keto groups of

Table 1 Optimization of reaction conditions for the synthesis of (**4a**) using ball milling

Entry	Catalysts or additive	Catalyst (mol%)	Rotation (rpm)	Time (min)	Yield[a] (%)
1	No catalyst	—	600	60	10
2	SiO_2	20	600	60	33
3	PMA–SiO_2	20	600	60	55
4	Amberlite	20	600	60	41
5	MMT K-10 clay	20	600	60	40
6	Indion resin	20	600	60	24
7	Wang-OSO_3H	20	600	60	62
8	Sulfamic acid[b]	20	600	60	98

[a] Isolated yield; model reaction (**4a**): dimedone (140.18 mg, 1.0 mmol), phenacyl bromide (199.04 mg, 1.0 mmol), and aniline (93.13 mg, 1.0 mmol) under ball milling. [b] Present work.

Table 2 Sulfamic acid catalyzed synthesis of 4-oxo-tetrahydroindoles derivatives



dimedone to produced an intermediate (**B**) followed by loss of water molecule giving *N*-alkylenamine (**C**). The amino group of *N*-alkylenamine (**C**) can attack on the carbonyl group of phenacyl bromide specifically to generate an intermediate (**D**). In the presence of sulfamic acid undergo cyclization to produced (**E**) and followed by loss of water molecule furnishes the product (**4a**).

In order to assess the effect of various Brønsted acids, we carried out the reaction between dimedone (140.18 mg, 1.0 mmol), phenacyl bromide (199.04 mg, 1.0 mmol), and aniline (93.13 mg, 1.0 mmol) at refluxing conditions in EtOH, catalyzed by using 20 mol% of various additives (Table 3). The reaction afforded the product (**4a**) although the yield was low as compared with ball milling condition (compare with entry 8 in Table 1).

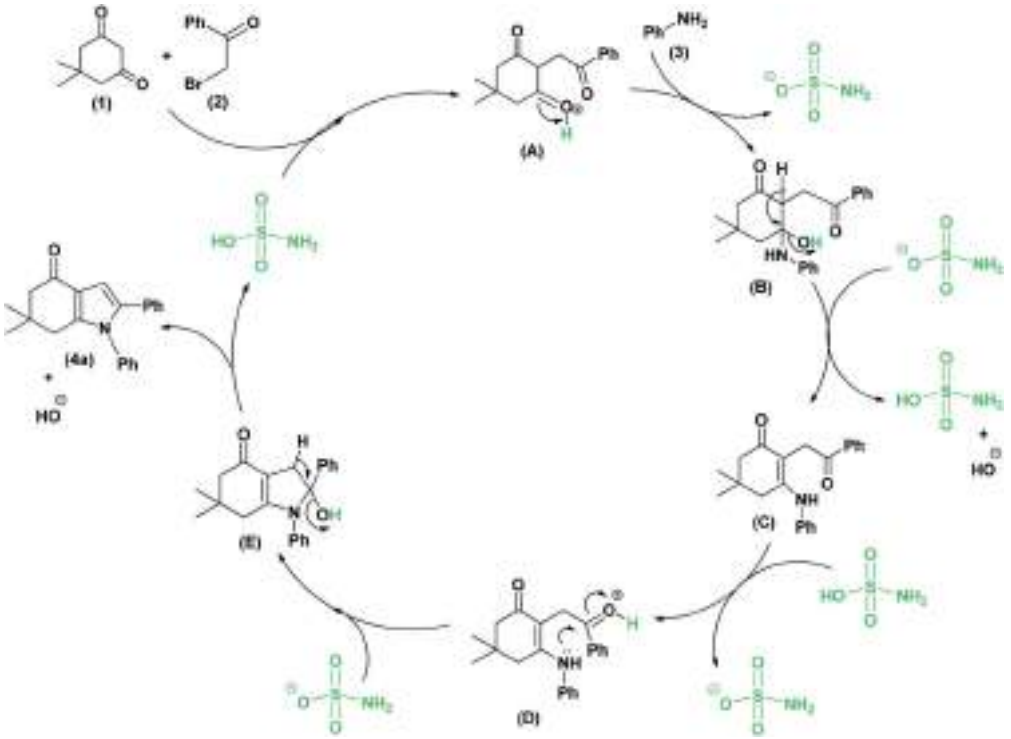
To signify the advantage of the current methodology, a comparative study of current and earlier known methods is provided in (Table 4) which clarifies the effectiveness of the sulfamic acid promoter compared with the known Wang resin supported sulfonic acid[4g] in terms of reaction time, product yield and catalyst recyclability.

Next, we have investigated the reusability of sulfamic acid for the synthesis of (**4a**) as a model reaction in 2 mmol scale. After reaction, sulfamic acid was retrieved from the reaction mixture by simple filtration, consequently washed with aqueous ethanol, dried and reused for the next cycle. We confirmed that sulfamic acid can be effectively recycled for five cycles without appreciable loss of catalytic activity. However, a little (~12%) loss in the yield of the product was observed. The results were presented in (Fig. 3). The decrease of the yield could be due to loss of sulfamic acid (~8.5%) during reaction and recycling.

Experimental

General

The chemicals were procured from S. D. Fine, India and Merck Ltd. without additional purification. The sulfamic acid was purchased from Merck Ltd. (catalogue no. 242780). The



Scheme 3 Plausible mechanism for the synthesis of 4-oxo-tetrahydroindole (**4a**) using sulfamic acid.

reactions were monitored by thin-layer chromatography (TLC) on silica gel plates (60 F254), visualizing with ultraviolet light or iodine spray. Flash chromatography was performed on silica gel (100–200 mesh) using distilled hexane, ethyl acetate, and dichloromethane. A Retsch 01.462.0220 Agate Grinding Jar (250 mL capacity) was used for the Planetary Ball Mill 100. All the products were identified compounds and their physical information, FT-IR, mass spectra and ^{1}H NMR was basically the same as those of the genuine samples. Melting points were determined using melting point B-540 apparatus and are uncorrected. HRMS was determined using waters LCT premier XETOF ARE-047 apparatus.

General procedure for synthesis of 4-oxo-tetrahydroindoles derivatives using ball milling technique: representative experimental procedure for the synthesis of 6,6-dimethyl-1,2-diphenyl-1,5,6,7-tetrahydro-4*H*-indol-4-one (4a)

The mixture of dimedone (140.18 mg; 1 mmol), phenacyl bromide (199.04 mg; 1 mmol), and aniline (93.13 mg; 1 mmol) and catalytic amount of sulfamic acid (19.50 mg; 20 mol%) was

Table 3 Comparison of Brønsted acids catalyzed conventional methods for synthesis of (**4a**)

Entry	Additives	(mol%)	Reaction conditions	Time (min)	Yield[a] (%)
1	TFA	20	Reflux/EtOH	180	69
2	$C_6H_5CO_2H$	20	Reflux/EtOH	240	61
3	$C_6H_5SO_3H$	20	Reflux/EtOH	180	78
4	p-$CH_3C_6H_4SO_3H$	20	Reflux/EtOH	180	71
5	AcOH	20	Reflux/EtOH	480	45
6	Sulfamic acid[b]	20	Reflux/EtOH	360	84

[a] Isolated yield; model reaction (**4a**): dimedone (140.18 mg, 1.0 mmol), phenacyl bromide (199.04 mg, 1.0 mmol), and aniline (93.13 mg, 1.0 mmol) under conventional reflux. [b] Present work.

Table 4 Comparative study of the present and reported methods for synthesis of (**4a**)

Sr. no.	Catalyst	Reaction conditions	Yield (%)	Time	Reusable?
1	Wang resin[4g]	Water/80–85 °C	80–90	4–5 h	Up to 4 cycles
2	Sulfamic acid[a]	Room temperature	88–98	60 min	Up to 5 cycles

[a] Present work.

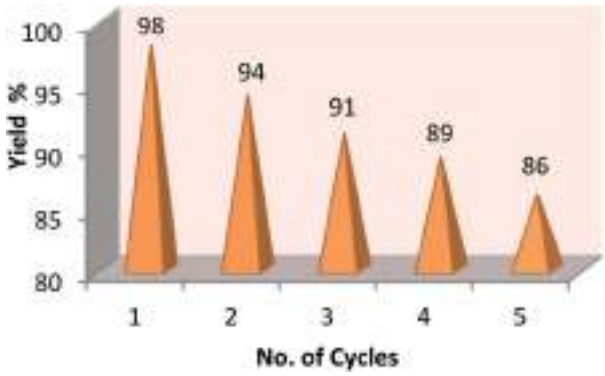


Fig. 3 Recyclability of sulfamic acid for the synthesis (**4a**) as a model reaction.

taken in one pot under solvent/additives free under ball-milling at 600 rpm with six balls (d = 10 mm) of the equivalent substance using 25 mL stainless steel beaker for 60 min. The ball-milling was carried out at inverted rotation directions, for time durations of 10 min separated by intervals of 30 s. The extraction of the reaction residue was accomplished by elution with ethanol (5 mL), acetone (2.5 mL) followed by solvent evaporation and recrystallization to provide 6,6-dimethyl-1,2-diphenyl-1,5,6,7-tetrahydro-4*H*-indol-4-one as yellow solid in 98% yield. This experimental procedure was followed for the synthesis of all products listed in (Table 2).

General procedure for recycling of sulfamic acid

The reusability of the sulfamic acid was investigated for the synthesis of 6,6-dimethyl-1,2-diphenyl-1,5,6,7-tetrahydro-4*H*-indol-4-one (**4a**) as a model reaction in 2 mmol scale. Sulfamic acid was separated from the reaction mixture through filtration, washed thoroughly with ethanol (2 × 1 mL) followed by acetone (2 × 1 mL), dried under oven and reused for the subsequent cycle. We have observed that after five consecutive cycles there was 8.5% loss of sulfamic acid during reactions and recycling process.

Analytical dada for all synthesized products

6,6-Dimethyl-1,2-diphenyl-1,5,6,7-tetrahydro-4*H*-indol-4-one (4a). ^{1}H NMR ($CDCl_3$, 400 MHz) δ: 1.10 (s, 6H), 2.42 (s, 2H), 2.51 (s, 2H), 6.78 (s, 1H), 7.05–7.07 (m, 2H), 7.12–7.17 (m, 5H), 7.39–7.41 (m, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ: 28.6 (2C), 35.5, 37.0, 52.1, 105.6, 120.0, 122.5, 126.8, 127.7 (2C), 128.1 (2C), 128.1 (2C), 128.2, 129.3 (2C), 136.3, 137.7, 144.7, 194.0; HRMS (ESI) [M + 1] calcd for $C_{22}H_{22}NO$: 316.1702, found: 316.1691.

1-(4-Bromophenyl)-6,6-dimethyl-2-phenyl-1,5,6,7-tetrahydro-4*H*-indol-4-one (4b). ^{1}H NMR ($CDCl_3$, 400 MHz) δ: 1.10 (s, 6H), 2.41 (s, 2H), 2.50 (s, 2H), 6.77 (s, 1H), 7.00–7.03 (m, 2H), 7.04–7.07 (m, 2H), 7.18–7.20 (m, 3H), 7.52 (dd, J 1,2 = 2.0 Hz, J 1,3 = 6.8 Hz, 2H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ: 28.6 (2C), 35.5, 37.0, 52.0, 105.9, 120.2, 122.1, 127.1, 128.2 (2C), 128.3, 129.2 (2C), 131.5 (2C), 132.5 (2C), 136.2, 136.6, 144.4, 193.8; HRMS (ESI) [M + 1] calcd for $C_{22}H_{21}NOBr$: 394.0808, found: 394.0811.

6,6-Dimethyl-2-phenyl-1-(*o*-tolyl)-1,5,6,7-tetrahydro-4*H*-indol-4-one (4c). ^{1}H NMR ($CDCl_3$, 400 MHz) δ: 1.05 (d, J = 9.6 Hz, 6H), 1.86 (s, 3H), 2.15 (d, J = 16 Hz, 1H), 2.36–2.50 (m, 3H), 6.83 (s, 1H), 7.08–7.14 (m, 5H), 7.2–7.36 (m, 4H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ: 17.4, 27.9, 29.2, 35.5, 36.5, 52.1, 104.9, 119.7, 126.9 (2C), 127.4 (2C), 128.1 (2C), 128.6, 129.1, 131.2, 132.0, 136.1, 136.4, 136.9, 144.8, 193.9; HRMS (ESI) [M + 1] calcd for $C_{23}H_{24}NO$: 330.1859, found: 330.1847.

1-(2,3-Dimethylphenyl)-6,6-dimethyl-2-phenyl-1,5,6,7-tetrahydro-4*H*-indol-4-one (4d). ^{1}H NMR ($CDCl_3$, 400 MHz) δ: 1.07 (s, 3H), 1.10 (s, 3H), 1.74 (s, 3H), 2.15 (d, J = 16 Hz, 1H), 2.26 (s, 3H), 2.40–2.47 (m, 3H), 6.82 (s, 1H), 7.06–7.09 (m, 3H), 7.12–7.14 (m, 3H), 7.18–7.19 (m, 1H), 7.22–7.23 (m, 1H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ: 13.9, 20.3, 27.9, 29.1, 35.5, 36.5, 52.1, 104.8, 119.5, 126.1, 126.8, 127.4 (2C), 128.1 (2C), 130.1, 130.4, 132.0, 133.4, 136.6, 136.8, 138.6, 145.1, 194.0; HRMS (ESI) [M + 1] calcd for $C_{24}H_{26}NO$: 344.2014, found: 344.2012.

1-(3-Chloro-2-methylphenyl)-6,6-dimethyl-2-phenyl-1,5,6,7-tetrahydro-4*H*-indol-4-one (4e). ^{1}H NMR ($CDCl_3$, 400 MHz) δ: 1.52 (s, 3H), 1.55 (s, 3H), 2.34 (s, 3H), 2.60 (d, J = 16.4 Hz, 1H), 2.85–2.87 (m, 2H), 2.90 (d, J = 2.8 Hz, 1H), 7.26 (s, 1H), 7.49 (d, J = 2.0 Hz, 2H), 7.50–7.60 (m, 3H), 7.61–7.67 (m, 1H), 7.88–7.93 (m, 2H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ: 15.0, 27.9, 29.1, 35.6, 36.5, 52.0, 105.2, 119.9, 127.3 (2C), 128.3 (2C), 129.3 (2C), 130.1, 131.6, 133.6, 135.0, 135.8, 136.7, 138.1, 144.8, 194.0; HRMS (ESI) [M + 1] calcd for $C_{23}H_{23}NO$: 364.1468, found: 364.1455.

6,6-Dimethyl-1-(naphthalen-1-yl)-2-phenyl-1,5,6,7-tetrahydro-4*H*-indol-4-one (4f). ^{1}H NMR ($CDCl_3$, 400 MHz) δ: 1.02 (s, 6H), 2.13 (d, J = 16.4 Hz, 1H), 2.32–2.42 (m, 3H), 6.91 (s, 1H),

7.01–7.36 (m, 5H), 7.46–7.49 (m, 2H), 7.50–7.56 (m, 3H), 7.92–7.95 (m, 2H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ: 28.0, 28.8, 35.5, 36.3, 52.1, 105.1, 119.8, 122.5, 125.2, 126.5, 126.8 (2C), 127.5 (2C), 127.7 (2C), 128.3 (2C), 129.3, 130.9, 131.8, 134.0, 134.2, 137.5, 146.1, 194.0; HRMS (ESI) [M + 1] calcd for $C_{26}H_{24}NO$: 366.1858, found: 366.1850.

1-Cyclopropyl-6,6-dimethyl-2-phenyl-1,5,6,7-tetrahydro-4*H*-indol-4-one (4g). ^{1}H NMR ($CDCl_3$, 400 MHz) δ: 0.55–0.60 (m, 2H), 0.85–0.95 (m, 2H), 1.17 (s, 6H), 2.37 (s, 2H), 2.80 (s, 2H), 3.20–3.24 (m, 1H), 6.54 (s, 1H), 7.31–7.33 (m, 1H), 7.36–7.40 (m, 2H), 7.45–7.47 (m, 2H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ: 9.2 (2C), 27.0, 28.7 (2C), 35.5, 37.2, 51.9, 104.6, 119.0, 127.0, 128.1 (2C), 128.3 (2C), 132.8, 137.0, 146.0, 193.6; HRMS (ESI) [M + 1] calcd for $C_{19}H_{22}NO$: 280.1701, found: 280.1707.

1-Butyl-6,6-dimethyl-2-phenyl-1,5,6,7-tetrahydro-4*H*-indol-4-one (4h). ^{1}H NMR ($CDCl_3$, 400 MHz) δ: 0.77 (t, J = 7.6 Hz, 3H), 1.10–1.19 (m, 2H), 1.25 (s, 6H), 1.46–1.52 (m, 2H), 2.36 (s, 2H), 2.67 (s, 2H), 3.83 (t, J = 7.6 Hz, 2H), 6.53 (s, 1H), 7.34–7.42 (m, 3H), 7.42–7.49 (m, 1H), 7.58–7.62 (m, 1H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ: 13.5, 19.6, 28.8 (2C), 35.5, 36.5, 40.8, 44.2, 51.9, 105.4, 119.2, 127.7, 128.4 (2C), 129.2 (2C), 130.1, 133.6, 143.3, 193.7; HRMS (ESI) [M + 1] calcd for $C_{20}H_{26}NO$: 296.2014, found: 296.2000.

1-(4-Fluorophenyl)-6,6-dimethyl-2-phenyl-1,5,6,7-tetrahydro-4*H*-indol-4-one (4i). ^{1}H NMR ($CDCl_3$, 400 MHz) δ: 1.10 (s, 6H), 2.42 (s, 2H), 2.49 (s, 2H), 6.77 (s, 1H), 7.04–7.07 (m, 2H), 7.09–7.12 (m, 4H), 7.17–7.19 (m, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ: 28.6 (2C), 35.5, 37.0, 52.0, 105.6, 116.2 & 116.4 (d, $^2J_{C,F}$ = 23.0 Hz) (2C), 119.9, 127.0 (2C), 128.2 (3C), 129.3 &129.4 (d, $^3J_{C,F}$ = 9.0 Hz) (2C), 131.6, 133.6, 136.3, 144.6, 160.7 & 163 (d, $^1J_{C,F}$ = 247.0 Hz), 193.9; HRMS (ESI) [M + 1] calcd for $C_{22}H_{21}NOF$: 334.1607, found: 334.1600.

2-(4-Methoxyphenyl)-6,6-dimethyl-1-phenyl-1,5,6,7-tetrahydro-4*H*-indol-4-one (4j). Brown gum; ^{1}H NMR ($CDCl_3$, 400 MHz) δ: 1.10 (s, 6H), 2.42 (s, 2H), 2.49 (s, 2H), 3.69 (s, 3H), 6.77 (s, 1H), 7.04–7.07 (m, 2H), 7.09–7.12 (m, 3H), 7.17–7.19 (m, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ: 28.4, 28.7, 35.4, 36.4, 52.1, 55.5, 104.8, 112.1, 119.6, 120.8, 126.4, 126.7, 127.7 (2C), 127.9 (2C), 129.6, 130.1, 132.2, 136.7, 145.8, 155.1, 194.0; HRMS (ESI) [M + 1] calcd for $C_{23}H_{24}NO_2$: 346.1807, found: 346.1812.

4-(6,6-Dimethyl-4-oxo-1-phenyl-4,5,6,7-tetrahydro-1*H*-indol-2-yl)benzonitrile (4k). ^{1}H NMR ($CDCl_3$, 400 MHz) δ: 1.10 (s, 6H), 2.43 9 (s, 2H), 2.51 (s, 2H), 6.91 (s, 1H), 7.11–7.15 (m, 4H), 7.42–7.46 (m, 5H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ: 28.5 (2C), 35.5, 36.9, 51.9, 107.7, 118.6, 120.2, 127.5 (2C), 127.9 (2C), 128.8, 129.7 (2C), 131.9 (2C), 132.2, 134.1, 136.2, 137.1, 146.1, 194.0; HRMS (ESI) [M + 1] calcd for $C_{23}H_{21}N_2O$: 341.1654, found: 341.1644.

4-(6,6-Dimethyl-4-oxo-1-(*o*-tolyl)-4,5,6,7-tetrahydro-1*H*-indol-2-yl)benzonitrile (4l). ^{1}H NMR ($CDCl_3$, 400 MHz) δ: 1.07 (s, 3H), 1.11 (s, 3H), 1.85 (s, 3H), 2.16 (d, J = 16.8 Hz, 1H), 2.41–2.50 (m, 3H), 6.96 (s, 1H), 7.13–7.16 (m, 2H), 7.23 (d, J = 1.2 Hz, 1H), 7.28 (d, J = 0.8 Hz, 1H), 7.30–7.37 (m, 1H), 7.39 (d, J = 1.6 Hz, 1H), 7.40–7.43 (m, 2H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ: 17.2, 27.8, 29.1, 35.5, 36.5, 52.05, 107.1, 110.0, 118.7, 120.1, 127.0 (2C), 127.3, 128.3, 129.7, 131.5, 132.1 (2C), 134.2, 134.2, 135.8, 136.4, 146.1, 193.7; HRMS (ESI) [M + 1] calcd for $C_{24}H_{23}N_2O$: 355.1810, found: 355.1805.

4-(1-(2,3-Dimethylphenyl)-6,6-dimethyl-4-oxo-4,5,6,7-tetrahydro-1*H*-indol-2-yl)benzonitrile (4m). ^{1}H NMR ($CDCl_3$, 400 MHz) δ: 1.36 (s, 3H), 1.40 (s, 3H), 2.02 (s, 3H), 2.46 (d, J = 16.8 Hz, 1H), 2.59 (s, 3H), 2.70–2.77 (m, 3H), 7.36 (s, 1H), 7.38–7.44 (m, 2H), 7.50–7.52 (m, 1H), 7.54–7.55 (m, 1H), 7.57–7.59 (m, 1H) 7.69–7.72 (m, 2H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ: 13.8, 20.3, 27.9, 29.0, 35.5, 36.4, 52.0, 107.0, 109.9, 118.7, 120.0, 125.9, 126.5, 127.0 (2C), 131.0, 132.0 (2C), 134.3, 134.5, 136.3, 136.4, 139.1, 146.3, 193.8; HRMS (ESI) [M + 1] calcd for $C_{25}H_{25}N_2O$: 369.1967, found: 369.1951.

2-(4-Chlorophenyl)-6,6-dimethyl-1-phenyl-1,5,6,7-tetrahydro-4*H*-indol-4-one (4n). ^{1}H NMR ($CDCl_3$, 400 MHz) δ: 1.09 (s, 6H), 2.41 (s, 2H), 2.50 (s, 2H), 6.77 (s, 1H), 6.96–6.98 (d, J = 8.4 Hz, 2H), 7.11–7.14 (m, 4H), 7.41–7.42 (m, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ: 28.6 (2C), 35.5, 37.0, 52.0, 105.9, 120.2, 122.1, 127.1, 128.2 (2C), 128.3, 129.2 (2C), 131.5 (2C), 132.5 (2C), 136.2, 136.6, 144.4, 193.8; HRMS (ESI) [M + 1] calcd for $C_{22}H_{21}NOCl$: 350.1312, found: 350.1300.

Conclusion

In conclusion, we presented a facile and effective protocol for the synthesis of 4-oxo-tetrahydroindole moieties using sulfamic acid. The entire reactions described in (Table 2) are very clean and provide high yield (88–98%) under ball milling conditions. Moreover, a very short reaction time of 60 min was possible for the synthesis of 4-oxo-tetrahydroindoles derivatives (**4a–n**) compared to the very lengthy procedures reported for other methods. The relative results of current and earlier reported method for the synthesis presented in (Table 4) have demonstrated a significant development in terms of reaction yields, time and green protocol. Moreover, under ball milling conditions, solvent free, simple isolation and purification without column chromatography, mild sulfamic acid as recyclable promoter make the current synthetic approach environmentally benign and more attractive.

Conflicts of interest

There are no conflicts to declare.

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M-Governance For Local Governments in India

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Abstract:

India is in the direction of globalization. Our nation economy is growing faster than the most of any major economy in the world. The Ministry of Statistics and Programme Implementation expects the Indian economy to grow by 7.4% during the course of the year. As well Indian cities are going to be the fastest growing cities in Asia over the next five years without its problems. In Indian city encroachment leads to problems regarding communal security, worth of living, environmental issues, Health issues etc. Indian government planning is to create every government services available to the people of India via electronic media. Municipal Corporations or local governments in India play a vital role in socio-financial development of cities. When cities have been their constant rising stage, it becomes complicated for local governments to meet accountability to issues they rule and be in stable communication with public. For the city enhancement have huge potential in Mobile Communication Technology (MCT) and M-governance (e-governance through mobile). M-governance is fast becoming the favoured mode of availing services by the citizens. MCT is seen as constituting great potential for development in developing nations which cannot be mistreated. It is proved, that India wants to utilize MCT & M-governance in order to encourage growth.

Keywords: M-governance, Local government, Citizen, Municipal Corporation.

Introduction:

The process of making decision and the process by which these decisions are implemented (or not implemented) it's called as Governance. Good Governance means do not taken always 'correct' decisions, but bringing the greatest possible procedure for making those decisions. As well as not only gives the public confidence, but also improves the trust in government and process of decision-making. Good governance favoured to superior decisions, superior associations and better government. Some of the characteristics of Good Governance are: Accountability, Participation, Transparency, Responsibility, Responsiveness (to the needs of the people) and Effective Good governance is a must for developing countries fast development, like India. E-Governance is the process to supply eminence of data and services which are supplied to citizens, businesses, public society, organizations, and other government

agencies in an efficient, cost effective and convenient manner. This is the reason of makes government's processes more transparent and accountable. Dr. APJ Abdul Kalam says about India: "A transparent smart e-Governance with seamless access, secure and authentic flow of information crossing the interdepartmental barrier and providing a fair and balanced service to the public." To create the following types of E-governance services:

1. G2C – Transaction between government and citizens
2. G2E - Transaction between government and Employee
3. G2B - Transaction between government and business
4. G2G - Transaction between Central/National and local governments and between government departments/agencies.

E-Governance is not a replacement of M-Governance; rather it complements e-Governance. In the M-Governance, doing use of mobile or wireless technologies to help make information or data and government services publicly available "anytime, anywhere" to citizens and officials.

Governance in India:

India is a developing country with huge potential for a fast development. Developing nation economy is rising faster than the most of any major economy in the world. The Community Empowerment is pivotal for the developing nations. To bringing people in mainstream for greater social transformation is most required to the digital technologies. Indian governance is mainly paper based. And avoid to the paper based governance want to use of digital technologies only. For the development of digital technology concern about developing nations, it is essential for invest in infrastructure and training of wireless and ICT technologies and services to serve its growth goals. Using through e-governance create minimized corruption, better transparency and accountability and also would be reduce the uses of paper this caused by balanced and greener ecosystem. Context of the Indian government E-Governance should also expand its horizons in the type of M-Governance which is high-speed becoming the favoured mode of availing services by citizens. The rising use of mobile phones by different age groups is seen as having an effect on all stages of living. The mobile phone technology has provided a robust platform for development and growth of the society and verified to be very successful. Digital India programme has been start by Prime Minister of India for the development of information technology and digitalization of the present structure of the governance of India.

Local governments in India:

The municipal Corporation are urban local government that works for the development of a Metropolitan City, which has a population of more than one million. The increasing population and urbanization in Indian cities were in require of a local governing body that be able to work for provide basic community services such as health concern, educational society, housing, transportation etc. All the Municipal Corporation has a committee consisting of a Mayor by Councillors. In the Municipal Corporation consists

of various members for different departments elected from different wards of the city. The Municipal Commissioner has all the executive powers. He or she is accountable to lie down and implement the policies and moreover the local city governance. Municipal corporation works for the development of the local community which work include that, water supply, sewerage and sanitation, eradication of transmissible diseases. Related to the type of welfare work includes public facilities like Education, recreation, etc.; regulatory works related to prescribing and enforcing construction rules, encroachments on public property, Birth registration and Death certificate, etc.; in public safety works includes Fire safety, Street lighting or power etc.; public works measures such as construction and maintenance of inner city roads, etc.;

M-governance in Local governments:

The system of work done by Municipal corporation has through the manually with paper, that reason for responsible to the completion of work is slowly and more time consuming by the employees. Today's society is moving towards increasing number of mobile and internet connections, local governments should make use of this. M-governance has possible to link the gap between government and citizens through the using of updated technology. With the help of this mobile technology, local government provide better and time bond service to the citizen. Latest android/iOS/Windows based mobile application and technologies have must be adopted by Local governments.

Methodology:

Mobile phone and internet are basic need for M-governance. Using of it's to enhance delivery and access of information and services by M-governance to the public by effectively and quality. In the country an effective government service is a result of a clear vision, mission and strategy of service delivery. Superior Leadership is the part of success, the success of any government service and e-governance strategy depends on its leadership and sound use of Technology. Functioning of mobile and wireless technologies will make easy access to government information and services and promotes effectiveness, responsibility and transparency in the rendering of those services. In India, there is a striking dissimilarity among the high tech and world class Information Technology Corporations and its low-tech Government organizations serving the public. Filling the gap in work cultures between these two is much needed and is feasible. For implementing M-Governance, methodologies for different heads like citizens, businesses and governments should be taken into consideration. The mainly significant points to regard as here are Indian network framework and services particular for citizens. For implementing M-Governance using Mobile phone Communication and wireless or internet technologies, survey to choose local government to implement M-governance wants to be conducted. This study should consist of information about requirements of local citizens, government's current infrastructure and departments. According to research and study conducted, several issues identified for broad implementation of m-Government services in India.

1) ***Infrastructure progress:*** Forty to fifty percent of success of m-government services depends upon the IT infrastructure and processes used for its implementation. For m-government success in India, physical (hardware) IT infrastructure such as networking, setting up systems for processing information and delivering services, mobile connectivity, technology, equipments, ICT tools, department wise arrangements etc. everything should be at satisfactory level.

2) ***Compatibility and interoperability:*** It will still take many years in India for totally implementation of m-governance. At the present, for its bigger success, m-government services should be well-matched with the live e-government systems. M-government services should seamlessly integrate among e-government services lacking any technical difficulties. For this government may need to recreate and optimize their business processes.

3) ***Privacy, safety and Mobile Payments infrastructures:*** Citizen's trust on M-government's services is necessary for M-government's success. A very first hurdle for consumers to have participation in online business is a feeling of mistrust in submits their credit card or debit card information over the mobile phone or the Internet. As well people also have concerns that their privacy on opinions and inquiries to the government are protected and their individual information is not shared by third parties. The government must overcome the mistrust, must set up the information security system, secure online business and guarantee mobile users that people's privacy is protected.

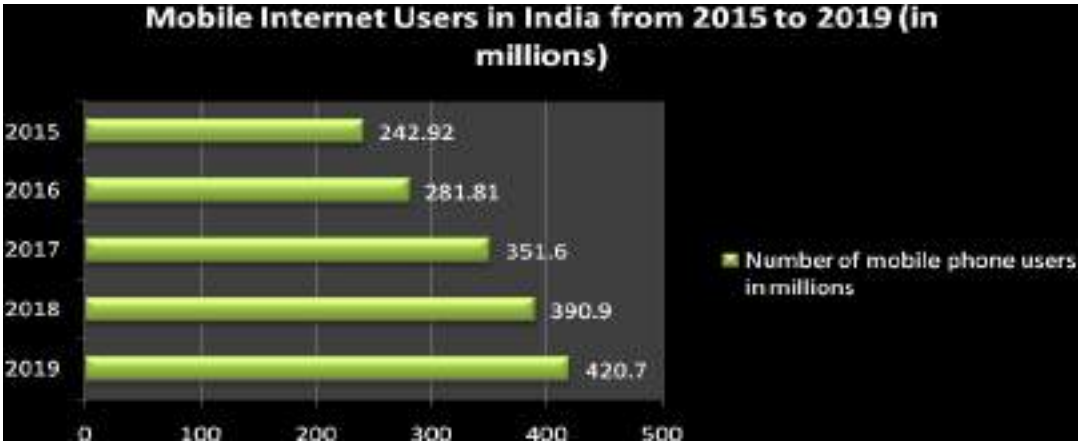
4) ***User friendly:*** The users play the vital role of the success of M-Governance. To augment citizen participation and supply citizen-oriented services, easy m-government applications and easy access to these applications must be offered. Possibly these applications must include video and audio communications.

5) ***Legal issues:*** For avoid to the mobile phone crime M-Government relevant laws, regulations and standards must be adopted. Like cyber security, online security to protect to the mobile or internet users by the government.

Discussions:

In the Twenty First century, mobility has become one of the most important technology and communication standard affecting all facets of modern life including mobile information systems, mobile payments, mobile commerce, mobile television and mobile government.

Figure: 1



(Source: Statista 2019)

Above the Figure 1, in the year 2015 internet users were 242.92 million they grown up to 420.7 million access internets from their mobile phones in India in the year 2019. The percent of mobile internet users has grown more rapidly than traditional broadband users. 177.78 million new mobile internet users have been added between 2015 to 2019.

Figure:2

Ranking of Country Based Mobile Phone Users in 2011-12

2012			2019		
Rank	**Country**	**Mobile Phone**	**Rank**	**Country**	**Mobile Phone**
1	China	1,100,000,000	1	China	1,320,810,000
2	India	893,862,000	2	India	1,175,997,150
3	United States	310,000,000	3	United States	327,577,529
4	Indonesia	281,960,000	4	Brazil	284,200,000
5	Russia	261,900,000	5	Russia	256,116,000
6	Brazil	248,324,000	6	Indonesia	236,800,000
7	Japan	138,363,000	7	Nigeria	167,371,945
8	Vietnam	134,066,000	8	Bangladesh	157,048,000
9	Pakistan	125,000,000	9	Japan	146,649,600
10	Nigeria	112,780,000	10	Pakistan	150,169,643
11	Germany	107,700,000			
12	Philippines	103,000,000			
13	Mexico	100,786,000			
14	Italy	97,225,00			

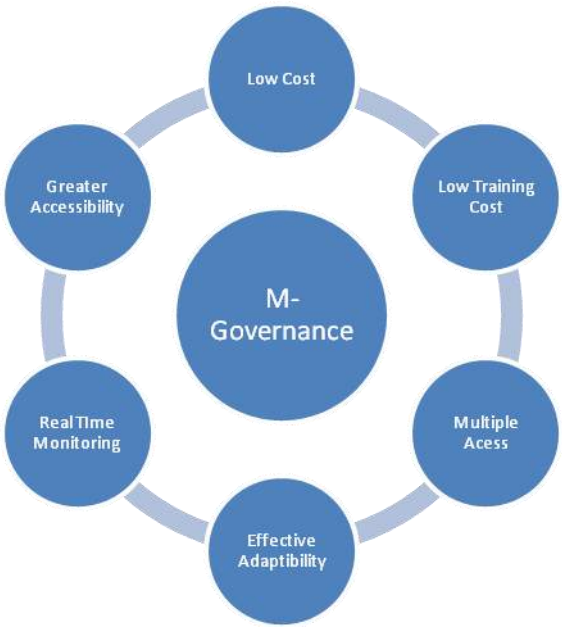
15	Bangladesh	97,180,000			
16	Egypt	96,800,000			
17	Thailand	84,075,000			
18	United Kingdom	82,109,000			
19	South Africa	68,400,000			
20	Turkey	67,680,000			

(Source:CIA World Factbook 2014/)

Figure 2 shows that the Number of mobile phone users increasing day by day. In 2012 India was in 2nd position with 893 million, and in 2019 India also stable is in 2nd position with 1,175 million Mobile phone users. The expenditure of mobile phone is very less, than a computer with internet connection and the learning how to use a mobile phone is also much simpler. Government should make use of Internet ready mobile phones, smart phones and personal digital assistants (PDAs), their features like android OS, GPS, and location based services and should open a new channel to provide fast and timely information accessible anytime, anywhere.

7. Benefits

In this paper has thrown some lights on the possible benefits of m-governance. Following are the benefits of implementation of m-governance.



1) ***M-Governance benefits to Government:*** M-Governance makes positive impacts on management of internal processes like following:

i) Efficiency of administration

ii) Law and Policy making

iii) Regulation and Provision of services to constituents

M-Governance is in turn beneficial for government's better Image, Control of Corruption, for cost cutting like (Manpower, Accounting, Compilation, reporting and Review).

2) ***M-Governance benefits to Citizen:*** M-Governance makes promises of providing efficient and convenient services to citizens, which includes following benefits:

i) Reduce corruption because of increasing clearness.

ii) Easy access to information of government agencies and programs

iii) Reduces difficulty of visiting multiple government agencies and websites.

iv) It enhances quality of life in areas such as health, education, employment etc.

v) Promotes spirit of liberty between people

3) ***M-Governance benefits to ICT:*** The major beneficiary of m-Governance would be ICT business. Benefits are in different segments such as, software, hardware, networking, security and IT-education. But the significant benefit for the ICT business is partnership with government in implementing m-governance through a expenditure effective and sustainable business model.

Challenges:

If M-Government has some Benefits such as lower cost, real time monitoring, and better accessibility, yet there are some problems are as follows.

1) E***xpenditure:*** Because of now, M-governance is not a whole substitution for E-governance. For full substitution it will still take some years. Therefore at this stage M-governance systems are likely to be cost-addition initiatives.

2) ***Trust/security:*** If m-government encompasses public service applications which consist of business or m-payment systems, then it must have good security and must be reliable.

3) ***Mobile mindsets:*** Mobile phones particularly are seen as tools more for entertainment not for proper manner uses by many than for serious activities. Since m-governance is a serious activity, chances of playing pranks by the anonymity from mobile devices (which are often unregistered) cannot be neglected.

4) ***Data overload:*** Whenever mobile phone users use their mobile phones they will still habit of this. Some M-governance applications may require users to be connected to internet permanently or "always on". Out of these permanent connections, some can be valuable and some not. These kinds of connections may create a storm of communications.

5) ***Localization:*** Since India is a country with diversified culture; localization is also an important challenge for our nation.

Conclusion:

According to the discussion and success of M-governance projects in India, there are no two ways that M-governance will carry efficient, corruption free government which would bring regulation and even implementation of rules & policies. It also improves services, decision making, staff performance and efficiency. Therefore increases income and helps in rapid growth. Every this would carry transparency in internal processes, customer convenience and satisfaction. In view of India's recent IT infrastructure state, not each and every application can be deployed on mobile phones. For this, M-governance has to be conceived and developed with e-governance. Local governments have to choose applications wisely. Applications must be user-friendly and must deliver exactly what they claim to. Major challenge in implementing M-governance in developing countries like India is strong communication and IT infrastructure. For this local government has to set up inventive atmosphere to encourage/facilitate development of IT infrastructure. Use of m-governance would absolutely lead local governments into the new era and boost India in economic and social improvements.

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महाराजा सयाजीराव गायकवाड यांचे शिक्षणविषयक विचार

प्रा. भोजराज व्ही. बोदेले
यशवंतराव चव्हाण कला, वाणिज्य व विज्ञान महाविद्यालय लाखांदूर, जि. भंडारा

प्राचार्य, डॉ. शरयु बी. तायवाडे
तायवाडे महाविद्यालय कोराडी,जि.नागपूर

सारांश :—

महाराजा सयाजीराव गायकवाड हे शिक्षणाविषया बद्दल किती जागृत होते ? ते त्यांच्या शिक्षणविषयक विचारावरून आपल्या लक्षात येते. त्यांनी गावोगावी प्राथमिक मोफत शिक्षणाची सोय केली, व्यक्तीनी केवळ पुस्तकाचा किडा न होता त्यांनी ज्ञानग्रहणावर भर दिला आहे. तर माणूस हा शिक्षणामुळे आपला तिसरा डोळा उघडु शकतो व आत्मज्ञानाचा मार्ग ओळखुन स्वत: ज्ञानी बनूण तो दुसऱ्याचा अज्ञान दूर करू शकतो एवढे सामर्थ्य शिक्षणामध्ये आहे. हे त्यांनी ओळखले होते.

बीजशब्द :—सक्तीचे प्राथमिक शिक्षण, अंत्यजांसाठी शिक्षण, मूल्यशिक्षण, पुस्तकी शिक्षणाच्या मर्यादा, शास्त्रीय शिक्षण, औद्योगिक शिक्षण आणि स्त्री—शिक्षण.

प्रस्तावना :

महाराजा सयाजीराव गायकवाड हे हिंदुस्थानच्या इतिहासातील झाकून राहिलेले एक सोनेरी पान आहे. त्यांचा चौसष्ट वर्षाचा प्रशासनाचा प्रदीर्घ कालखंड पाहताना थक्क व्हावे अशा गोष्टी समोर येत आहेत. आयुष्यभर जनकल्याणाचा ध्यास घेतलेल्या या लोकपाळ राजाचे अक्षरधन जनसामान्यांपर्यंत पोहोचविण्याची कामगिरी महाराष्ट्र शासनाने स्वीकारली, ही जनसंवादासाठी फार फार महत्त्वाची गोष्ट घटक आहे. या 'अक्षरधना'तील पहिले पुष्प सयाजीराव महाराजांच्या भाषणांचे दोन खंड मराठीत प्रकाशित केले आहेत. तसेच इंग्रजीतही त्यांच्या भाषणांचे दोन खंड प्रकाशित झालेत.

त्यांचे शिक्षणविषयक विचार लक्षात घेता आधुनिक काळातसुद्धा लक्षात घेण्याजोगे आहेत. त्यांनी प्रतीकुल काळात आपल्या राजवटीमध्ये शिक्षणावर कशाप्रकारे भर दिला आहे. हे पाहण्यासारखे आहे. सर्वांना जगण्यासाठी अन्नाची आवश्यकता असते. तेवढीच आवश्यकता किंबहुना त्यापेक्षा अधिक आवश्यकता शिक्षणाची आहे. हे त्यांनी ओळखले होते

१) सक्तीचे प्राथमिक शिक्षण :

१९ व्या शतकात आपल्या राज्यात सक्तीचे व मोफत प्राथमिक शिक्षणाचा प्रयोग करणारा प्रगमनशील राजा म्हणून जगाच्या शैक्षणिक इतिहासात महाराजा सयाजीराव गायकवाडांच्या कर्तृत्वाची नोंद झाली आहे. आधुनिक प्रगत संस्कृती असलेल्या विलायतेतही जेव्हा नुकताच कुठे सक्तीच्या प्राथमिक शिक्षणाचा विचार पुढे येते होता, त्याच वेळी बडोद्यात सक्तीच्या व मोफत प्राथमिक शिक्षणाची मुहूर्तमेढझाली होती. सक्तीच्या प्राथमिक शिक्षणाचा कायदा विलायतेत १८७२ साली, जपानला १८८० साली, इंग्लंडला १८८१ साली, फ्रान्समध्ये १८८४ साली, पोर्तुगाल आणि १८८५ साली स्पेन व डेन्मार्क इथे पारित

झाला होता. बडोद्याला मात्र १८७९ सालीच १२८ खेडेगावात शाळा उघडण्यात आल्या होत्या. ज्या गावात सोळा विद्यार्थी नित्य हजर राहतील त्या गावी शिक्षकास मदत करण्याचे व विद्यार्थ्यास पाटीपेन्सिली व पुस्तके यांसारखी साधने पुरविण्याचे धोरण अमलात आले होते. आपल्या संस्थानातील सोनगडसारख्या आदिवासी भागात महाराजांनी गरिबांना मोफत शिक्षणाची व वसतिगृहाची सुविधा उपलब्ध करून दिली होती. महाराजांच्या शिक्षणनीतीतले द्रष्टेपण यावरून लक्षात येते. १८९१–९२ साली ना. गोपाळकृष्ण गोखले यांनी पार्लमेंटमध्ये हिंदुस्थानातल्या प्रजेला सक्तीच्या व मोफत प्राथमिक शिक्षण देणारा ठराव मांडला होता. बडोद्याच्या सक्तीच्या व मोफत प्राथमिक शिक्षणाचा आदर्श डोळ्यांसमोर ठेवून ब्रिटिशांनी हा कायदा पारित करावा, असे ना. गोखले यांनी स्पष्ट शब्दात पार्लमेंटपुढे निवेदन केले होते. मात्र ब्रिटिश सरकारने हे विधेयक पारित होऊ दिले नाही. महाराजांची सक्तीच्या मोफत प्राथमिक शिक्षणाची ही दृष्टी जगातल्या अग्रेसर असलेल्या शासनप्रणालींनाही मागे टाकणारी होती.[1]

२) अंत्यजांसाठी शिक्षण :

सामाजिक रूढी आणि परंपरेतून घडलेली सामाजिक मानसिकता हा अंत्यजांच्या शिक्षणप्रसारातला मोठा अडसर असल्याचे सूक्ष्म निरीक्षण महाराजांनी आपल्या भाषणांतून नोंदविले आहे. यासंबंधीचा त्यांना आलेला अनुभव कथन करताना महाराज म्हणाले होते की, अस्पृश्य विद्यार्थ्यांच्या वर्गावरील शिक्षकांचे काम करणे ज्यांना रूचत नाही, असे पुष्कळ हिंदू लोक आजही आहेत. त्यामुळे मला अस्पृश्यांच्या शाळांसाठी ख्रिश्चन व मुसलमान शिक्षकांची मदत बाहेरून मागवावी लागते. वास्तविक शिक्षणात स्पृश्य–अस्पृश्य असा भाव असण्याचे कारण नाही. आपल्याकडे उच्चवर्णीय ब्राह्मणांनीही ज्यांना पूज्य मानले आहे, असे महाराष्ट्रातला चोखामेळा, बंगाल्यातला हरिदास ठाकूर, दक्षिणेकडेचा नंद आणि आयोध्येतला रविदास हे साधुसंत अंत्यजवर्गातच जन्माला आले आहेत. हे लक्षात घेतल्यास शिक्षण दिल्याने व उपजीविकेसाठी सर्व धंदे खुले ठेवल्याने अंत्यजांची सुधारणा झपाट्याने होईल, याविषयी महाराजांना पूर्ण विश्वास होता. आपल्या संस्थानात त्यांनी म्हणूनच अंत्यजांच्या शिक्षणाची विशेष काळजी घेतली. श्रमोपजीवी लोक शिक्षणाविषयी उदासीन असतात, शेतकरी समाज मुलांना शाळेत पाठविण्याऐवजी कायद्याप्रमाणे दंड भरण्यास खुशीने तयार असतात. ही परिस्थिती बदलण्यासाठी स्थानिक पंचायती व नगरपालिकांनी विशेष लक्ष्य देण्यासाठी महाराजांनी प्रयत्न केला.[2]

३) शीलसंवर्धन शिक्षण :–

कौशल्यशिक्षणाबरोबर संस्कृतीकेंद्री शिक्षणावर महाराजांचा भर होता. त्यांच्या मते, विद्यार्जनात ज्ञानप्राप्तीच्या खालोखाल शीलसंवर्धन ही महत्त्वाची बाब आहे. किंबहुना "शील उत्तम नसेल तर ज्ञानने मोठा बृहस्पती असला तरी त्याची विद्या कधीही पूर्णपणे सफल व उपयोगी होणार नाही." साक्षरचे राक्षस बनलेले काय थोडे आहेत काय, असा प्रश्न विचारून त्यांनी शील निर्माणाचे सांस्कृतिक काम करणाऱ्या शिक्षणपद्धतीचा पुरस्कार केला आहे. आज आपण सर्व भारतभर सुरू असलेला भ्रष्टाचार, सामाजिक बांधिलकीचा अभाव, कमालीची स्वार्थपरायणता, चंगळवाद आणि लैंगिक स्वैराचार आजूबाजूला पाहत आहोत. या पार्श्वभूमीवर शीलसंवर्धनाचे कार्य शिक्षणातून साध्य झाले पाहिजे, या विचारावर सयाजीरावांनी त्या काळात दिलेला भर निश्चित समर्थनीय ठरतो. "प्रत्येक व्यक्ती ही

केला. स्वत: फ्रेंच सरकारनेही कौशल्यशिक्षणाला पूरक असे चिनी मातीच्या भांड्यांचा व नक्षीदार कापडाचा कारखाना काढून व कौशल्यनिर्मित वस्तूंची प्रदर्शने भरविण्याची व्यवस्था निर्माण करून या शिक्षणपद्धतीला पाठबळ पुरविले होते."

८) स्त्री–शिक्षण :

सामाजिक अन्यायामुळे निर्माण झालेली बंधने नाहीशी करण्यावर सयाजीरावांचा भर होता. रूढी परंपरांमुळे होणारे शोषण थांबविणे अग्रक्रमाचे आहे, असे त्यांना वाटे. स्त्रीयांची परवशता संपविण्यासाठी बालविवाहबंदी, विधवा पुनर्विवाहाचे कायदे त्यांनी केलेच; परंतु त्यासोबत स्त्री शिक्षणावरही भर दिला. स्त्रियांना शिक्षण न दिल्यामुळे आपण जाणूनबुजून राष्ट्रातील अर्धी शक्ती कमी करीत आहोत, अशी त्यांची धारणा होती. स्त्रीवर्गाला पुराणप्रिय बनवून आपण एक प्रकारे सुधारणाशकटास अडथळा आणत आहोत, असे म्हणयचे. १८८५ साली त्यांनी स्त्री शिक्षणाचा हुकूम काढला. तोपर्यंत राज्यात फक्त दोन शाळांत मुलींच्या शिक्षणाची सोय होती; महाराजांच्या हुकमानंतर १९३५ पर्यंत चारशेहून अधिक कन्याशाळा सुरू झाल्या आणि ९० हजारांहून अधिक मुली शिक्षणाच्या प्रवाहात आल्या. या सोबत महाराज शारीरिक शिक्षणाकरिता प्रीस, रोम या देशाचा दौरा करून त्यांनी क्रिडा शिक्षणाकडे लक्ष दिले.[८]

संशोधन पद्धती :– या शोध निबंधात चिकित्सक, आशय विश्लेषन अभ्यास पद्धतीचा वापर करण्यात आलेला आहे.

निष्कर्ष :–

१. आपल्या प्रजेची परिस्थिती सुधारणे.
२. प्रजाकार्यासाठी लायक माणसांचा पुरवडा करणे, आणि
३. प्रजेच्या नैतिक आणि आध्यात्मिक हिताचे जतन करणे.

महाराजांच्या शिक्षणनीतीवर या त्रिसूत्रीचा प्रभाव होता. समाजाला उपयोगी पडेल ते शिकवावे हेत्यांनी आपल्या शिक्षणनीतीचे मध्यवर्ती सूत्र ठेवले. वेदशास्त्रसंपन्न व धर्मपरायण शास्त्रीपंडीतांची समाजाला गरज असतेच; परंतु तोंडपाठ ऋचा म्हणणाऱ्या उपाध्यायांचा समाजाला काही उपयोग नसतो. त्यामुळे सामान्य व्यवहारज्ञान, विज्ञान–शास्त्रांची प्राथमिक माहिती आणि औद्योगिक कौशल्य शिक्षणाऱ्या शाळा–कॉलेजेस काढण्याचा मनोदय कायम करून त्यांनी बडोद्यात शैक्षणिक सुधारणांचे नवे निर्माण केले.

संदर्भ :–

१) संपादक डॉ. रमेश वरखेडे – 'सयाजीराव गायकवाड यांची भाषणे' खंड–१, शिक्षण, धर्म आणि तत्त्वज्ञान, साकेत प्रकाशन, ११५, म. गांधीनगर, स्टेशन रोड, औरंगाबाद, ०५, काशी, १९ जानेवारी १९२४, पृ.क्र. ७
२) तत्रैव, बडोदे, २४ मार्च १९१९, पृ. क्र. ९..
३) तत्रैव, मुंबई, १० जानेवारी १९३०, पृ. क्र १६.
४) तत्रैव, बडोदा, २६ डिसेंबर १९२३, पृ. क्र. १८.
५) तत्रैव, मुंबई, २६ फेब्रुवारी १९३४, पृ. क्र. २०.
६) तत्रैव, पुणे, २ सप्टेंबर १९०९, पृ. क्र. २२.
७) तत्रैव, मुंबई, २३ मार्च १९१८, पृ. क्र. १३.
८) तत्रैव, बडोदा, २४ मे १९२०, पृ. क्र. १९.

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मानवी विकासावर बदलल्या पर्यावरणाचा परिणाम

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(गृहअर्थशास्त्र विभाग प्रमुख) यशवंतराव चव्हाण महाविद्यालय, लाखांदूर

आपलीसुर्यमाला ही आकाशगंगेचा एक भाग असुन पृथ्वी आपल्या सुर्यमालेतील सर्वात महत्वाचा जीवावरण असलेला ग्रह आहे. पृथ्वीवरील जल, हवा, जमीन, कार्बन, अकार्बनपदार्थ सुर्यप्रकाश, आवश्यक पोषक घटक या सर्व अनुकुल पर्यावरणीय घटकांचा उत्क्रांतअविष्कार म्हणजे मानव आहे. मानवाची निर्मिती होण्यापुर्वी पृथ्वीवर वेगवेगळ्या प्रकारची स्थित्यंतरे होकन गेली पहिल्यांदा सुक्ष्म वनस्पती निर्माणझाल्या त्यांनतर त्यांच्यात विविधता येऊन त्यातुन सुक्ष्म प्राण्यांची निर्मिती झाली.सजीवात सातत्याने उत्क्रांती होऊन मानव निर्माण झालाम्हणून मानवाला अनुकुल पर्यावरणाचे उपात्य मानले जाते.डार्विनच्या उत्क्रांतीच्या हा सिध्दांतानुसार वनस्पती व प्राणिजीवन एकपेशीय अवस्थेकडुन बहुपेशीय अवस्थेकडे वळले. मनुष्य उत्क्रांतीच्या प्रक्रियेचा शिखर बिंदु होय. पृथ्वी तलावर मनुष्याचा उदय १० लाख वर्षापुर्वी झाला असावा. गनटी अवस्था, शिकार अवस्था, भटकी अवस्था, कृषी अवस्थापार करून माणसाने आधुनिक युगात प्रवेश केला. आधुनिक युगात प्रवेश करणाऱ्या मानवाचा केवळ ५०००वर्षापूर्वीचा इतिहास आपल्याला ठाऊक आहे.

मानव हा निसर्गाचाच एक भाग आहे.परंतु तो इतर सजीव घटकापेक्षा बुध्दीमान असल्याने त्याने संरक्षणासाठी गाव,शहर वसविले, त्यातुन व्यवहार , व्यापार , प्रवासे दळण वळण या संस्था निर्माण झाल्या. मानवाने आपल्या गरजेनुसार काही राजकिय, सांस्कृतिक संस्था निर्माण केल्या संशोधनातुन तंत्रज्ञान विकसित झाले. नैतिकतेसाठी धार्मिक संस्था निर्माण झाल्या शिक्षणासाठी शैक्षणिक संस्थाची जोपासना मानवाने केली.

प्रत्येक सजीवांनी आपला अनुवंश टिकविण्याची धडपड चालु असते. अशी सभोवतालची अनुकुल परिस्थिती म्हणजे त्या सजीवाचे पर्यावरण मानवासाठी अन्न, पाणी, संरक्षण, प्रजनन इत्यादी क्रिया करण्यासाठीअनुकुल परिस्थितीची गरज असते.मानवाच्या भावना आणि विकास ह्यावर प्रभाव असलेल्या ज्या भौतिक आणि सामाजिक परिस्थिती मध्ये मानव राहतो.तो परिस्थिती म्हणजे मानवाचे पर्यावरण

सजीवांचा उगममातीतुन होतो. त्यांचे पालनपोषण मातीच करते. व त्यांच्या जीवनाचा अंतसुध्दा मातीतच होतो. माती हासजीवांचा आधारभुत घटक आहे.परंतु अलिकडील काळात या महत्वपूर्ण संसाधनाकडे मनुष्याचे दुर्लक्ष होत आहे. सोसायटी फॉर प्रमोशन ऑफ वेस्टलॅंड डेव्हलपमेंटच्या अनुमानानुसार जगातील सुमारे १०करोड हेक्टर जमीन उजाड होण्याच्या मार्गावर आहे. जमीनीची धुप झाल्यामुळे चंबळ घाटीतील सुमारे १० टक्के गावे उजाड झाली आहेत.

नैसर्गीक साधन संपत्तेवर सर्व प्राणी मात्रांचा सारखाच हक्क आहे. परंतु मनुष्याने भुमि जल, वायु, वनस्पती खनिजे या सर्व प्रकारचा संपत्तेवर आपले स्वामित्व स्थापन केले आहे. ह्या साधन संपत्तेचा उपभोग होतो ही बाब वेगळी. परंतु आजचा मनुष्य विकासाच्या हव्यासापोटी नैसर्गीक, साधनसंपत्तेचा मोठया प्रमाणावर शोषण करीत आहे. इतर प्राणीमात्रांना त्यांचा वाटा देणे तर दुरच उलट त्या सर्वांना मनुष्याने संकटात टाकले आहे. पाळीव प्राण्यापासून तर जंगली श्वापदापर्यंत सर्वांनाच मनुष्याने आपल्या वेठीस धरले आहे. श्रीकृष्णासारखे गोपाल या देशात आले. व गायींना देवता मानण्यात आले. परंतु आज हरयाना व पंजाबसारख्या राज्यामध्ये गायींना होर्मोनचे इंजेक्शन लावले जाते. त्यामुळे त्यांच्या शरीरातील जास्तीत जास्त रक्त व

ISSN : 2278-9308
March 2020

चरबी दुधात परावर्तीत होते. अशा रितीने गोमातेच्या शरीराचे शोषण करून आरतीत आपण दुध मिळविले जाते. त्यामुळे गाय दोन अडीच वर्षानंतर म्हातारी होते. त्यानंतर लगेच तिची रवानगी कत्तलखान्याकडे केली जाते. मनुष्याच्या वाढलेल्या शोषक प्रवृत्तीचा दाखला देण्यास हे एक उदाहरण पुरेसे आहे. आपल्या वाढत्या गरजांची पूर्ती करण्यासाठी मनुष्य मानवाने वन्य जीवनाचा विनाश करीत आहे. वाढती लोकसंख्या वाढते औद्योगिकरण व शहरीकरण या सर्व बाबीमुळे वन्य जीवांना त्रास होत आहे. मनुष्याच्या आक्रमणामुळे व अतिक्रमणामुळे निरपराध वन्य प्राणी भयभीत झाले आहेत.

उद्योगधंद्याच्या विस्तारामुळे शहरभोवतालची वने व शेती क्षेत्र मोठ्या प्रमाणात नष्ट होत आहे. व सिमेंट कॉंक्रीटची जंगले वाढत आहेत. जेथे अन्न धान्य पिकविले जात होते. तेथे कारखान्याची गर्दी वाढली आहे. जमीनीच्या अमर्यादित वापरामुळे तसेच रासायनिक खते आणि विषारी द्रव्याचा वापर मोठ्या प्रमाणात वाढल्यामुळे जमीनीची जैविक विविधता घटतआहे.जमीनीवरील मानवाच्या अत्याचारामुळे जी मानवाला स्वतःच्या उदरात गडप करेल हे शाश्वत आहे. मात्र ८ प्र.श भाडवलदार विचारसरणीच्या लोकामुळे ९० प्र.श. सामान्य माणुसही त्यांच्याबरोबर संपेल असे दुश्य पर्यावरणात मानवाने हस्तक्षेप केल्याचे दिसत आहे. भारतात दरवर्षी शेती व जलसिंचनाच्या अयोग्य वापरामुळे दरवर्षी ८० दशलक्ष हेक्टर्सची धुप होत आहे. शहरांची लोकसंख्या दुप्पट तिपटीने वाढल्यामुळे विकसीत व अविकसीत देशाचे भवितव्य धोक्यात आले आहे. कारण मानवी विकासाची संसाधने आणि प्राकृतीक स्त्रोत कमी होण्याची दाट शक्यता आहे.

''वृक्षवल्ली आम्हा सोयरी वनचरे,
पक्षीही सुस्वरे आळविती....''

असे कौतूकाने म्हणणाऱ्या संताचे वारसदार सुध्दा आम्ही राहिलो नाहीत.' हे विश्वची माझे घर असे सार्वभौम दृष्टीकोन देणाऱ्या नामदेवांचा माणसाला पुरता विसर पडलेला आहे. आजचा स्वतला सुसंस्कृत म्हणवुन घेणारा माणुस स्वत पलिकडे अन्य कोणाचेच हित न पाहण्या इतपर्यंत स्वार्थी बनला आहे. परंतु आपले जीवन हे केवळ आपल्या पुरतेच मर्यादित नसते. ते सृष्टीमधील सर्व घटकांबरोबर आंतर संबंध राखुन असते हे विसरून चालणार नाही. स्वार्थ आणि स्वामित्वाची भावना बाजुला ठेवुन वनांचे आणि वन्य जीवनाचे प्राणपणाने संवर्धन करणे मनुष्याच्या अस्तित्वासाठी आवश्यक झाले आहे.

पर्यावरण प्रदुषण ही पर्यावरणातील एक महत्वाची समस्या आहे. ती तिच्या निर्मितीस मानव हाच एकमेव घटक जबाबदार आहे. पर्यावरण संरक्षण हे समाजातील प्रत्येक व्यक्तीचे दायित्व आहे. पर्यावरणाचे संरक्षण करून त्यांची गुणवत्ता वाढविण्यासाठी लोक शिक्षण देऊन जनजागृती करणे आवश्यक आहे. त्या संदर्भात पुढिल बाबी लक्षात घेण्यासारख्या आहेत.

१) नैसर्गीक साधन संपत्तीचा वापर काळजीपुर्वक करावा.

२) प्लास्टीक,पॉलिथीनचा वापर टाळावा, त्या ऐवजी कागद, कापड किंवा गोणपाटाच्या पिशव्यांचा वापर करावा.

३) घरातील जाळण्यासारख्या कचरा जाळुन टाकावा.

४) पर्यावरणाचा घटक प्रमुख घटक म्हणुन वृक्षाला अनन्यसाधारण महत्व आहे. यासाठी प्रत्येक व्यक्तीने वृक्षसंगोपन व वृक्षसंवर्धनासाठी तत्पर असावे .

५) वृक्ष प्रमाणेच वन्य, पशु प्राणी व पक्षाचे रक्षण करणे काळाची गरज आहे.

६) झाडावर , पिकावर , शेतीत विषारी किटकनाशके , फवारणे टाळावे.

७) रासायनिक खते टाकुन कंम्पोस्ट खतांचा वापर बागेत व शेतात करावा.

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March 2020

८)स्वयंचलित वाहनांचा वापर आवश्यकते प्रमाणे करावा. तसेच वाहनाची नियमित देखभाल करावी. जेणे करून हवा, प्रदुषण , नियंत्रणास मदत होईल.

९)पाण्याचा वापर अतिशय काटकसरीने करावा, पावसाच्या पाण्याचे संवर्धन करावे. तसेच नद्या ,नाले, तळे,सरोवरे यासारख्या जलाशयामध्ये पाण व दुषित पाणी सोडु नये.

१०) कोरडया कचऱ्यातील पेपर, वहया व काही भाग जे भंगारलेले घेतात त्यांना तो द्यावा इतरत्र फेकु नये.

११) लोकांना पर्यावरण शिक्षणाचे धडे द्यावे अन्यथा '' जो दिन गया सो वक्त भला होता है , आनेवाली पिढियो से वक्त कहर लिया होता है '' एका उर्दु शायरने स्वलेल्या ह्या ओळीचे पावले पावली प्रत्युत्तर येईल इतकी भविष्यातील पर्यावरणाची आव्हाने गुंतागुंतीची व भयावह स्वरूपाची राहतील. पर्यावरण हा पुर्वजांचा वारसा आहे. व भावी पिढयाचा अनमोल ठेवा आहे. म्हणुनच वर्तमान पिढीला विश्वस्त म्हणून आपली भूमिका सक्षमपणे पार पाडायची आहे.

सारांश :—

खनिज,तेल, वाळवंटाचा विस्तार शहरीकरण, औद्योगिकरण परिणामता पृथ्वीवर उष्णतेत झालेली वाढ मानवी विकासास मारक ठरत आहे. रसायनिक व किटकनाशक औषधे ह्याचा अतिरेकी वापर मानवी आरोग्यावर होणारा रेडीओ, टि.व्ही.,भ्रमणध्वनी यंत्राचा कर्कश आवाज, डिजे इत्यादीचा घातक परिणाम, कृत्रिम पाऊस इत्यादीमुळे मानवी जिवन विनाशाच्या मार्गाने जात आहे. ह्या बाबत वेळीच उचित उपाययोजना न केल्यास मानवजात व मानवी विकास विनाशाच्या गर्तेत सापडेल व पुढीलपीढी आपणाला कधीच माफ करणार नाही.

निष्कर्ष :—

मानवी विकासाकरीता संतुलीत पर्यावरण अत्यावश्यक आहे. कारण पर्यावरणातील प्रतिकुल बदलामुळे पर्यावरणाचे संतुलन बिघडून ते मर्यादिच्या बाहेर गेल्यास मानव समाजाचा विनाश अटळ आहे.

संदर्भग्रंथ :—

१) पर्यावरणशास्त्र —डॉ. विठ्ठल घारपुरे
२) पर्यावरणपरिचय — डॉ. जयकुमार मगर
३) पर्यावरण —चौधरी, रोशन, भोळे, जाधव
४) पर्यावरण शिक्षण — डॉ. डी.आर.कुलकर्णी
५) पर्यावरणशास्त्र — प्रा.आर. कुमार

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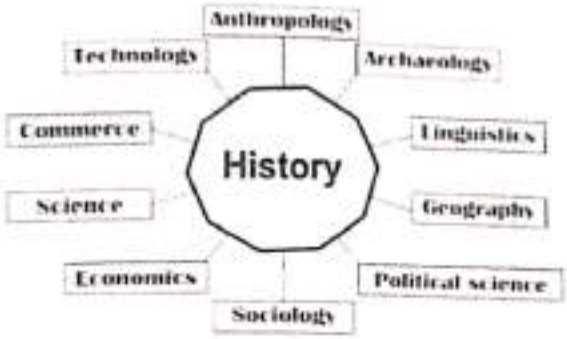

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INDEX

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Digital Teaching-Learning: Impact On The Education System

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Abstract

Traditionally, education has focused on sources such as schools, teachers, and print media. Learners connected to schools, teachers and libraries and reached sources of Information. Before the digital age, most people did not have access to information. Modern society wants to know when and how this happens and the world is moving from information society to knowledge society. Therefore, education is the priority and brain power become the most asset of the organization. Advances in digital technology have opened many learning opportunities. Technology has made information accessible and transferable to anywhere and / or all groups. Education has reached a large part of the world and ICT is an integral part of human life. This paper describes the process of creating, creating and modifying knowledge through technology. The use of ICT to manage and organize explicit knowledge is highlighted. The paper also describes how technology is used to access and apply this knowledge. The the paper also describes the use of these techniques in education and their general effects. This paper uses examples to highlight some of the changes in Indian education.

Motivation

In India, formal education has traditionally focused on schools at the rural level, while informal education has focused on libraries in the form of newspapers and books. The teachers provided formal training from the textbook or books and notes drawn from their experiences. The learners enrolled and visited the places that offered formal education. The libraries offered supplementary reading to reinforce their learning also as reference facilities.

A teacher had to be educated and knowledgeable to be ready to educate others. Also, that they had to accumulate the talents of retaining student's attention and deliver content in an efficient way. Thus, teaching is a crucial profession and other people respected them as they guided and assisted the learners to be useful citizens of the country. thanks to the respect earned by the society teaching was one among the welfare work activities. Also, most activities people then want to do were centered at village level and teaching too was administered at villages where small populations want to live. With emerge of commercialism and commercial cities people have removed of villages to those cities for various sorts of employment. When the population increased the demand for learning also goes up and thus the normal schools couldn't deal with the demand. Thus, new schools had to be created and existing schools had to be expanded, and new teachers were required to deliver education. to satisfy the demand inexperienced, under qualified and under trained personnel were used and thus the profession has changed from a welfare work to a commercial business. Business is governed by remuneration and when it's lower, the capable people tends to hunt other employment offering higher remunerations. Past governments used this sector as an employment creation section thus contributing towards the deterioration of the the world.

Electronic era commenced with the utilization of wireless transmission over 100 years ago. The messages were passed through the air, invisibly, on radio waves. Since

then the technology use has moved from radio, to recordings, to movies, to television, to computers, to CDs, CD ROMs & the web. This technology was very useful to convey instant urgent messages and well on make people remember current local and international news. This has become an off-the-cuff but effective sort of education.

The transformation of analogue signals to digital emerged a replacement technology that could eliminate transmission errors and performing an equivalent task some efficiently. Digital technology has been around for over 50 years with the wide use of the technology for computers and other equipment. Since early 1960s educators and scientist began using computers for teaching purposes. Initially it had been used as reading and typing text to supply instructions of the way to use the pc thanks to its low-level interaction with users and later to unravel a while consuming problem. However, with the invention of affordable microcomputers and therefore the integration of text, graphics and color there was a rapid spread of computers in business, educational institutes and houses. Computers first came to India within the late 1950's and round the same time computing was introduced to the curriculum of Indian Universities. Learning about computers grew from understanding how computer works, to programming it to perform specific tasks, to use of it to perform daily activities. Computers also evolved from manipulation of text and numbers to interaction via text, graphics, voice and pointing devices. the power to network many computers to share information and resources was another breakthrough. With of these advances there has been a gentle and dramatic decrease in cost of a computer. alongside these courseware and better integration of text, graphics and color appeared making education material simpler. Graphical power and use of mouse on a par with keyboard made the foremost impact with reference to attracting laypeople to use computers. The expansion of the web from a little group of academics and officialdom exchanging textual material into a worldwide resource, with many people using it for diverse activities like shopping, banking, researching, forums, exchanging and sharing information, access to digital libraries and in fact e-learning have already made an impression to the society. This has and can transform everything we do.

1.TECHNOLOGIES AND THEIR APPLICATIONS IN EDUCATION

There are variety of technology components available to build knowledge management systems. Local area networks, Internet and Intranets are the backbones. Everything is simply one click away. they supply transparent speedy transfer of data among people and applications. Internet applications built using software and tools allow collaborative intelligent access to knowledge. Appropriate access and authentication layers make sure the security aspect of such systems. Data and document bases act because the repositories to get the knowledge.

1.1 Media for Knowledge

Explicit knowledge might be represented using different media. Text, graphics, animation, sound and video are the media to represent them. Unlike the normal media in sorts of books information stored digitally are often preserved with none sorts of distortion and that they are often accessed easily and quickly from any a part of the planet .

1.1.1 Text

Text is one among the foremost effective components of representing knowledge. The words embodied as text, convey a strong message and this has been widely utilized in handwritten and medium. Most data and knowledge are represented through this medium. it's impossible to convey an unambiguous message without text. To convey a message effectively the message should be specific, definite, concrete and precise. Selection of suitable fonts and size is vital for legibility and aesthetic effects. Learning cares, summarized text is employed to spot the details and detailed descriptions are for explanations and subsequent supplementary reading.

1.1.2 Graphics

Text and graphics are the essential components of multimedia systems. Text without graphics will fail to retain person's attention also as long-term retention. Bitmaps (paint) graphics and vector (draw) graphics are two basic sorts of still graphics. Each type has its own characteristics and satisfies different needs. Color is a crucial component of an image. However, when producing graphics colors should be chosen carefully to make sure effective and pleasing displays. Human eyes react to candlepower and to the three colors red, green and blue. Like within the case of fonts and sizes of text, the selection of color composition has immediate aesthetic impact.

1.1.3 Sound

All sorts of verbal communication use sound. Technology has been wanting to transmit sound across the universe. Teacher's voice has been the first focus in delivering knowledge. Sound might be represented using computers. A multimedia requires the utilization of speech, music or special sound effects. When used for education, speech should be short, manageable and integrated with other media. It should be used as a complementary to text.

1.1.4 Animation

Animation adds impact to a presentation. Unlike text and graphics these are dynamic time-based media. The visual impact of animation is to harness the training process. Animations usually take forms like moving an object across the screen, user-controlled movement of an object, bitmap flipping and full animation files. Many tools are often used for animation from an easy PowerPoint animation to complex animations in 'unity'.

1.1.5 Video

Video occupies the foremost disc space and bandwidth when used over the network. Hence video is often integrated with other media only through use of edited segmented video clips each conveying a selected message. Many educational videos are readily available on the web on sources like YouTube. Any required topic is often searched on an enquiry engine to get related video.

1.2 Access to Knowledge

Databases like, RDBMS and EDMS manage the specific knowledge. They're accessed using various technologies like Internet, Intranet, and Search Engines.

1.2.1 Internet

Internet provides a price effective global network backbone. It connects users from anywhere, if they need access to the online. This has allowed users to host information on their computers and make them available for others. Such computers got to be dedicated for that purpose as users are going to be checking out information at different times. These sites are called internet sites and that they are connected to the online on 7x24. This technology intends to supply unrestricted access to information. an academic institute will publish all information relevant to the general public through their internet sites. This technology has made information accessible because it happens and other people access them at any time they need to try to do so.

1.2.2 Intranet

Intranet is employed only within an organization, thus restrict access to information from outside the organization. the acceptable security measures (e.g. firewalls) implements such requirements. These internet sites allow employees and authorized users to access information while protecting an equivalent from others. This technology is employed to share tip within an organization. Teachers and administrators could monitor the general status of a student and hence take appropriate actions promptly. Teachers also can make their learning material and exercises available through them. Some e-learning systems runs on these networks with login accounts created for its users.

1.2.3 Search Engines

Search Engines are very effective powerful tools that allow text-based information retrieval. Web based search engines deploy differing types of navigation strategies. Meta searching, hierarchical searching, attribute searching, and content searching are among them. This facility is now widely employed by most users of the web. This has helped researchers, teachers and students to succeed in the specified information and acquire the knowledge. Any information available in any corner of the planet are often obtained in matter of seconds. It's just an enquiry away.

1.3 Sharing Knowledge

Knowledge sharing is completed among a network of individuals. Communication among people might be done through paper mail, fax and telephone. However, these techniques are synchronous and fewer effective across geographical boundaries. IT provides simpler solutions through the utilization of e-mail, video conferencing, virtual meeting, and document collaboration. Combined use of data sharing techniques will allow reaching them beyond geographical boundaries and performing businesses and services more effectively.

1.3.1 E-mail

E-mail allows sharing knowledge asynchronously. An individual could share knowledge with a community by sending a message to a gaggle of individuals. lists eliminate the necessity for everybody to recollect the names of the community and ensure everyone gets the message.

1.3.2 Video Conferencing

Telephone allowed speech among distant personnel. This has evolved not only to look at a live video of the person but also to attach to variety of individuals. Although the technology is expensive it's been used for scheduled meetings involving people internationally. Universities having campuses cover a bigger geographical location have their staff meetings through such technology. this protects time period of individual. If the time saved and it's used effectively the organization and society will benefit within the end of the day. Some universities use this technology for teaching also. Students ask questions by posting them to the teacher using the technology. Such systems require each student to possess their individual computer with the power receive and interact with the system.

1.3.3 Virtual Meeting

Virtual meetings allow people from different locations connect with one another to conduct meetings and share knowledge as if everyone were within the same room. Applications like presentation graphics, spreadsheets and data processing are often shared in real time. Such activities are getting used in India and therefore the extent of it varies among users.

2. CHANGES TAKING PLACE

Availability of vast amount of data on the online has provided access to all or any sorts of learning material. The teacher's lecture notes are not any longer the first focus of a learning process, and therefore the teacher's role and the student's learning process is changing. Knowledge that's accessible virtually with the main target on the scholar. Virtual access is achieved through Internet / Intranets. Techniques like e-mail, web notices, discussion forums and video conferencing allow a student to access information without visiting the physical location of delivery. A typical interactive e-learning system will have these characteristics and thus demonstrates the paradigm shift.

2.1 Teacher's Role

In the modern global learning environment teacher's role shifts from "dispenser of information" to "facilitator of learning" as he has only to guide the active students who are involved in using the e-learning material. Classrooms are fully equipped with permanent multimedia projectors and computers and therefore the facilitator must access the e-learning system through the Intranet. Teachers shouldn't control the training process also as they ought to allow students to perform collaborative work and make some decisions on their own. Teachers should make sure that knowledge and skills aren't presented to students directly but are constructed by them in response to information and learning tasks. Teachers got to consider how these learning

experiences might be encouraging to students who are performing this sort of mental work.

2.2 Student's Role

Some classrooms are equipped with computer access to all or any students. In such cases students interactively participate within the learning process. Now the student's focus is completely on the training process than on copying note because the learning material are often accessed at a future time. A Student who wants to learn facts and skills by absorbing the content presented by teachers and media resources should move towards creating personal knowledge by working on content provided by teachers, media resources, and private experiences. the main target should get on acquiring higher order skills like problem solving and important thinking.

2.3Assessments

With changes to the training process the assessment methods should also change. Rather than measuring a student on fact knowledge and discrete skills, assessments should specialize in application of data. this may allow testing of problem-solving skills of a student. Students should even be given tasks to demonstrate understanding and creativity.

3.CONCLUSION

Over the last 20 years, computers are introduced to most educational institutes although its ratio to a student is extremely high. By making the educators conscious of the available technology and a few taking initiatives to implement them, some sorts of reforms may happen. Whatever India do with respect technology requirements the planet is going to be flooded with information and a few people will use them effectively. they might be the people that have developed their skills to the extent of finding problem-relevant information and interpreting and applying them in solving of problems.

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अमरावती जिल्ह्यातील जलसिंचन व कृषी उत्पादकता यांच्या संबंधावर बदलत्या पर्यावरणाच्या परिणामाचे अध्ययन

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प्रस्तावना (Introduction) :-

जलसिंचन हे शेतीच्या विकासासाठी न विसरण्यासारखे शास्त्र आहे. त्यामुळे शतीचा विकास पाण्याच्या पुरवठ्यवर अवलंबून असतो. निसर्गाच्या लहरीवर अवलंबून असलेल्या कृषीच्या विकास करणे कृषी उत्पादकता वाढविणे हे जलसिंचनामुळे शक्य होते.

एन. बी. के. रेड्डी यांनी म्हटले आहे की, हेक्टरी उत्पादनाच्या संदर्भात कृषीची असलेली गुणवत्ता म्हणजे कृषी उत्पादकता होय. कृषी उत्पादकता म्हणजे कृषी योग्य क्षेत्रातून प्रत्यक्षात मिळालेले हेक्टरी उत्पादन होय. कृषी उत्पादकता ही स्थळ व कालानुसार बदलत असते त्यावर विविध घटक प्रभाव टाकतात त्यातील महत्त्वपूर्ण घटक म्हणजे पर्यावरण होय. बदलत्या पर्यावरणाचा म्हणजे विशेषत वाढत्या तापमानाचा तसेच अनियमित पावसाचा जलसिंचन सुविधा व कृषी उत्पादकता यावर परिणाम झालेला दिसून येतो.

उद्दिष्टये (Objectives) :-

१. अमरावती जिल्ह्यातील जलसिंचनाचा अभ्यास करणे.

२. जलसिंचन व कृषी उत्पादकत यांच्यातील सहसंबंधाची माहिती घेणे.

३. अमरावती जिल्ह्यातील जलसिंचन व कृषी उत्पादकतेवर बदलत्या पर्यावरणाचा परिणाम जाणून घेणे.

बीज संज्ञा (keywords) :-

१. जलसिंचन व कृषी उत्पादकता सहसंबंध

२. त्यावर होणारा बदलत्या पर्यावरणाचा परिणाम अभ्यासणे.

माहिती स्त्रोत व अभ्यास पद्धती (Review & Methodology)

प्रस्तुत शोध निबंधात विषयाशी संबंधीत अनेक पुस्तके, सामाजिक, आर्थिक समालोचन अमरावती जिल्हा, संदर्भग्रंथ मासिके, नेट सेवा, संशोधन पेपर यांच्या माध्यमातून

सांख्यिकीय आकडेवारी जमा करून तिचे पृथकरण करूनच शोधनिबंध प्रस्तुत करण्याचा प्रयत्न केला आहे.

कृषी उत्पादकता काढण्याकरिता केंडली व मोहम्मद शफी (१९८४) यांनी वापरलेली Agriculture Productivity = $\frac{Y}{Yn} \div \frac{T}{Tn}$ या सुत्राचा वापर करण्यात आला तसेच जलसिंचन व कृषी उत्पादकता यांच्या सहसंबंध शोधण्यासाठी स्पीअरमन यांच्या सहसंबंध पद्धतीचा वापर करण्यात आला.

अभ्यास क्षेत्र (Study Area)

प्रस्तुत शोध कार्यासाठी अमरावती जिल्हा हे अभ्यासक्षेत्र म्हणून निवडले आहे. अमरावती जिल्हा हा महाराष्ट्र राज्याच्या उत्तर सिमेवर असून भारताच्या मध्यभागी विस्तारलेला आहे. अमरावती जिल्ह्याचा विस्तार $20^0 32'$ उत्तर ते $20^0 46'$ उत्तर अक्षांश आणि $76^0 37'$ पूर्व ते $78^0 26'$ पूर्व रेखांश यांच्या दरम्यान वसलेला आहे.

अमरावती जिल्ह्यातील जलसिंचन व कृषी उत्पादकता यांचा सहसंबंध –

भारतातील अपूऱ्या पावसाअभावी किंवा लहरी पर्जन्यावर मात करण्यासाठी जलसिंचन हे उपयुक्त साधन आहे. त्यामुळे शेतीचा विकास पाण्याच्या पुरवठ्यावर अवलंबून असतो. जलसिंचनाचा विकास, वितरण व क्षमता ही येथील प्राकृतिक घटकांवर अवलंबून असते. ज्या भागात कमी व विसंगत पर्जन्यमान असते त्या ठिकाणी जलसिंचनाची आवश्यकता असते तसेच ज्या ठिकाणी कृषी उत्पादकता कमी असते ह्या ठिकाणी जलसिंचनाचल आवश्यकता असते. प्राचीन काळात विहीर, मोट यांच्या साहाय्याने जलसिंचन केले जात होते आता अमरावती आधुनिक काळात नद्यांवर धरणे बांधून बंधारे बांधून पाटाच्या साहाय्याने जलसिंचन मोठ्या प्रमाणावर केले जाते.

कृषी उत्पादकता म्हणजे प्रत्यक्षात असलेले हेक्टरी उत्पादन होय. हेक्टरी उत्पादनाच्या संदर्भात कृषीची असलेली गुणवत्ता म्हणजे कृषी उत्पादकता होय. Input output ration means agricultural productivity- Majid Husen

शेती उत्पादक क्षेत्रातील भौतिक पर्यावरणीय साधनसंपत्तीचा वापर करून घेण्याची क्षमता ही आर्थिक सांस्कृतिक, तांत्रीक व व्यवस्थापकीय घटकांवर (मानवनिर्मित) अवलंबून असते यांचा जो निर्देशांक असतो निर्देशांकावरू व या सर्व घटकाच्या आंतरक्रियेतून कृषी उत्पादकता न वाढता ती घटते जाते. कृषी प्रदेशाचे वर्गीकरण उत्पादकतेवर आधारीत असते परंतु कृषी उत्पादकता ही निरनिराळ्या प्राकृतिक, सामाजिक व आर्थिक कारणांनी प्रभावित असते. म्हणजेच प्राकृतिक व सामाजिक घटकांच्या संयुक्त भावाचे परिणाम कृषी उत्पादकतेवर होतो. कृषी उत्पादकतेचे दुग्ध स्वस्त हेक्टरी उत्पादने किंवा एकंदर उत्पादने सूचित होते. कृषी उत्पाकदाच्या मोजमापाने माहिती होते की, कोणता प्रदेश अधिक उत्पादक आहे की कमी

उत्पादक आहे. कृषी उत्पादकता काढण्याकरिता केंडली व शफी यांनी वापरलेली $\frac{Y}{Yn} \div \frac{T}{Tn}$ पद्धतीने कृषी उत्पादकता २०००.२००१ व २०१०.२०११ ची काढण्यात आली.

अमरावती जिल्ह्यातील जलसिंचन व कृषी उत्पादकतेचा स्पिअरमन पद्धतीचा वापर करून केले असता असे दिसून आले की, जलसिंचन व उत्पादकता यात मध्यम स्तरीय धनात्मक स्वरूपाचा सहसंबंध आहे. जिल्ह्यातील मध्य भागातील जमीन ही काळी कसदार तर धारणी, चिखलदरा या तालुक्यातील डोंगर पायथ्याशी जमीन आहे. सिंचनामुळे पिकांच्या उत्पादनात वाढ झालेली दिसून येते तर काही पिकांच्या उत्पादनात घट झाली आहे.

अमरावती जिल्ह्यातील पिकांच्या उत्पादनावर जलसिंचनाचा कसा प्रभाव होतो हे पाहण्यासाठी गह, हरबरा, तूर, मका, ज्वारी, कापूस या पिकांचे नमूने पीक म्हणून २०००—२००१ या काळातील उत्पादन व २०१०—२०११ या दहा वर्षातील उत्पादनाचे तुलनात्मक अध्ययन केले असता असे दिसून येते की, गहू, हरबरा, तूर, मका या पिकांच्या उत्पादनात वाढ झालेली दिसून येते तर ज्वारी, कापूस, पिकांच्या उत्पादनात घट झालेली दिसून येते. स्थानपरत्वे गहू, हरबरा, तूर, मका या पिकांच्या उत्पादनात कमी अधिक प्रमाणात वाढ झालेली दिसून येते. तर कापूस, ज्वारी सारख्या पिकांच्या उत्पादनात काही रोख पिकांचे वाढते महत्त्व व पावसाची अनियमितता या घटकांमुळे घट झालेली दिसून येते.

अमरावती जिल्ह्यातील विशेषत मोर्शी, वरूड, तिवसा, धामणगाव, चांदूर रेल्वे या भागातील जलसिंचनामुळे पीक उत्पादनात वाढ झालेली दिसून येते. तर कापूस व ज्वारी सारख्या पिकांच्या उत्पादनात इतर पिकांचे वाढते व्यापारीक महत्त्व लोकांच्या दृष्टीने महत्त्वाचे असल्यामुळे या पिकांच्या बाबतीत थोडीफार घट आपल्याला पाहायला मिळतो. जलसिंचनामुळे कृषी उत्पादनात मोठ्य प्रमाणात दर हेक्टरी उत्पादन वाढते आहे.

अमरावती जिल्ह्यात जलसिंचनामुळे पीक पारूपात बदल झालेला दिसतो. शेतकऱ्यांनी एकाच सलग पीकाऐवजी लहान लहान पिके घेण्याकडे कल दर्शविला आहे. याचा परिणाम म्हणजे दुबार पिक, तिबार पीक घेतल्या गेल्याने पीक प्रारूपात बदल झाला. तसेच शासनाच्या विविध योजनांच्या माध्यमातून जलसिंचनाच्या सुविधा उपलब्ध झाल्याने तसेच आधुनिक पद्धतीने शेती करण्याकडे शेतकरी वळला परिणामी जलसिंचनाचा वापर करून मोठ्य प्रमाणात उत्पन्न कसे घेता येईल याकडे शेतकऱ्यांचे लक्ष आकर्षित होत आहे.

जलसिंचन क्षेत्र व कृषी उत्पादकता यांचा सहसंबंध (२०००—२००१)

अ. क्र.	तलुका	मुख्य पीकाखालील एकूण उत्पदाकता (%)	ओलिताखालील क्षेत्र (%)
१	धारणी	८.८१	.
२	चिखलदरा	४.८५	०.४४

३	अंजनगांव सूर्जी	२७.३५	१५.२५
४	दर्यापूर	२१.०५	९.९७
५	चांदूर बाजार	२३.२५	८.९३
६	मोर्शी	९.०२	२१.०४
७	वरूड	११.५९	२१.२३
८	तिवसा	१२	३.४९
९	अमरावती	१६.२९	४.७५
१०	भातकुली	५.२७	०.४३
११	दर्यापूर	१२.०५	.
१२	नांदगांव खंडे.	२.०२	२.११
१३	चांदूर रेल्वे	११.७७	६.६२
१४	धामणगांव रेल्वे	२२.५७	.

(स्त्रोत – अमरावती जिल्हा सामाजिक–आर्थिक समालोचन, २००४–२००५ व २०१०–२०११)

अमरावती जिल्ह्यातील ओलीताखाली जलसिंचन क्षेत्रामध्ये २०००–२००१ मध्ये सर्वाधिक वरूड तालुक्यात आहे. तेथे कृषी उत्पादकता ११.५९ एवढी आढळुन येते. मात्र सर्वाधिक उत्पादकता अंजनगाव सुर्जी तालुक्यात आहे. त्या मानाने तेथे जलसिंचन क्षेत्र ९.९७ टक्के एवढेच आहे. तरीही आधुनिक शेतीचे तंत्रज्ञान व पाण्याचा योग्य वापरामुळे तेथे उत्पादकता ही जास्त आढळुन येते. सर्वात कमी ओलीताखाली क्षेत्र हे चिखलदरा तालुक्यात आहे. त्यामानाने तेथे उत्पादकता प्रमुख पिकाच्या एकुण उत्पादकतेपैकी ४.८५ टक्के एवढी आढळुन येते. अशा प्रकारे आपल्याला कृषी उत्पादकता व जलसिंचन यांचा सहसंबंध हा २०००–२०००१ मध्ये आढळुन येतो.

२०१०–२०११ मध्ये सर्वाधिक ओलीताखाली क्षेत्र चांदुर बाजार तालुक्यात २६.१५ एवढे असून त्या तालुक्यात कृषी उत्पादकता २२.५५ टक्के आढळुन येते. जी २०१०–२०११ मध्ये मुख्य पिकाच्या एकुण उत्पादकतेपैकी जास्त प्रतिशत आहे. सर्वाधिक जलसिंचन क्षेत्र हे भातकुली तालुक्यात ०.६० टक्के आढळते व जलसिंचनाच्या कमतरतेमुळे कृषी उत्पादकता देखील याच तालुक्यात सर्वात कमी म्हणजे १.६९ टक्के एवढी आढळुन येते.

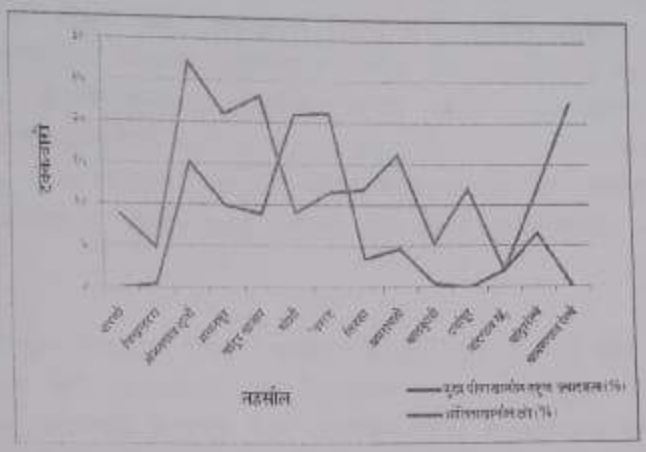
उत्पादकता व जलसिंचनाच्या सर्व आकडेवारीच्या सरासरीवरून असे आढळुन येते की, जलसिंचन क्षेत्र जेथे जास्त आहे तेथे कृषी उत्पादकता ही अधिक प्रमाणात आढळुन येते. अशा प्रकारचा जलसिंचन व कृषी उत्पादकता यामध्ये सहसंबंध आढळुन येतो.

जलसिंचन क्षेत्र व कृषी उत्पादकता यांचा सहसंबंध (२०१०—२०११)

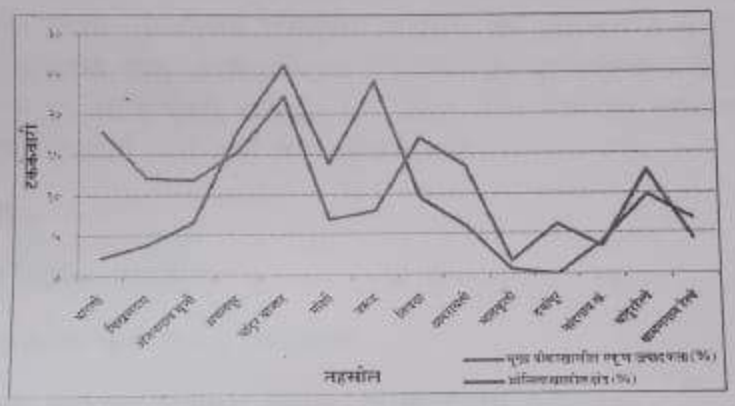
अ. क.	तालुका	मुख्य पीकाखालील एकूण उत्पदाकता (%)	ओलिताखालील क्षेत्र (%)
१	धारणी	१८.००	२.२६
२	चिखलदरा	१२.१७	३.८४
३	अंजनगांव सूर्जी	१२.०२	६.५९
४	टचलपूर	१५.४९	१८.१५
५	चांदूर बाजार	२२.२५	२६.१५
६	मोर्शी	६.९८	१३.९९
७	वरूड	८.१२	२४.१९
८	तिवसा	१७.१३	९.६४
९	अमरावती	१३.५३	५.९५
१०	भातकुली	१.६९	०.६०
११	दर्यापूर	६.१६	०.००
१२	नांदगांव खंडे.	३.४६	४.००
१३	चांदूर रेल्वे	१२.९६	९.९१
१४	धामणगांव रेल्वे	४.२६	६.७८

(स्त्रोत — अमरावती जिल्हा सामाजिक—आर्थिक समालोचन, २००४—२००५ व २०१०—२०११)

जलसिंचन क्षेत्र व कृषी उत्पादकता यांचा सहसंबंध (२०००—२००१)



जलसिंचन क्षेत्र व कृषी उत्पादकता यांचा सहसंबंध (२०१०—२०११)



जलसिंचन व कृषी उत्पादकतेवर बदलत्या पर्यावरणाचा परिणाम

२०००—२००१ ते २०१०—२०११ या दहा वर्षात पर्यावरणात काही प्रमाणात जे बदल झाले त्याचा परिणाम कृषी उत्पादकतेवर व जलसिंचन झालेला दिसून येतो. दहा वर्षपूर्वी मोसमी पावसाची अनियमितता फारशी वाढली नव्हती म्हणून जलसिंचन सुविधा अभाव असूनही ज्वारीसारखी पीके अमरावती जिल्ह्यात मोठ्या प्रमाणात घेतली जात असल्यासचे जाणवते. कारण २०१०—२०११ मध्ये त्यात घट झाली आहे. असे बरीच धान्य वेगवेगळ्या कारणाने कमी उत्पादीत होऊ लागणारी त्यात पावसाची अनियमतता हेही एक कारण आहे. जलसिंचन सुविधा आज मोठ्या प्रमाणावर निर्माण केल्या जात आहे. त्याचे एक मुख्य कारण म्हणजे बदलते पर्यावरण बदलत्या पर्यावरणात प्रमुख म्हणजे पावसाची अनियमितता वाढते तापमान हे प्रमुख दान घटक होय.

अमरावती जिल्ह्यात पर्यावरण बदलत्या महत्त्वाचा परिणाम म्हणजे जलसिंचन क्षेत्राच्या वितरणावरही जाणवतो. २०००—२००१ मध्ये ओलीताखालील एकूण क्षेत्राची टक्केवारी ८.८ टक्के एवढी होती जी २०१०—२०११ मध्ये ९.०० टक्के झाली आहे. बदलत्या पावसाच्या

अनियमिततेमुळे वाढत्या लोकसंख्येची गरज भागवण्याकरिता पाणी कमी पडू लागले म्हणून यात वाढ झालेली दिसून येते. अमरावती जिल्ह्यातील कृषीवर वाढत्या तापमानाचा व पावसाच्या अनियमिततेचे परिणाम दर्शविणारी अजून एक आकडेवारी म्हणजे अमरावती जिल्ह्यात २०००—२००१ मध्ये लघु पाटबंधाऱ्यांची संख्या ३६० एवढी होती वाढत्या कृषीची गरज भागविण्याकरिता २०१०—२०११ मध्ये ही लघू पाटबंधाऱ्यांची संख्या ६०४ म्हणजे जवळपास दुप्पट झालेली. बदलत्या पर्यावरणामुळे दिसून येते. म्हणून आज बदलत्या पर्यावरणाकडे लक्ष देणे व पर्यावरणाच्या संवर्धनासंबंधी उपाय करणे गरजेचे आहे.

निष्कर्ष —

अमरावती जलसिंचनाचा विकास झाल्यामुळे कृषी उत्पादनामध्ये वाढ झाल्याचे दिसून येते. जलसिंचन व कृषी उत्पादकता यात स्पिअरमन यांच्या पद्धतीनुसार अध्ययन केल्यास धनात्मक स्वरुपाचा सहसंबंध आढळून येतो. जलसिंचनामुळे व बदलत्या पर्यावरणामुळे पीक प्रारुपात बदल झालेला दिसून येतो. जलसिंचन विकासामुळे पीकाचा पाण्याचा प्रश्न काही अंशी सुटल्याचे जाणवते. बदलत्या पर्यावरणामुळे जलसिंचन अधिक करावे लागले त्यामुळे पाण्याचा उपसा वाढून भूगर्भातील पाण्याच्या पातळीत घट झाल्याचे आढळते. बदलत्या पर्यावरणामुळे पाण्याची गरज भागविण्यासाठी जलसिंचन क्षेत्र वाढवण्याची गरज पडू लागली त्यामुळे कृषी क्षेत्रात घट झाल्याचे आढळून येते. म्हणून आज बदलत्या पर्यावरणास आपली पर्यावरण प्रदूषीत करणारी कृत्ये कमी करणे गरजेचे आहे.

संदर्भग्रंथ सूची —

१. जिल्हा आर्थिक समालोचन, २०००—२००१ व २०१०—२०११

२. पीक अहवाल कृषी विभाग, अमरावती

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४. कृषी भूगोल — डॉ. सुरेश फुले

५. कृषी भूगोल — डॉ. माजीद हुसेन

६. जिल्हा आर्थिक सामाजिक समालोचन २००२—२००५

७. अमरावती जिल्हा सिंचन अहवाल.

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ADSORPTION STUDIES ON TOXIC As(III) ION REMOVAL USING COPOLYMER

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ABSTRACT

Pollution of the water by heavy metals has created toxicity to human and their environment. In the heavy metals especially trivalent arsenic is very toxic because it carcinogen to both humans and animals. Arsenicals have been associated with cancers of the skin, lung, and bladder hence more hazardous. Several conventional chemical and physical methods are reported in the literature for the removal of trivalent arsenic. However these methods are expensive and less efficient to remove the trivalent arsenic. The aim of the present study is an attempt to synthesize new group of copolymer with higher ambient capacity of trivalent arsenic removal from contaminated water. The adsorption capacity of the copolymer was studied as the function of solution pH, concentration of arsenic metal ions and contact time of adsorption. The applicability of Langmuir isotherm was tested. The adsorption capacities were found to be 88.47% for As (III). These results showed that the copolymer RSF-II may be an efficient material for remove of trivalent arsenic from contaminated wastewater.

KEYWORDS: Heavy Metals, Trivalent arsenic, Hazardous, copolymer, Langmuir isotherm.

I. INTRODUCTION

The tremendous increase concentration of heavy metals and there compounds in aquatic environment over the past few decades. Toxic heavy metals are particularly includes arsenic, zinc, copper, nickel, mercury, cadmium, lead and chromium [1]. Arsenic and its compounds are more toxic than other heavy metal because they are carcinogenic [2]. Exposure to arsenic occurs through both natural and anthropogenic sources. The major cause of human arsenic toxicity is from contamination of drinking water from natural sources rather than from mining, smelting and agricultural sources such as fungicides, insecticides, pesticides, herbicides [3]. It has been reported that chronic oral exposure to arsenic (0.05-0.1 mg/kg/day) causes neurological and hematological toxicity in humans and other animals [4]. For this study is an attempt to synthesize and characterize new copolymer with heavy metal adsorbent properties for their removal of trivalent arsenic from environment, specifically trivalent arsenic ion from contaminated water. In the present investigation, copolymer RSF-II was synthesized by using three reacting monomers resorcinol (R), semicarbazine (S) and Formaldehyde (F) in 2:1:3 molar ratios. The new copolymer was characterized by FTIR, TGA and SEM. The newly obtained copolymer have been proved to be a very good adsorbent which can be successfully used for removal of Carcinogenic Arsenic contaminated water which can then be used for safe potable purpose.

II. MATERIAL AND METHOD

All chemicals used were of analytical grade. Resorcinol, Semicarbazine, Formaldehyde (37%) procured from Merck, India. Double distilled water was used for all the experiments.

Synthesis and Purification of RSF-I Copolymer: The copolymer (RSF-II) was synthesized with used of resorcinol, semicarbazine with formaldehyde in molar ratio (2:1:3). The reaction mixture of above monomer with 2M HCL taken in 500ml RB flask fitted with water condenser for cooling and heated in an electrically operated oil bath at 135 ± 2°C for 7.15 hrs. The solid brown mass obtained was removed immediately as soon as the reaction

period was over. The separated product (RSF-II) was filtered and purified. The purity of newly synthesized and purified terpolymer sample has been tested and confirmed by TLC the proposed structure of RSF-II with reaction scheme has shown in **Fig.1.**

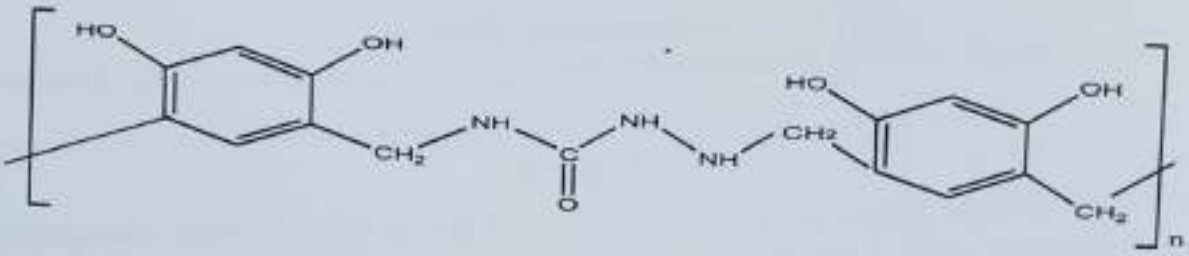

Fig.1: Structure of Copolymer RSF-II

III. MODELING AND ANALYSIS

a) Batch Experiment

Batch equilibrium studies were conducted with different parameters such as pH, agitation time, initial concentration of trivalent arsenic solution and effect of adsorbent doses. The systems were agitated on rotary shaker at 250 rpm, filtered through good quality filter paper and filtrate was analyzed for trivalent arsenic solution concentration using UV-Visible Spectrophotometer. From experimental data, the applicability of Langmuir model was judged. Linear regression coefficient (R2) and isotherm constant values were determined from the model.

b) Characterization of copolymer

Characterization of copolymer was carried out by techniques like elemental analysis, FTIR, TGA and SEM analysis and the concerned spectra/ image have been presented. These was techniques carried out at Sophisticated Analytical Instrumental Facility (SAIF) Punjab University, Chandigarh and SAIF Cochin.

IV. RESULTS AND DISCUSSION

a) FTIR Studies of RSF-II Copolymer

Infrared spectroscopy gives the information on molecular vibrations or more precisely on transition between vibration and rotational energy level in molecule. This information is of immense help to organic chemist because it directly related to molecular structure. The FTIR spectrum of the RSF-II copolymer is shown in **Fig.2**. The FTIR spectrum observed is assigned on the basis of the literature [5]. A sharp band appeared in the region 3474.71cm cm^{-1} may be assigned to –NH bridge in the copolymer. A band appeared at the 3748.28 cm^{-1} may be assigned to the phenolichydroxyl group intermolecular polymeric bonding. A sharp band at 2305 cm^{-1} is due to carbon nitrogen stretching bonding. The band appeared at 638.83 and 1078.29cm^{-1} are assigned of aromatic substitution in benzene ring. The band appeared at 1526.41cm^{-1}may be due to aromatic carbon double bond bending and stretching. The band appeared at 1365.07cm^{-1}may be due to phenolic –OH in plane bending. The band appeared at 1468.12 cm^{-1} may be due to vibration of secondary am[illegible] A band appeared at 2886.74 and 1195.33 cm^{-1} may be assigned to bond linkage present the two monomers in copoly[illegible]

b) SEM analysis of RSF-II Copolymer

Fig.3 indicates the SEM images of RSF-II obtained using an (x 1500, x10000) magnification. At such magnification, SEM images clearly revealed that different types of microspheres are presents on the surface of RSF-II. The microspheres are semi crystalline in nature because the SEM showed, they are transition state between the amorphous and crystalline state. Microspheres are formed in the form of large beads with uniformity and monodispersity [6]. The microspheres are globular shape but they are different shape. This microsphere are

increases absorption capacities of copolymers which are beneficial to remove trivalent arsenic metal ion and their compounds.

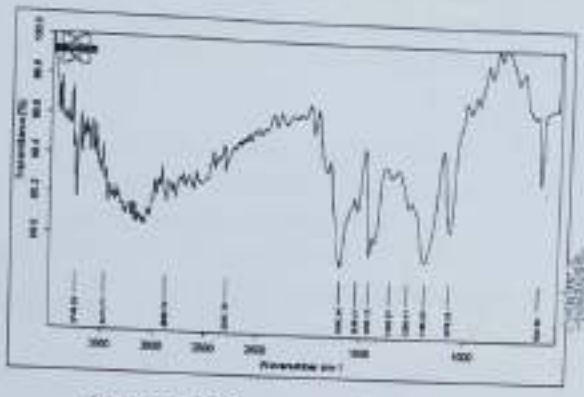

Fig-2: FTIR Spectrum of RSF-II

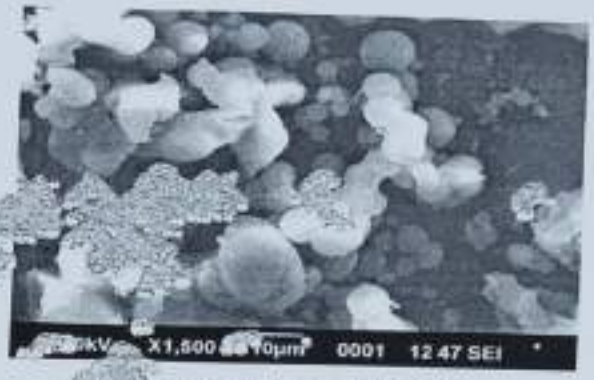

Fig-3: SEM image of (RSF-II)

c) Adsorption of As(III) ion on RSF-II

Effect of pH on As(III) ion removal: It is very important parameter for absorption. The adsorption capacities of RSF-II towards As(III) were determined using various pH values shown in **fig.4** . The pH values are ranging from 1 to 10. It is evident from this figure that maximum at pH 7 the adsorbents i.e. RSF-II remove 86.35% of As(III) ion.

Effect of contact time on As(III) ion removal: From **fig.5** It can be seen that As(III) removal efficiency of RSF-II increased from 20.27% to 86.35% when contact time was increased up to 140 min after graph are remain constant. Thus optimum contact time for RSF-II was found to be 140 min.

Effect of Adsorbent dose on As(III) ion Removal: From **fig.6** the RSF-II dose increased from 0.5 to 7.0 gm/lit, there was increased of removal efficiency of As(III) from 21.30 % to 86.35 %. It is also seen from the figure that a further increase of RSF-II i.e. 7.0 gm/lit does not affect the percentage of As(III) removal that remain constant. The optimum dose of RSF-II for the maximum removed percentage of As(III) was 7.0 gm/lit.

Effect of initial Chromium (VI) ion Concentration:- The percentage of adsorption with different As(III) concentration was studied by varying As(III) ion concentration from 10 to 100 mg/lit keeping other parameters such as pH of solution, adsorbents dose, contact time optimum. The results are show in **fig.7**. From the figure, it is observed that percentage of As(III) removal was found to decrease from 93.86 % to 57.85% as initial concentration started from 10 to 100 mg/lit for RSF-II.

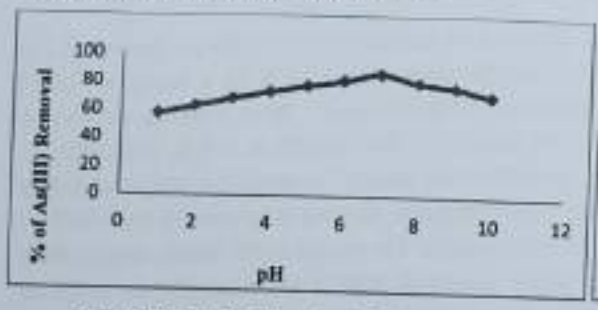

Fig-4: Effect of pH on As(III) ion

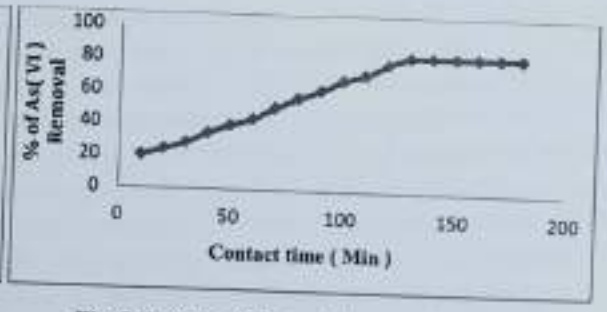

Fig-5: Effect of Contact time on As(III) ion

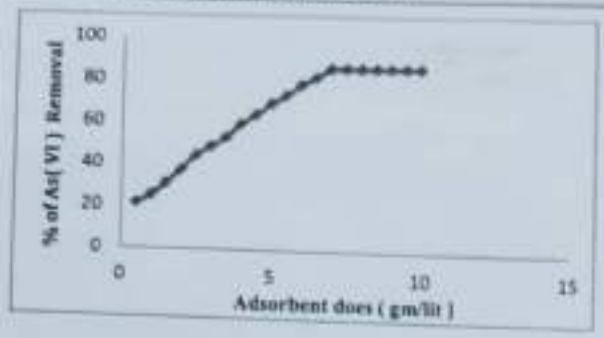

Fig-6: Effect of Adsorbent dose on As(III) ion

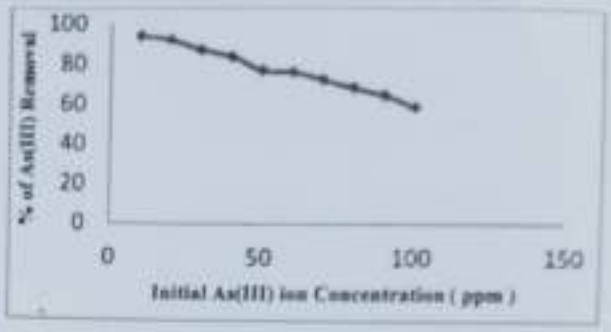

Fig-7: Effect of initial concentration of As(III) ion

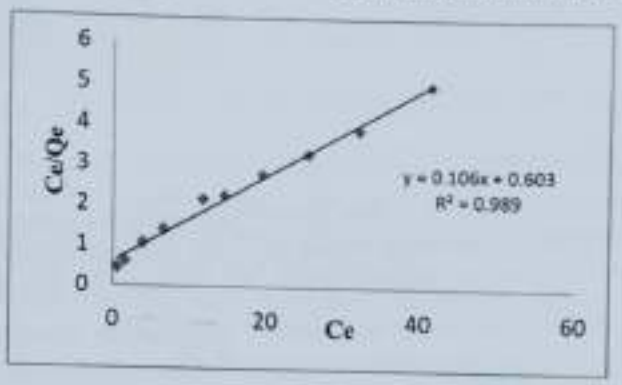

Fig-8

Adsorption Isotherm: The isotherm data have been linearized using the Langmuir equation and is plotted between Ce/Qe versus Ce. The Langmuir constant 'Qm' which is measure of the monolayer adsorption capacity of RSF-II is obtained as 9.433. The Langmuir constant 'b' which denotes adsorption energy, is found to be 0.1757.The high value (0.989) of regression correlation coefficient (R2) indicates good agreement between the experimental values and isotherm parameters and also confirms the monolayer adsorption of Cr(VI) onto the RSF-II. The dimensional parameter 'RL' which is a measure of adsorption favorability is found to be 0.091(0< RL < 1) which confirms the favorable adsorption process for As(III) on RSF-II adsorbent[7].

V. CONCLUSION

RSF-II copolymer is successfully synthesized with a good yield based on condensation reaction of resorcinol and semicarbazine with Formaldehyde in the molar ratio of 3:1:2 the presence of 2M HCL as a catalyst. RSF-II copolymer is characterized by FTIR and SEM studies. Removal of trivalent arsenic from aqueous solution is possible using RSF-III copolymer which effectively removes more than 86.35 % of As(III) at 308 K. The optimum parameters for efficient application of the RSF-II copolymer material under present investigation was at adsorbent dose, pH and contact time 7.0 g, 7 pH and 140 min respectively. The adsorption data are satisfactorily explained by Langmuir isotherms. Sorption of As(III) follows pseudo second order kinetics. The values of RL factor ranging from 0 to 1 indicate the favorable adsorption situation. Thus the newly generated RSF-II has been proved to be an excellent adsorbent which can employed for removal of As(III) from contaminated water

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Synthesis and characterization of terpolymeric resin for removal of hexavalent chromium

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ABSTRACT

8-HQTF terpolymeric resin was synthesized by condensation of 8-hydroxy quinoline (8-HQ), thiourea and formaldehyde in 1:1:2 mol ratio in the presence of HCl as a catalyst. A-synthesized material was authenticated by elemental analysis, FTIR, XRD and ^{1}H NMR spectroscopy. Cr(VI) removal were studied by using 8-HQTF via Batch equilibrium method, while Langmuir adsorption isotherm model was employed for detail adsorption study. The removal efficiency of Cr(VI) was found to be increase with adsorbent doses from 1 to 6 gm, and at 6 gm maximum efficacy was found. The result shows the maximum removal of Cr (VI) can be done nearly 94%.

Selection and Peer-review under responsibility of the scientific committee of the 11th National Conference on Solid State Chemistry and Allied Areas.

1. Introduction

Pollution, due to heavy metals is one the most uninhabitable threat for the living organism and it is gaining the scientists interest day by day. Heavy metals mostly consist of iron, lead, manganese, zinc, copper, chromium, and nickel and so on that lead to many problems for human and water environment. With the exponentially increasing population, there is a need for controlling heavy metal discharge before the toxic metal ions enter the waste-water. About 80% of mined chromium is used for metallurgical applications most of which is used in the stainless steel industries and it is also largely produces in leather industry, catalyst for many chemical reaction [1,2]. Cr(VI) is freely soluble in aqueous medium at any pH and easily penetrates in biological membrane [3]. The consequence of which is edema, skin irritation damage of liver, and pulmonary congestion [4]. In recent past Cr(VI) separation is carried by many common and popular methods such as Chemical reduction [5], Nano-filtration [6], bio-accumulation [7] and ion exchange [8], from aqueous effluents. These routes are indeed not cost-effective and difficult to implement in developing/undeveloped countries. Bio-sorption also gained significant attention due to its technical feasibility and economically viability as well as it is cost friendly [9–11]. Terpolymers have potential application in verities of different fields adsorption study is one of the major aspect. Also terpolymers gains attention on account of their wide ranging ion exchange properties [12]. The terpolymers of hydroxyl benzoic acid, urea/thiourea and formaldehyde/trioxane have been widely investigated because of their numerous applications [13–14]. Copolymers have also been synthesized by condensation of a mixture of phenol or hydroxybenzoic acid, various amine and formaldehyde [15,16]. However literature survey revealed that the application of terpolymers made of 8-hydroxy quinline, thiourea and formaldehyde is very scanty in adsorption technique. Therefore, we have carried out synthesis and characterization of this terpolymer and its application is thoroughly studied in the light of surface phenomenon. Terpolymeric resin as adsorbent reported in this article is effective for chromium removal from waste water and thus can be productively used for the control of chromium pollution.

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Selection and Peer-review under responsibility of the scientific committee of the 11th National Conference on Solid State Chemistry and Allied Areas.

2. Materials and methods

2.1. Chemicals

Analytical grade chemicals were purchased from Sigma Aldrich and used without further purification. Double distilled water is used for the preparation of solution.

2.2. Synthesis of terpolymer

A mixture of 8-hydroxy quinoline, thiourea and formaldehyde in 1:1:2 ratio is mixed in 500 mL round bottom flask fitted with water condenser and heated in an electrically operated oil bath at 120 ± 2 °C for 6 h with occasional shaking 2 M HCl is used as catalyst. The reaction scheme is shown in Fig. 1. Dimmer stat is used to maintain the temperature of the oil bath all through the course. The resinous mass obtained was removed as soon as the reaction period was over. The solid product obtained was repeatedly washed with hot water followed by methanol to remove unreacted monomers. The resinous product was then dried in air and powdered. The powder was washed many times with petroleum ether in order to remove hydroxy quinoline-formaldehyde copolymer which supposes to be present with the terpolymer. The product so obtained needs further purification for that purpose re-precipitation technique is used. Drop wise addition of ice cold 1:1 (v/v) conc. HCl/distilled water with constant stirring is used in the terpolymer which was dissolved in 8% NaOH solution, filtered and precipitated. The yield of the terpolymer resin was found to be 81%. To remove the chloride the precipitated resin product was filtered off washed with hot water and then it is dried and powdered. The purified polymer sample was dried in vacuum at room temperature. Although detail literature survey reveals that some alternative and supportive reaction scheme is also possible in this context [17,18].

2.3. Preparation of Cr (VI) solution

The stock solution of Cr (VI) is prepared by dissolving 2.8287 g of potassium dichromate in 1000 mL of distilled water. This stock solution is further used to prepare solution of different concentration solution upon dilution ranging from concentrations 10–100 mgL^{-1}. Dilute range solution of 0.5 N HCl and 0.5 N NaOH is used to tune the pH of the solution.

2.4. Batch adsorption experiment

Batch equilibrium process were conducted with 6 gm of 8-HQTF on addition with varying concentration of Cr(VI) solution. Different parameters such as effect of adsorbent doses, pH, agitation time, initial concentration of Cr(VI) solution also changed to study the adsorption isotherm study. At around 200 rpm the equilibrium mixture is shaken in Rotary shaker, filtered through Whatmman no.42 filter paper and filtrate was analyzed for Cr(VI) concentration using UV–Visible Spectrophotometer. The adsorption percent (%) is calculated using the Eq. (1).

$$\text{Adsorption}\% = \frac{C_0 - C_{eq}}{C_0} \times 100\% \quad (1)$$

where C_0 is the initial concentration of Cr(VI) in solution and C_{eq} is the equilibration concentration of Cr(VI) in supernatant after centrifugation. Langmuir model was used to judge the obtained result. The model gives the values of linear regression coefficient (R^2) and isotherm constant.

3. Results and discussion

3.1. FTIR and CHN analysis of 8-HQTF

FTIR spectrum of 8-HQTF terpolymeric resin is presented in Fig. 2 Appearance of band at region 3300 cm^{-1} is due to the stretching vibration of phenolic hydroxyl (–OH) group. A peak at 1515 cm^{-1} may be ascribed to N–H bending of secondary amide group [19]. The medium band at 959 cm^{-1} reflects the tetra substitution in the benzene ring which is attributed to (C–H) bending vibration [20]. The methylene bridge associated with 8-hydroxy quinoline can be identified by the peak at 3000 cm^{-1} [21]. The peaks appeared at 1440 and 1167 cm^{-1} are due to methylene bridges coupled with aromatic ring. The peak at 1006 cm^{-1} indicates the presence of C–N stretching. Peak in the range of 1266 cm^{-1} is attributed to C=S stretching vibrations [22].

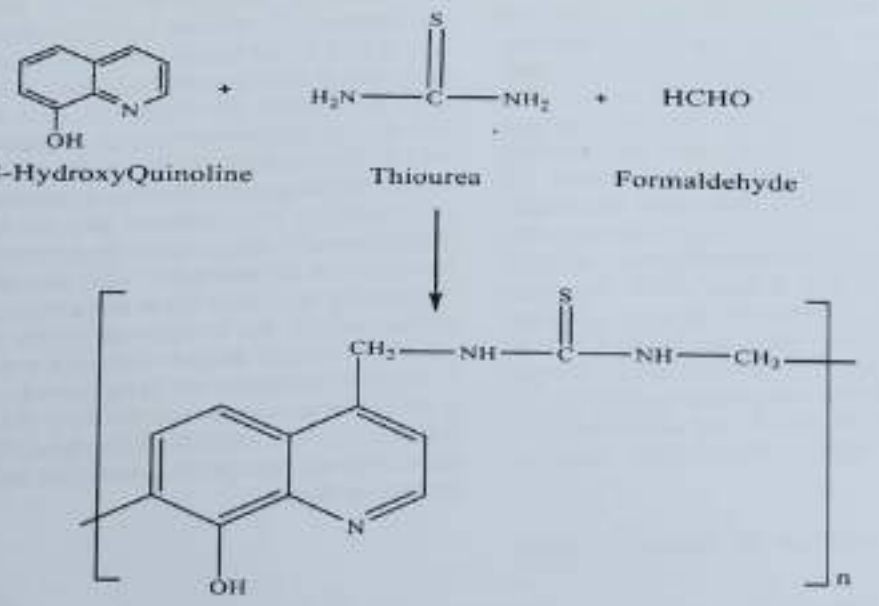

Fig. 1. Synthesis of 8-HQTF terpolymeric resin.

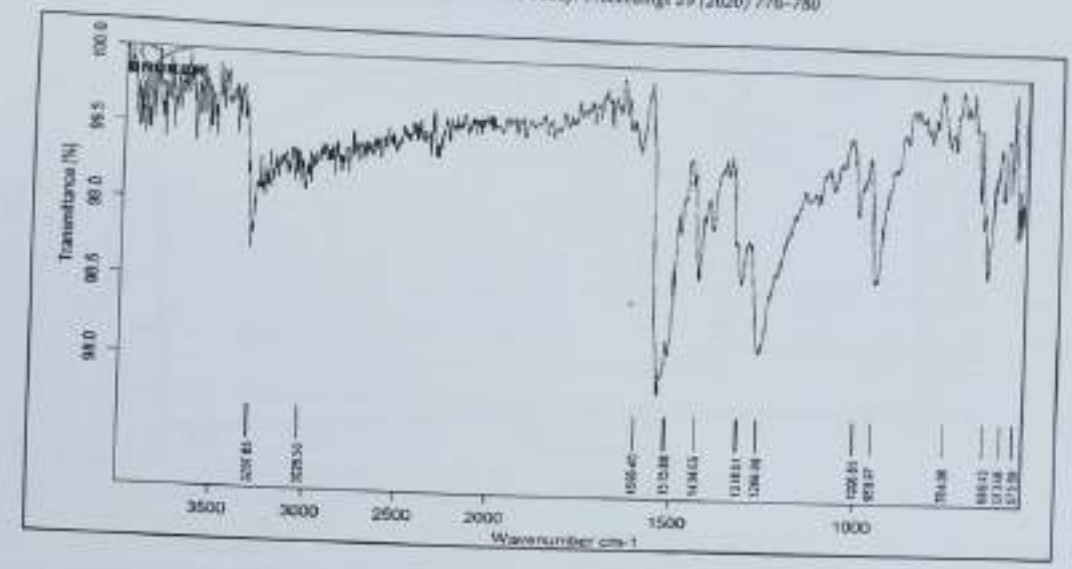

Fig. 2. FTIR spectrum of 8-HQTF.

The terpolymer resin was subject to microanalysis for C, H, and N on Perkin Elmer 2400 series II CHNS/O analyzer. All the spectral analysis is carried out at sophisticated analytical instrumental facility (SAIF) Punjab University, Chandigarh, India. The molecular weight of the compound is found to be 245 g/mole. The result of the analysis is listed in Table 1.

3.2. XRD analysis of 8-HQTF

The X-ray diffraction pattern of 8-HQTF has shown in Fig. 3. In this spectrum a high intense sharp peak at $2\theta = 32°$ and 45° has shown crystalline nature of the synthesized terpolymer. The spectrum also contains low intense and sharp peak sat $2\theta = 23°$, 27° and 57° indicate crystalline nature. Thus it can be concluded that 8-HQTF terpolymer resin exhibits crystalline nature [23,24].

3.3. Thermogravimetric analysis of 8-HQTF

The thermal analysis is most important and acceptable techniques for the determination of lattice water as well as degradation of organic molecules. The TG curve of synthesized 8-HQTF terpolymeric resin and its thermal decomposition behavior was investigated at a heating rate of 10 °C min^{-1}. Fig. 4 shows three derivative steps of degradation at temperature of 61.26, 218.76 and 310 °C. The first derivative degradation peak of 3% weight loss was observed at 61.26 °C is due to the loss of lattice water [25,26,18] entrapped in the copolymer, is quite fast step, later on TGA curve is quite stable. The second step start to lose weight of 21%, corresponds to the elimination of –OH groups directly attached to the aromatic nuclei is fast degradation step. Whereas, the gradual degradation was observed in the third step from 350 °C onwards was observed due to degradation of organic moiety, corresponds to 55% weight loss which may be due to the elimination of $-CH_2$ bridges and the aromatic nucleus [27–29].

3.4. ^{1}HNMR- studies of 8-HQTF

1HNMR spectrum of 8-HQTF is depicted in Fig. 5 it reveals that the signal at 3.6–4.6(δ) ppm due to methylene proton of the Ar-CH-N linkage. The signal at 8.3 ppm is assigned to the OH group of 8-hydroxyquinoline ring. The signal at 2.2(δ) ppm can be ascribed to

Table 1
Element analysis data.

Name of terpolymeric resin	Carbon (%)	Nitrogen (%)	Oxygen (%)	Hydrogen (%)	Empirical formula	Molecular wt.
8-HQTF	58.77(Cal.) 57.93	17.14(Cal.) 17.04	6.53(Cal.) 6.39	4.49(Cal.) 4.30	$C_{12}N_3H_{11}OS$	245

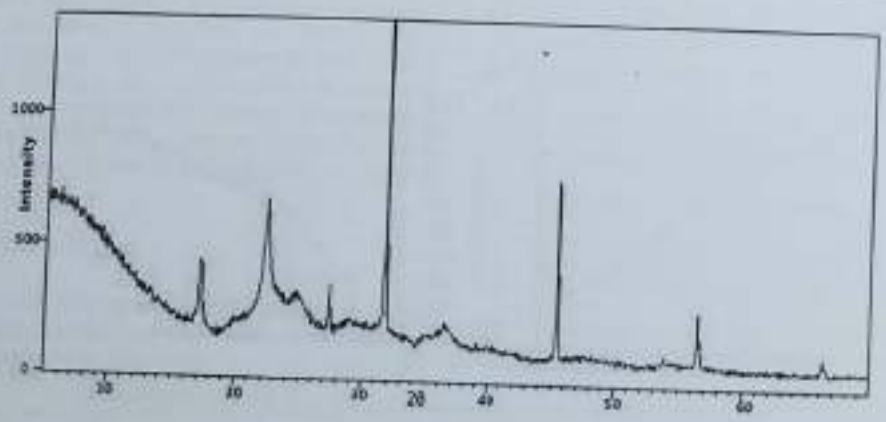

Fig. 3. X-ray diffraction pattern of 8-HQTF.

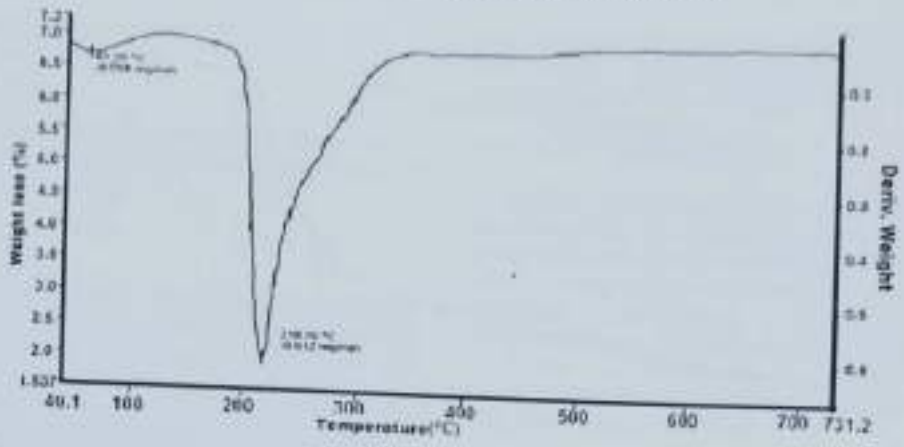

Fig. 4. TG curve of 8-HQTF.

Fig. 5. NMR spectrum of 8-HQTF.

–NH-bridge [18]. The multiple signals observed in the range 7.8(δ) ppm indicate the presence of aromatic protons.

3.5. Effect of pH and contact time on adsorption

pH is one the most important factor for the adsorption isotherm study it controls many other parameters in adsorption study. In Fig. 6(a) the change of pH on Cr(VI) adsorption using 8-HQTF as an adsorbent is given in the pH range from 1 to10. It is concluded from the plot that the separation increases steadily from 64% to 90% when pH is increased from 1 to 3 in Cr(VI) adsorption. It goes on decreasing slowly with the decreases on further increases in pH. Fig. 6(b) depicts the variation of contact time as a function of Adsorption experiment. The results can be interpertated as the Cr (VI) binding with adsorbent was greater in the initial stages then gradually increases and remains almost constant near about 94%, after 110 min of minimum time.

3.6. Effect of adsorbent amount and initial concentration of adsorbate

In Fig. 7(a) the effect of adsorbent (8-HQTF) doses on percent removal of Cr(VI) in the range 1 to 10 gm is embodied. Initially due to higher concentration of Cr(VI) the plot increases rapidly. Nonetheless after certain adsorbent quantity it becomes constant and it is treated as best adsorbent dose, which is found to be 6 gm/L for the 8-HQTF adsorbent. This effect is studied in the varying Cr (VI) concentration which is ranging from 10 to 100 ppm using 8 gm/L of adsorbent dose. The results have been plotted in Fig. 7(b) The results signifies that demonstrate that the percentage of Cr (VI) removal decreases with increasing concentration of adsorbate at a fixed adsorbent dose.

3.7. Adsorption isotherm

On homogeneous surface the adsorption isotherm is studied by Langmuir isotherm. The Langmuir isotherm is given as in Eq. (2).

$$\frac{C_{eq}}{q_{eq}} = \frac{1}{Q_0 b} + \frac{C_{eq}}{Q_0} \tag{2}$$

where C_{eq} is the equilibrium concentration of metal ion in mg/L. q_{eq} is amount of metal ion adsorbed at equilibrium (mg/L). Q_0 and b is Langmuir constants related to adsorption capacity and energy of adsorption respectively [30]. Langmuir adsorption relates the maximum adsorption capacity (Q_0) and the adsorption energy (b). Under this isotherm C_{eq}/q_{eq} versus C_{eq} is plotted following the standard procedure and the parameters contains their usual significance. The Langmuir constant q_m is obtained as 11.56, which is

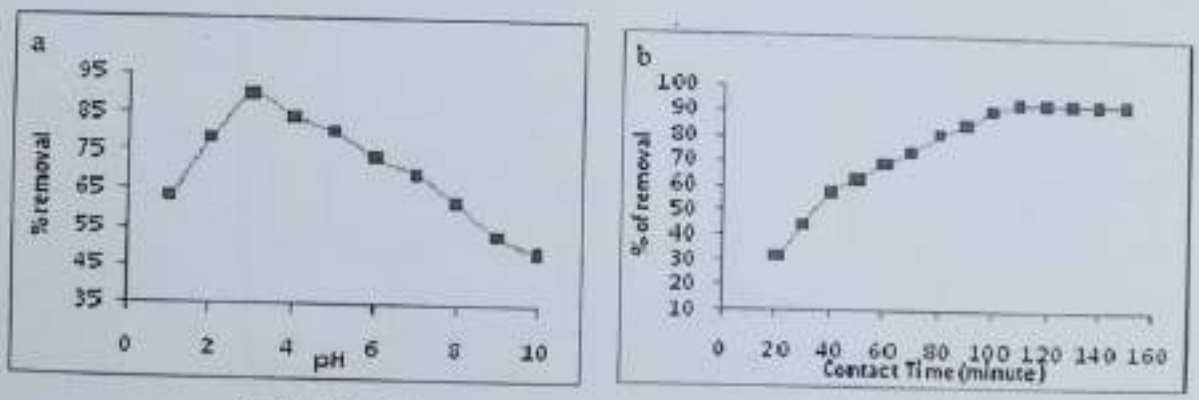

Fig. 6. (a) Effect of pH on Cr(VI) adsorption; (b) effect of contact time on Cr(VI) adsorption.

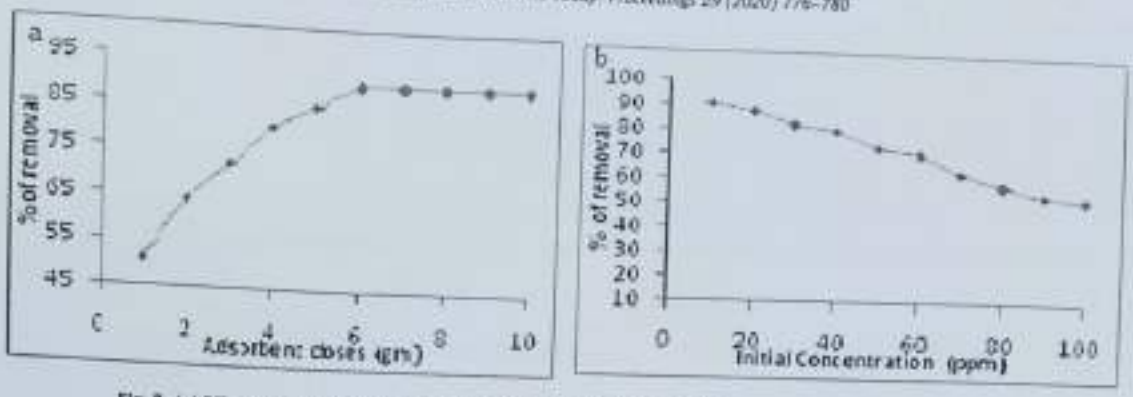

Fig. 7. (a) Effect of adsorbent doses on Cr(VI) adsorption; (b) effect of initial concentration on Cr(VI) adsorption.

the measure of the monolayer adsorption capacity of 8-HQTF. The Langmuir constant b which denotes adsorption energy is found to be 0.151. The high value (0.9945) of regression correlation coefficient (R^2) indicates good agreement between the Experimental values and isotherm parameters and also confirms the monolayer adsorption of Cr(VI) onto 8-HQTF. The value of R_L less than unity is an indication of effective inter-action between adsorbent and adsorbate. In the present case it confirms the favorable adsorption process for Cr(VI) on 8-HQTF adsorbent. The k_f values of the adsorbent to remove Cr(VI) was observed to be 2.243 mg/g which indicate dominance of adsorption capacity. The Freundlich exponents 'n' was 2.35 for Cr(VI) which reflect favorable adsorption. The values of R^2 was found to 0.9637 for Cr(VI) which shows appropriate in the plot of the Freundlich isotherm. The findings indicate that probably the sorption of metal ion on 8-HQTF has multilayer coverage.

4. Conclusion

The terpolymer 8-HQTF can be employed for the elimination of Cr(VI) from the industrial waste-water. The overall adsorption study relvals that at pH 4 and contact time 100 min maximum Cr (VI) removal (91%) is noticed. The percentage removal decrease with increase in initial Cr(VI) concentration. At 4 gm/L of optimum adsorption dose maximum removal efficacy has been noticed. The monolayer adsorption of Cr(VI) onto 8-HQTF is raveled due to best fitted data with Langmuir isotherm model.

5. Contribution of authors

The authors (whose names are mentioned in the paper) pronounce that this work was collaboratively done by them. Firstly after detail literature survey the scheme was designed by, Pralhad K. Rahangdale, Sudhir S. Bhuyar, Sudhir M. Maskey and Sudip Mondal. The terpolymer was synthesized in Department of Chemistry, S. S. Jaiswal College, Arjuni/Morgoan-441701 by Nitin D. Vilayatkar, and Manjiri S. Nagmote. The manuscript was well written by Nitin D. Vilayatkar, Sudhir S. Bhuyar, Aniruddha Mondal, and Sudip Mondal. However, electronic spectroscopy interpretation was done by Aniruddha Mondal with corresponding author Sudip Mondal. All the authors have reviewed and approved the content of the submitted manuscript.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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APPLICABILITY OF CCRPHF-I COMPOSITE IN ENVIRONMENTAL POLLUTION CONTROL

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Abstract: Environmental pollution due to toxic metals is topic of major concern related to pollution control. Arsenic heavy metal is considered to be acute toxic, carcinogenic and mutagenic to living organisms and hence more hazardous, causing various diseases and disorders. For this reason, the water treatment of toxic arsenic polluted water has received an extensive concern and become a hot topic in environmental research. Presence of arsenic in waste water and its various treatment methods are cited in the extreme. The aim of the present investigation is to synthesize Copolymer composite (CCRPHF-I) and to study its applicability in environmental pollution control with respect to arsenic removal efficacy from aqueous solution. This CCRPHF-I composite was characterized using modern techniques like FTIR, SEM and TGA. The arsenic adsorption was investigated using batch experiment method and effect of pH, contact time, adsorbent dosage and initial arsenic concentration on arsenic removal efficiency. The maximum removal of arsenic was observed to be 95.37 %. Thus the composite under study can be successfully used as an efficient adsorbent material for removal of arsenic from contaminated water and can have a variety of potential environmental applications.

Keywords: Arsenic toxicity, Composite, Batch experiments, Adsorption, Environmental application.

Introduction

Contamination of arsenic in drinking water is due to the untreated effluent discharge to water bodies from industries and agricultural field. Arsenic is considered to be acute toxic, carcinogenic and mutagenic to living organisms and hence more hazardous, causing various diseases and disorders such as lung and urinary bladder cancer, muscular weakness, nerve tissue injuries, blackfoot disease etc. The arsenic concentration of 0.05 mg/L in drinking water has been set as permissible limit by World Health Organization (WHO).[1] For this reason, the treatment of polluted water due toxic arsenic metal has received an extensive concern and become a hot topic in environmental research.[2]

This study is an attempt to synthesize and characterize new copolymer composite with heavy metal adsorbent properties for removal of arsenic from contaminated water. In the present investigation, copolymer RPHF-I was synthesized by using resorcinol (R), Phenylhydrazine (PH) and Formaldehyde (F) reacting monomers. The new Composite CCRPHF-I synthesis using RPHF-I and chitosan . This composite adsorbent has been abbreviated as CCRPHF-I. The purpose of surface modification is to enhance the adsorptive efficacy of copolymer with respect to arsenic removal. The trivalent arsenic adsorption was investigated using CCRPHF-I also effect of pH, contact time, adsorbent dosage and initial arsenic ion concentration was studied using batch experiments. The maximum removal of trivalent arsenic was obtained to be 95.37% using CCRPHF-I. CCRPHF-I composite can be successfully used as an efficient adsorbent material for removal of trivalent arsenic from aqueous solution and can have a variety of potential environmental applications.

Materials And Method

All chemicals used were of analytical grade. Resorcinol, Phenylhydrazine, Formaldehyde (37%) procured from Merck,

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India. Double distilled water was used during all experiments.

Synthesis and Purification of RPHF–I Copolymer

The copolymer (RPHF-I) was synthesized employing the method published earlier. [3,4] The purity of newly synthesized and purified copolymer sample has been tested and confirmed by TLC.[5]

Synthesis of CCRPHF–I composite

5gm of chitosan powder was dissolved in 100 ml of 10% acetic acid, which from whitish viscous gel. It was heated to 40-50°C to facilitate the mixing. 50 gm of RPHF-I was slowly added to this viscous gel and mechanically agitated using rotary shaker at 150 rpm for 24 hrs. The gel coated RPHF-I was then washed with double distilled water and dried. The process was repeated for three times until thick coating of chitosan was formed on the RPHF-I surface. The excess of acetic acid in Chitosan Coated RPHF-I (CCRPHF-I) was neutralized by treatment with 0.5% NaOH solution for 3 hrs. The resultant mixture was then filtered with Whatmann No. 41 filler paper, extensively rinsed with double distilled water, dried in an oven at 55°C for 48 hrs and stored in air tight container.[6]

Characterization of copolymer

The FTIR spectrum of the **CCRPHF-I** Composite is shown in **Fig.a.** A broad band appeared in the range 3742.55 cm^{-1} which is attributed to O-H stretching vibration and the 3391.63 cm^{-1} which is attributed to NH stretching vibration of chitosan molecules.[7] The weak band at 2927 cm^{-1} may be due to methylene C-H stretching vibrations. The band appeared at 1390.06 cm^{-1} result in stretching vibration of $-CH_2OH$ (primary alcohol). Absorption peak at 1632 cm^{-1} correspond to the NH bending. Absorption peak at 1685.64 cm^{-1} may be due to C = O stretching vibration of amide group. The sharp band at 1474.45cm-1 corresponds to a symmetrical deformation of the CH group and at 1547.89 cm-1 corresponds to the N-H deformation of amide. The vibration bands at 1084.32 and 120.48 cm-1 are indicative at C-O-C vibration inside chitosan ring. The three weak peaks appeared in the region 824, 754.90 and 698 cm^{-1} attributed to NH wagging of primary amine.[8]

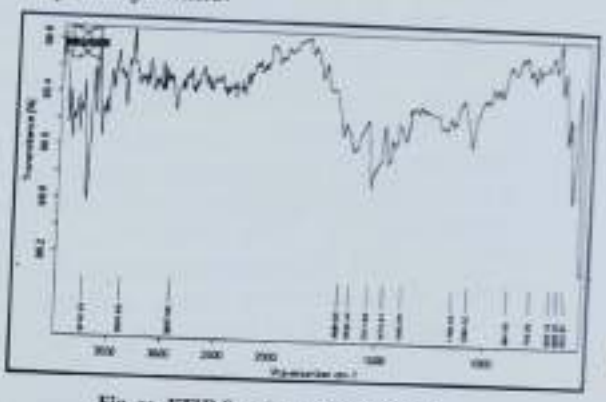

Fig. a:- FTIR Spectrum of CCRPHF-I

Fig.b. Represents the SEM image of CCRPHF-I obtained using an accelerating voltage of 15 KV at x3500 magnification. SEM image of CCRPHF-I that clearly revealed that wide variety of globular microspheres are present. Microspheres were formed in the form of large beads with irregularity and polydispersity.[9, 10] The sizes of microspheres are found to be 3.01μm, 1.98μm, 2.52μm and 1.06 μm. The image indicates a transition state of material between the amorphous and crystalline. However, more predominantly, the material is amorphous because of surface modification of copolymer by chitosan.[11, 12]

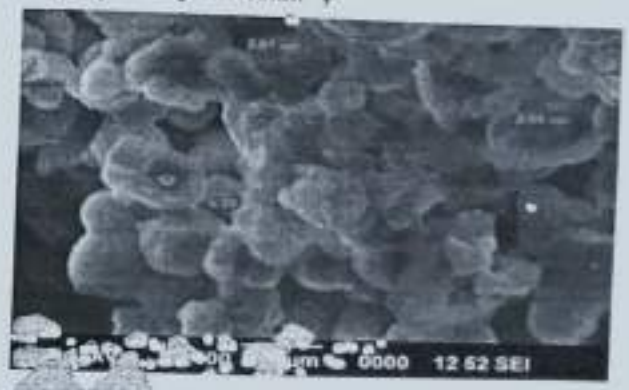

Fig.b:-SEM image of CCRPHF-I

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The TGA curve of **CCRPHF-I** has shown in **fig.c.** it can be seen from figure that three consecutive weight loss steps were observed in CCRPHF-I. The first weight loss was about 50 to 150°C. The derivative peak observed at temperature 67.23°C with a weight loss of 3 %which may be due to the removal of water molecule (moisture).[13] The second weight loss was at about 250 to 529C. The derivative peak observed at temperature 350.86°C with a weight loss of 13 % which may be due to the some volatile matter and scission of the ether linkage in the chitosan backbone. In the third stage, the weight loss in the temperature range of 500 to 700°C. The derivative peak observed at temperature 598.93°C with a weight loss of 37 % which may be due to the thermal decomposition of glucosamine residue present in chitosan.[14] After 700°C, the TGA curve is almost flattened due to the nondecomposible.[15]

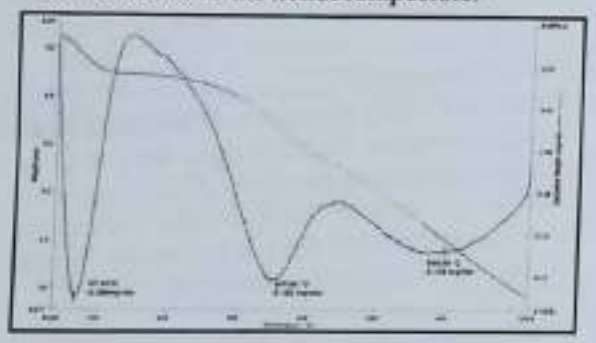

Fig. c:- TGA Curve of CCRPHF-I

Adsorption of As(III) on CCRPHF-I

Effect of pH on As(III) ion removal

The influence of pH on the percentage sorption of As(III) is shown in **fig.d**. Optimum at pH 5 for the adsorbent i.e. CCRPHF-I with at remove 95.35 % of As(III) ion.

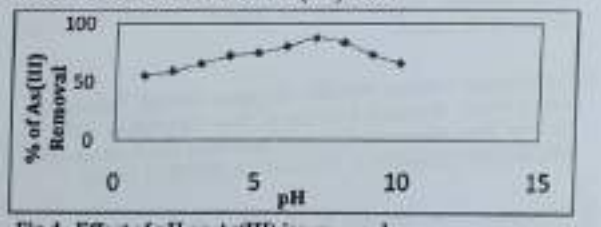

Fig.d. Effect of pH on As(III) ion removal

Effect of contact time on As(III) ion removal

The effect of contact time on percentage of adsorption of arsenic (III) ion is shown in **fig.e.** Thus optimum contact time for CCRPHF-I composite was found to be 120 min. Hence CCRPHF-I have required a shorter contact time.

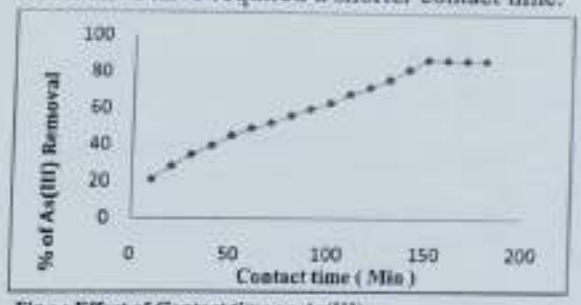

Fig.e.: Effect of Contact time on As(III)

Effect of adsorbent dose on As(III) ion removal

The dependence of As(III) adsorption was studied by varying the amount of CCRPHF-I from 0.5 to 10 gm/lit. The influence of absorbent dose on the percentage of removal of As(III) is shown in **fig.f.** From the figure, it can be observed that the removal efficiency of As(III) ion increases by increasing the CCRPHF-I dose up to a certain limit and then it remains constant. The CCRPHF-I dose increased from 0.5 to 5 gm/lit, with increase rate for removal efficiency of As(III) from 21.42% to 95.37%.

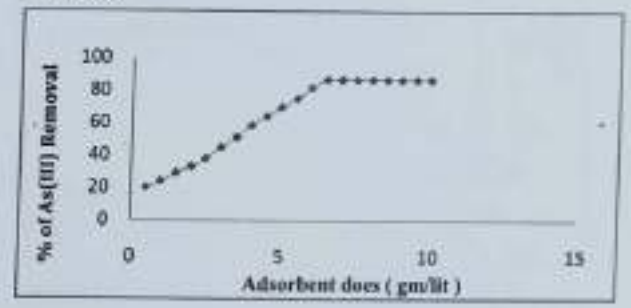

Fig.f: Effect of Adsorbent dose on As(III

Effect of initial Arsenic (III) ion concentration

. The result is shown in **fig.g.** From the figure, it is clear that the percentage of As(III) removal was found to decrease from 98.13% to

63.50% as the initial concentration of As(III) ion increased from 10 to 100 mg/lit for CCRPHF-I.

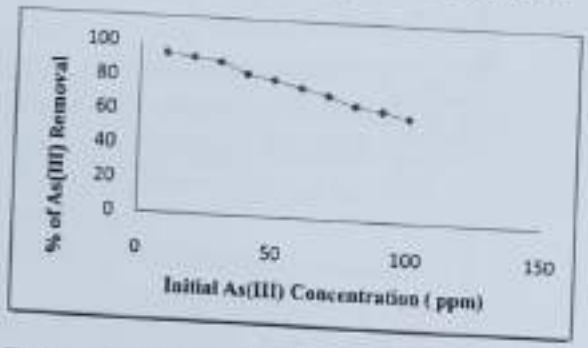

Fig. g: Effect of initial concentration of As(III)

Adsorption Isotherms

The equilibrium data are well fitted in Langmuir linear plot of Ce/Qe versus C_e and it suggests the applicability of the Langmuir isotherms. The values of adsorption efficiency 'Q_m' and adsorption energy 'b' were determined form the slope and intercept of the plots shown in **Fig.h** . The values of 'Q_m' and 'b' for CCRPHF-I were respectively found to be 15.15 mg/g and 0.2727. To confirm the favorability of the adsorption process, the equilibrium parameter that is separation factor (R_L) for CCRPHF-I is determine and found to be in fraction in the range of 0 to 1 indicating that the adsorption process is favorable for this adsorbent for the removal of As(III).[16]

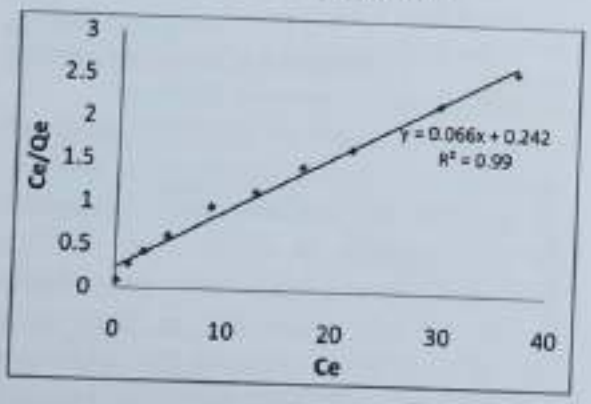

Fig h : Langmuir isotherm CCRPHF-I

Conclusion

RPHF-I copolymer is successfully synthesized with a good yield . Chitosan coating was successful on the surface of RPHF-I to get surface modified copolymer and they are abbreviated as CCRPHF-I. Characterization of CCRPHF-I adsorbent has been done employing the techniques like FTIR, SEM and TGA. CCRPHF-I was studied for testing of its adsorption efficacy towards removal of As(III) ion from contaminated water. Batch equilibration method was adopted for these studies. Results of batch experiment studies proved excellent efficiency of the newly obtained material for removal of As(III) from contaminated waste water. The excellent capacity of the CCRPHF-I under present investigation is supported by correlation coefficient values 0.990 for Langmuir isotherm. The values of adsorption efficiency (Q_m) and adsorption energy (b) calculated from linear Langmuir isotherm is in good agreement for favorable adsorption process for the adsorbent - adsorbate pairs under consideration in the present investigation. In this way adsorbent under consideration in the present research work is suitable for the treatment of water and wastewater with special reference to abatement of toxic metal ions that is As(III) and has potential application in environmental pollution control.

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DECISIVE ROLE OF INNOVATIVE STEPS IN TEACHING AND LEARNING

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Abstract:

With education only, there can be a very positive change in the society, and the nation can have a bright future. Teaching and learning are the two most decisive parts of education concerned with teachers and students in schools and colleges. Teaching and learning are the processes which ensure the effective delivery of education to the pupils for the promising future of any nation. The resource persons and academicians are expected to offer their views and vision to transform the present sluggish educational system into a dynamic one to streamline the teaching-learning process in colleges and schools. Innovative steps indicate number of crucial and revolutionary decisions to be taken by the authorities responsible towards the educational system in India. One such decision is to introduce the use of ICT in teaching and learning process in classrooms and the organization of teachers' training programs to augment their teaching ability and overall quality. Teachers are required to be more and more experimental and creative with the ways and skills they employ in the classrooms to transform the learning process into a jolly experience for students. In this regard, participative approach may be result-oriented as it involves learners actively and with intense interest in teaching-learning process. Introduction of innovative steps in teaching and learning process may immensely be helpful in reducing the dropout percentage in schools and colleges of our country. In short, it can be said that there can be a revolutionary, constructive and productive change in the field of education with the help of various innovative steps taken by the top management, head of the institute and the teachers.

Key Words:- *Teaching-learning, innovative steps, ICT etc.*

Introduction:

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Education bears the potential to bring a required positive and constructive change in the human world. Through schools and colleges, education is given to the students with the help of interactive process of teaching and learning. 'The purpose of teaching is to facilitate students towards better comprehension of the subject with increased retention of information and development of lifelong learning skills.'[1]

The two-way process of teaching and learning holds a significant importance in the task of turning any nation into a developed place to make its citizens feel proud of it. Education is imparted through teaching and learning. Both, the teaching and the learning are equally significant components. Currently, there is need of introducing some changes in these processes as the world has become highly advanced and modernized with several inventions and latest technologies. In fact, every system is required to update itself with the passage of time to meet with the rising demands and needs to keep its own existence intact. Similarly, there is a point in bringing positive and constructive changes in the teaching and learning process to make it more effective and productive. Innovation means creativeness, uniqueness, inventiveness, revolutionary mind-set and exploratory spirit to carry out any tasks competently and effectively in all the areas of life. Teachers need to develop a temperament to be productive and innovative with their teaching to generate interest among the learners in classroom to turn the teaching learning process more thought-provoking and impressive. Teachers are required to be inventive to turn the process of learning easier and faster. The main goal of teaching is to help students apprehend the contents which are hard and complicated for them in the prescribed syllabus. The teaching which brings the topic within the understanding level of learners can be considered as efficient and fruitful teaching. The teaching should be competent enough to involve the maximum participation of students in it by means of its quality to create interest among them along with the sense of amusement. It is, therefore, expected that managing authorities of colleges ought to take innovative and creative decisions to bring positive transformation in the age-old methods of teaching with the use of modern technological tools during the teaching-learning process to uplift the desire level of students towards the subject under discussion in the classroom. Knowledge gained through such hands-on lectures will motivate students and enrich them with updated knowledge and, thereby, help them to become successful in both, the personal and the social life.

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There is a strong need of drawing up recommendations on the design of the teaching and learning processes in the present scenario. Traditional didactic lecture is an age old method of teaching which imparts greatest amount of information in the shortest period of time forming the framework for future clinical learning[2], but this is not adequate for additional productive results in educational arena. Hereafter, there is a great requirement of the inventive tactics which comprise several things that may be useful in improving the teaching-learning processes. In this regard, the use of ICT tools with special stress on the teachers' training programs can perform an important role. The training programs should be organized for teachers to acquaint them with new and latest ICT tools to be used in the classrooms for making their subject matter more attractive and impressive. Introduction of teaching through ICT tools is itself an inventive and creative step, because it enhances the interest of a learner towards the contents of the syllabus to be taught in the classroom, and thus the understanding level of a learner is improved to a great extent. If a teacher who employs ICT equipment for the presentation of his or her topic in the classroom as an accessory to the conventional lecture method, his or her teaching becomes very effective, interesting and productive. "The greater challenge, here, is to withhold the students' attention and interest which diminishes after 10 minutes of passive learning"[3]. Use of ICT tools helps a teacher to elucidate even intricate definitions, theories, figures and any type of material in a simple and plain way to make sure a learner's adequate comprehension. Teaching and learning gets inventive and productive with the help of ICT in it. ICT instruments incorporate computers, projectors, interactive white board, digital camera, digital recorder, visualizer and many others. All these can have a strong and positive impact on the improvement of the quality of teaching and learning. Learners are enabled to uphold the information in their mind for a long span with the use of ICT in the classroom by the teachers. Teachers are made capable of transforming the boring topics into attention-grabbing and amusing ones by means of ICT. Thus, the teaching and learning process can be made effective and result-oriented by taking the innovative step to introduce the usage of ICT tools in it.

There is a need of motivating teachers to utilize the new and creative techniques while discussing any part of the syllabus with the students in the classroom, so that the interest level of learners will get enhanced leading to the fruitful and quality teaching-learning process. Teachers

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Vol-68-Issue-60-January-2020

are supposed to invent and develop unprecedented methods and strategies to deliver their topic in the classroom in order to augment the learners' capability to apprehend the subject. "Teaching is not a mechanical but a vital process. It is not simply stuffing the mind of the pupil with information, but presenting truth in such a way as to cause the pupil to receive and appropriate it".[4] This leads to the arousal of inquisitiveness among the students and ensures their responsiveness to the act of teaching. To boost the morale of the teachers employing the novel notions during their lectures, the managing authorities should take the initiative to felicitate them on special occasions and appreciate them for their wonderful efforts from time to time. This practice will definitely contribute to the improvement of teaching-learning process.

Government is supposed to take well thought out steps to bring in improvement and impart quality to the Higher Education. Accordingly, universities, education boards, colleges, schools, managing authorities, teachers should be allowed to execute novel and untraditional ideas to enhance the interest and attention of the learners in the topic to be studied in the classroom. It is usually seen that the norms and condition laid down by the government hamper the innovative teaching which, in turn, harms the normal learning process. In case of India, the rules, which were formed during the British period, are even today, being implemented by the government and this is paralysing the creativeness and constructiveness of students. The government in India has a tendency to give importance to the cultural and conventional legacy, and so it puts stress on the presence of primeval ideals and ethics in the field of education. This type of stand taken by the government is highly uncreative and unfruitful in today's scenario where there is scarcity of jobs, while the number of educated people is terrifically large.

The boredom caused by the present educational system with the traditional methods of teaching has been largely responsible for the reduction in the number of students getting higher education. This has led to the rise of dropout rates, which is a matter of serious concern for the government in India. Hence, teachers should be encouraged to introduce innovative methods and techniques in their teaching, so that the learners will be attracted towards the classes for the joy and knowledge they are supposed to get through the teaching learning process. This will definitely help to increase the number of students in the classroom. The students should be encouraged to take part in the noble process of teaching and learning spontaneously and vigorously through the

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Vol-68-Issue-60-January-2020

various novel ways of imparting education. Certain best practices can be introduced to ensure the active participation of learners in the teaching and learning process. As a result, the students will be motivated towards the education and the dropout rates will be reduced to a great extent.

Conclusion:

It's the requirement of present era to incorporate innovative methods and practices in teaching and learning to motivate the learners, who are the future of our nation. These learners should be creative, imaginative, productive, experimental, adventurous, talented, and skilled, because they have to perform a crucial role in the development of our country. This sort of ability can be developed in the students only when they have been provided education in advanced and latest novel ways and methods. It is, therefore, the demand of the situation to launch an unprecedented style of teaching based on innovative ideas and notions, so that, the learners will be enthusiastic and interested towards it leading to the effective, fruitful, quality teaching leaning process. "Learning is essentially a process of changing the responses to the manifold situations of life in short, a change from one kind of conduct to another. We say that one has learned well if he has attained to better ways of living."[5] Thus, with the help of innovative methods in teaching and learning, the key goals and objectives of education can be achieved effectively.

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ROLE OF BEST PRACTICES IN THE IMPROVEMENT OF TEACHING-LEARNING PROCESS

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Abstract

It's the basic nature of timeto introduce changes. The things that fail to transform themselves with the changes brought by the time, fail to maintain their quality and thus are deprived of the capacity and potential to do something substantial and result-oriented. The same is the case with the teaching-learning process, if it goes without updating itself as per the time. Hence, it is the main responsibility of the government, top management of the higher education institution, its principal and the teachers to implement varied techniques, skills, practices, ideas in and outside the classroom to transform teaching-learning into such an experience that will generate interest, enthusiasm, joy, curiosity, passion among the learners, so that they will be truly and fully engaged in it leading to the successful delivery of education for the bright future of our nation. One of the innovative and creative ways to make teaching-learning process a medium of imparting quality education to the students, is to include best practices in it. The best practice is the introduction of a new method, way, skill, technique or a strategy to present the topic before the learners in and outside the classroom. The teaching and learning process, with the help of best practices, becomes a matter of joy and attraction for both the teachers and students and thus improves and enhances the overall quality of education.

Key Words: - best practice, teaching-learning, learners, ICT tools etc.

Introduction:-

India is the third largest country in the world offering higher education after America and China. However, with regard to the quality higher education, it lags far behind the other countries in the world. Hence, it is the demand of time to bring positive, constructive, creative, innovative, productive, result-oriented changes in the education provided to the students by the higher education institutions in present scenario in our country. Both, the central and the state governments are required to formulate educational policies that can play a decisive role in the development of educational quality. However, the role to be played by the top management cannot be overlooked, as it is supposed to govern the entire system providing education to the learnersthrough schools and colleges on local level. Similarly, as a head of the institute, the principal is the most significant part of the process of educating people, because his accountability towards the management of almost all the curricular, co-curricular and extra-curricular activities and the administrative affairs which are supposed to be carried out in the institute, is more than any other stakeholder.Last but not least, the responsibility of a teacher, who works directly with that part of the educational structure,

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Vol-40-Issue-31-March-2020

which is, beyond doubt, the most crucial one, that is, a learner, for whom the whole educational system has been established by the society and the government.

"Teaching is not a mechanical but a vital process. It is not simply stuffing the mind of the pupil with information, but presenting truth in such a way as to cause the pupil to receive and appropriate it".[1]

The interaction between an instructor and a pupil takes place in and sometimes outside the classroom. The teacher is supposed to involve a learner in the teaching-learning process as much as he or she can in order to yield better results from the said process. For the same, an instructor is required to discover newer ideas, techniques, strategies, skills, methods, practices and bring them into force during the teaching- learning process. These novel ways of teaching and learning are called as best practices and the teacher has to subject the learners to them for more effective and productive teaching- learning process.

Advantages of Best Practices:-

(a) Rise in the Interest Level of a Learner

The innovative techniques, skills, methods adopted by the instructor during the teaching-learning process, create curiosity among the learners towards the topic being dealt with in the classroom. The traditional method of delivering lecture in the class dose not succeed in retaining the attention of a pupil for an adequate period leading to the failure of teaching-learning activities. "The greater challenge, here, is to withhold the students' attention and interest which diminishes after 10 minutes of passive learning"[2].

The students should be excited and turned curious about what they are going to be instructed in the classroom by means of something unprecedented in terms of best practices. This will definitely lead to the rise of interest level of a learner ensuring the increased and lasting participation of students in the process of teaching and learning. In this way, the teaching-learning process, which is the core of entire educational system, will be improved and made efficient. In this regard, best practices can undoubtedly play a very important and effective role. For instance, to improve four skills of listening, speaking, reading, and writing in English, a teacher started a mission 'One Day One Page' in which, he asked his students to write down one page in English from the prescribed text of compulsory English every day with the accomplishment of tasks such asunderlining the words whose meanings and pronunciations they don't know, and having found out and written the same above and below these words, they were directed to read the very page for five times. The students who followed this mission sincerely and regularly, attained good results of this practice while those who did not carry out the said tasks honestly, could not experience any improvement in the abovementioned four skills. Three fourth of the learners were pretty happy with this best practice and they enjoyed and learned a lot from it.

(b) Increase in the Grasping Power of a Learner

The second influential advantage of best practices, implemented in the classroom, is that they help to increase the grasping power of students by involving their maximum

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Vol-40-Issue-31-March-2020

possible attention into what is being taught. The best practices function to simplify the task of understanding the topic under discussion and study on the part of the students. They remove the complications girdling the contents of the topic and enhance the learner's competence resulting in better comprehension. When a teacher applies innovative and creative tactics to deliver his or her topic in the classroom, the teaching learning process becomes attention-grabbing and ensures adequate involvement of learners which is actually the main objective of the educational system. For instance, a teacher of English Literature had to teach his students a drama which is long and tedious with lots of characters in it. The students found it difficult to have satisfactory comprehension of the said work of art due to above features creating hurdles in the process of understanding it. Teacher got an idea and accordingly he asked his students to play different characters of the drama in the classroom. This novel idea, implemented by a teacher, generated curiosity and attraction among students towards the drama and thus they learnt it with joy and enthusiasm. In this way, the best practices help to enhance the understanding capacity of the learners during the teaching learning process.

(c) Useful and helpful for teachers

Best practices bear the potential and calibre to enable an instructor to be proficient at successfully and efficiently delivering his or her lecture to the pupils. Best practices enhance a teacher's overall competence and helps him or her to deal with any topic with lot of skill and ease in the classroom making the teaching-learning process more and more interesting, productive and effective. Being experimental with unprecedented methods of teaching, a teacher can motivate the learners and bring best out of them. In this way, the best practices employed by an instructor can pay a vital role in transforming the age-old boring and sluggish teaching and learning process into a dynamic and effective one.

Use of ICT tools in Best Practices

ICT tools hold immense importance, as they can be used by a teacher to make the contents of the topic understandable and interesting for the learners.'ICT is an innovation which can promote and foster various degrees of educational changes'.[3]Classrooms should be well equipped with the ICT tools in order to create atmosphere conducive to the process of teaching and learning. Best practices implemented through the use of ICT tools become more impressive and impactful and can have better results. In this way, the teaching-learning process can be made a fruitful experience for both teachers and students. For teachers, because it will encourage them to go with full confidence, enthusiasm, vigour, interest and joy into the classroom and for students, because they will be attracted towards the teaching of a teacher and will also aid in making them completely lost in the learning process. So, the best practices accompanied by the ICT tools can convert the teaching-learning process into an everlasting memory, most specifically for the learners, who are actually the principal target of the whole educational system.

Conclusion:-

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Vol-40-Issue-31-March-2020

Education is the backbone of every society without which, no progress can be possible. Through the process of teaching and learning, education can be imparted to the people. Schools and colleges are key places where education is provided to the students. Government, top management of the schools and colleges, their principals and teachers are the crucial factors which influence the process of offering education. Teaching- learning process is at the centre of all these units because it is here, where a learner is taught and enabled to receive education for his or her bright future. Hence, it is the first responsibility of all the stakeholders of schools and colleges along with the governmentto transform the teaching-learning process into an impactful, creative, delightful, inspiring experience for a learner for whom the entire educational system is established.'The purpose of teaching is to facilitate students towards better comprehension of the subject with increased retention of information and development of lifelong learning skills.'[4]To attain this objective, the inclusion of best practices, that is, the creative, innovative, revolutionary, novel, amusing, enthusiastic, motivational ideas, tactics, strategies, methods, ways, techniques, actions should be made in the teaching-learning process. This will definitely make a very positive and constructive impact on the mind of a learner and encourage him or her to participate in the said process with true interest and desire. Thus, the best practices can play a very crucial role in enhancing the quality of higher education in the context of ourcountry.

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DECOLORIZATION OF DYES WITH IMMOBILIZED LACCASE

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ABSTRACT

Present investigation was undertaken on production of laccase enzyme by *Pleurotus pulmonarius, Bartalinia sp. (MM101), Rhizopus oryzae* and *Trametes hirsute* and its immobilization. Decolorization of dyes with the help of immobilized laccase enzyme was also studied. Reactive Red M8B, Reactive Green 19 and effluent showed decolorization to the extent of 30 % in case of Reactive Red M8B and effluent, while 55 % in Reactive Green 19, after immobilization of the crude enzyme with 100 ml of 2 % Sodium Alginate. There was significant variation in the extent of decolorization of various dues; however, the difference due to the organisms, from which the enzyme was isolated, was statistically non-significant.

Key words: Immobilization, laccase enzyme, *Pleurotus pulmonarius, Bartalinia sp. MM101, Rhizopus oryzae, Trametes hirsute*, Reactive Red M8B, Reactive Green 19.

Introduction:

Laccases (benzenediol: oxygen-oxidoreductase, EC:1.10.3.2) have very broad substrate specificity. These enzymes convert phenolic compounds (Huttermann *et al*., 1980; Jonsson *et al*., 1998 and Ullah *et al*., 2000). For the treatment of phenolic effluents in polluted waste water, processes have been developed using laccases, either in free or immobilized state (Bohmer *et al*., 1998; Call and Mucke., 1996; D'Annibale *et al*., 2000 and Davis and Burns., 1992). With this background, present investigation was undertaken on production and immobilization of the crude laccase obtained from four fungal species and its use in decolorization of dyes.

Material and Methods:

The white rot fungi *Trametes hirsuta (NCIM-1201)* was procured from National Chemical Laboratory, Pune, India on January 1, 2008, *rejuvenated* in Potato Dextrose Agar *(PDA)* media and maintained at 4°C. Rest of the three fungal strains were isolated from soil, infected wood particles showing mushroom like fruiting bodies were selected as sample source for fungal isolation. Approximately 5 g fresh weight of each soil sample was added to 500 ml of sterile 0.1% (w/v) sodium pyrophosphate. After due processing as described in chapter 3.1, the suspension was spread into 20 petriplates containing PDA. The plates were incubated at 28±2°C for 3 to 5 days. The plates were subjected to visual screening for fungal colonies, followed by morphological characterization for selection of fungal strains.

Fruiting bodies from the infected woods were collected in sterile polyethene packs and transported to the laboratory. The fruiting bodies were cut into fine pieces to the level up around minute particle size with a sterile scalpel. 100 mg of chopped fruiting bodies were spread on 20 different petriplates containing PDA. The plates were incubated at 28±2°C for 2 days. The colonies were visually identified and subjected to purification and characterization.

Colonies showing mycelial growth and typical fungal spores were picked up on plane

glass-slide and direct microscopical observation was done at 45X magnification for ascertaining fungal characters. Selected colonies were then subjected to purification on PDA plates. All the plates were incubated at 28±2°C for 3 days at the stage of purification. The isolates were maintained on PDA slants at 4°C and they were subculture at regular interval of two months.

Reactive Red M8B and Reactive Green 19 dyes were procured from market. One hundred mg each of the dyes were dissolved in 1 l distilled water and filtered through 0.45 µ filter paper. Aliquots of 5 ml dyes used for degradation studies**.** Textile effluent was obtained from Raymond Company, Saunsar (Borgaon), Madhya Pradesh (India) and it was characterized with respect to the parameter including Chemical Oxygen Demand (COD), Dissolved Oxygen (DO), Total Dissolved Solid (TDS), pH and λ_{max} of the colorants.

For finding out the values of $\wedge_{max,}$ 100 mg of the respective dye was dissolved in 1 l distilled water and an amount of 3 ml were placed in cuvette. The optical density was measured on Shimadzu UV-Spectrophotometer (UV-1800) at various wavelengths within visible range, and absorption spectra was plotted. The value of $\wedge_{max}$ was determined from the graph in the form of highest peak observed for each dye. The $\wedge_{max}$ for Reactive Red M8B was found to be 543 nm and that for Reactive Green 19 it was 630 nm. Similarly the value of $\wedge_{max}$ for the effluent was determined as 400 nm.

For the production of laccase a wheat bran media was prepared containing 4.5% (w/v) wheat bran flakes, 1.5 % yeast extract, 1 % glucose, 0.25 % NH_4Cl, 0.05 % thiamine dichloride, 0.2 % KH_2PO_4, 0.05 % $MgSO_4$, $7H_2O$, 0.01 % $CaCl_2$, and 0.05 % KCl dissolved in distilled water. The pH was adjusted to 5.0, and the flasks containing 100 ml of media were inoculated with 1 gm of mycelia spore suspension from actively growing fungus culture. The flasks were then incubated at 30°C on a rotary shaker (150 rpm), which were plugged with cotton. After 10 days of inoculation the contents were filtered and successively centrifuged at 8000 rpm for 20 min, and supernatant was used as a source of enzyme (Abdulla *et al*., 2000).

The test organisms *Pleurotus pulmonarius*, *Bartalinia sp. MM 101*, *Rhizopus oryzae* and *Trametes hirsuta* were grown on wheat bran media The protein content in the supernatant estimated following Bradford's method. Aliquots containing 3 mg protein were then slowly added in 100 ml of 2% sodium alginate and the slurry was prepared. It was added drop-wise to 2 % $CaCl_2$ solution and kept on a magnetic stirrer for 10 min. The beads were removed after decantation, washed in acetate buffer (pH 5).

A series of columns (15 cm x 1 cm) were filled with washed beads up to the height of 5 cm. Each column containing immobilized laccase from the respective organisms was charged with dyes separately e.g Reactive Red M8B, Reactive Green 19 and the Effluent so that the column was filled up to 15 cm, and kept for 10 min. After 10 min 3 ml of dyes and effluent were taken out and optical density was measured at respective λ_{max} of the dye and the effluent respectively. Per cent decolorization was calculated as follows (Chen et al., 2010).:
Dye Decolorization (%) = [(Initial O.D. Final O.D.) / (Final O.D)] X 100. The results have been presented in Table 1.

Results and Discussion :

The production of extracellular enzyme laccase could be achieved using wheat bran medium. Protein estimation of the crude enzyme in the supernatant was sufficient enough for immobilization. More than 3 mg immobilized enzyme protein significantly decolorized dyes within 10 min. The effect of immobilized enzyme significantly varied among Reactive Red M8B, Reactive Green 19 and Effluent, however, the variation in activities of the enzymes isolated from four fungal strains was statistically non-significant. Abadulla *et al*., (2000) reported 80 % decolorization of anthraquinonic dyes and 40 % decolorization of azo dyes under immobilized conditions. From 55 to 80 % decolorization of different dyes including

Reactive Blue, Reactive Orange, Ramazole Black and Congo Red by sodium alginate immobilized enzyme system has been reported by Dayaram and Dasgupta (2008).

Table- 1: Per cent decolorization by immobilized Laccase enzyme.

Organisms	Per cent decolorization by immobilized enzyme		
	Reactive Red M8B	Reactive Green 19	Effluent
T.hirsuta	32.00	61.60	34.09
P.pulmonarius	39.26	66.54	38.13
Bartalinia sp. MM 101	39.86	56.97	33.70
Rhizopus oryzae	8.94	58.40	25.18

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Rhizoctonia solani assisted biosynthesis of silver nanoparticles for antibacterial assay

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ABSTRACT

Recently biosynthesis of nanoparticles using microorganism has gained the attention due to its green and economical approach. In the present communication a significant attempt has been made to synthesis silver nanoparticles mediated by *Rhizoctonia solani* (*R. solani*) fungi. The synthesized nanoparticles were well characterised by UV–visible spectrometry, X-ray diffraction (XRD), Raman spectroscopy, Scanning electron microscopy (SEM), Transmission electron microscopy (TEM) and Fourier transform Infrared spectrometry (FTIR). The XRD data exhibit that crystallite sizes are around 5–10 nm, while TEM revealed particle size 10-20 nm. Furthermore, AgNPs were found as an effective antibacterial agent against *S. aureus*.

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1. Introduction

Today, it is in need to develop cost-effective and biodegradable methods for the production of nanoparticles (NPs) due to increasing pollution gradually. However literature survey revels that different physical, radiation and chemical techniques are already exists [1–4]. Although, these conventional methods are costly and toxic to the environment. Therefore, development of an eco-friendly and biological systems method for the NPs synthesis is an exigency. In this perception, scientists have paying immense concerns for green approaches. The best option is to use green reducers. The green reducer includes plant extract, yeast, microbes, algae and fungi [5–10]. However, using microbes is a clean, green, safe and inexpensive method for nanoparticles fabrication. Owing to, fungi gained the most attention as they are eukaryotic microorganisms having a stiff cell wall, simpler biomass handling, easy to culture, and easy to grow by taking nutrition from dead organic matter [11–14]. The fungi due to its cell activity secretes large amount of enzyme which takes the target metal ion from the solution and converter it into metal. As the method is extracellular so it is devoid of any cell component which is also highly desirable [15–17]. For instance, *Aspergillus terreus* releases more amounts of bioactive compounds which could helpful for the synthesis of Ag NPs [18,19]. Moreover, Ahmad et al. were synthesized bio-mediated a quasi-spherical silver nanoparticles with particles sizes 5–15 nm by using *Fusarium oxysporum* [20]. Besides, there are some papers on the biogenic synthesis of silver nanoparticles by using fungi like *Fusarium acuminatum* [21], and *Penicillium fellutanum* [22]. Likewise, according to literature survey revealed there are two reports on *Rhizoctonia solani* assisted synthesis of silver nanoparticles [23,24]. *Rhizoctonia solani* (*R. solani*) is a plant pathogenic fungi, it is soil borne pathogenic and infected many vegetables like onion, potato, crops, like corn, beans, pea, pepper, pumpkin, spinach, squash, sweet corn and so forth [25–27].

Silver is precious metal having immeasurable uses in the fields of biological labelling, antibacterial agents, filters, biomedical, and so forth [28–29]. Moreover, silver can be employed for microbial growth inhibition like *B. cereus, S. aureus, Citrobacterkoseri, S. typhii, P. aeruginosa, E. coli, K. pneumonia, V. parahaemolyticus and C. albicans* by producing reactive oxygen species and free radicals which cause apoptosis leading to cell death [30–32].

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Herein, we explored *R. solani* assisted biosynthesis of Ag NPs. Biogenic fabricated silver nanoparticles characterized by UV–visible spectroscopy, powder-XRD, FTIR, EDS, TEM and SEM techniques. Further, different human pathogenic bacteria were tested by utilizing Ag NPs.

2. Materials and methods

2.1. Chemicals and microbial culture

Silver nitrate (CAS Number 7761–88-8) of analytical grade was purchased from Sigma Aldrich and used without further purification. Double distilled water was used for the preparation of solution. Pathogenic cultures were obtained from pathology, laboratory Department of microbiology. *Rhizoctonia solani* was obtained from National Fungal culture collection centre Pune **(NFCCI-188)**, Potato Dextrose Agar medium (PDA) and Nutrient Agar medium (NA) were obtained from Himedia laboratory Mumbai.

2.2. Identification of fungi

R. solani obtained from (**NFCCI-188**) and was maintained on potato dextrose agar (PDA) medium at 25 ± 2 °C and stored at 4 °C for further study. The obtained fungus was identified on the basis of their morphological characteristics in phase contrast and electronic microscopy examination (Fig. 1).

2.3. Biogenic synthesis of silver nanoparticles

R. Solani was grown in Erlenmeyer flask containing 150 mL potato dextrose broth (PDB) and then incubated in a rotating shaker set at 150 rpm at 25 °C. After 5 days of incubation, the biomass was separated from the medium by filtration using Whatman filter paper (No.1), and washed three times in sterile de-ionised water to remove any nutrient. The fungal biomass was mixed with 100 mL de-ionized water for 48 hrs at 26 °C at 150 rpm. After filtration, 50 mL of 1 mM $AgNO_3$ solution was mixed with 50 mL of cell filtrate in 250 mL flask, kept at 26 °C for five days in the dark. The positive control is biomass filtrate without silver nitrate solution, and the negative control is the silver nitrate solution without fungal cell biomass filtrate. The reduction of silver nitrate is routinely monitored by visual inspection of the solution (colour change from yellow to brown) and by measuring the UV–visible spectrophotometer of the solution by periodic sampling of aliquots of the aqueous solution. Schematic representation of biogenic synthesis of Ag NPs has been shown in Fig. 2.

2.4. Antimicrobial activity

2.4.1. Agar well diffusion method

The fungus mediated synthesis of silver nanoparticles were screened for its antibacterial activity against human pathogenic bacteria *E. coli*, *B. subtillis* , *S. aureus* and *P. aeruginosa,* using agar well diffusion method [33,34]. For the preparation of plates Muller Hinton Agar (MH) media was used. Bacterial culture grown for overnight (100 μl), then spread on the surface agar plates by L-shaped glass spreader. Then solid agar medium was punctured with a cork borer (5 mm) to make a well in centre of plate containing bacterial cultures. The synthesized silver nanoparticles were dispersed in dimethylsulphoxide, and also used as a negative control. *Ciprofloxacin* and *Norfloxacin* (10 μg/50 μl) used as a standard drug for positive control. Different concentrations of Ag NPs (20, 40, 60, 80 and 100 mg/mL) were added from the stock into each well and incubated for 24 hrs at 37 °C. After 24 hrs, the zone of inhibition was measured and expressed as millimetre in diameter. Every concentration of the sample was repeated in Triplicates and the average and standard deviation for the antibacterial assays were calculated.

2.4.2. Minimum inhibitory concentration (MIC)

The antimicrobial assay of the Ag NPs was confirmed by the standard micro dilution method, using four different cultures. Ag NPs with different concentration (2.5, 5, 10, 15 and 20 mg) were dispersed in DMSO and diluted with 200 uL of Mueller–Hinton broth (MHB). Each concentration was inoculated with 10 μl of a bacterial suspension (10^8 CFU/mL), and then incubated at 37 °C for 48 hrs. The MIC was measured after 48 hrs of incubation on the basis of suspension turbidity. MIC values of Ag NPs were recorded according to our previous work [35]. The MIC of Ag NPs is presented in (Table 1).

3. Results and discussion

3.1. Structural authentication

The crystalline nature of fungus mediated silver nanoparticles was confirmed by XRD technique (Fig. 3a). The four intense peak were present with 2Θ values 77.9°, 65.2°, 44.7°, and 38.6° attributed to(3 1 1), (2 2 0), (2 0 0), and (1 1 1) this suggested a face centered cubic (FCC) shape of Ag NPs. The crystalline sizes of NPs

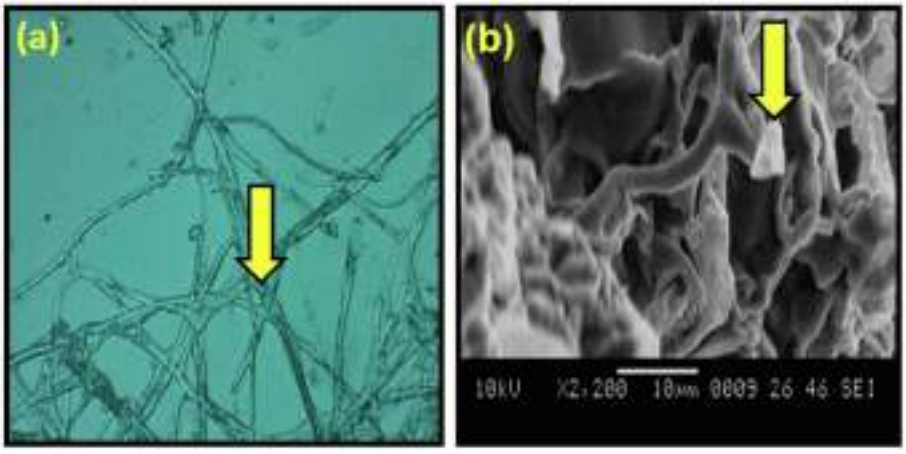

Fig. 1. Hyphae with right-angled branching pattern and septa a) Phase contrast image and b) Scanning electron microscope.

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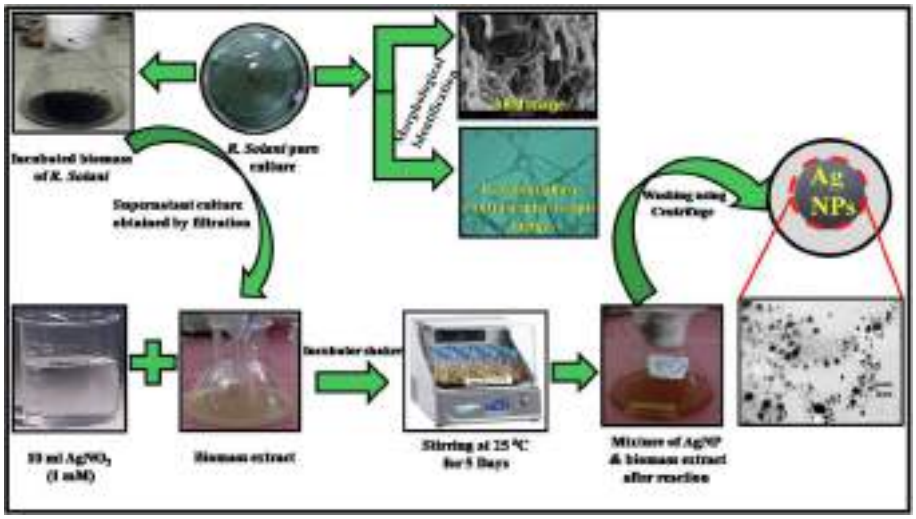

Fig. 2. Schematic representation for biosynthesis of Ag NPs.

Table 1
MIC (μg/mL) of $AgNO_3$ against human pathogens.

Pseudomonas aeruginosa MIC	*Escherichia coli* MIC	*Staphylococcus aureus* MIC	*Bacillus subtillis* MIC
15	20	20	15

were computed by using Debye-Scherer Formula, and it was estimated around 5–10 nm. Followed by, FTIR spectroscopy of material was carried out for chemical bonding authentication (Fig. 3b). The observed peak at 3609 cm^{-1} represent due to phenolic group or O-H stretching [36], while peak at 2878 cm^{-1} because of the presence of –C-H group. The peak obtained at 2141 cm^{-1} characteristic to due to C-N group, while bands at 1845, 1321, and 801 cm^{-1} may be due to C-O-, -C-O-C-, amide linkages, and N-H stretching frequency, protein can bind nanoparticles by amino acids or free amine group by electrostatic attraction of carboxylate ion in enzymes present in the mycelia's cell wall thus, it stabilize Ag NPs [37].

3.2. Electronic and Raman study

Electronic spectra of fungus mediated Ag NPs was monitored from range 200–800 nm. After introducing silver ion into cell membrane of *R. solani* extract, it increases absorbance intensity with increases incubation time of the reaction. However, maximum absorbance observed at 420 nm which indicated formation of Ag NPs in (Fig. 4a) [38]. Moreover, a Raman spectrum of Ag NPs was recorded (Fig. 4b). The peak at 265 cm^{-1} ascribed to the frequency of Ag–N and Ag–O bonds [39]. The sharp band specifies the chemical bond formation between nitrogen of $–NH_2$ group and Ag, and between COO– groups silver present in fungus biomass. It confirms that the protein and polysaccharides were bound to the surface of Ag NPs by amino and carboxylate group. The peaks at 1024, 1115 and 1208 cm^{-1}; and 955 cm^{-1} aroused due to the C–H bending and wagging came from the saccharide of gum respectively. The peaks at 732 and 1444 cm^{-1} allocated to the stretching frequency of (C–N–C), (C–S–C) and phenyl ring respectively [40]. Consequently, Raman bands suggested both $–NH_2$ and COO– groups were responsible for stabilizes the Ag NPs.

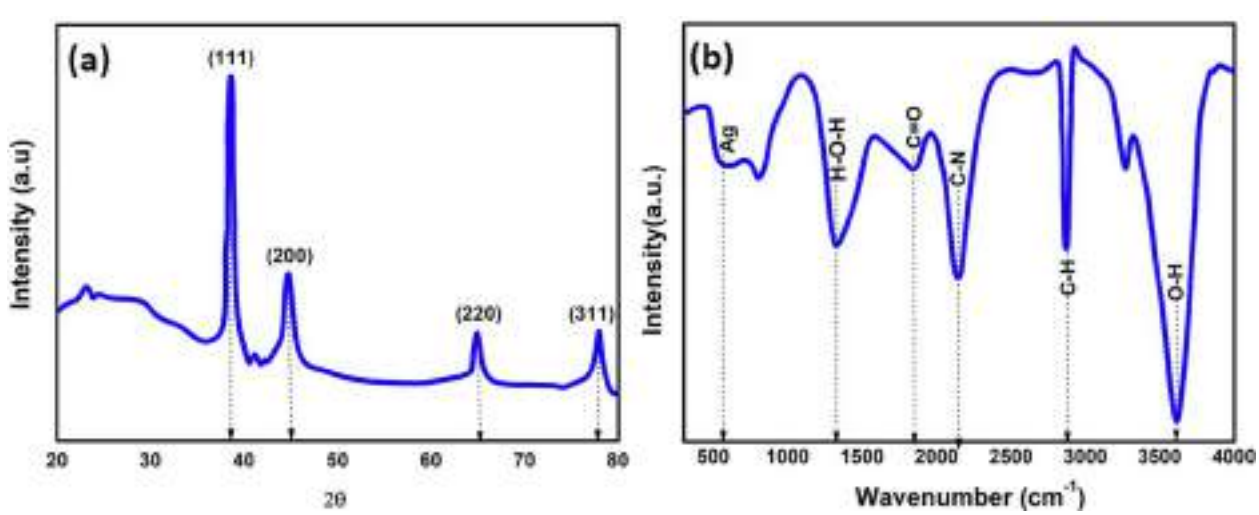

Fig. 3. (a) XRD and (b) FTIR spectra of Ag NPs.

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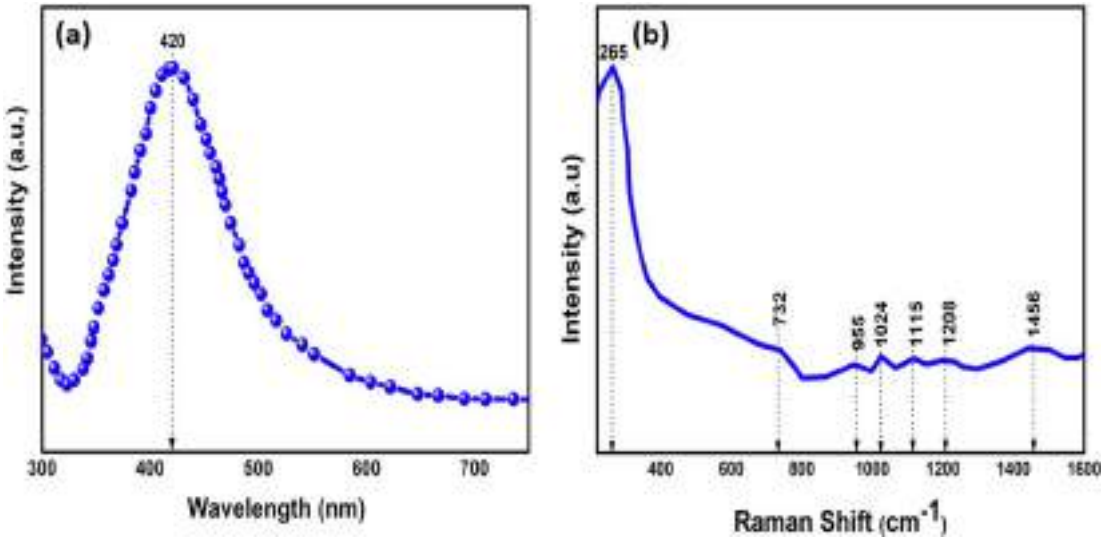

Fig. 4. (a) UV–Visible, and (b) Raman spectroscopy of Ag NPs.

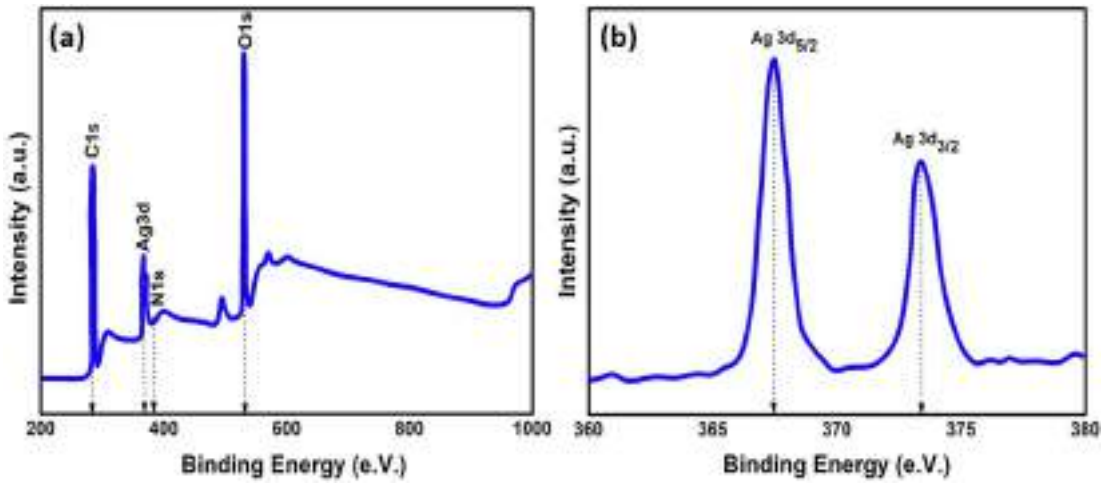

Fig. 5. XPS spectrum of Ag NPs (a) Survey spectrum, and (b) Ag 3d.

3.3. X-ray photoelectron spectroscopy

The XPS study explicated the chemical, and oxidation state of Ag NP's (Fig. 5a). Elements present in survey spectrum of Ag NPs are Silver [Ag 3d], Carbon [C (1s)], oxygen [O (1s)], and nitrogen [N (1s)] were identified. The binding energy of peak at 283.75 eV associated with the C-1s region of the NPs. The peak at 365.60 eV related with Ag 3d region in the survey spectrum. The XPS spectrum for the N (1s) region displayed binding energy at 383.6 eV are attributed to nitrogen containing amine groups presents in the *R. solani* biomass extract which strongly interact with Ag NPs. The band at 532.59 eV correspond to O (1s) region. This was due to strong

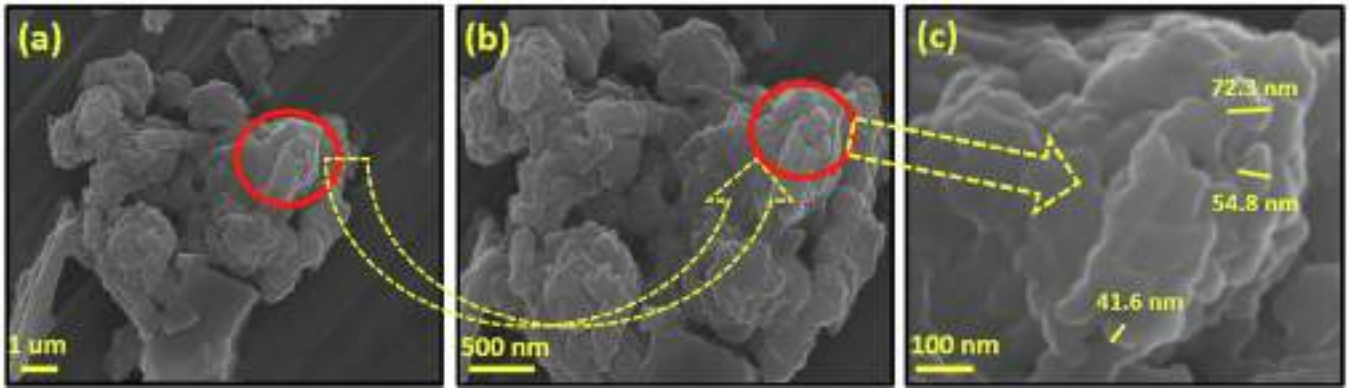

Fig. 6. (a-c) SEM morphology of Ag NPs.

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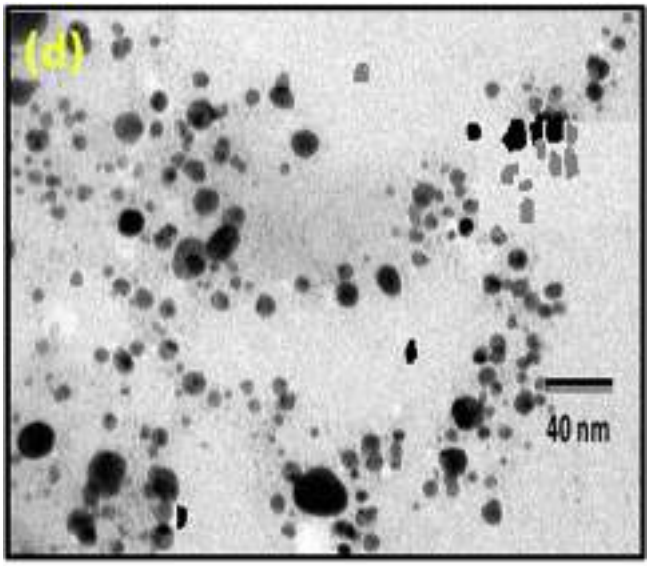

Fig. 7. TEM Micrographs of Ag NPs.

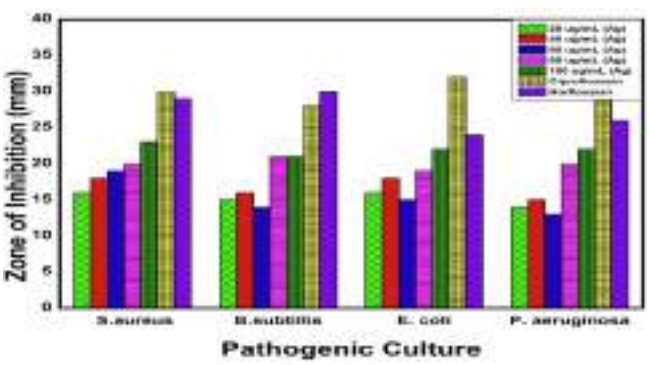

Fig. 8. Antibacterial plots of Ag NPs.

interaction between fungus extract and vacancy present in the d-orbital of Ag and formed Ag-O bond [41]. While the XPS of Ag NPs situated in 3d region is indicated an existence of two bands at 373.38 eV and 367.49 eV, that seems to splitting of the spin orbital that matches to Ag $3d_{3/2}$ and Ag $3d_{5/2}$ levels respectively (Fig. 5b).

3.4. Morphological study

The morphology investigations were authenticated by SEM, and TEM techniques (Fig. 6(a-c). Fig. 6a-b shows micro flakes-like behavior with agglomeration, while Fig. 6c shows non-uniform micro flakes with mixed morphology which may be due to agglomeration of Ag NPs. Each micro flakes with diameter around 40–71 nm. The micro flakes were non-uniformly distributed having narrowed or no space between two particles. Also, SEM images reveals sheet like structure due to biomass impurity of *R. solani* which leads to agglomerated micro flakes of silver. However, the uncontrolled coagulation occurs during the precipitation, and intrinsic affinity of nanostructures to shrink their surface due to agglomeration [42]. Further, particles size of each micro flakes were estimated by TEM microscopy (Fig. 7). TEM analysis revealed spherical morphology with particle sizes around 10–20 nm. The homogenized particles were distributed may be due to the homogeneous nucleation. A nearly uniform nanosphere was developed due to homogeneous nucleation or protecting and structure directing chemicals responsible by biomass of *R. solani* [43].

3.5. Antibacterial activity

The antibacterial activity of fungus mediated synthesis of silver nanoparticles were tested against human pathogenic bacteria such as *S. aureus*, *E. coli*, *B. subtillis* and *P. aeruginosa* using agar well plate method. The zone of inhibition data is presented in Fig. 8 and Table 2. The inhibition zone are measured (mm) associated to the gram-negative and gram-positive bacteria, represented in Table 2. Also, the MIC of Ag NPs were carried out and presented in Table 1. From Fig. 8 and Table 2, it is revealed that an inhibition zone is more effective in case of the gram-negative bacteria, in comparison to gram positive bacteria. This was due to composition of cell wall are different in both strains, the layer of peptidoglycan is thicker in positive bacteria than gram-negative bacteria. Thus, inhibition of bacteria also depends on concentration Ag NPs [44], as the concentration of nanoparticles increases zone of inhibition also increases shown (Fig. 8). The results achieved highest inhibition zone at the concentration 100 μg/mL of Ag NPs toward tested strains. This was caused due to the large surface area of the Ag NPs, which can helps microorganisms the better contact with Ag NPs. Therefore, Ag NPs revealed a remarkable affinity toward the bacterial cell membrane, which favour the eradication of this microorganism [45].

Basically, the Ag NPs enters into the membrane through the cell wall and stabbed the bacterial cell. Silver shown a great affinity to react sulphur containing proteins and phosphorus compound present in cell membrane, these might be favourable positions for the interaction of Ag NPs with bacteria [46]. Moreover, the extracellular generation reactive oxygen species (ROS) oxidized by Ag NPs. The antibacterial mechanism of Ag NPs describe in Fig. 9. In this scenario, the bactericidal effect can endorsed the direct membrane damage with ROS production and block the respiration system by Ag NPs [47]. The reactive oxygen species (ROS), are oxygen containing reactive species. ROS an oxidative species including superoxide anion (O_2•−), hydroxyl radical (OH•), hydrogen peroxide (H_2O_2), and singlet oxygen ($^1O_2$). ROS are produced either extrinsically or intrinsically inside the cell. Molecular oxygen generates O_2•−, the primary ROS catalysed by (NADPH) reduces one-

Table 2
A comparative antibacterial activity of Ag NPs.

$AgNO_3$ (μg/ml) and Standard antibiotics	*S. aureus* (n = 3)	*B. subtilis* (n = 3)	*E. coli* (n = 3)	*P. aeruginosa* (n = 3)
20	16 ± 0.47	15 ± 0.81	16 ± 0.47	14 ± 0.57
40	18 ± 0.57	16 ± 0.57	18 ± 1.15	15 ± 1.15
60	19 ± 0.47	14 ± 0.47	15 ± 0.81	13 ± 0.47
80	20 ± 0.04	21 ± 0.60	21 ± 0.18	19 ± 0.04
100	23 ± 0.10	21 ± 0.38	22 ± 0.17	22 ± 0.18
Ciprofloxacin 5mcg	30 ± 0.57	28 ± 1.24	32 ± 0.47	29 ± 1.63
Norfloxacin 10mcg	29 ± 0.81	30 ± 1.24	24 ± 0.81	26 ± 0.81

Note: n = 3 is the number of samples ± SD.

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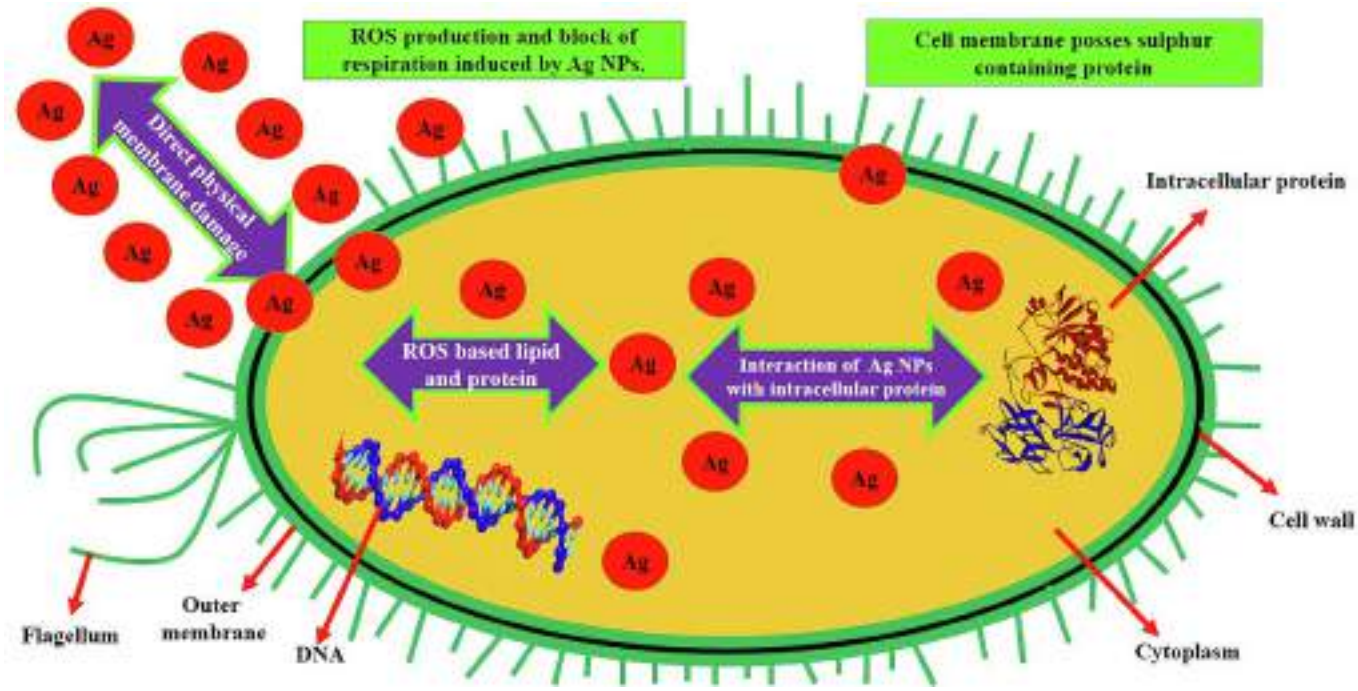

Fig. 9. The possible antibacterial mechanism by Ag NPs.

electron system. Additionally reduction of oxygen either cause of H_2O_2 or OH**.** by dismutation and Silver catalyzed Fenton reaction. The ROS increases oxygen vacancies are due to its smaller in particle size and the large surface area of nanoparticles. These oxygen vacancies in ROS eventually caused cell death due to damage of endoplasmic reticulum, DNA, mitochondria, and Golgi complex in bacterial cells.

4. Conclusion

In conclusion we have developed non-hazardous, straightforward, and environment friendly procedure of *Rhizoctonia solani* mediated silver NPs synthesis. The fabricated material was confirmed by various analytical techniques. The XRD patterns disclosed face centered cubic phase, while TEM revealed nearly monodisperse spherical shape with particles sizes 10–20 nm. Another important finding was an outstanding antibacterial activity tested against both bacterial strains, and significantly demonstrated higher inhibition against *S. aureus* at the highest concentration.

Declaration of Competing Interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

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Studies on Isolation, Characterization and Screening of Dye Decolorizing Fungal Species isolated from soil sample

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Abstract:

One of the major environmental problems facing the world today is the contamination of soil,water, and air by toxicchemicals coming out from various textile industries. In the present work the potential of the isolated *Fungal Isolates*from soil sample were studied for the biodecolorization of dye at solid & liquid cultural conditions. Microscopic analysis and cultural characteristicswere used to identify the isolated *Fungal Isolates*and three isolates namely Isolate - 3, Isolate - 6 and Isolate - 10 were selected for further studies as each of them represented as a member of Zygomycetes, Ascomycetes and Basidiomycetes respectively. *Trameteshirsuta*was used throughout the experiment as control or reference strain.These three isolates showed maximum decolorization in Solid State Studies (93.75%, 68.75% and 71.87% respectively in 4 days) similarly Aqueous Phase Decolorization was found to be (45.34%, 30.51% and 32.21% respectively for the three isolates in 3 days time). These three isolates also showed very high enzyme activity (130.86, 125.54 and 426.11 U/ml respectively).

Keywords: *Fungal Isolates*, Biodegradation, Zygomycetes, Ascomycetes, Basidiomycetes.

INTRODUCTION: The pollution problems due to the textile industry effluents have increased in the last years. The dyeing processes have, in general, a low yield and the percentage of the lost dye in the effluents can reach up to 50% (Pearce *et al.*, 2003). Approximately 50% of the dyes are released in the industrial effluents (Zollinger.,1991). According to a research report, almost 10-15% of dye applied in dye bath is lost through wastewater during application (Vaidya and Datye., 1982). This loss of azo dye has been increased several times now as extent of use of these dyes has increased. Annual production of dyes (from all classes) is estimated to be about one million ton (Selvam*et al.*, 2003). Out of total production of dyes two percent are discharged in aqueous effluent during manufacture and 10% are finally released during dyeing of fabric (Pearce *et al.*, 2003).

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Fungi from the basidiomycetes group, known as white rot fungi are a heterogeneous group of microorganisms but have in common the capacity to degrade lignin as well as other wood components (Kirk and Farrell., 1987). The white rot fungi are by far the most efficient ligininolytic microorganisms. They are able to degrade a wide variety of recalcitrant pollutants including various types of dyes. White rot fungus showed some capacities to remove dyes from industrial effluents. The fungus has been studied for their ability to degrade recalcitrant organo-pollutants such as polyaromatic hydrocarbons, chlorophenols and polychlorinated biphenyl. The decolorization of phenol red, methylene blue, coomassive blue, dextran blue etc., has been used that indicate ligninolytic activity (Moorthi*et al*.,2007).

Basidiomycetous fungi are not only able to decolorize but also degrade and mineralize a broad spectrum of different dyes (azo, anthraquinone, heterocyclic, triphenylmethane and polymeric dyes), in addition to numerous other toxic organic and recalcitrant compounds. The ability of white rot fungi to decolorize various synthetic textile dyes has been extensively studied (Binz and Canevascini., 1996; Libra *et al*., 2003; Panswad and Luangdilok,, 2000 and Ramsay *et al*., 2005). A great number of white rot fungi have been shown to excrete extra cellular enzymes like lignin peroxidase, Mn-peroxidasesand laccase (Hatakka., 1994). The enzymatic system involved in the degradation of pollutants by these fungi is nonspecific and even acts on mixtures of pollutants (Machado *et al*., 2005; Shah and Nerud., 2002 and Wesenberg*et al*., 2003).

With this background, the present investigation was taken up with the following objectives:Isolation and screening of efficient basidiomycetes strains from soil, having the potential to degrade and decolorize reactive textile dyes and their effluents with a laccase enzyme.

MATERIAL & MATERIALS:

Sample Source: Soil, infected wood particles showing mushroom like fruiting bodies were selected as sample source for fungal isolation. Approximately 5g fresh weight of each soil sample was added to 500 ml of sterile 0.1% (w/v) sodium pyrophosphate. After due processing, the suspension was spread into 20 petriplates containing PDA. The plates were incubated at 28±2°C for 3 to 5 days. The plates were subjected to visual screening for fungal colonies, followed by morphological characterization for selection of fungal strains.

Fruiting bodies from the infected woods were collected in sterile polyethene packs and transported to the laboratory. The fruiting bodies were cut into fine pieces to the level up

ISSN:2320-0693
Vol-19-Issue-37-June-2020

around minuteparticle size with a sterile scalpel. 100 mg of chopped fruiting bodies were spread on 20 different petriplates containing PDA. The plates were incubated at 28±2°C for 2 days. The colonies were visually identified and subjected to purification and characterization.

RESULTS & DISCUSSION:

Isolation and Purification of Fungal Strains: Colonies showing mycelial growth and typical fungal spores were picked up on plane glass-slide and direct microscopical observation was done at 45X magnification for ascertaining fungal characters. Selected colonies were then subjected to purification on PDA plates. All the plates were incubated at 28±2°C for 3 days at the stage of purification. The isolates were maintained on PDA slants at 4°C and they were subculture at regular interval of two months. Representative sample plates are shown in Photographs-1.

Photograph-1: Representative sample plates.

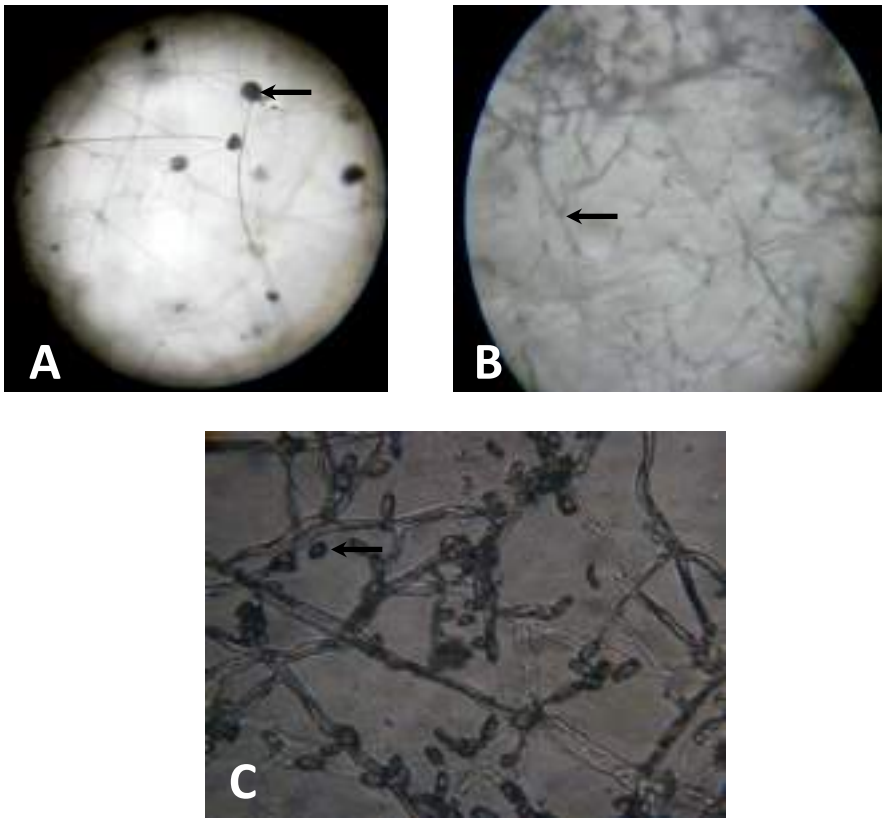
TrameteshirsutaRhizopusoryzae

Morphological Characterization:14 isolates were screened morphologically for screening various fungi. The tools includedlactophenolcotton blue staining, slide culture techniques and nature of sporulation.All the 14 isolates were subjected to lactophenol cotton blue staining and slide culture technique. Nature of mycelia, length and width of hypha and spore bearing bodies were observed. The results of fourteen isolates along with *Trameteshirsuta*are shown in Table-1 as these could be confirmed as fungal species. *Trameteshirsuta*procured from National Chemical Laboratory (NCL), Pune was used as reference strain. Photograph-2 shows light microscopic images of representative isolates.

Photograph-2: Light Microscopic Images (at 45X/100X).

A-Sporangiospores (*Rhizopusoryzae*)
B - Clamp connections at septa (*Trameteshirsuta*)
C-Ascospores (*Bartalinia sp. MM 101*)

ISSN:2320-0693
Vol-19-Issue-37-June-2020



Confirmation of Fungal Character on Culture Media: Tentative 14 isolates were grown on Czapek-Dox Agar, Sabourauds Maltose Agar andSabourauds Dextrose Agar. The plates were incubated at 28±2°C for 3 days and the nature of sporulation was confirmed by slide culture technique. The results are shown in Table-2.

SCREENING OF DYE DECOLORIZATION

Rationale: Reactive Red M8B dye was selected for screening the decolorizationcapacity of the different fungal isolates. Decolorization studies were done in two ways, namely, Solid State Decolorization and Aqueous Phase Decolorization.

Solid state decolorization:5 ml of dye from a stock solution containing 100 mg/lit of Reactive Red M8B dye was dispersed in 50 ml of PDA. After through mixing the molten media was poured into 16 cm diameter petriplates. Each isolate was spot inoculated at the centre of the plate with total inoculation of 2 mm diameter. The experiment was performed in quadruplet. The plates were incubated at 28±2°C for four days (Moorthi*et al*., 2007). At

ISSN:2320-0693
Vol-19-Issue-37-June-2020

every interval of 24 hours the zone of decolorization was measured in millimeter (mm). The percent (%) decolorization was calculated as:-

$$\boldsymbol{Percent}\ (\%)\ \boldsymbol{Decolorization} = \frac{\boldsymbol{Diameter\ of\ Zone\ of\ Decolrization}}{\boldsymbol{Diameter\ of\ Petriplate}} \times \mathbf{100}$$

The results are shown in Table-3.

Aqueous Phase Decolorization:5 ml of dye from a stock solution containing 100 mg/lit of Reactive Red M8B dye was dispersed in 50 ml of 1% glucose media (Moorthi*et al.*, 2007). Each tube was then inoculated with the fungal suspension containing 100 mg wet weight of fungal culture. The tubes were incubated at 28±2°C for 3 days. The pH of media was also monitored throughout the experiment. The decolorization was measured in terms of optical density at 543 nm (λ_{max} of the dye). The percent (%) decolorization was calculated as:-

$$\boldsymbol{Percent}(\%)\boldsymbol{Decolorization} = \mathbf{100} - \left(\frac{\boldsymbol{Absorbance of treated dye solution}}{\boldsymbol{Absorbance of control dye solution}}\right) \times \mathbf{100}$$

The results are shown in Table-4

Laccase Production by Fungal Isolates:

All the 14 isolates and the reference strain *Trameteshirsuta*were grown in media containing wheat bran and thiamine dichloride. Laccase production was studied as per the method. The enzyme activity was measured as U/ml and the results are shown in Table-5.

MAJOR OUTCOMES:

The major outcomes of present study are in accordance and comparable with findings of Panswad*et al.*, 2000; Shah *et al.*, 2002; Libra *et al.*, 2003; Pearce *et al.*, 2003; Selvam*et al.*, 2003; Ramsay *et al.*, 2005; Machado *et al.*, 2005; Moorthi*et al.*, 2007.Three isolates namely Isolate - 3, Isolate - 6 and Isolate - 10 were selected for further studies as each of them represented as a member of Zygomycetes, Ascomycetes and Basidiomycetes respectively. These three isolates showed maximum decolorization in Solid State Studies (93.75%, 68.75% and 71.87% respectively in 4 days) similarly Aqueous Phase Decolorization was found to be (45.34%, 30.51% and 32.21% respectively for the three isolates in 3 days time). These three isolates also showed very high enzyme activity (130.86, 125.54 and 426.11 U/ml respectively).

ISSN:2320-0693
Vol-19-Issue-37-June-2020

Sr. No.	Isolate No.	Cotton Blue Staining	Hypha	Sporulation
1	*Trameteshirsuta*	Show Clamp Connection at Septa	Trimitic hyphae (have additional skeletal hyphae)	Basidiospores
2	*Isolate -1*	Show Clamp Connection at Septa	Trimitic hyphae	Basidiospores
3	*Isolate -2*	Show Clamp Connection at Septa	Trimitic hyphae	Basidiospores
4	*Isolate -3*	Show Sporangium	Zygospores	Sporangiospores
5	*Isolate -4*	Show Clamp Connection at Septa	Trimitic hyphae	Basidiospores
6	*Isolate -5*	Show Clamp Connection at Septa	Trimitic hyphae	Basidiospores
7	*Isolate -6*	Show Ascocarps	Interconnected hyphae forming mycelium	Ascospores
8	*Isolate -7*	Show Clamp Connection at Septa	Trimitic hyphae	Basidiospores
9	*Isolate -8*	Show Clamp Connection at Septa	Trimitic hyphae	Basidiospores
10	*Isolate -9*	Show Clamp Connection at Septa	Trimitic hyphae	Basidiospores
11	*Isolate -10*	Show Clamp Connection at Septa	Monomitic hyphae (hyphae with a soft consistency)	Basidiospores
12	*Isolate -11*	Show Clamp Connection at Septa	Trimitic hyphae	Basidiospores
13	*Isolate -12*	Show Clamp Connection at Septa	Trimitic hyphae	Basidiospores
14	*Isolate -13*	Show Clamp Connection at Septa	Trimitic hyphae	Basidiospores
15	*Isolate -14*	Show Clamp Connection at Septa	Trimitic hyphae	Basidiospores

Table-1: Morphological characterization of selected 14 isolates.

Table -2: Cultural characteristics of selected 14 isolates.(+ Moderate, ++ Heavy, +++ Luxurient Growth).

Sr.No.	Isolate No.	Growth on Culture Media			Nature of Sporulation
		Czapek-Dox Agar	Sabourauds Maltose Agar	Sabourauds Dextrose Agar	
1	*Trameteshirsuta*	+++	+++	+++	Basidiospores
2	*Isolate-1*	++	+	+	Basidiospores
3	*Isolate-2*	+	++	++	Basidiospores
4	*Isolate-3*	+++	+++	+++	Sporengiospores
5	*Isolate-4*	+	+	+	Basidiospores
6	*Isolate-5*	+	++	++	Basidiospores
7	*Isolate-6*	+++	+++	+++	Ascospores
8	*Isolate-7*	+	+	+	Basidiospores
9	*Isolate-8*	+	+	+	Basidiospores
10	*Isolate-9*	+	+	+	Basidiospores
11	*Isolate-10*	+++	+++	+++	Basidiospores
12	*Isolate-11*	++	+	+	Basidiospores
13	*Isolate-12*	++	++	++	Basidiospores
14	*Isolate-13*	++	+	+	Basidiospores
15	*Isolate-14*	++	++	++	Basidiospores

ISSN:2320-0693
Vol-19-Issue-37-June-2020

Table-3:Percent decolorizationof selected 14 isolates on solid state.
(Day 1, 2, 3 and 4 shows zone of decolorization in mm).

Sr.No.	Isolate No.	Day 1	%Decol^n	Day 2	%Decol^n	Day 3	%Decol^n	Day 4	%Decol^n
1	*T. hirsuta*	22	13.75	45	28.12	67	41.87	99	61.87
2	Isolate -1	10	6.25	16	10	25	15.62	36	22.50
3	Isolate -2	14	8.75	21	13.12	29	18.12	38	23.75
4	Isolate -3	40	25	72	45	120	75	150	93.75
5	Isolate -4	12	7.5	18	11.25	22	13.75	28	17.50
6	Isolate -5	13	8.12	19	11.87	25	15.62	30	18.75
7	Isolate -6	25	15.62	49	30.62	75	46.87	110	68.75
8	Isolate -7	12	7.5	20	12.50	27	16.87	35	21.87
9	Isolate -8	15	9.3	23	14.37	30	18.75	39	24.37
10	Isolate -9	11	6.8	17	10.62	23	14.37	34	21.25
11	Isolate -10	28	17.50	56	35	79	49.37	115	71.87
12	Isolate -11	9	5.62	13	8.12	17	10.62	21	13.12
13	Isolate -12	8	5.00	12	7.50	16	10.00	20	12.50
14	Isolate -13	10	6.25	15	9.37	18	11.25	22	13.75
15	Isolate -14	8	5.00	14	8.75	20	12.50	24	15.00

Table-4:Percent decolorization of selected 14 isolates in aqueous phase.

(Day 1, 2 and 3 shows Absorption of treated dyes; pH = shows changes in pH from 7).

Sr. No.	Isolates	Day 1	% decol^n	pH	Day 2	% decol^n	pH	Day 3	% decol^n	pH
1	*T.hirsuta*	0.220	6.78	6.50	0.199	15.68	5.45	0.171	27.55	4.20
2	*Isolate -1*	0.230	2.55	6.29	0.218	7.63	6.00	0.210	11.02	5.19
3	*Isolate -2*	0.231	2.12	6.40	0.219	7.21	6.15	0.209	11.45	5.20
4	*Isolate -3*	0.200	15.26	6.05	0.162	31.36	5.05	0.129	45.34	4.00
5	*Isolate -4*	0.230	2.55	6.60	0.216	8.48	6.10	0.207	12.29	5.29
6	*Isolate -5*	0.233	1.28	6.59	0.220	6.78	6.09	0.208	11.87	5.05
7	*Isolate -6*	0.216	8.48	6.22	0.185	21.62	5.35	0.164	30.51	4.30
8	*Isolate -7*	0.230	2.55	6.47	0.219	7.21	6.01	0.210	11.02	5.05
9	*Isolate -8*	0.232	1.70	6.81	0.217	8.06	6.40	0.211	10.60	5.30
10	*Isolate -9*	0.229	2.97	6.70	0.215	8.80	6.39	0.207	12.29	5.40
11	*Isolate -10*	0.210	11.02	6.20	0.180	23.73	5.30	0.160	32.21	4.30
12	*Isolate -11*	0.231	2.12	6.60	0.218	7.63	6.50	0.208	11.87	5.30
13	*Isolate -12*	0.230	2.55	6.81	0.216	8.48	6.60	0.205	13.14	5.40
14	*Isolate -13*	0.232	1.70	6.85	0.218	7.63	6.61	0.209	11.45	5.20
15	*Isolate -14*	0.231	2.12	6.83	0.219	7.21	6.60	0.206	12.72	5.40

ISSN:2320-0693
Vol-19-Issue-37-June-2020

Sr.No.	Isolates	Enzyme Activity in U/ml
1	*Trameteshirsuta*	197.63
2	*Isolate -1*	100.89
3	*Isolate -2*	110.97
4	*Isolate -3*	130.86
5	*Isolate -4*	107.56
6	*Isolate -5*	102.64
7	*Isolate -6*	125.54
8	*Isolate -7*	90.20
9	*Isolate -8*	100.88
10	*Isolate -9*	105.04
11	*Isolate -10*	426.11
12	*Isolate -11*	107.86
13	*Isolate -12*	110.04
14	*Isolate -13*	117.59
15	*Isolate -14*	106.02

Table-5:Laccase production by selected 14 isolates.

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ISSN:2320-0693
Vol-19-Issue-37-June-2020

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Sustainable Chemistry

Microwave Assisted One-Pot Multicomponent Synthesis Using ZnO-β Zeolite Nanoparticle: An Easy Access to 7-Benzodioxolo[4,5-b]xanthene-dione and 4-Oxo-tetrahydroindole Scaffolds

Trimurti L. Lambat,*[a] Sami H. Mahmood,[b] Pankaj V. Ledade,[c] and Subhash Banerjee*[d]

ZnO-β zeolite nanoparticle has been introduced as, an inexpensive and efficient heterogeneous catalyst for the one-pot multicomponent synthesis of 7-benzodioxolo[4,5-b]xanthenedione and 4-oxo-tetrahydroindole derivatives under microwave (MW) irradiations. The method offers several advantages such as excellent yields of the products (>90%), simple work-up procedures, faster reactions, use of MW as source of energy and recyclability of the catalyst.

Introduction

β-zeolite is a high silica zeolite,[1] comprising an intersecting three-dimensional structure of twelve-member ring channels.[2] Due to this voluminous channel structure, it has a potential to catalyze numerous reactions.[3] Moreover, the acidic properties of β-zeolite are adjustable to affect a susceptible reaction. β-zeolite was reported to be an effective catalyst for the synthesis of organic transformations like carbon-carbon bond forming reaction,[4] aromatization, dehydrogenation reactions[5] and trans-esterification to synthesize various products.[6] The trans-esterification proceeds at the Brønsted acidic sites of the β-zeolite. The Brønsted acid sites of the β-zeolite have been tuned by altering the metal cations for preparing the modified catalysts with acidity suitable for diverse trans-esterification reactions.[7] Interestingly, β-zeolite modified with zinc oxide (ZnO) is an efficient catalyst for a variety of bioactive moieties like 5-arylidene-2,4-thiazolidinedione,[8] quinoxaline derivatives,[9] benzothiazole,[10] tetrahydrobenzo[b]pyrans,[11] and polyhydroquinoline.[12]

On the other hand, multicomponent reactions (MCRs)[13] provide attractive features such as improved efficiency, waste reduction, atom economy, as well as simple and relatively fast synthesis of bioactive motifs.[14] In addition, MCRs are more economical than the conventional multistep sequences considering the cost of materials required for the reaction, and purification and isolation of the products.[15]

Again, synthesis of important medicinal heterocycles using microwave-assisted organic synthesis routes[16] is receiving an increasing attention due to its advantages compared with conventional reaction, especially eco–friendliness.[17] This synthesis route can reduce the reaction time significantly, and satisfy a number of principles of green chemistry.[18] The development of cleaner synthesis techniques is of a major importance for green chemistry, and the application of microwave irradiation provides an opportunity for rapid synthesis of biologically relevant heterocyclic molecules under solvent-free conditions.[19] Therefore, microwave-assisted synthesis of novel bioactive molecules has drawn a growing interest of both technologists and academics working in the medicinal and pharmaceutical sectors.[20] Some of the attractive features of this synthesis are: (i) selectivity toward the target compound, (ii) rapid synthesis, (iii) higher product yield, and (iv) elimination or reduction of hazardous solvents/ catalysts/ reagents, etc. In the sequence of the reaction, inter-coordination between the reactants, solvent and catalyst is crucial for the success of MCRs.[21] Consequently, with a proper choice from a diversity of molecular species as reactants, MCRs are considered valuable in designing a variety of organic blocks that are essential for the preparation of various fascinating heterocyclic structures.[22]

In this context, ZnO-β zeolite has not been much explored in MCRs most important to pharmacologically significant scaffolds.[23] In the present work, we employed ZnO-β zeolite in MCR for the synthesis of the xanthenediones and the oxo-tetrahydroindoles. This study was motivated by the fact that Xanthenedione molecules[24] are crucial heterocyclic compounds[25] that were extensively used for their antibacterial activity,[26a] antifungal,[26b] anti-inflammatory drug[26c] and anti-viral activity.[26d,e] Because of the variety of their applications, the synthesis of xanthenedione compounds has received a

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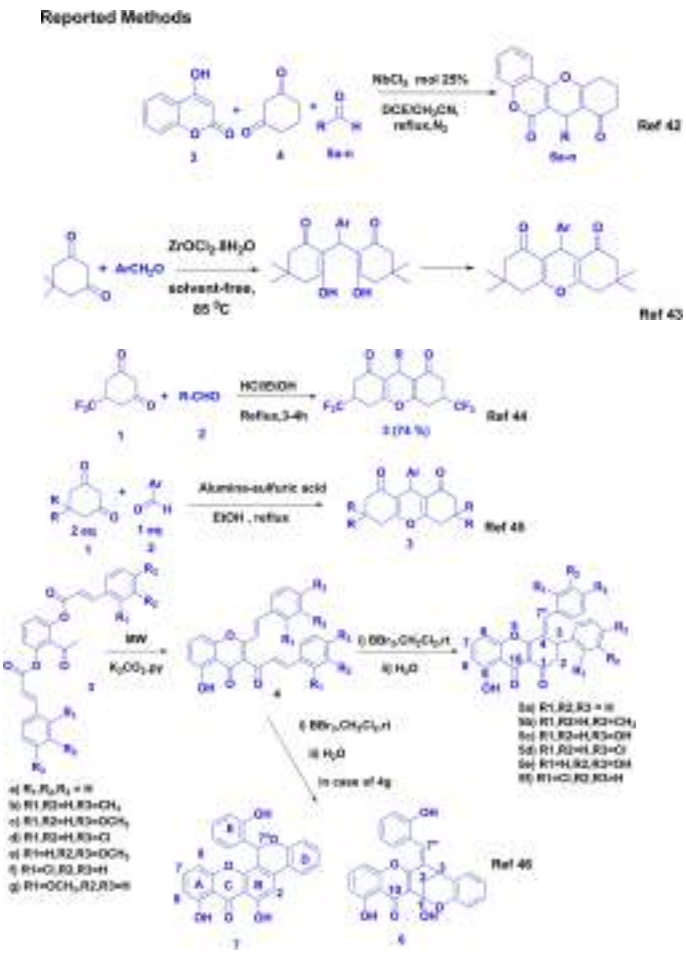
special attention and consideration.[27] Specifically, Vitamin-K nucleus[28,29] shows a variety of biological activities. As a result, a diversity of strategies[30] have been established in the literature[31] for the synthesis of xanthenes and their keto analogues, like rhodomyrtosone-I,[32] rhodomyrtosone-B[33] and BF-6,[34] as well as their associated bioactive molecules.[35] Examples of these biologically active xanthene scaffolds are shown in (Figure 1).

On the other hand, oxo-tetrahydroindole molecules exhibited a broad spectrum of biological activities such as antibacterial,[36a] progesterone receptor agonist,[36b] $CRTH_2$ receptor antagonist,[37] antimalerial,[38a] anti-proliferative,[38b] MDM_2-p53 interaction inhibitor[38c] and cytotoxic activity[38d] (Figure 1). Therefore, synthesis of multi-functionalized oxo-tetrahydroindoles by MCRs can be considered as an important achievement.[39] A further motivation of this work is that although a number of strategies were proposed for the synthesis of xanthenedione,[40,42–46] reports on the employment of MCRs reaction using heterogeneous acid catalysts for the synthesis are relatively few.[41]



Nonetheless, most of the reported methods were based on the impregnation of noxious acid. The use of HCl, H_2SO_4, Lewis acids and p-TSA[40] as a catalyst demonstrated efficient synthesis, but with a relatively longer reaction time of 3–4 h, and low yield of product. In continuation of our previous work,[17,24] we report an efficient protocol for a rapid synthesis of 7-benzodioxolo[4,5-b]xanthenediones and oxo-tetrahydroindoles using ZnO-β zeolite, a well known heterogeneous acid catalyst.[10] To the best of our knowledge, this is the first report on the synthesis using this catalyst (Scheme 1). The importance

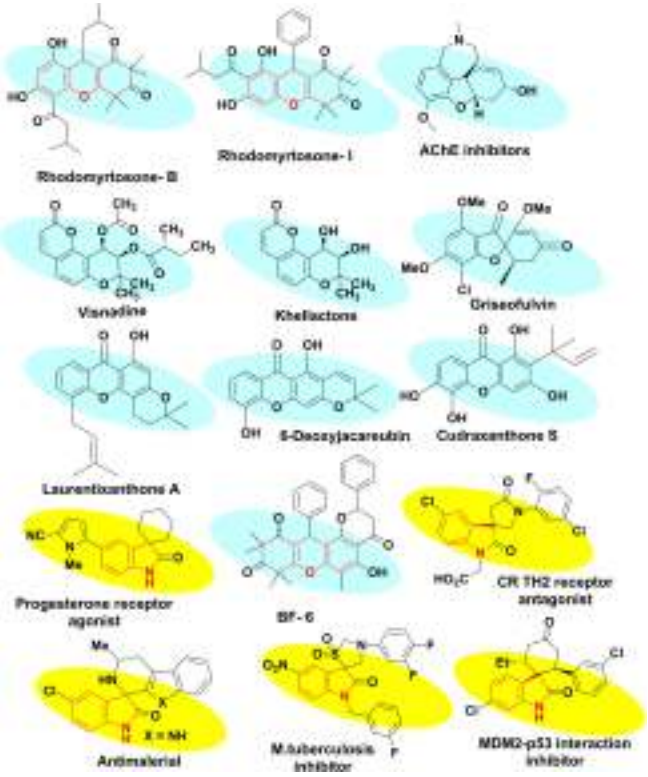
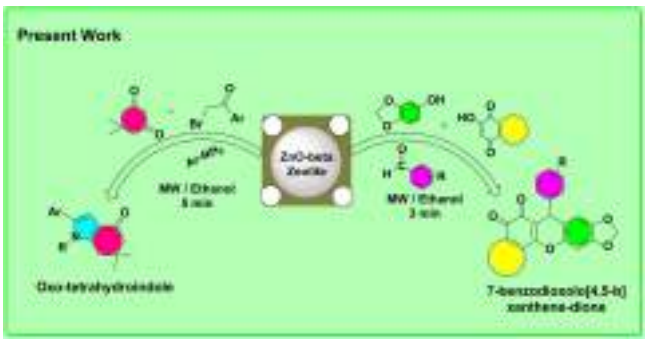


Figure 1. A few biologically significant xanthenes and oxo-tetrahydroindole motifs.



Scheme 1. Reported methods and present work for the synthesis of xanthenedione derivatives

of the present protocol is demonstrated by obtaining high yields in a rapid and clean reaction with mild reaction conditions and minimal environmental effects.

Result & Discussion

ZnO-β-zeolite was synthesized using zinc acetate and β-zeolite as starting materials. The material was centrifuged at 4500 rpm for 30 min and annealed at 600 °C for 8 h. The as-synthesized material was characterized by electron spectroscopy to authenticate its structure and morphology. Powder X-ray diffraction (XRD) pattern of the material was in good agreement with that reported for β-zeolite.[10] XRD patterns of H-beta and ZnO-β were consistent with the typical diffraction pattern of H-β-zeolite, exhibiting the characteristic diffraction peaks at $2\theta = 7.88°$ and 22.38°. Further, Fourier transform infrared (FT-IR) spectra of both materials were observed stretching frequency in the range 550–600 cm^{-1} confirmed the metal-zeolite bonding. The peaks at 575 and 525 cm^{-1} correspond to the H-β-zeolite,[10] whereas the zinc-modified β-zeolite showed a prominent peak at 427 cm^{-1}. Furthermore, the surface morphology of H-β-zeolite and ZnO-β- zeolite was examined by electron microscopy (Figure 2).

Scanning electron microscopy (SEM) image of the material in (Figure 2a) revealed the presence of nearly cubic-shaped particles with sizes around 2 to 5 μm. The transmission electron microscopy (TEM) image in (Figure 2b) revealed similar results Also, the chemical constituents of the materials were checked by energy dispersive spectroscopy (EDS), where the representative spectrum of ZnO-β zeolite which confirmed the presence of Zn, Al, Si and O elements in the material (Figure 3).

The specific surface area, as well as the pore size of ZnO-β-zeolite was evaluated using the BET study. Temperature-programmed absorption-desorption (TPD) measurements were carried out by (i) pre-heating the sample from room temperature up to 200 °C in a gas flow of N_2; (ii) adsorption of ammonia at room temperature. The pore size and specific surface area of the sample were found to be around 55 nm and 137.13 m^2/g. The results revealed mesoporous structure of the catalyst with a relatively high specific surface area, rendering the catalyst promising for high catalytic activity. The total acidity and BET calculated surface area of ZnO-β-zeolite are summarized in (Table 1). With this ZnO-β zeolite catalyst in hand, we envisioned to develop a simple, convenient, and eco-friendly protocol for one-pot multicomponent synthesis of multifunctional compounds. In the first part of this study, we look for the optimal conditions for the synthesis of benzodioxolo[4,5-b]xanthenedione derivatives.

To begin the study, the reaction of veratraldehyde **(1)**, 3,4-methylenedioxyphenol **(2)**, and 2-hydroxy-1,4-naphthoquinone **(3)** in (2.5 mL) solvents as shown in (supplementary data, S3) was examined as a model substrate under microwave condition. Initially, the reaction carried out at 100 °C using 0.10 g catalyst under 200 W MW irradiation for 5 min produced trace amounts of the product. However, larger amounts of the catalyst under otherwise similar conditions gave better results, where 0.15 g gave 11% yield, and 0.20 g produced 25% yield

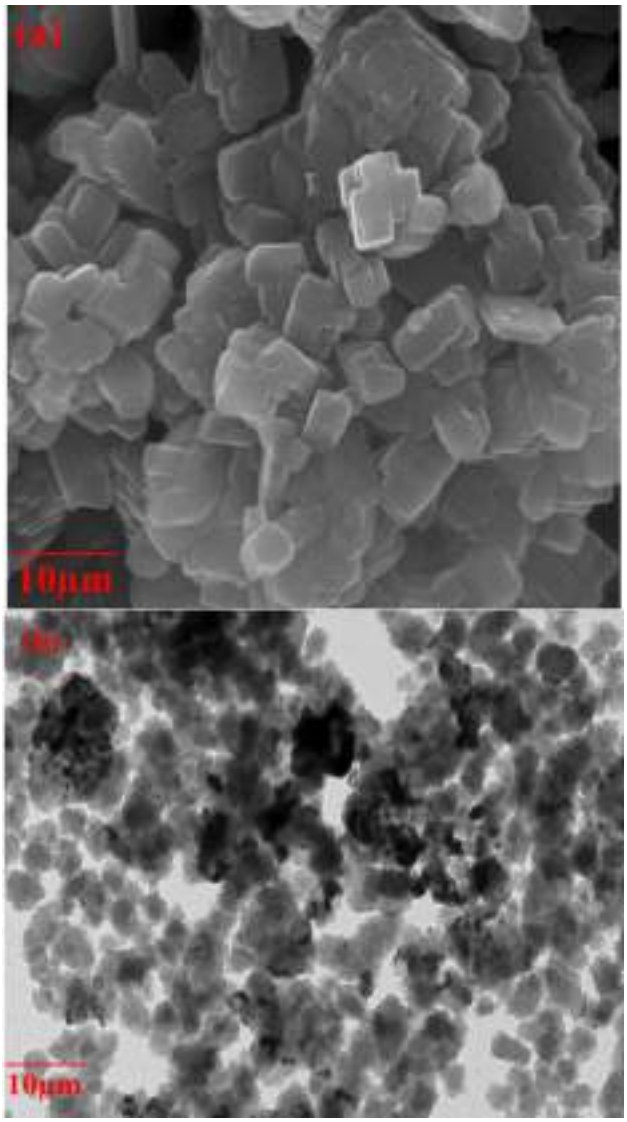


Figure 2. (a) SEM image and (b) TEM Image of ZnO-β-zeolite.

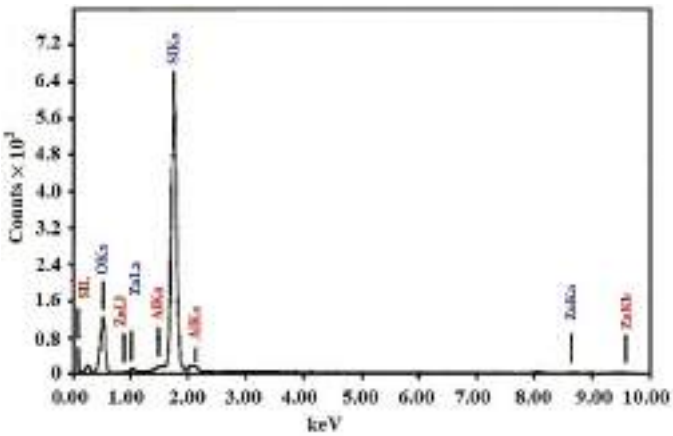


Figure 3. EDS spectrum of ZnO-β zeolite.

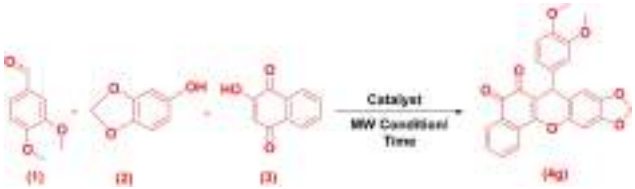
Table 1. The acid strength and surface area of catalyst.

		Acidity (mmol.g^{-1}) [a]		
Catalyst	Total acidity (mmol.g^{-1})	Weak (T_1)	Strong (T_2)	Surface area (m^2/g) [b]
ZnO-β zeolite	0.703	0.549	0.154	137.13

[a] Desorption temperature: T1 = 100-300 °C, T2 = 300- 700 °C, [b] Calculated from BET

(Table 2, entry 1–3). These preliminary results indicated effectiveness of the catalyst in the synthesis route. Then we proceeded to optimize the reaction conditions in terms of temperature, time, power of microwave and the amount of ZnO-β zeolite catalyst. In order to investigate the effects of these experimental conditions, the ZnO-β catalyst loading was varied from 0.10 to 0.20 g, while the reaction took place under MW irradiation power of 200, 300, and 400 W for reaction times of 5, 3 and 1 min, respectively. The resulting yield of **4g** from reactions performed at temperatures between 70 °C and 100 °C was then evaluated (ESI† for details of the experimental procedure, S3). The results are presented in (Table 2). The results in Table 2, entry 8 indicated clearly that the reactions performed under microwave irradiation with 200 W for 5 min. and 300 W for 3 min gave maximum yields at 80 °C, whereas the reactions under 400 W microwave irradiation for 1 min revealed a decreasing behaviour of the yield with the increase of temperature due to formation of black tar. Meanwhile, the

Table 2. Effect of microwave power, temperature, reaction time, and amount of ZnO-beta zeolite catalyst for the synthesis of **4g** under microwave irradiation



Entry	Temp (°C)	Power (W) [MW]	Time (min)	Catalyst (gm)	Yield (%) [a],[b]
1.	100	200	5	0.10	Trace
	100	200	5	0.15	11
	100	200	5	0.20	25
2.	100	300	3	0.10	31
	100	300	3	0.15	33
	100	300	3	0.20	38
3.	100	400	1	0.10	33
	100	400	1	0.15	39
	100	400	1	0.20	44
4.	90	200	5	0.10	45
	90	200	5	0.15	49
	90	200	5	0.20	55
5.	90	300	3	0.10	53
	90	300	3	0.15	59
	90	300	3	0.20	66
6.	90	400	1	0.10	60
	90	400	1	0.15	68
	90	400	1	0.20	73
7.	80	200	5	0.10	82
	80	200	5	0.15	86
	80	200	5	0.20	88
8.	**80**	**300**	**3**	**NIL**	**Trace**
	80	**300**	**3**	**0.10**	**90**
	80	**300**	**3**	**0.15**	**92**
	80	**300**	**3**	**0.20**	**95**
9.	80	400	1	0.10	68
	80	400	1	0.15	73
	80	400	1	0.20	76
10.	70	200	5	0.10	55
	70	200	5	0.15	59
	70	200	5	0.20	64
11.	70	300	3	0.10	85
	70	300	3	0.15	87
	70	300	3	0.20	90
12.	70	400	1	0.10	81
	70	400	1	0.15	84
	70	400	1	0.20	88

[a] Isolated yield; [b] Model reaction: Veratraldehyde (166.2 mg, 1.0 mmol), 3,4-methylenedioxyphenol (138.1 mg, 1.0 mmol), 2-hydroxy-1,4-naphthoquinone (174.1 mg, 1.0 mmol), solvents (2.5 mL), [MW] microwave irradiation.

yield increased with the increase of the catalyst mass addition at otherwise fixed experimental conditions as shown by (Figure 4). On the other hand, (Figure 4c).

demonstrates clearly the aforementioned decrease of the yield with the increase of temperature under 400 W irradiation for 1 min at any amount of catalyst addition. Also, the yield decreased with the increase of temperature above 80 °C under otherwise constant experimental conditions. Further, the yield obtained from reactions under irradiation with 400 W MW radiations for 1 min resulted in the higher yields compared with reactions performed under lower MW power irradiation at 90 and 100 °C, whereas irradiation with 300 W for 3 min was superior at lower temperatures. The highest yield of 90–95% was obtained at 80 °C from the 300 W MW-assisted reactions when using different amounts of the catalyst, whereas the reaction did not give a detectable yield in the absence of the catalyst as demonstrated by (Figure 4b). Given that the amount of MW energy (power multiplied by irradiation time) transferred to the reaction components is highest at 200 W for 5 min and lowest at 400 W for 1 min, the increase of the yield with the increase of temperature in the range from 70 to 80 °C, and the subsequent decrease in the temperature range from 80 °C to 100 °C is a clear indication that the amount of thermal energy available for the reaction is not the single decisive factor for the product yield obtained.

The effect of the type of solvent was examined by adopting the optimal experimental conditions (Table 3) for the synthesis of 7-benzodioxolo[4,5-b]xanthenediones, where veratraldehyde, 3,4-methylenedioxyphenol and 2-hydroxy-1,4-naphthoquinone were selected as model reaction partners. In this experiment, 300 W microwave irradiation was used with 0.20 g catalyst, and the reaction duration was 3 min. The reaction in chloroform, acetone, and toluene gave low yields (< 50%) (Table 3, entries 1–3), whereas acetonitrile and methanol gave good yields of 83% and 76%, respectively (Table 3, entries 4–5). However, a significantly higher yield of 95% was obtained by using ethanol as a solvent.

The effect of the catalyst type with ethanol solvent for the synthesis of compound **4g** using the conventional oil bath heating under different thermal conditions and reaction times was also investigated and compared with the results obtained by the proposed microwave-assisted synthesis under optimal experimental conditions using ZnO-β zeolite. The results in (Table 4) indicate the yield obtained by using different catalysts in different reaction durations. The results indicated the superiority of the present synthesis route in improving the yield in a significantly shorter time. Additionally, some of the used catalysts that produced satisfactory yield required drastic reaction conditions (e.g. refluxing or high temperature), and some were toxic and are not reusable in nature, making the synthetic protocols more environmentally malignant and expensive. Thus, the present ZnO-β zeolite NPs is a better alternative to the previously reported catalysts from the perspective of lower reaction time, higher yields of products and reusability of the catalyst. Using the optimized reaction conditions, we proceeded to explore the efficiency of our methodology in the synthesis of diversely substituted 7-

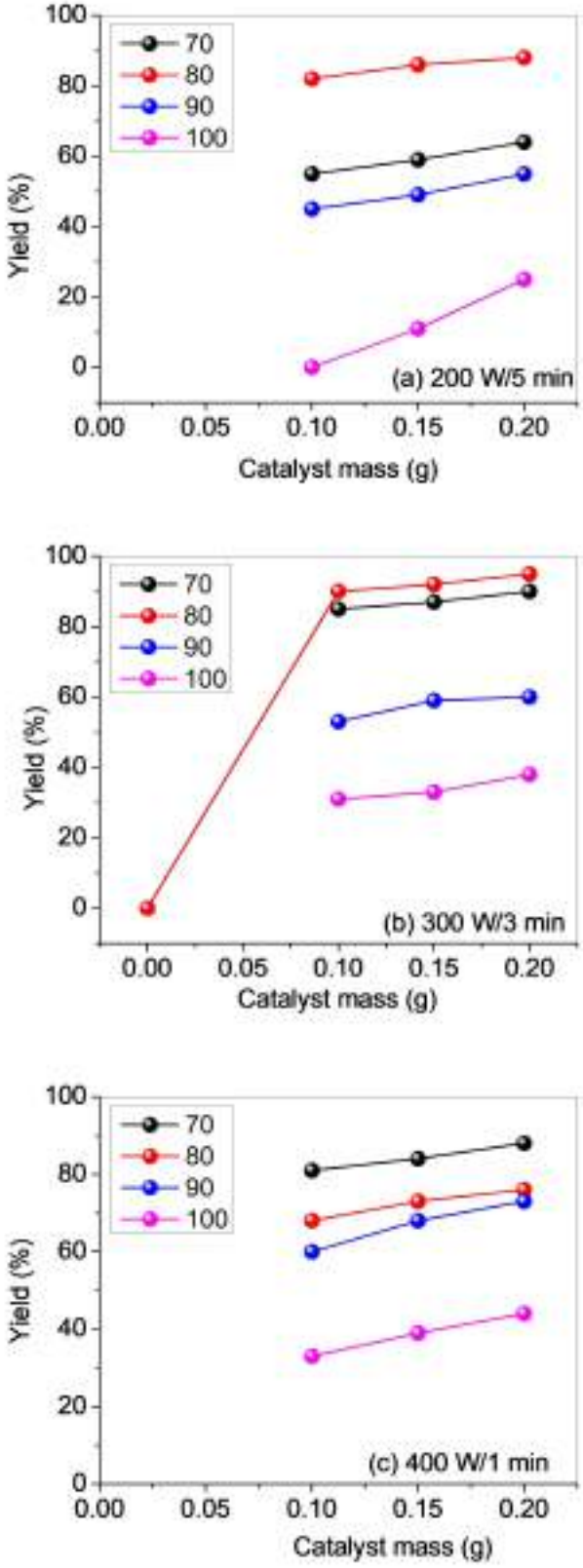
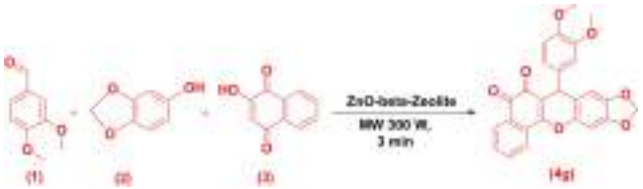


Figure 4. Yield of **4g** product as a function of catalyst mass at different temperatures under different microwave irradiation conditions.

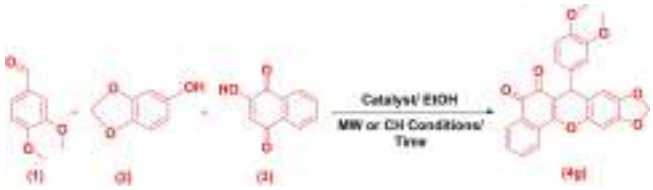
Table 3. Optimization of reaction solvent for synthesis of model product **4g**.



Entry	Solvent	MW Power (W)	Catalyst (g)	Time (min)	Yield (%)[a,b]
1	AcOH	300	0.20	3	27
2	C_6H_5-CH_3	300	0.20	3	32
3	$CHCl_3$	300	0.20	3	48
4	CH_3CN	300	0.20	3	83
5	MeOH	300	0.20	3	76
6	**EtOH**	**300**	**0.20**	**3**	**95**
7	H_2O	300	0.20	3	74
8	EtOH/ H_2O	300	0.20	3	88
9	NIL	300	0.20	3	Trace

[a] Isolated yield; [b] Model reaction: Veratraldehyde (166.2 mg, 1.0 mmol), 3,4-methylenedioxyphenol (138.1 mg, 1.0 mmol), 2-hydroxy-1,4-naphthoquinone (174.1 mg, 1.0 mmol), solvents (2.5 mL).

Table 4. Comparison of the results of the conventional heating method and the MW-assisted method in terms of time and yield of model product **4g**.



Entry	Solvents	Catalyst (mol %)	Time (min)	Temp. (°C)	Yield (%)[a]
1	EtOH	Et_3N	180[CH]	80	Trace
2	EtOH	Piperidine	180[CH]	80	Trace
3	EtOH	$MgCl_2$	90[CH]	80	81
4	EtOH	$InCl_3$	120[CH]	80	72
5	EtOH	$NiCl_3.6H_2O$	90[CH]	80	80
6	EtOH	$Zn(OTf)_2$	90[CH]	80	84
8	EtOH	CH_3COOH	120[CH]	80	68
9	EtOH	NH_2SO_3H	120[CH]	80	76
10	EtOH	P-TSA	40[CH]	100	90
11	EtOH	ZnO-β Zeolite	180[CH]	80	86
12	EtOH	ZnO-β Zeolite	3[MW]	80	95
13	EtOH	Nano-ZnO	120[CH]	100	42
14	EtOH	Nano-ZnO	3[MW]	80	66

[a] Isolated yield; [b]Model reaction: Veratraldehyde (166.2 mg, 1.0 mmol), 3,4-methylenedioxyphenol (138.1 mg, 1.0 mmol), 2-hydroxy-1,4-naphthoquinone (174.1 mg, 1.0 mmol), solvents (2.5 mL), [MW] microwave irradiation, [CH] Conventional Heating, All catalysts (20 mol%) excluding ZnO-β Zeolite.

benzodioxolo[4,5-b]xanthenedione derivatives; the corresponding results are summarized in (Table 5). Notably, the results indicated that both electron deficient as well as electron-rich aryl aldehydes provided the desired products with excellent yields. Several active functional groups like $-NO_2$, –Cl, and –Br remained dormant and allowed the selective reaction. In addition, the presences of these functional groups provided the scope for late-stage functionalization of the final products. Moreover, we found that under optimized conditions, the heterocyclic aldehyde equally participated in the MCR to result in 93% yield of the desired product **4k**. (The copies of HRMS spectra as shown in supplementary data, S4).

The probable role of ZnO-β zeolite is represented in the proposed mechanism (Scheme 2).

The catalyst, ZnO-β zeolite is Lewis acidic in nature due to presence of free O–H group in the surface of the catalyst. The reaction begins with the polarization of carbonyl group of a substrate (a) in the presence of acidic proton and forms oxonium ion (b) which enhances the electrophilicity of carbonyl carbon. The oxonium ion (b) subsequently react with 2-hydroxy-1, 4-naphthoquinone (c) to form a C–C bond between the carbonyl carbon of the aldehyde and the naphthoquinone to give an intermediate (d). Under the catalytic condition, α,β-unsaturated ketone forms with the elimination of water molecule (e). This intermediate has three carbonyl different

Table 5. Results of the synthesis of a variety of derivatives of the 7-benzodioxolo[4,5-b]xanthenedione.

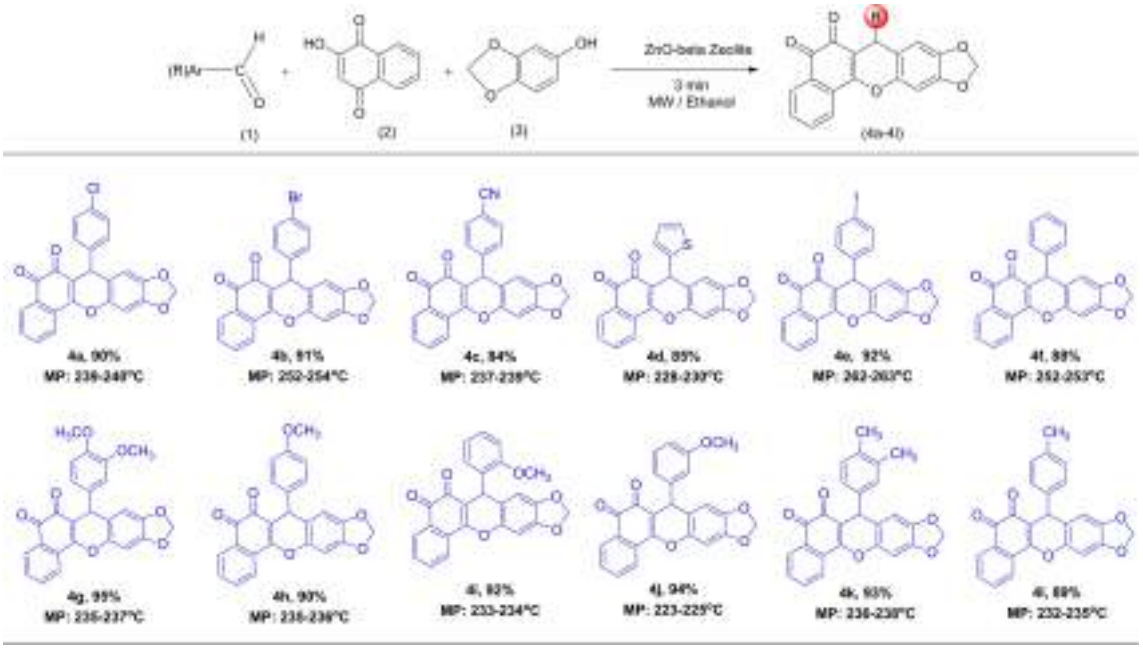


Table 6. Optimization of reaction conditions for the synthesis of Oxo-tetrahydroindoles (**8a**) using ZnO-β zeolite as catalyst.

Entry	Temp (^{0}C)	Power (W)[MW]	Time (min)	Catalyst (gm)	Yield (%)[a],[b]
	100	200	3	0.15	21
2	100	200	3	0.20	34
3	100	200	3	0.25	55
4	100	300	5	0.15	76
5	100	300	5	0.20	91
6	**100**	**300**	**5**	**0.25**	**97**
7	100	300	7	0.25	97
8	100	300	8	0.25	97
9	100	300	5	NIL	Trace
10	100	300	3	0.15	93
11	100	300	3	0.20	90
12	100	300	3	0.25	88
13	90	200	5	0.15	70
14	90	200	5	0.20	66
15	90	200	5	0.25	72
16	90	300	3	0.15	88
17	90	300	3	0.20	89
18	90	300	3	0.25	92
19	90	400	1	0.15	44
20	90	400	1	0.20	69
21	90	400	1	0.25	77
22	80	300	5	0.15	84
23	80	300	5	0.20	89
24	80	300	5	0.25	90

[a] Isolated yield; Model reaction (**8a**): Dimedone (140.18 mg, 1.0 mmol), phenacyl bromide (199.04 mg, 1.0 mmol), and aniline (93.13 mg, 1.0 mmol) under [MW] Microwave; [b] Present Work

Table 7. Optimization of reaction Solvent for synthesis of model product **8a.**

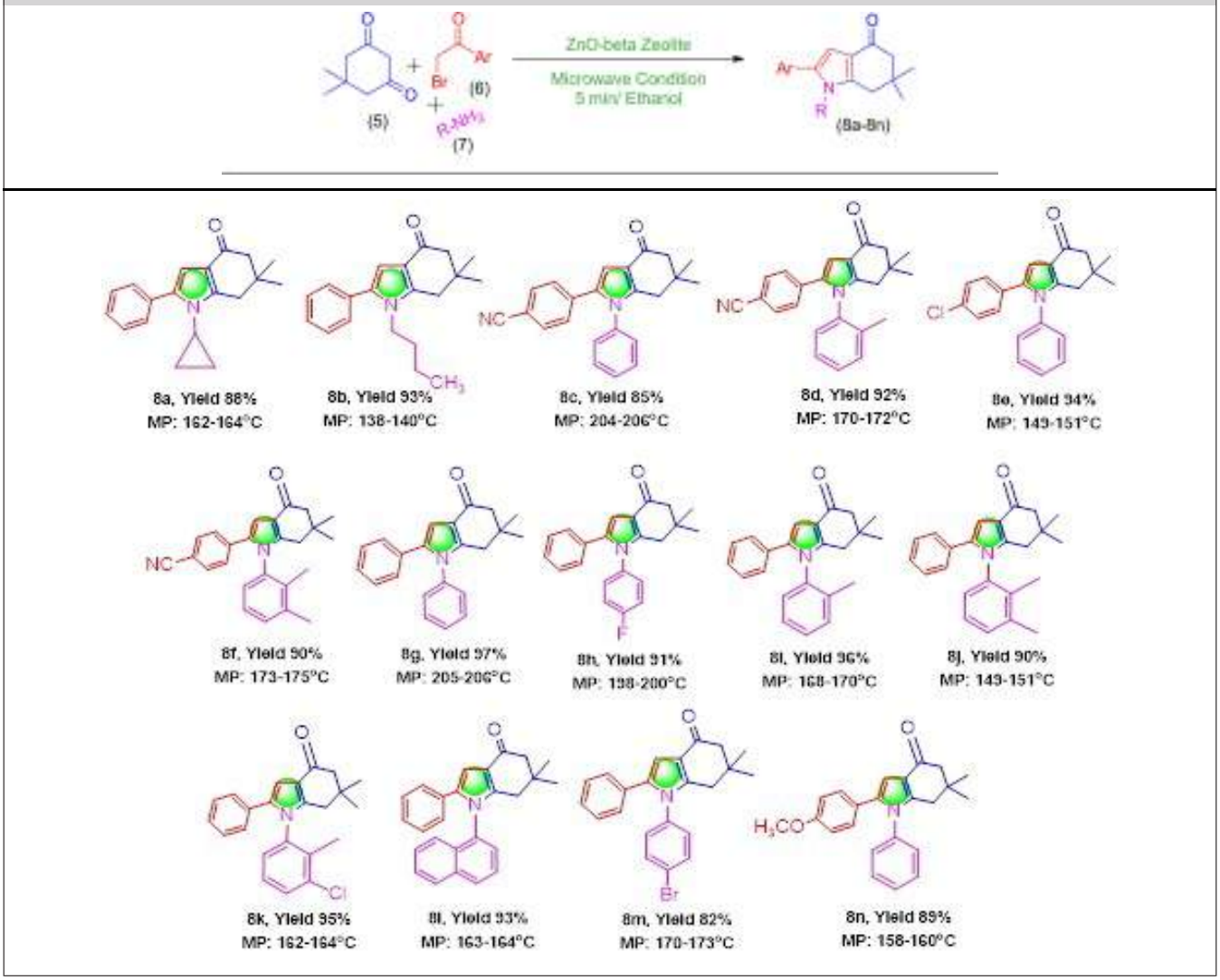
Entry	Solvent	Power (W)MW	Catalyst (gm)	Time (min)	Yield (%)[a],[b]
1	EtOH/ H_2O (1:1)	300	0.250	05	35
2	Solvent Free	300	0.25	05	46
3	DMF	300	0.25	05	52
4	CH_3CN	300	0.25	05	57
5	MeOH	300	0.25	05	78
6	EtOH	300	0.25	03	93
7	EtOH	300	0.25	04	94
8	EtOH	300	0.25	05	97
9	NIL	300	0.25	05	Trace

[a] Isolated yield; [b] Model reaction (**8a**): dimedone (140.18 mg, 1.0 mmol), phenacyl bromide (199.04 mg, 1.0 mmol), and aniline (93.13 mg, 1.0 mmol) under [MW] Microwave; [b] Present Work

groups. Out of these, two carbonyl groups are of the starting 1,4-naphthaquione moiety, whereas the third comes from the hydroxyl group of 1,4-naphthaquione. The α,β-unsaturated ketone intermediate (e) participates again in C–C bond forming a reaction with 4-methylenedioxyphenol (f), and results in the adduct (g), which upon cyclization followed by protonation using catalyst to produces pyran nucleus (i). Finally, the compound (j) undergoes aromatization with loss of water molecule to produce the desired product (**4a-4l**).

The recyclability of the ZnO-β zeolite catalyst was examined by considering the model reaction **4g**. For this purpose, the

Table 8. ZnO-β zeolite catalysed synthesis of 4-oxo-tetrahydroindole derivatives



catalyst was separated from the reaction mixture by filtration, washed and activated at 50 °C, and dried in an oven. The reaction yield in (Figure 5) revealed that the catalyst could be used four successive times without a significant loss of its activity. These results indicated that the efficiency of the recovered catalyst was comparable with that of the fresh catalyst, where the small decrease of the obtained yield could be due to loss of small amounts of the catalyst during the recovery process.

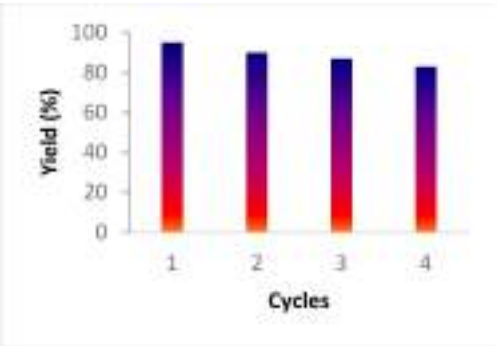
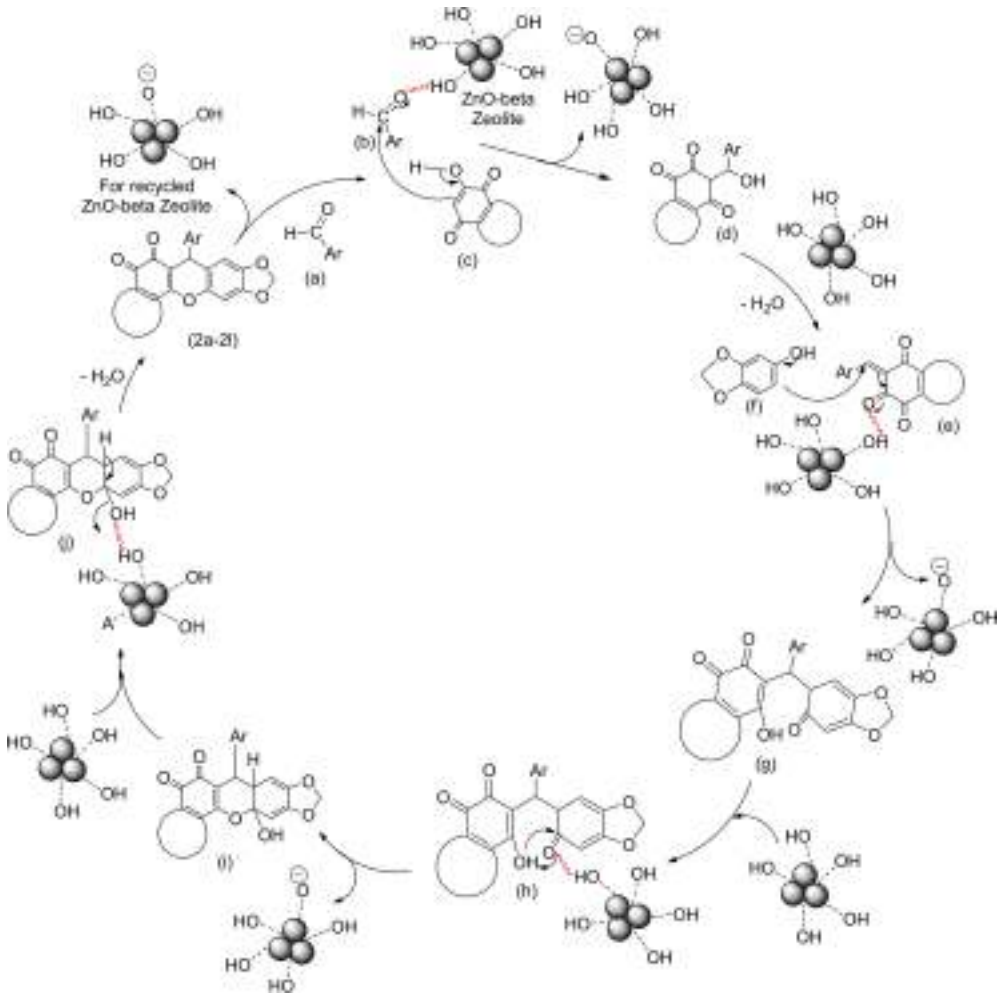


Figure 5. Recycling of ZnO-β zeolite for the synthesis of model product **4 g**

The recycled ZnO-β zeolite NPs were analysed by transmission electron microscopy (TEM) and SEM imaging. The images of the separated catalyst after the 4th run are shown in (Figure 6). SEM image (Figure 6a) clearly revealed agglomeration of crystalline ZnO-β zeolite NPs. Interestingly, the particle size decreased down to (~70 – 280 nm) compared with the fresh ZnO-β zeolite (200 – 500 nm); this could be due to the microwave irradiation process, or the loss of particle surface irregularities as demonstrated by the smooth cuboidal surfaces of the particles (Figure 6b).

Next, we investigated the efficiency of the ZnO-β zeolite catalyst for the synthesis of the highly functionalized oxo-tetrahydroindoles under MW irradiation. The reaction of phenacyl bromide **(6)**, dimedone **(5)**, and aniline **(7)** solvent was examined as a model substrate under microwave condition. The reaction carried out at 100 °C for 3 min using



Scheme 2. Possible cyclic reaction mechanism for the ZnO-β zeolite catalysed synthesis of 7-benzodioxolo[4,5-b]xanthenediones.

0.150 g of the catalyst under 200 W of MW power produced relatively low yield of 21%. Under otherwise similar conditions, larger amounts of the catalyst gave higher yields, where 0.20 g gave 34% yield, and 0.25 g produced 55% yield (Table 6, entry 1–3). These results also indicated effectiveness of the catalyst in the proposed synthesis route. In an attempt to optimize the reaction conditions in terms of temperature, time, power of microwave and the amount of ZnO-β zeolite catalyst, the ZnO-β catalyst amount was varied from 0.15 to 0.25 g, the microwave irradiation power from 200 W to 400 W for reaction times of 1 to 5 min, and the temperature was varied between 80 °C and 100 °C. Following the experimental procedure (ESI† for detail experimental procedure, S5) and the various combinations of the conditions, the yield of **8a** was evaluated, and the results are presented in (Table 6). The results indicated that 90–97% yield could be obtained at 100 °C in a short period of time of 3 to 5 min, by using 300 W microwave-assisted reactions with 0.15 to 0.25 g of ZnO-β catalyst (Table 6, entry 5, 6, 8, and 9). In the absence of the catalyst, however, the reaction gave only trace amounts of yield at optimized temperature and MW irradiation conditions.

The effect of the type of solvent on the product yield was examined under optimal experimental conditions (Table 7) using selected model reaction partners. In this experiment, 300 W microwave irradiation was used with 0.25 g catalyst, and the reaction duration was 5 min. The reaction in DMF, CH_3CN, and ethanol-water mixture (1:1) gave low yields (< 57%) (Table 7, entries 1–4), whereas methanol gave a relatively high yield of 78% (Table 7, entry 5). However, a significantly higher yield of 97% was obtained by using ethanol as a solvent. Under otherwise fixed experimental conditions, lowering reaction time gave somewhat lower yield (Table 7, entries 6 and 7), but the effect is not considerably large, and a yield as high as 93% could still be obtained in a short reaction time (3 min). Further, the optimal conditions were employed for the synthesis of a variety of oxo-tetrahydroindoles derivatives. The results in Table 8 indicated that the majority of the products (**8a–8n**) were obtained with high yield (≥ 90%). Even the lowest yield of 82% for product **8m** is still relatively high (The copies of ^{1}H NMR and ^{13}C NMR as shown in supplementary data, S6).

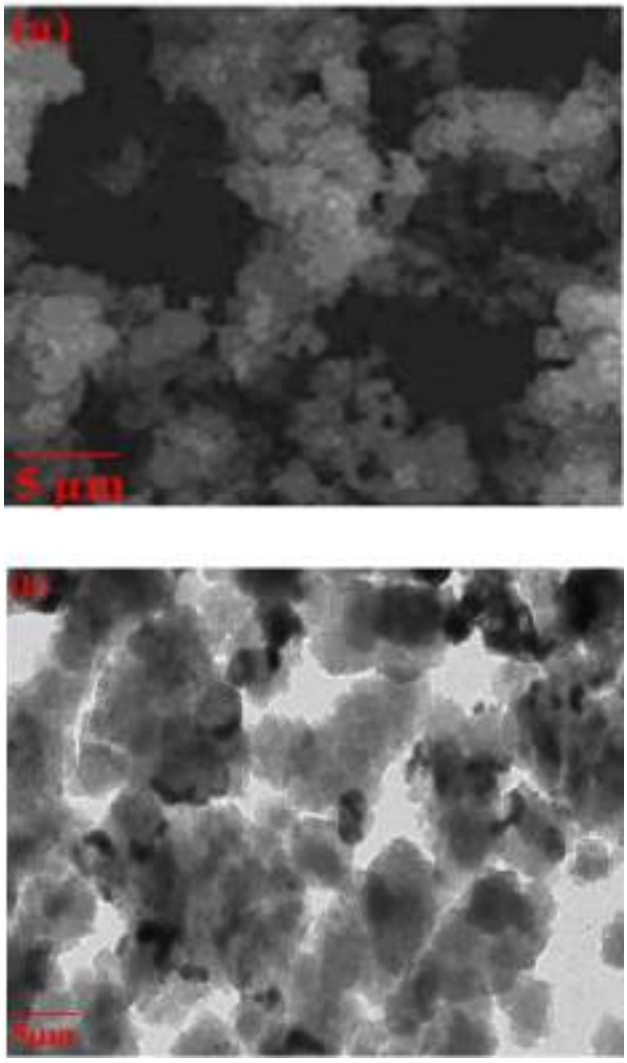


Figure 6. (a) SEM and (b) TEM images of recycled ZnO-β zeolite NPs after the 4th run.

Conclusions

In conclusion, the 7-benzodioxolo[4,5-b]xanthenediones and highly functionalized 4-oxo-tetrahydroindole derivatives were successfully synthesized with high yield by using ZnO-β zeolite catalyst in a simple one-pot multicomponent protocol under microwave irradiation. The present work provided several advantages such as, (i) introducing ZnO-β zeolite as a catalyst with superior catalytic performance in terms of reaction time (~3 to 5 min) and high yields of products (95-98%), (ii) synthesis of 7-benzodioxolo[4,5-b]xanthenedione derivatives by means of a heterogeneous, greener catalyst, (iii) efficient reusability of ZnO-

β zeolite catalyst for several cycles without appreciable loss of the catalytic activity, and (vi) introducing an environmentally benign protocol employing a non-toxic catalyst. Thus, a rapid, cost effective, eco-friendly, and convenient protocol with mild reaction conditions avoiding volatile and hazardous solvents, has been developed for the organic reaction transformation. These results, we hope, may open doors for using ZnO-β zeolite NPs in MCRs leading to biologically effective molecules in the near future.

Supporting Information Summary

Supporting information contains detailed experimental procedure for the preparation of ZnO-beta Zeolite catalysts and experimental procedure for the 7-benzodioxolo[4,5-b]xanthenediones and 4-oxo-tetrahydroindole derivatives; copies of HRMS spectra of product listed in (Table 5) in addition to ^{1}H NMR and ^{13}C NMR spectra of the products listed in (Table 8).

Acknowledgments

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Conflict of Interest

The authors declare no conflict of interest.

Keywords: ZnO-beta Zeolite · Heterogeneous catalyst · One-pot multi-component synthesis · 7-Benzodioxolo [4,5-b] xanthenediones · 4-Oxo-tetrahydroindoles · Microwave irradiation · Recyclability of the catalyst.

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चिरकालीन मानवी जीवनाकरिता राष्ट्रसंत श्री तुकडोजी महाराज यांचे विचार.

प्रा. डॉ. भारत वि. नखाते

यशवंतराव चव्हाण कला,वाणिज्य व विज्ञान महाविद्यालय

साखांदूर, जिल्हा भंडारा

वृक्षवल्ली आम्हा सोयरे वनचरे.

जगतगुरु तकोबारायांच्या वरील अभंगातील मतितार्थ लक्षात घेता, आज संपूर्ण जगातील मानवजातीला विनाशापासून वाचविण्याचा महामंत्र आम्हाला दिलेला आहे. मानव हा पृथ्वीवरील सर्वात स्वाथ्ी सजीव आहे. स्वत:च्या सुखाकरिता संपूर्ण हा जिवसृष्टी, चराचर पंचमहाभूते यांचा विनाश करण्यासाठी सातत्याने प्रयत्नशील आहे. पृथ्वीवरील प्रत्येक सजीव प्राण्यांना, वनस्पतींना स्वत:चे अस्तित्व आहे. प्राणी व वनस्पती परस्परांनापूरक आहेत प्रत्येक प्राणी निसर्गाच्या संतुलनाला सहाय्यभूत ठरत आहे. वनस्पती व प्राण्यांची अन्नसाखळी ठरलेली आहे, त्यामुळे निसर्गाचे संतुलन टिकून राहते. ते डळू न देण्याचे कार्य बुध्दीप्राप्त मानवाला करायच आहे. याकरिता भारतवर्षातील साधुसंतांनी वेळोवेळी आपल्या भजन, कीर्तन, प्रवचानातून मार्गदर्शन केलेले आहे.

पर्यावरण म्हणजे जंगल,पाणी,हवा इतकेच नव्हे तर आपण ज्या परिसरात राहतो. त्या परिसरातील नैसर्गिक वातावरणाचा परिणाम मानवी जीवनावर होत आहे. आपण त्याबाबत अनभिज्ञ आहोत असे नाही, तर तत्संबंधी विचार करीत नाही. राष्ट्रसंत तुकडोजी महाराजांनी आपल्या भजन, भाषण, साहित्य, प्रवचन, आदिव्दारे यासंबधी सखोल चिंतन केलेले आहे.

उद्देश :-

स्वच्छततेचा मुलमंत्र स्वीकारणे,ग्राम स्वच्छता करणे, पर्यावरणाचा संतुलन राखणे, जीवसृष्टीमध्ये प्रत्येक सजीवांचे अस्तीत्व टिकवून ठेवणे, जंगलसंपत्ती, व नैसर्गिक संसाधनांचा विनाश थांबविणे, नैसर्गिक म्हणजे साध्या पध्दतीने जीवन जगणे 'जगा आणि सर्वांना जगू द्या' हा मूलमंत्र स्वीकारणे

राष्ट्रसंताचे विचार व आजचा समाज जीवन

पर्यावरणाचा नाश म्हणजे संपूर्ण जीवसृष्टीचा (पृथ्वीचा) विनाश !

'कागदी पुस्तकात, काव्यात खेडयाचे वर्णन दिव्य बहुत।
परि वस्तूस्थिती पाहता तेथे, क्षणभरही राहवेना ।।
रस्ते सर्व घाणींनी भरले, आजूबाजूस डबके साचले ।
एकही काम न निभे तिथले, शहराविण'।।

कथा, कविता, कादंबऱ्यांमध्ये खेडयांचे सुंदर वर्णन केले जात, त्यामुळे मन खेडयाकडे आकर्षित होते. परंतु प्रत्यक्ष स्थिती मात्र विपरीत दिसते. रस्ते, सांडपाणी, डबके आर्दिची व्यवस्था बघता, अनवाणी चालनेही अवघड ठरते अशी दुरावस्था आपणाला आढळते.

देशाला स्वातंत्र्य मिळून सत्तर वर्षाचा कालावधी लोटूनही शौचाला कुठे बसावे, याचे भान जनतेला नाही, रस्त्याच्या बाजूला गावाला लागूनच हा विधी उरकला जातो.

'काहींनी सांडपाणी साचविले। मच्छर जंतू अती वाढले ।
रोगराईने बेजार झाले। शेजारी सगळे ।।
गावचे मार्ग विष्ठेने व्यापले। आड कोने घाणींनी भरले ।
ठायी ठायी उकिरडे साचले। गाव वेढले गोदरींनी ।।

खेडयांमध्ये गावाच्या सभोवताल विष्टेचा सडा पडलेला दिसतो, असे होऊ नये म्हणून आपल्या पूर्वजांनी गावाच्या चारही बाजूंना सीमेवर कुठल्यातरी देवी.देवतांचे मंदिर असायचे, मरिमाय, हनुमंत

UGC Care Group I Journal
Vol-10 Issue-07 No. 3 July 2020

आदि यामागील उद्देश म्हणजे मंदिर देवदेवतांच्या असायचे बघ्देपोटी अथवा धाकाने, भितीने म्हणा गावाचा परिसर स्वच्छ असावा हा होता.

'अहो! ही निसर्गाची रचना। समजलीज पाहिजे सर्व जना।

खाद्यची होते खत जाणा। खतापासोनि खाद्योत्पत्ती।।

आपण जे-जे खातो। रसरक्तमांस तेये जमविती।

त्यातूनि वाचले ते खत म्हणतो। भूमिवरी घालावया।।

शेण, मळ, मूत्र हे विशिष्ट खड्डे करुन त्यात पुरावे आणि शेतीमध्ये खत म्हणून वापर करावा. तुकडोजी महाराज, तुकाराम दादा गीताचार्य यांनी, सोनखत, हिराखत, कंपोस्ट खत कसे तयार करावे यांचे सविस्तर वर्णन केलेले आहे. त्यामुळे नैसर्गिकरित्या शेतीची उपज क्षमता वाढत, सेंद्रिय खतामुळे अन्न-धान्ये, भाजीपाला, फळफळावळे अधिक पोषक तत्वांनी मानवी शरिराला उपयुक्त ठरतात, त्यामुळे रोगप्रतिकारशक्तीमध्ये वाढ होऊन निरोगी जीवन, निरामय आयुष्य मानवाला प्राप्त होते परंतू तसे न करता रासायनिक खत, केमिकल्स, औषधी यांचा वापर करुन जमीनींचे प्रदूषण वाढवित आहोत, त्यामुळे जमिनीची उपज क्षमता कमी झालेली आहे. विषयुक्त अन्न मानवाच्या आरोग्याला हानीकारक ठरत आहे, त्यामुळे रोगराई वाढली याकरिता वं.तुकडोजी महाराज म्हणतात,

"तैसेचि करावे चर संडास । मळ दिसोचि न द्यावा कोणास।

आपल्या मळाची आपणास । व्यवस्था लावणे सोयीचे ।।

याने दूर होईल घाण । थांबेल रोगराईचे नुकसान ।

आणि पिकेल अधिक धान्य । अनेक लाभ एकामाजी' ।।

हे तुकडोजी महाराजांनी नव्याने सांगितले नाही तर आपल्या पूर्वजापासून ही जीवनशैली त्यांनी आपल्या अभंग,ग्रामगीता व इतर साहित्यातून समजावून दिलेली आहे.

विज्ञानवादी समजणारी माणसं परकीय संस्कृतीच्या आहारी जाऊन त्यांचे अंधानुकरण करुन आपल्या पायावर कुऱ्हाड मारतांना दिसतो आहे. याबाबत तुकडोजी महाराजांनी जपानच्या विकासाच्या रहस्य सांगितले आहे.

जपानच्यु०ा० विकासाचे रहस्य

'प्रत्येक जपानी माणूस आपल्या घरी सेंद्रीय खताव्दारे भाज्या,फळे, पिकवितो, घरच्याच संडासातले खत वापरतो. घराघरात 'पिच' नावाचे थंड आणि रसदार फळ तयार करतो.... जपानी लोकांच्या कष्टांचा तो नमुना मानला पाहिजे. घरातील सारी माणसे सकाळ संध्याकाळ जागेत(जमीन,शेती) काम करतात. कंपोस्ट खत बनवितात. तिथे पाहुणा जेवायला दुसरीकडे गेलेला चालतो, परंतु शौचासाठी तो मालकाच्या (यजमान) घरात आला पाहिजे. तिथे प्रत्येक गोष्टीची एक विशिष्ठ पध्दती आहे. जोडे एका रांगेत ठेवले जातात, घरात, अंगणात, संडास, बाहेर असे प्रत्येक वेळी वापरावयाची पादत्राणे वेगवेगळी असतात..... जपानमध्ये एकही जागा रिकामी नाही . प्रत्येक ठिकाणी झाडे, रस्त्याच्या बाजूंना, पर्वतावर, टेकड्यांवर, उंचीपर्यंत झाडे व त्यांना पाणी स्वत: वाहून नेऊन घालतात' म्हणजेच स्वच्छता, वृक्षारोपन, संगोपन उत्तमप्रकारे दिसून येते, म्हणूनच जपान आज समृध्द देश आहे.

जलप्रदुषण, नदीप्रदुषण थांबविण्याकरिता तु.महाराजांनी गुरुकुंज मोजरी येथे सर्वतीर्थ कुंड स्थापन केले आहे.

'इस सर्वतिरथ कुंण्डमे सबतीर्थका जल है भरा।

सब संत और सब देवतांका वरद इसको है पुरा ।।

....प्रात: समय जब ध्यानके उपरान्तही दर्शन करो।

अस्थि विसर्जन हो तभी, तुकड्या कहे जीव उध्दरो" ॥

भारतवर्षातील हिंदू लोक मृत्युनंतर अस्थी विसर्जनासाठी काशी,प्रयाग,आदिसारख्या तीर्थस्थळी जाऊन पंडीत,ब्राम्हणांकडून आर्थिक दृष्टया पिळले जातात. नदीमध्ये तलावातील जलामध्ये अस्थि विसर्जन करुन नदी व जल प्रदुषित करतात, अशा रुढी थांबवून आर्थिकदृष्ट्या कंगाल होण्यापेक्षा तुकडोजी महाराजांनी भारतातील सर्वच प्रसिध्द तीर्थ, कुंड,नदी,समुद्र यांचे जल एकत्रित करुन मोझरी येथे सर्वतिर्थकुंड स्थापन केले आहे. त्यामागे त्यांचा वैज्ञानिक, आर्थिक व पर्यावणवादी दूरदृष्टिकोण आढळून येतो. माणसाच्या प्रेतदहना नंतर उर्वरित रक्षा नदी किंवा तलावाच्या पाण्यामध्ये न घालता स्वत:च्या शेतामध्ये पसरवून द्यावी त्यामुळे शेतीची सुपीकता वाढते असे ग्रामगीतेमध्ये सांगितले आहे.

ग्रामस्वच्छतेसंबधी तुकडोजी महाराज आदेशरचना ग्रंथामध्ये म्हणतात,

'बघ गाव किती अस्वच्छ हे, घाणेरडे मळ साचले ।
मंदिरही उद्ध्वाटले, आणि देवही उध्वस्तले ॥
रोगे ही जनता पिडीली, भांबावली रे भावना।
या ग्राम-सेवासाधना, कर रामधूनचि घोषणा ॥
'झाडोनि मार्ग सर्वही, सेवेस सेवक लावूनि।
कर नीट अपुले गाव, घर, वापी तलावालागूनी ॥
नच गर्व धर अपुलेपणाचा, कोणी म्हणतील नीच ना ।
या ग्राम-सेवासाधना, कर रामधूनचि घोषणा।'

तुकडोजी महाराजांचा रामधून काढण्यामागचा मुख्य उद्देश म्हणजे ग्राम स्वच्छता होता. गावातील वाईट प्रथा, परंपरांचा विनाश करुन एकता स्थापने, सर्व गावातील जनतेचे संघटन करणे, स्वच्छतेचा मूलमंत्र देउन, पर्यावरण व निसर्ग संरक्षणाचा होता.

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देवाने सृष्टी निर्माण केली त्याने सारे काही व्यवस्थित केले आहे. त्यासाठी काही नियम ठरविले. क्रमाने ऋतू येतात आणि जातात, मानवी संख्या मर्यादिपेक्षा अधिक वाढली तर रोगराई येते, युध्द होतात, अशाप्रकारे सृष्टीचे संतुलन कायम राहते म्हणजे लोकसंख्या नियंत्रणातून पर्यावरण संरक्षण करणे गरजेचे आहे असे तुकडोजी महाराज म्हणतात.

उपसंहार :-

उपरोक्त शोध निबंधात राष्ट्रसंत तुकडोजी महाराजांनी ग्राम स्वच्छतेव्दारे पर्यावरण संरक्षण करण्याचे महत्व विशद केलेले आहे. मनुष्य स्वत: ज्या पध्दतीने जगू ईच्छीतो त्याच पध्दतीने ईतर लोकांना व जीवांना जगू देण्याची काळजी घेणे, निसर्गत: मानवमात्राला हितकारक होईल. जेव्हा सर्व मानव स्वच्छतेच्या नियमांचे व्यवस्थित पालन करेल तेव्हाच सर्वांचे जीवन सुखमय होईल. एकंदरीत संताचा उपदेश, विज्ञानवादी दृष्टिकोण, स्वच्छतेचा मुलमंत्र अणि नैसर्गिक संसाधानाचा सदुपयोग यांचा अवलंब करुन मानवी जीवन सुखकर करणे गरजेचे आहे. तसेच वायुप्रदुषण थाबविण्यासाठी सौर उर्जा, पवन उर्जा यांचा जास्तीत उपयोग करुन पेट्रोल, डिझेल,कोळसा,लाकूड यांचा विनाश थांबविणे काळाची गरज आहे. स्वच्छ भारत हे मिशन पूर्णत्वाकडे नेण्याकरिता राष्ट्रसंतांचे विचार उपयुक्त ठरत आहेत. चिरकालीन किंवा निरंतर सजीव सृष्टी टिकविण्याकरिता राष्ट्रसंताचे विचार मानव जातीने प्रत्यक्ष जीवनात अवलंबीत करणे अनिवार्य आहे.

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गडचिरोली जिल्हयाच्या पूर्व भागातील आदिवासी जमातीतील कुपोषण व त्यांचा निरंतर विकास : एक भौगोलिक अध्ययन

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प्रस्तावना :

मानवाच्या मूलभूत गरजावर पर्यावरणाचा परिणाम होत असतो म्हणजेच मानवी क्रिया या पूर्णपणे निसर्गावर अवलंबून असतात. मानवी कार्यावर निसर्गाची प्रत्यक्ष व अप्रत्यक्षरित्या प्रभाव पडत असतो. याचा परिणाम मानवी स्वास्थावर सुध्दा होतो.

जगातील सारख्याच हवामान प्रदेशातील मानवाच्या आचार-विचारावर भेद दिसून येतो. यावरच मानवाचा विकास अवलंबून असतो. मानवी विकास हा देशाच्या प्रगतीचा मानदंड समजला जातो. देशाच्या विकासाकरिता मानवी आरोग्य निरोगी असणे आवश्यक असते. मानवी आरोग्य निरोगी राहण्यासाठी पोषक आहार व स्वच्छतेची आवश्यकता असते. आहार व मानवी आरोग्य यांचा निकटचा संबंध आहे आहारावरच मानवी शरीराची बांधणी व कार्यक्षमता अवलंबून असते. सकस आहारामूळेच शरीराची झिज व रोग प्रतिकारक शक्ती वाढत असते. साहजिकच आपल्या दैनंदिन आहारात पोषक घटकांची कमतरता असेल तर कुपोषणाची समस्या निर्माण होते.

(Akhtar, R-1980)

कुपोषण ही समस्या गरिबी, बेकारी, अन्नप्राप्ती करीता स्पर्धा, निरक्षरता, अंधश्रध्दा, आधारी संरचनेचा अभाव यातून निर्माण होत असते. अशी परिस्थिती गडचिरोली जिल्हयाच्या इतर भागाच्या तुलनेत पूर्व भागातील भामरागड, एटापल्ली, धानोरा, कोरची व कुरखेडा या तालुक्यात प्रकर्षाने जानवते. म्हणून या भागात जिल्हयाच्या इतर भागाच्या तुलनेत कुपोषणाचे प्रमाण सर्वाधिक आढळते. म्हणून या संशोधनाकरीता गडचिरोली जिल्हयातील पूर्व भागातील कुपोषणाची वर्तमान स्थितीचे अध्ययन करणे हा विषय घेतलेला आहे.

उद्दिष्टिे :

गडचिरोली जिल्हयाच्या पूर्व भागातील तालुक्यातील कुपोषणाची वर्तमान स्थितीचे अभ्यास करणे हे या अभ्यासाचे उद्दिष्टये आहे. जिल्हयातील इतर भागापेक्षा हा भाग प्राकृतिक दृष्टया घनदाट जंगलाचा, उंचवटयाचा व उताराचा भाग आहे. त्यामुळे सामाजिक, आर्थिक दृष्टया बरीच भिन्नता आढळते. अभिक्षेत्रानुसार भौगोलिक घटकांचा कुपोषणावर काय परिणाम होतो हे अभ्यासाचे हे सुध्दा उद्दिष्टये आहे.

परिकल्पना :

गडचिरोली जिल्हयाचा अन्य भागाच्या तुलनेत हा भाग साधनसंपत्तीने संपन्न आहे. परंतू येथिल प्राकृतिक रचनेमुळे तीचा योग्य वापर होत नाही. येथे पायाभूत सोयीचा अभाव, अपूरी आरोग्य व्यवस्था, निरक्षरता, अंधश्रध्दा यामुळे येथे कुपोषणाचे प्रमाण बरेच आहे ही परिकल्पना समोर ठेवून हा अभ्यास केलेला आहे.

संशोधन अध्ययन पध्दती :

या अभ्यासाकरीता आवश्यक माहिती व आकडेवारी द्वितीयक स्त्रोतातून घेतलेली आहे. यात जणगणना, निर्देश ग्रंथ, सामाजिक व आर्थिक समालोचन पुस्तीका, आरोग्य विभागातर्फे प्रकाशित मासिक, विविध सेवाभावी संस्थाचे प्रकाशित व अप्रकाशित लेख याच्या आधारे माहिती मिळविली आहे.

अभ्यास प्रदेश :

संशोधनाच्या अभ्यासाकरीता गडचिरोली जिल्हयातील पूर्व भागातील भामरागड, एटापल्ली, धानोरा, कोरची, कुरखेडा या तालुक्याची निवड केलेली आहे. हा भाग गडचिरोली जिल्हयातच नव्हे तर संपूर्ण भारतात 100 टक्के आदिवाशी लोकांचा भाग म्हणून ओळखला जातो. हा भाग वनसंपत्ती व खनिजांनी संपन्न असून दुर्गम, डोंगराळ आहे. येथे आदिवाशी लोकांचे वास्तव आहे. येथे भिल्ल, आंध, बैगा, बिंसवार, वनधोडी, कवार, धनका, गोंड, राजगोंड, माडियागोंड, हलबा, कोलम, कोळी, कुमार, हलबी, खैरवार, खरिया, कोरकू, परधान, पारधी, कोया, साबर व ठाकूर इ. पोटजातीचे आढळतात. यापैकी बहुतांश आदिवासी जमाती मागासलेल्या, निरक्षर, दारिद्रय व त्यांचा निवास व कार्यक्षेत्र हे जंगलाचे पर्यावरण आहे.

सन 2011 नुसार गडचिरोली जिल्हयाची एकूण लोकसंख्या 10,72,942 इतकी असून क्षेत्रफळ 14,412 चौ.किमी इतका आहे. घनता दर चौ. किमी 74 इतकी आहे. जिल्हयात नागरी लोकसंख्या 6.93 टक्के असून ग्रामीण लोकसंख्या 93.07 इतकी आहे. तर साक्षरता 60.10 टक्के व लिंग गुणोत्तर 976 इतका आहे. तो इतर जिल्हयाच्या तुलनेत चांगला आहे. जिल्हयात सरासरी वार्षिक पर्जन्यमान 170 मी.मी. आहे.

पूर्व गडचिरोलीतील भामरागड, एटापल्ली, कोरची, कुरखेडा व धानोरा या तालुक्याचे क्षेत्रफळ 6944.92 चौ. किमी असून लोकसंख्या 3,29,620 इतकी आहे. म्हणजेच जिल्हयाचा 48.18 टक्के क्षेत्र व्यापलेले असून यात एकूण जिल्हयाची 30 टक्के लोकसंख्या आहे. यावरून हा भाग दुर्गम व डोंगराळ

तसेच घनदाट वनांनी व्याप्त असावा असे लक्षात येते. येथे आदिवाशी लोकसंख्या 2,32,96 इतकी असून एकूण लोकसंख्येत हे प्रमाण 72.90 टक्के इतके आहे. म्हणजेच हा भाग आदिवाशी लोकसंख्येनी व्याप्त असा भाग आहे. येथे लोकसंख्येची घनता दर चौ. किमीला 48 प्रती व्यक्ती असून साक्षरता 68.79 टक्के इतकी आहे. जिल्हयात एकूण 78 बाजारपेठा (2011) असून त्यापैकी अभ्यासक्षेत्रात केवळ 36 बाजारपेठा आहेत. आरोग्य व्यवस्थेचा विचार करता संपूर्ण जिल्हयात 460 ग्रामीण, प्राथमिक व आरोग्य केंद्र असून त्यापैकी अभ्यास प्रदेशात केवळ 175 आरोग्य ठिकाणे उपलब्ध आहेत. यावरून या भागात मोठया प्रमाणात आधारी संरचनेचा अभाव दिसून येतो. तसेच येथे रस्ते पावसाळयात वाहतूकीची सोय नसल्यामुळे पावसाळयात या भागाचा संपर्क तुटलेला असतो. याशिवाय येथे वाहतूक साधनांचा अभाव दिसून येतो. येथे जंगलाचे प्रमाण जास्त असून हा भाग मागासलेल्या अवस्थेत दिसून येतो.

अभ्यास विषय :

कुपोषण ही समस्या सकस आहार न मिळाल्यामुळे निर्माण होणारी समस्या आहे. व ही समस्या जन्मापासून तर 6 वर्षे वयापर्यंत अधिक संवेदनशिल मानली जाते. आजही भारतात 30 टक्के बालके जन्मानंतर मृत्यू पावतात. कुपोषण ही समस्या शहरी व ग्रामीण अशा दोन्ही भागात प्रकर्षाने दिसून येते.

अभ्यास प्रदेशाची एकूण लोकसंख्या 3,29,620 इतकी असून 2,32,960 इतकी आदिवाशी लोकसंख्या आहे. म्हणजेच येथिल लोकसंख्येत आदिवाशी लोकांचे प्रमाण 72.90 टक्के इतके आहे. या भागात जंगलाचे प्रमाण जास्त असून लागवडीयोग्य जमिनिचे क्षेत्र कमी असून याचा परिणाम या भागातील शेतीतील उत्पन्नावर होवून कमी लागवड क्षेत्रामुळे उत्पन्न कमी आहे. त्याचा परिणाम येथिल मानवी आरोग्यावर झालेला दिसून येतो. येथे जंगलाचे प्रमाण व लागवडी खालील क्षेत्राचा विचार करता व त्यातील सहसंबंध विचारात घेता हा 0.84 इतका येतो व तो 't' कसोटीवर 99.9 टक्के पातळीवर खरा ठरतो. म्हणजेच यात धनात्मक प्रमाण उच्चस्तरीय संबंध दिसून येतो.

हा भाग वनव्याप्त असून डोंगराळ व दुर्गम स्वरूपाचा आहे. या ठिकाणी वाहतुकीच्या अपुऱ्या सोयी यामुळे येथिल लोक विकासाच्या मुख्य प्रवाहापासून कोसोदूर आहेत. जिल्हयात आरोग्य, शिक्षण व

आर्थिक तसेच सामाजिक क्षेत्रात झालेली प्रगती यापासून ते मागासलेले आहेत. येथील लोक रोजगारापासून वंचित असून बेरोजगारी व कुपोषण हया एकमेकांना पूरक अशा समस्या असून यांचा परिणाम मानवी आरोग्यावर होऊन कुपोषणाची समस्या आहे.

कुपोषणाची स्थिती

सारणी 1.1 सन 2015 नुसार

अ.क्र.	तालुके	वर्षे 2011	2018 नुसार
1	भामरागड	50.04	28.50
2	एटापल्ली	42.36	22.27
3	कोरची	37.52	19.98
4	कुरखेडा	35.27	18.45
5	धानोरा	38.45	19.54
		40.72	**21.69**

स्त्रोत : ICDS गडचिरोली 2019

वरील सारणीत गडचिरोली जिल्हयातील कुपोषण दृष्टीा संवेदनशिल भागातील पाच प्रकल्पाअंतर्गत तालुक्यातील कुपोषणाचा विचार करण्यात आलेला आहे.

सन 2011 या वष्र्ाी या विभागात कुपोषीताचे प्रमाण 40.72 टक्के इतके होते. भामरागड तालुक्यात 50.04 टक्के कुपोषणाचे प्रमाण असून ते सर्वाधिक होते. म्हणजेच येथिल 50 टक्के पेक्षा जास्त बालके कमी अधिक प्रमाणात कुपोषित होती तर सर्वात की कुरखेडा तालुक्यात 35.27 टक्के कुपोषित होते.

2018 या वर्षात या विभागात कुपोषणाचे प्रमाण 21.69 टक्केवर आले म्हणजेच 2011 च्या तुलनेत या विभागातील कुपोषितांच्या प्रमाणात 19.03 टक्के ने घट झाली. यावेळी भामरागड तालुक्यात

कुपोषितांचे प्रमाण 28.50 टक्के इतके झाले. म्हणजेच 2011 च्या तुलनेत 21.54 ने झालेली दिसून येते. तर सर्वात कमी कुपोषितांचे प्रमाण कुरखेडा तालुक्यात 18.45 टक्के इतके होते. येथे सुध्दा जवळपास अध्यानेच कुपोषितांच्या प्रमाणात घट झालेली दिसून येते. याचे मुख्य कारण म्हणजे साक्षरतेच्या प्रमाणात झालेली वाढ व आरोग्य विषयक सुविधा तसेच सकस आहाराचा लोकांना झालेला पुरवठा होय. असे असले तरी कुपोषणाचे श्रेणी नुसार वितरण लक्षात घेतल्यास कुपोषणाचे गांभीर्य लक्षात येते.

सारणी - 2 कुपोषणाच्या श्रेणी नुसार वितरण

वर्षे	तालुके	भामरागड	एटापल्ली	कोरची	कुरखेडा	धानोरा
2011	श्रेणी 1	5.90	9.78	4.93	8.25	9.03
	श्रेणी 2	6.56	13.40	4.42	8.46	9.21
	श्रेणी 3	7.11	50.71	4.35	7.16	10.17
	श्रेणी 4	11.52	6.58	10.70	5.97	6.17
2018	श्रेणी 1	5.50	9.94	5.58	8.10	9.22
	श्रेणी 2	7.27	9.80	3.86	8.73	9.55
	श्रेणी 3	7.79	12.33	5.99	7.06	8.39
	श्रेणी 4	8.36	15.45	8.86	6.59	9.55

संदर्भ : ICDS गडचिरोली विभाग

कुपोषणाची श्रेणी 1 व श्रेणी 2 मधील कुपोषण हे सर्वसामान्य मानले जाते. श्रेणी 2 च्या बालकास सकस आहाराचा व आरोग्य विषयक सुविधा पुरविल्या गेल्यास ते श्रेणी 1 मध्ये येतात. तर श्रेणी 1 ही सर्वसामान्य श्रेणी मानली जाते. श्रेणी 1 मधील बालकात कुपोषणाचे लक्षण आढळतात. म्हणून त्यांना श्रेणी 1 मध्ये मानले जाते. तर श्रेणी 3 व श्रेणी 4 ही कुपोषणाची गंभीर बाब मानली जाते व या श्रेणीतील बालके वेळप्रसंगी दगावतात. म्हणजेच मृत्यूही होतो. अशा गंभीर कुपोषिताचे प्रमाण

भामरागड, एटापल्ली, कोरची, धानोरा व कुरखेडा तालुक्यात क्रमश : 8.36 टक्के, 15.45 टक्के, 8.86 टक्के, 9.55 टक्के व 6.59 टक्के इतके आहे. याचे मुख्य कारण म्हणजे हे सर्वच तालुके जिल्हयाच्या पूर्व सिमेला छत्तीसगड राज्याला लागून असून या भाग उंचवटयांचा व घनदाट जंगलानी व्याप्त आहे. येथे आदिवाशी लोकांचे प्रमाण अधिक असून ते मोठया प्रमाणात निरक्षर, अंधश्रध्देवर विश्वास ठेवून सामाजिक व वैयक्तीक जीवन जगतात. येथे पक्कीा रस्त्यांचा अभाव, विकासाचा अभाव, शासकीय योजना वेळेत लोकांपर्यंत न पोहचणे, स्त्रियांना समाजात दुय्यम स्थान, बालकांच्या आहाराकडे व आरोग्याकडे दुर्लक्ष, लागवडी खालील जमिनीचे अल्प प्रमाण, जलसिंचनाचा अभाव, घनदाट जंगले इत्यादी कारणामुळे येथे श्रेणी 3 व श्रेणी 4 चे कुपोषिताचे प्रमाण सर्वाधिक आहे. व ही बाब येथिल विकासाकरीता गंभीर बाब आहे.

निष्कर्ष :

जिल्हयाच्या विकासाचा विचार करता आधारी संरचनेच्या व सर्व कार्याच्या दृष्टीने दिशानुकूलता पश्चिम भागाकडे आहे. तर जिल्हयाचा पूर्व भाग डोंगराळ घनदाट जंगलानी व्याप्त असून दुर्गम स्वरूपाचा आहे. त्यामुळे येथे आधारी संरचनेचा विकास योग्य प्रमाणात न झाल्यामुळे हा प्रदेश विकासाच्या मुख्य प्रवाहापासून दुर आहे. त्यामुळे कुपोषण ही गंभीर समस्या निर्माण झालेली आहे.

या भागात विपुल प्रमाणात वन व खनिज संपत्ती मोठया प्रमाणात उपलब्ध आहे. परंतु लोकांच्या निरक्षरतेमुळे व योग्य व्यवस्थापनाच्या अभावामुळे तिचा उपयोग करून घेण्याची येथिल लोकांची क्षमता नाही. त्यामुळे लोकांची आर्थिक स्थिती बिकट स्वरूपाची आहे. म्हणजेच राहणीमान, खानपान याचा परिणाम आरोग्यावर होवून कुपोषण ही ज्वलंत समस्या येथे निर्माण झालेली आहे. याकरीता नियोजनबध्द पध्दतीने लोकांमध्ये जनजागृती करून विकासाच्या अनेक योजना राबविने आवश्यक आहे.

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आर्थिक विकासाचा पर्यावरणावर होणारा परिणाम

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सारांश :

प्राचीन काळी मानवाच्या अन्न, वस्त्र व निवारा एवढयाच मूलभूत गरजा होत्या. त्या पूर्ण करण्याकरीता आर्थिक क्रिया मर्यादित स्वरूपाच्या होत्या. परंतू जसजशी वैज्ञानिक प्रगती गेली तसतश्या मानवाच्या गरजा वाढून नैसर्गिक संसाधनाचा वापर मोठया प्रमाणात होऊ लागला. आर्थिक विकास साधन असतांना पर्यावरणावर मोठया प्रमाणात आघात करून पर्यावरण असंतूलन होवून संपूर्ण परिस्थितीकी व्यवस्था धोक्यात आलेली आहे. आर्थिक विकास साधनांचा पर्यावरणातील संसाधनाचा विवेकपूर्ण, संसाधनावर भार पडणार नाही तर भावी पिढी करीता संसाधनाचे जतन होईल या दृष्टीने वापर करून पर्यायी संसाधनाचा वापर आवश्यक आहे. भविष्यकाळ समृध्दी करीता पर्यावरणाचे संरक्षण करणे, जतन करणे व आर्थिक विकास साधणे शक्य आहे.

प्रस्तावना :-

मानव पृथ्वीवरील सजीव सृष्टीतील एक महत्वाचा घटक आहे. तो आपल्या बुध्दी सामर्थ्यावर आपल्या मूलभूत गरजा पूर्ण करीत आहे. मानवाने आपल्या कुवतीप्रमाणे निसर्गातील नैसर्गिक संसाधनाचा वापर करीत आहे. परंतू वाढत्या लोकसंख्येच्या गरजा लक्षात घेवून, नैसर्गिक संसाधनाचा अधिकाधिक उपयोग करून मोठया प्रमाणावर विकास साधला आहे. याचा परिणाम संसाधनावर होवून काही संसाधने संपूष्टात येण्याच्या मार्गावर आहेत. याचसोबत पर्यावरणावर परिणाम होवून संपूर्ण परिसंस्था धोक्यात आलेली आहे. मानवाने या नैसर्गिक संसाधनाचे अंदाधूंद पध्दतीने शोषण थांबविले नाही तर भविष्यात फार मोठे पर्यावरणीय धोके आपल्या समोर निर्माण होऊन संपूर्ण पृथ्वीवरील पर्यावरणाचे संतूलन बिघडेल. व यांचा परिणाम मानवी स्वास्थावर होईल.

जगात विकसीत व विकसनशील देशांत आर्थिक विकासाकरीता स्पर्धा लागलेली आहे सर्वच देश पर्यावरणातील संसाधनाचा मोठया प्रमाणावर वापर करून विकास साधत आहेत. याचा परिणाम उदयोगधंदयातून वाढ होऊन यातून बऱ्याच पर्यावरणीय समस्या निर्माण झालेल्या आहेत. भारताचा संदर्भ घेतल्यास वाढत्या तापमानामुळे भारतीय मान्सुनच्या नियमितेत बदल झालेला आहे. शेतीच्या बाबतीत शेती पिकांची उत्पादकता कमी झालेली आहे, तसेच पिकांवर येणाऱ्या रोगांच्या प्रमाणात वाढ झालेली आहे. एकंदरीत आज जस-जशी मानवी सभ्यता विकसीत होत गेली आहे. तेवढयाच वेगाने पर्यावरणाचा ऱ्हास झपाटयाने होत आहे. वर्तमान स्थितीत मानव चंद्र व मंगळावरून जावून आलेला आहे. या वैज्ञानिक प्रगतीचा परिणाम पर्यावरणाचा ऱ्हासाचा होण्याकरीता झालेला आहे. त्यामूळे मानव पर्यावरण हा चिंतेचा विषय ठरलेला आहे. आर्थिक विकास तसेच औद्योगिक विकास पर्यावरणाला हानी पोहचवत आहे. म्हणून पर्यावरणाची गुणवत्ता टिकवायची असेल तर आर्थिक विकास चिरस्थायी स्वरूपाचा असावा. भविष्यकाळात पर्यावरणीय समस्या कमी होईल याकडे लक्ष देणे गरजेचे आहे.

बीज संज्ञा :-

संसाधने, मानव-निसर्गसंबंध, पर्यावरण, आर्थिक विकास, परिस्थितीकी असंतूलन.

संधोधनाचा उद्देश :-

संशोधनाचा मुख्य उद्देश नैसर्गिक संसाधनाचे संरक्षण करून आर्थिक विकास साधने हा आहे. नैसर्गिक संसाधने विकसित करण्याकरिता मानवाला उपदेश करणे, नैसर्गिक संसाधनाचा विवेकपूर्वक उपयोग करून आर्थिक विकास साधणे, हे या अभ्यासाचे उद्देश आहे.

परिकल्पना :-

आर्थिक विकास साधत असतांना पर्यावरणात मोठया प्रमाणात बदल घडवून आणलेत. तसेच नैसर्गिक संसाधनाचा अंदाधूंद पध्दतीने उत्खनन करून संसाधने संपूष्टात आणलेली आहेत. अनेक संशोधने

अयोग्य पध्दतीने वापरली गेल्याने संपण्याच्या मार्गात आहेत. त्याचा विवेकपूर्ण वापर करून संरक्षण करणे गरजेचे आहे. ही संकल्पना समोर ठेवून हा अभ्यास करण्यात आलेला आहे.

संशोधन पध्दती :-

प्रस्तूत शोध निबंधात द्वितीयक आकडेवारचा आधार घेवून अभ्यास केलेला आहे. याशिवाय प्रकाशित व अप्रकाशित लेख, पुस्तके, वर्तमानपत्रे, साप्ताहिक, मासिक व इंटरनेटचा उपयोग केलेला आहे. योग्य त्या ठिकाणी आकडेवारीचा शास्त्रीय पध्दतीने सहसंबंध दर्शविण्यात आलेला आहे.

अभ्यास क्षेत्र :-

आर्थिक विकास व पर्यावरण याचा जवळचा संबंध आहे. आर्थिक विकासामूळे पर्यावरणावर होणारा परिणाम हा संपूर्ण पृथ्वीतल आहे. त्यामूळे प्रस्तूत शोध निबंधात संपूर्ण पृथ्वीला अभ्यासाचे क्षेत्र म्हणून अभ्यास करण्यात येत आहे. आर्थिक विकास ही संकल्पना विश्वव्यापी स्वरूपाची आहे. त्यामुळे आर्थिक विकास व पर्यावरण ऱ्हास यांचा अभ्यास करण्याकरीता संपूर्ण जग अभ्यास क्षेत्र ठरते.

आर्थिक विकासामुळे निर्माण होणाऱ्या समस्या :

वनविनाशाचा पर्यावरणावर होणारा प्रभाव :-

अतिप्राचीन काळी मानव मागास अवस्थेत होता. त्यामूळे तांत्रिक प्रगती फारशी नव्हती. त्यावेळी जगाचा 60 टक्के क्षेत्र जंगलानी व्यापलेला होता. मात्र वाढत्या लोकसंख्येच्या गरजा वाढत जाऊन व आर्थिक विकास साधतांना विविध कामाकरिता मोठया प्रमाणात वृक्षतोड करण्यात आली. व आज केवळ 22 टक्के क्षेत्रावरच वने शिल्लक राहिली. वननिती नुसार एकूण भूभागाच्या 33 टक्के क्षेत्र वनव्याप्त असावयास पाहिजेत. म्हणजे 11 टक्के वनांचे प्रमाण कमी झालेले आहे. आर्थिक विकास साधतांना वेगवेगळया कामाकरिता मोठया प्रमाणात वृक्षतोड केलेली आहे. याचा परिणाम पर्यावरणावर होवून पर्यावरण प्रदूषण घडून येत आहे त्यामूळे वन्य प्राणी, च्या जाती जमाती नष्ट होण्याचा मार्गावर आहेत. वनविनाशामूळे ग्रीन हाऊस वर प्रभाव टाकणाऱ्या वायुचे प्रमाणा वाढत आहे त्यामूळे पृथ्वीचे तापमानात

वाढ होत आहे. याशिवाय हिमख्खलन, अतिवृष्टी, पूर, वन्यप्राण्याच्या संख्येत घट, वाळवंटीकरण, मृदाधूप, व पर्यावरण असमतोल या सारख्या घटनांमध्ये सातत्याने वाढ होत आहे.

औद्योगिकरणाचा पर्यावरणावर प्रभाव :

औद्योगिकरणमुळे देशातील जवळजवळ 60 शहरा पेक्षा जास्त भागात हवा विषारी बनलेली आहे. उत्पादनाच्या वाढत्या स्पर्धेमूळे मोठया प्रमाणात कारखाण्यातील अवशिष्ट पदार्थ यात दुषितपाणी, विषारी हवा, रासायनिक अवशेष, धुळ, राख, धूर इ. वर कोणतीही प्रक्रिया न करता उत्सर्जन करीत आहेत. त्यामूळे हवा, पाणी व माती प्रदुषित होवून पर्यावरणाचा ऱ्हास होत आहे. औद्योगिकरणामुळे वन विनाश, पाणी संकट व नागरीकरण इ. समस्या निर्माण झालेल्या आहेत.

नविन तंत्रज्ञानाचा पर्यावरणावर प्रभाव :

नवीन तंत्रज्ञानाचा मानवी स्वास्थावर तसेच पर्यावरणावर बराच प्रभाव पडतो. नवीन तंत्रज्ञानाच्या विकासामूळे प्लॉस्टिक, कृत्रिम रेशीम कृत्रिम रबर, रासायनिक खत, कृत्रिम गवत यांचा दैनंदिन जिवनात वापर केला जातो. नविन तंत्रज्ञानाचा अचूकतेकरीता रॉकेट, कृत्रीम उपकरण यांचा वापर करून बिनचूक अध्यावत माहिती मिळत आहे.असे असले तरी त्यातून उत्सर्जित वायूमूळे पर्यावरणाला हानी पोहचते. व हि समस्या दिर्घकालावधीनंतर लक्षात येते.

नियोजन शून्य विकासाचा पर्यावरणावर प्रभाव :-

नियोजनशून्य विकासाचा परिणाम पर्यावरणाच्या स्थितीला धोका निर्माण झालेला आहे. विकसीत देश आपल्या विकासाच्या दिशेला निश्चित करीत असतांना अनेक प्रकारे सामाजिक, आर्थिक स्थितीचे अध्ययन करीत असतात. परंतू विकसनशील देश औद्योगिकरण प्रमूख माणून भविष्यकाळात निर्माण होणाऱ्या समस्या याकडे दुर्लक्ष करतात. देशातील शहराचा अनियमित विकास, नागरीकरण, गावांकडून शहराकडे लोकांचे होणारे स्थलांतरण यामूळे पर्यावरणावर दबाब पडतो यामूळे शहरी

भागातील लोकांचे सामाजिक, आर्थिक, व शारीरिक स्वास्थ बिघडून शहरी लोकांचे आरोग्य धोक्यात येवून नागरी पर्यावरणाला बाधा पोहचत आहे.

उर्जा वापराचा पर्यावरणावर प्रमाण :

विश्वबँकेच्या अभ्यासानुसार भारतातील उर्जा वापराचा दर 2010 च्या तूलनेत 2020 पर्यंत तीन पटीने होईल असा अंदाज आहे. आज सर्वत्र उर्जा संसाधनाला मोठया प्रमाणात मागणी आहे. मागणी व पूरवठा यात अंतर वाढल्यामूळे कच्चया मालाच्या किंमतीत भरमसाठ वाढ होत आहे. त्यामूळे वाढती महागाई, उत्सर्जित होणारा धूर, यामूळे ग्रीन हाऊस वायूचे प्रमाण आपल्या वातावरणात वाढून पृथ्वीचे तापमान वाढत आहे. मानवाला स्वच्छ हवा मिळत नसल्यामूळे त्याचा परिणाम मानवी स्वास्थावर होवून शूगर, रक्तदाब, कॅन्सर या सारख्या आजारात वाढ होत आहे.

निरंतर विकास एक उपाय :-

संसाधनाचा अतिरेक वापर करून होणारी हानी व त्यांचा होणारा प्रभाव यामूळे भविष्यातील भावीपिढी समोर मोठे संकट उभे राहिले आहे. आर्थिक विकासाची गती दिवसेंदिवस वाढून यातून अनेक संभाव्य धोके समोर येत आहेत. याकरिता निरंतर विकासाची प्रक्रिया होणे गरजेचे आहे. देशांच्या आर्थिक विकासासोबत भविष्यातील पिढीची गरज लक्षात घेवून पर्यावरणाला बाधा पोहचणार नाही याकडे लक्ष देणे गरजेचे आहे. सतत विकासाची प्रक्रिया ही कोणतीही हानी न पोहचता विकास साधणे होय. यातून वर्तमान स्थितीतीत भावी पिढीची गरज पूर्ण करणे अपेक्षीत आहे.

सतत विकास देशाच्या अर्थव्यवस्थेचा खालील प्रमाणे प्रभावीपणे मजबूत करू शकतो.

1) नैसर्गिक संसाधनाचे संरक्षण करीत असतो.

2) औद्योगिक प्रदुषण कमी होत असतो.

3) कृषीमध्ये प्रदुषण कमी होवून आर्थिक विकास व पर्यावरण यामध्ये संतुलन साधले जाते.

उपाययोजना :-

1) नैसर्गिक संसाधनाचे संरक्षण/विकास :

आर्थिक विकासाची गती वाढविण्याकरीता अनेक पर्यायी संसाधनाचा वापर करणे म्हणजे नैसर्गिक संसाधनाचे संरक्षण करणे होय. जसे इंधनाकरिता पेट्रोल, डिझेल या ऐवजी बायोडिझल करीता जेट्रोफाचा वापर करून पर्यायी इंधनाचा वापर करणे होय. जैविक शेती व कृषी तंत्रज्ञान आपणास लाभदायक करू शकते. उर्जा संसाधनामध्ये पवनउर्जा स्वस्त असून ही सर्वत्र सहज व सूलभ उपलब्ध होते यामूळे पर्यावरणाचे संवर्धन करता येईल. शेतीत किटकनाशकाचा व रासायनिक खतांचा मोठया प्रमाणावर वापर सुरू आहे. त्यामूळे पर्यावरणाची ऱ्हास अधिक वेगाने होत आहे. शेतकऱ्यांनी कमीत कमी 5 कडुलिंबाचे झाडे लावणे आवश्यक आहे. त्यापासून 100 प्रकारच्या किटकांचे नियंत्रण होवून पर्यावरण सुधारण्यास मदत होईल. तसेच निरंतर आर्थिक विकासाकरीता शोधकार्याची आवश्यकता आहे.

2) प्रदुषण ही सामुहिक जबाबदारी :-

प्रदुषणाकरीता केवळ सरकार जबाबदार आहे. प्रदुषण टाळणे ही सरकारची जबाबदारी आहे. असा आपला भ्रम आहे. लोकांनी सुध्दा प्रदुषण कमी करण्यासाठी पूढे येणे गरजेचे आहे. याकरीता सार्वजनिक पर्यटन स्थळांना चालना देणे गरजेचे आहे. कारखाण्यातील विषारी टाकावू पदार्थ सरळ नदीमध्ये/नाल्यामध्ये/जलाशयामध्ये न सोडता त्यावर प्रक्रिया करून सोडणे आवश्यक आहे. याकरिता कारखाण्याच्या परिसरात जलशुध्दीकरण योजना राबविणे आवश्यक आहे.

प्राचीन काळी ऋषीमूनीकडून पर्यावरणाचे संरक्षण केले जात असे. तूळशी व पिंपळ हे वृक्ष पर्यावरणाचे संतूलन राखण्याचे कार्य करीत असतात. अशा प्रकारच्या झाडांचे संवर्धन होणे काळाची गरज आहे.

3) जनजागृती :-

विविध प्रसारमाध्यमाद्वारे पर्यावरण प्रदुषण, जागतिक आर्थिक मंदी संसाधनाचे होणारे शोषण व त्याचा वापर या विषयी जनजागृती होणे गरजेचे आहे. त्यामूळे आर्थिक विकास घडून पर्यावरणाचे रक्षण होईल.

4) संसाधनाच्या वापरात बदल करणे/पर्यायी व्यवस्थेचा वापर करणे **:-**

पर्यावरण वाचविण्याकरिता तसेच संरक्षणाकरिता व पर्यावरण निरोगी राहण्यासाठी सामुहिक वाहनातून प्रवास केल्याने, एकच वाहन वापरले जाईल. त्यामूळे इंधनात बचत होऊन पर्यावरण प्रदुषणाचे प्रमाणही कमी होईल. बँकामध्ये गर्दी करण्याऐवजी बैंकिंग, इंटरनेट, ए.टी.एम. व अन्य नवनवीन प्रणालीचा वापर करणे, म्हणजेच पर्यायी व्यवस्थेचा वापर करून पर्यावरणाला कमीत कमी हानी कशी पोहचेल व पर्यावरणाचे संवर्धन होईल.

निष्कर्ष :

संसाधनाचा वापर करून आर्थिक विकास साधनांना पर्यावरणाचा ऱ्हास कमी कमी होईल याकडे लक्ष देणे गरजेचे आहे. आर्थिक विकास साधनांना नैसर्गिक संसाधनाचा विवेकपूर्ण बुध्दीने वापर करून संसाधनावर भार पडणार नाही. याची काळजी घेणे महत्वाचे आहे. याकरीता सरकारने पर्यावरणाचे संरक्षण करण्याच्या दृष्टीने कठोर कायदा करणे आवश्यक आहे. समृध्द भविष्यकाळासाठी पर्यावरणाचे संरक्षण करणे ही आपली सर्वांची जबाबदारी आहे. तेव्हाच संपूर्ण जग व आपण सुरक्षित राहू शकतो. आर्थिक विकास साधताना पर्यावरणालाही तेवढेच महत्व देणे गरजेचे आहे.याकरिता पर्यावरण संतूलनाकरीता तंत्रज्ञानाची जोड देणे गरजेचे आहे.

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SUSTAINABLE DEVELOPMENT THROUGH THE SPORT

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Abstract:

Sport in its simplest form inspires balanced participation and has the capacity to promote and achieve gender equality within societies. Sport is also ansignificant enabler of sustainable development. We know the growing contribution of sport to the realization of development and peace in its promotion of tolerance and respect and the contributions it makes to the empowerment of women and of young people, individuals and communities as well as to health,education and social inclusion objectives.This paper introduced goals to promote sustainable development.

Keywords:Sports, sustainable development,

Introduction:

Regular contribution in sport and physical activities provides various social and health benefits. Not only does it have a direct impact on physical fitness, but it also instils healthy lifestyle choices among children and young people, helping them remain active and combat non-communicable diseases. A number of studies conducted by the World Health Organization have also highlighted that physical exercise can stimulate positive mental health and cognitive development. Exercise has been linked to improvements in self-esteem and self-confidence, as well as positive effects for people struggling with depression and anxiety.

Sport contributes to well-being irrespective of age, gender or ethnicity. It is enjoyed by all, and its reach is unrivalled.Sport has consistently been proven to be a cost-effective and flexible tool for promoting peace and development objectives.

1. SPORT'S CONTRIBUTION TO HEALTH

Evidence-based research demonstrates that sport and physical activity can positively contribute to numerous healthissues:

- Sport produces beneficial effects on mental health, enhances self-esteem, helps to manage stress andanxiety, and alleviates depression.
- Sport offers multiple avenues to cope up with health challenges and promotes good health for girls and women.It can provide an important venue to share critical health information and education and a safe and neutralspace where women can discuss sexual and reproductive health issues and strategies to address them.
- Sport can be a valuable informational and educational platform for health and development messagestargeted to youth and adults alike.

- Sport can be an effective way to reach out to people, especially youth, and to encourage healthy lifestylebehaviours that will help to protect them against HIV and other diseases.
- Sport can help reduce health-care costs and increase productivity, key issues in emerging economies.

2. SPORT'S CONTRIBUTION TO EDUCATION

Research demonstrates that:

- Physical education, sport and learning activities in a playful format motivate children to enroll in school andpromote school attendance as they are enjoyable and frequently not accessible outside the schoolenvironment.
- Sport and play activities can help improve learning performance and academic achievement.
- Sport fosters mental health and development in young people.
- Sport and physical education programmes can promote a broad spectrum of life skills and values that build onindividual capacity such as team-building, communication, decision-making, problem-solving, sense ofcommunity, self-esteem, personal responsibility, empathy, moral development, resilience, and improvedinclination for educational achievement.
- Sport is aauthoritative vehicle to teach children and youth positive attitudes, values and moral strength.

3. SPORT FOR GENDER EQUALITY AND GIRLS AND WOMEN EMPOWERMENT

Sport can help to enhance girls' and women's health and well-being, foster self-esteem and empowerment, facilitate social inclusion and integration, challenge gender norms, and provide opportunities for leadership and achievement

- improve physical and mental health;
- create opportunities for social interaction and friendship;
- increase girls' and women's self-confidence, and deliver them with a sense of control over their bodies and their lives, encouraging them to delay sexual activity and reducing levels of teen pregnancy;
- offer incentives and support for girls to enroll in school, enhance school attendance and academic performance;
- help girls and women obtain transferable life-skills leading to increased employability;
- empower girls and women with disabilities to attain health information, skills, social networks, and leadership experience; and
- help develop skills in management, negotiation and decision-making that authorize women and girls to become leaders in the workplace, in the home and in all areas of community life;

4. SPORT'S CONTRIBUTION TO HUMAN SETTLEMENTS

It is known that cities which invest in public sport and play areas, and related physical activities and sportprogrammes, can:

- save money on health care and transport services;
- protect young people from unhealthy and dangerous behaviours such as alcohol and illicit substances abuse, unprotected sexual activity, smoking, delinquency and violence;
- reduce crimes;

- reduce violence against women and girls;
- have more productive citizens and workers;
- have less pollution and better admittance to green spaces;
- expand social networks; and
- enhance neighborhood renewal, social cohesion and community identity.

5. SPORT AS A TOOL TO PREVENT CONFLICT AND BUILD PEACE

Sport is being successfully used to endorsesocial inclusion, provide respite in periods of conflict, build trust and establish bridges between groups in conflict, contribute to peace in post-conflict situations, and promote a culture of peace.

Of course, sport alone cannot avert conflict or build peace. However, it can contribute to building relationships across social, economic and cultural divides and creating a sense of shared identity and fellowship among groups that might otherwise be persuaded to view each other with distrust and hostility.

- Sport can serve as a tool to advance demobilisation and disarmament efforts and to support the often tough reintegration of ex-combatants, particularly former child combatants, into their communities.
- Regular sport activities can also help to address war-related trauma and promote healing by providing safe spaces for actions that enable victims of war to regain a sense of security and normalcy.
- Through universal reach and admiration, sport offers an important means of reaching out to and engaging socially excluded groups.
- The global appeal of best sport makes it an ideal and tremendouslypowerful mass communication platform that can be used to promote a culture of peace. Celebrity athletes, in particular, can be extremely influential as role.

6. GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT - THE SPORT SECTOR AS AN IMPORTANT PLAYER IN COMMUNITIES

The sport sector is ainfluential and active member of civil society and can, as such, be a meaningful partner to reach out to maximise the achievements of the SDGs.

- Across five continents, sport takes together millions of people from all ages, and youth in particular, to practice sport and physical activities every day.
- Sport collects millions of people through organisations, clubs, associations, business companies and events which contribute to the economic and social growth of communities around the world.
- Sport uses its convening power to rally communities, involve youth, reach out to the most difficult and vulnerable groups, and create communal interests.

Conclusion:

The positive power and passion of sport will continue to take people together, promoting a more inclusive and peaceful world through its universal values and principles. Historically, sport has played anvital role in all societies and acted as a strong communication platform that can be used to promote a culture of peace. Sport has reliably been proven to be a cost-effective and flexible tool for endorsing peace and development objectives.

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INDEX

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गोंदिया जिल्ह्यातील रेशीम उत्पादक शेतकरांच्या सामाजिक व आर्थिक स्थितीचे अध्ययन

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साराशं

प्रस्तुत संशोधन हे गोंदियाजिल्ह्यातीलरेशीम उत्पादक शेतकरांच्याप्रश्नाशी निगडीत आहे. भारत हा कृषीप्रधान देश आहे. जास्तीत जास्त लोकांचे जीवन शेती व्यवसायाशी निगडीत आहे. भारतीय अर्थव्यवस्थेचा कणा हा शेती उत्पादनाशी संबंधीत आहे. त्यामुळे हवामानानुसार शेतीत अन्नधान्याचे उत्पादन, उत्पादीत मालाचे वितरण शेतकऱ्यांना मिळणारे उत्पादन मुल्य याचा अभ्यास करणे आवश्यक आहे. शेतकऱ्यांच्या परिश्रमावरच विशेषत: शेतमालाचे उत्पादन अवलंबून असल्यामुळें शेतकऱ्यांचे जीवनमान त्यांचे सामाजिक प्रश्न, त्यांची आर्थिक समस्या तसेच शेतमालाचे विपणन करतांना येणाऱ्या अडचणी या व्यतिरिक्त शेतकऱ्यासमोर अनेक प्रश्न निर्माण होत असतात. त्या समस्यांचे सहानुभूतीपूर्वक विचार करुन शासनाने उचीत सहकार्य देण्याची भुमिका पार पाडली तर गोंदियाजिल्ह्यातीलरेशीम उत्पादकांना त्याचा निश्चितच फायदा होऊ शकतो.

प्रस्तावना

भारत हा कृषीप्रधान देश आहे. वर्तमानकाळात शेती व्यवसायाचे महत्व वाढत आहे. भारतीय शेती पूर्णत्वाने निसर्गावर अवलंबून आहे. एका विद्वान व्यक्तीने भारतीय शेतीच्या संदर्भात पुढील विधान केले आहे. "शेती व्यवसाय हा जूगार असून शेतकरी व निसर्ग हे यातील प्रतिस्पर्धी आहेत"शेती हा भारताच्या ग्रामीण भागातील लोकांचा मुख्य व्यवसाय आहे. ग्रामीण भागात शेतीशिवाय उपजीवीकेचे दुसरे साधन नसल्यामूळे बहुसंख्य लोक उपजीवीका करण्यासाठी व रोजगार मिळविण्यासाठी शेतीवर अवलंबून आहेत. त्यामूळे शेतीवर लोकसंख्येचा वाढता दाब निर्माण झाला आहे. त्यातुनच शेतीचे सतत आंतरविभाजन व अपखंडन होवून लहान—लहान आकाराचे तुकडे पडले आहे. म्हणून शेतीतून अत्यंत कमी उत्पन्न मिळू लागले व शेती करणे परवडनासे झाले आहे. नेत्यांनी महाराष्ट्रासह देशातील शेतकऱ्याच्या मालाचा उत्पादन खर्च व शासनाने ठरवून दिलेल्या शासकीय खर्चातील प्रचंड तफावतीचा अभ्यास केला नाही. त्यामूळे शेतमालाला बाजारात किफायतशीर दर मिळत नाही. शासनाच्या चुकीच्या धोरणामूळे राज्यात शेतकरी होरपडले जात आहेत.

संशोधनाचे उद्देश

१. गोंदियाजिल्ह्यातीलरेशीम उत्पादक शेतकरांचीसामाजिक स्थितीचा अभ्यास करणे.
२. गोंदियाजिल्ह्यातीलरेशीम उत्पादक शेतकरांच्या आर्थीक स्थितीचा अभ्यास करणे.

गोंदियाजिल्ह्यातीलशेतकरांचीसामाजीक स्थिती दर्शविणारी माहिती

गोंदियाजिल्ह्यातील ३६० शेतकरांचीसामाजीक स्थितीचा अभ्यास करण्यात आला. त्यामध्ये शेतकरीसामाजीक स्थिती बद्दल किती जागरूक आहे यांचा अंदाज घेण्यात आला. ते पुढील सारणी वरून स्पष्ट होईल.

सारणी क्रं. १ सामाजीक स्थिती दर्शविणारी सारणी

अ.क्रं.	विवरण	उत्तरदाते	होय	प्र.प्र.	नाही	प्र.प्र.
१	धार्मिक, राष्ट्रीय सण साजरे केले जातात काय?	३६०	३६०	१००	—	—
२	रक्तदान केलेले आहेत का?	३६०	४०	११	३२०	८९
३	गुन्हेगारी मदत खाली शिक्षा	३६०	—	—	३६०	१००
४	भुकंप पुरग्रस्तांना मदत	३६०	७२	२०	२८८	८०
५	निवडणूकीत भाग घेणे	३६०	४२	११.६७	३१८	८८.३३
६	खेळात सहभाग आहे काय?	३६०	१६८	४६.६०	१९२	५३.३३
७	वृक्ष रोपण	३६०	१५६	४३.३३	२०४	५६.६७
८	मुलांना शैक्षणिक सुविधा	३६०	३६०	१००	—	—
९	संघटीत शेतकरी संघटना	३६०	१२	३.३३	३४८	९६.६७
१०	राष्ट्रीय एकात्मता	३६०	३६०	१००	—	—

उपरोक्त सारणी क्रं. १नुसार गोंदियाजिल्ह्यातील शेतकरांच्यासामाजीक स्थितीची माहीती घेण्यात आली असून राष्ट्रीय एकात्मता, राष्ट्रीय व धार्मीक सण तसेच मुलांना शैक्षणिक सुविधा या संदर्भात शेतकरांनी१०० टक्के सकारात्मक उत्तरे दिलेले आहे. तर गुन्हेगारी प्रवृतीत एकही शेतकरीसमाविष्ट नाही ही आशादायक बाब निर्देशनास आलेली आहे. वृक्षारोपन, भूकंप व पुरग्रस्तांना मदत याबाबतीत शेतकरांच्यासहभाग अल्प होता. ४६.६० टक्के शेतकरांनी खेळात सहभाग नोंदविला. तर निवडणूकीत भाग घेणारे शेतकरांचेप्रमाणे ११.६७ टक्के होते. एकंदरीत शेतकरांचीसामाजीक परिस्थीत समाधान कारक असली तरी सामाजीक जागृतीची त्यांना आवश्यकता असल्याचे निर्देशनास आलेले आहे.

सारणी क्रं. २ गोंदिया जिल्ह्यातीलरेशीम उत्पादीत शेतकऱ्यांचे वार्षीक उत्पन्न दर्शक सारणी

अ. क्र	तालूके	शेतकरी संख्या	१५००० पर्यंत		१५००१ ते २५००० पर्यंत		२५००१ पेक्षा जास्त	
			सं.	प्र.प्र.	सं.	प्र.प्र.	सं.	प्र.प्र.
१	तिरोडा	६०	१०	१६.६७	३०	५०	२०	३३.३३
२	आमगाव	६०	५	८.३३	४०	६६.६७	१५	२५
३	सालेकसा	६०	६	१०	४२	७०	१२	२०
४	सडक अर्जूनी	६०	८	१३.३३	४०	६६.६७	१२	२०

५	अर्जूनी मोरगाव	६०	६	१०	४०	६६.६७	१४	२३.३३
६	देवरी	६०	१५	२५	३५	५८.३३	१०	१६.६७
बेरीज		३६०	५०	१४	२२७	६३	८३	२३

उपरोक्त सारणी क्र. ०२गोंदियाजिल्ह्यातील रेशीम उत्पादन करणाऱ्या शेतकऱ्यांच्या आर्थीक वार्षीक उत्पन्नाचा आढावा घेण्यात आला. विविध मार्गानि शेतकऱ्यांचे वार्षीक उत्पन्न किती आहे याची माहीती घेतली असता उपरोक्त सारणी क्रं. २ वरून ३०० शेतकऱ्यापैकी १५००० रूपये पर्यंत वार्षीक उत्पन्न असणाऱ्या शेतकऱ्यांची संख्या ३५ असुन त्यांचे प्रमाण ११.६७ टक्के आहे. १५००१ ते २५००० पर्यंत वार्षीक उत्पन्न असणारे शेतकरी १९२ असुन त्यांचे प्रमाण ६४ टक्के आहे तर २५००१ पेक्षा जास्त वार्षीक उत्पन्न असणाऱ्या शेतकऱ्यांची संख्या ७३ असुन त्यांचे प्रमाण २४.३३ आहे.

निष्कर्ष

गोंदियाजिल्ह्यातील रेशीम उत्पादन करणारे शेतकरीराष्ट्रीय एकात्मता व लहान मुलांना शैक्षणिक सुविधा या बाबतीत शेतकरीजागृत झालेले आहेत. तर धार्मीक व राष्ट्रीय सन सुध्दा ते प्रामुख्याने साजरे करतात. वृक्षारोपन तसेच भुकूंप व पुरग्रस्तांना मदत करणारे शेतकरांचे प्रमाण अत्यल्प असल्यामुळे त्यांनी राष्ट्रीय योजनेत सहभागी व्हावे यासाठी विशेष प्रयत्न करण्याचे आवश्यकता आहे. संघटनेच्या बाबतीत ग्रामीण भागातील शेतकरीअजूनही एकत्रीत येवुन लढा देत नसल्याचे दिसुन येते. त्यामुळे त्यांना संघटीत होणे आवश्यक आहे.

रेशीम उत्पादन करणारे शेतकऱ्यांचे वार्षिक आर्थीक उत्पन्न फारच कमी आहे. १५००१ ते २५००१ रूपये आर्थीक उत्पन्न असलेल्या शेतकऱ्यांचे प्रमाण सर्वाधीक आहे. वर्तमान अवस्थेत शेतकऱ्यांच्या आवश्यक गरजा लक्षात घेता हे उत्पन्न समाधानकारक नाही. त्यामुळे शेतकऱ्यांना अधिक आर्थीक उत्पन्न प्राप्त करण्यासाठी विशेष प्रयत्न करण्याची आवश्यकता आहे.

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७. जिल्हा पशुसंवर्धन अधिकारी, अमरावती,यवतमाळ,अकोला,बुलडाणा व वाशिम
८. जिल्हा निरीक्षक भूमी अभिलेख, अमरावती,यवतमाळ,अकोला,बुलडाणा व वाशिम
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१०.जिल्हा ऋतु व पिके अहवाल—वार्षिक अहवाल २००४ते २०१४
११.पशुगणना—२००१ आणि २०११
१२.प्रत्यक्ष शेतक—याची मुलाखत, निरीक्षण व चर्चा

A REVIEW ON SIGNIFICANCE OF DIATOMS IN LAKE ECOLOGICAL STUDIES

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Abstract:

Lake ecological studies can be achieved using various proxies among which using diatom are very significant. Diatoms are very much in use as indicators of environmental conditions in lakes because of their sensitivity to limnological variables as nutrient concentration, pH, conductivity and their extraordinary preservation in fossil deposits, diatoms are powerful indicators of environmental changes in aquatic ecosystem. The change in the abundance of any particular species from one season to another can be used to interpret the affinity of species to that particular water quality condition. Similarly, the sudden disappearance or appearance of any diatom species or variation in their abundance during the past can also be satisfactorily used to interpret the past ecological condition of the lake.

Introduction:

Diatoms in particular are useful ecological indicators because they are found in abundance in most lotic ecosystems. The great number of diatom species provides multiple, sensitive indicators of environmental change and the specific conditions of their habitat. Diatom species are differentially adapted to a wide range of ecological conditions. Because diatoms are sensitive to water chemistry and lake depth (Haworth, 1972), diatom fossils are an important source of information about environmental change in lakes. Paleoecologists have reconstructed past pH and salt concentration using the environmental preferences of diatom taxa (Hustedt, 1937) used a surface-sample to reconstruct the post aquatic environment showed that surface sample diatom assemblages are good indicators of

modern lake environment. This study is to reconstruct the regional climatic changes of Holocene times. Paleolemnological techniques, using diatom assemblages as biomonitors of aquatic change, provide an effective approach to supply missing historical data (Battarbee *et al.,* 1990: Dixit *et al.,* 1992a, Charles *et al.,* 1994: Dixit and smol 1994). Sedimentary diatom assemblages have been used successfully to evaluate water quality trends resulting from Lake Acidification and concentrations of dissolved organic carbon (DOC), Lake Eutrophication, salinity associated with climatic changes (Anderson *et al.,* 1993, Christic and Smol 1993: Hall and Smol 1993).

Diatoms (Class-Bacillariophyceae) have been widely used as indicators of environmental conditions in lakes (Hall and Smol, 1999). Diatoms are microscopic, single celled algae that build complex, Beautiful cell walls of silica. These tiny algae range between 2μm to 500μm in length or diameter. Because of their sensitivity to limnological variables as nutrient concentration, pH, conductivity and their extraordinary preservation in fossil deposits, diatoms are powerful indicators of environmental changes in aquatic ecosystem (John, 2008). The diatoms are abundant in the lakes, rivers and other fresh water bodies. Several studies have indicated that the distribution of such sensitive diatoms taxa in the surface sediments can be correlated to know the trophic status of the water bodies (Fritz *et al.*, 1993; Hall and Smol, 1999). The Diatoms can also be used to develop a long term series data on the trophic status of the water bodies and also on its recovery. The pre disturbance water chemistry can also be analyzed from the fossil diatoms of sediment core as the target for the rehabilitation of the lake (Hall and Smol, 1999). The past changes in the pH, salinity, nutrient status, climatic changes and lake level fluctuation can be inferred by studying the sediment geochemistry and diatoms in the core extracted from the reservoirs with the radioactive isotope dating such as ^{137}Cs and ^{210}Pb (Kumar *et al.,* 2007). Paleolimnology uses the physical, chemical and biological information archived in lake sediments to reconstruct and interpret past environmental conditions over many time scales (Smol, 2008).

Methodology:

Diatoms for ecological studies can be retrieved from water samples as well as sediment samples. The methodology involves a) field work for sample collection (both water and surface samples), b) Processing/Sample preparation for extraction of diatoms, making diatom slides and study the diatom slides under biological microscope followed by microphotography, identification and counting. A systematic sampling of water sample from the lakes has to be carried out during two seasons pre-monsoon and post-monsoon.

The surface sediment or grab sediments from the lake surface bottom has to be collected from 3-6 different parts of the lake along its maximum length and from the same position from where the water samples were collected. In case if paleoecological condition of the lake is to be studied a vertical core sediment sample has to collected with the help of pvc pipe (when lake is almost dried during summer season) or with the help of gravity corer if lake is holding enough water throughout the year. The core sediment samples collected thus has to be vertically cut and divided into two equal halves and photographed. These halves would then have to be further sub sectioned and cut at an interval of 1cm. These sub sectioned sediment samples has to be processed for preparing diatom slide. The microphotography and identification of diatom taxa were done to generate diatom inferred tropic status.

Maceration and Analysis for Diatom:

5 gm of sediment sample obtained through cone quartering was taken in a beaker for isolating siliceous matter especially diatom. 10 ml of HCL (10%) has to be added to the sample to remove carbonate. After dissolution of carbonate, the samples should be washed with distilled water several times (2 to 4 times at 4 hours of intervals). After washing the samples with distill water 10 ml of H_2O_2 (Hydrogen peroxide) acid should be added to remove organic material. The samples could also be boiled for 1 -3 minute to quicken the process and then distilled water is added to wash the H_2O_2. The acidified sample have to be repeatedly treated with distilled water till all the traces of H_2O_2 were removed completely (Battarbee, 1986). For making a diatom slide, the prepared or macerated samples have to be taken in a dropper and put on a cover slip of 22mm x 40mm and spread by needle and allowed to dry naturally. After drying, the cover slips have to be mounted on the glass slides using DPX mountant and should be dried again for few days. After the slides were perfectly dried the slides have to be observed under biological research microscope at 20x, 40x, 63xand 100x using oil immersion and photographed. Calibrated scale has to be given on one side of the diatom microphotograph to know the size of the diatom. After microphotography the plates of diatoms were prepared followed by identification up to the species level.

Results:

The diatom must be identified up to species level or at least up to generic level from the plates that would be made after diatom microphotography. A systematic description and systematic classification has to be made for making interpretation and before reaching

to final conclusion about the ecological condition that the diatom species recovered thrives in.

Systematic description:

A Systematic Description of Diatom has to be written which deals with the taxonomy of diatoms recovered from surface and core sediments respectively. The widely employed scheme of classification is based on the similarity of phenetic characteristics proposed by Round *et al.*(1990). Taxonomic work done by Mann (1999) can also be considered for classification. Identification of the species can be based on the comparison with www.environment_agency.gov. uk; John (1986, 2010, 2014); Gandhi (1998); Sarode and Kamat (1984), along with various research publications.

Systematic classification:

The systematic of diatoms has been entirely depending upon the characteristics of frustules i. e. size, shape, structure, symmetry and nature of raphae, density of striae etc. The classification proposed by Round *et al.* (1990) adopted by the International Journal of Diatom Research i. e. the official journal of the International Society of Diatom Researchers and the same could be followed to make systematic classification. The nomenclature of some of the specimens may be kept open up to generic level whose species explanation if not match with any other earlier report.

The systematic classifications of diatoms proposed by John (2014) may serve as important way of classification (Fig. 1).

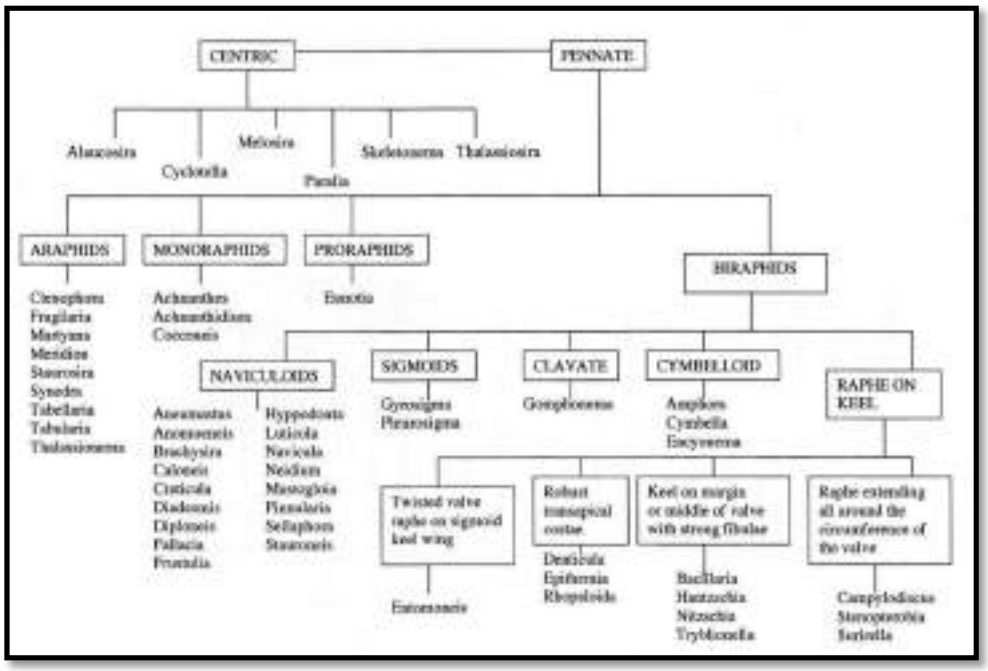

Figure 1: Showing the Systematic Classification of diatom (John, 2014)

After writing the systematic description and classification of diatoms, the counting of species has to be carried out to know the abundance of species. The results so obtained after counting has to be represented graphically in Excel specifically for grab sediment samples. To analyze the change in species variation during past a vertical profile has to be drawn in Coniss.

Discussion:

The results obtained after diatom counting has to be converted in to percentage variation. The ratio of planktonic and benthic taxa (P/B) (Centric: Pennate) has to be calculated then. The most abundant species obtained from the grab sediment samples has to be compared with the physicochemical quality of water samples obtained from same location or from same lake during the pre-monsoon or post monsoon season. This will indicate as which species thrives best under which specific environment and their sensitivity to particular pH, conductivity, alkalinity and temperature condition. It could also help us to know the pollution level of the lake and their present trophic status.

To study or to interpret the past ecological or paleoenvironmental condition a stratigraphic profile of the biotic indicators, Hill's N2, benthic and planktonic diatom percentage and means linear diameter (MLD) of diatom for the lakes has to be drawn. The mean linear diameter can be made by classifying the MLD into four different classes as <10µm, 10 -25 µm, 25-50 µm and >50 µm. The analysis of the effective number of taxa in each sample is considered as diatom diversity (Hill, 1973). The diatom diversity for each sample i.e. Hill's N2 for the lakes can be calculated using the program C2 1.5 (Juggins, 2007). The substantial change in the species composition can be distinguished by program CONISS.

Case Study: Navegaonbandh Lake

Figure 2: Satellite image of Navegaon band Lake Showing Sample location (Image after Google Earth)

The Navegaon Lake lies between latitude 20°53' to 20°56'N and longitude 80°06' to 80°09'E. It has a circumference of 27 kms and a water surface of about 20 sq. kms. The average depth of the lake is about 12 m increasing at place to 30 m. The catchment area is about 90 sq. kms.

Geological setting and lithological observation:

Geologically, the study area comprises of the Amgaon Gneissic Complex, the Tirodi Gnessic Complex, the Bailadila Group, the Nandangaon Group, the Dongargarh Granite, the Sakoli Group, the Sausar Group and the Khairagarh Group. The rocks of the Vindhyan Supergroup equivalent (Neoproterozoic, 1600-900 M. Y.) and the Gondwana Supergroup (Permocarboniferous 215-275 M. Y.) occur as isolated outcrops overlying the rocks of the Amgaon Gneissic Complex in the southern part. The Navegaon Bandh lake is geologically surrounded by granitic gneiss, pockets of laterites, quartz, phyllites, brecciated quartz vein, phyllite, pelitic schist, basic andesite and epidiorite (DRM, 2000)

Results and Discussion

The surface (grab) sediments collected during the Pre and Post monsoon seasons were investigated for understanding the diatom diversity of the Navegaon Bandh lakes and the related water quality was compared with the relatively most abundant species. The surface sediment of the Navegaon Bandh Lake revealed maximum abundance of *Rhopalodia gibberula, Rhopalodia musculus, Gomphonema parvalum, Gomphonema undulatum* and *Rhopalodia* sp. The average values of physicochemical parameters which support the dominance of above diatoms in the Navegaon Bandh Lake during the Pre-monsoon and post monsoon season are shown in Table 1.The surface sediments study of the Navegaon Bandh Lake revealed the presence of 37 diatom species belonging to 20 genera in pre-monsoon samples out of these 5 species are centric and 32 species are pennate. Post monsoon samples reveal presence of 39 diatom species belonging to 18 genera, out of these 06 species are centric and 33 species are pennate. The abundant diatom species are *Rhopalodia musculus kutz.* and *Gomphonema undulatum* Her. (Pre-monsoon) and *Rhopalodia musculus kutz. and Nitzschia palea Kutz* (Post-monsoon).

The core sediment of the Navegaon Bandh Lake includes 62 species of diatoms belonging to 24 genera. Out of these species 08 are centric and 54 pennate diatoms (07 araphid, 01 monoraphid, 01 proraphid and 45 biraphid). The abundant diatom species are *Rhopalodia musculus, Rhopalodia gibberula, Aulacoserira granulate and Gomphonema undulatum* (Plate 1).

Table 1: Most abundant diatom species in the Navegaon Bandh Lake surface sediments and their preferred range of physicochemical parameter

Season	Most abundant Diatom species	Physicochemical parameter													
		pH	EC µmhos/cm	Alk mg $CaCO_3$/L	Cl mg/l	SO_4 mg/l	Ca mg/l	Mg mg/l	NO_3 mg/l	TP mg/l	Fe mg/l	Na mg/l	K mg/l	Al mg/l	Si mg/l
Pre-Monsoon	*Rhopalodia gibberula*	7.75	104.00	69.00	2.50	2.18	15.00	3.90	0.17	0.02	0.15	1.65	0.15	0.05	5.36
	Rhopalodia musculus														
	Gomphonema undulatum														
Post-Monsoon	*Gomphonema parvalum*	7.48	118.75	69.00	2.13	1.18	11.20	4.15	0.20	0.03	0.25	2.18	0.35	0.04	4.48

The core sediment of the Navegaon Bandh Lake includes 62 species of diatoms belonging to 24 genera. Out of these species 08 are centric and 54 pennate diatoms (07 araphid, 01 monoraphid, 01 proraphid and 45 biraphid). The abundant diatom species are *Rhopalodia musculus, Rhopalodia gibberula, Aulacoserira granulate and Gomphonema undulatum* (Plate 1).

The Navegaon Bandh Lake, four diatom zones and ten sub-zones were identified for major species abundance using constrained cluster analysis. A total of 62 diatom taxa were found in the Navegaon Bandh Lake core of which 20 attained a maximum abundance of >1% in at least one sample. Diatom assemblages were categorized as 1) Planktonic diatoms, such as *Aulacoseira granulata* Ehrenberg (4.4 - 100%), *Discostella stelligera* Cleve and Grun (6.3 – 14.9%), *Aulacoseira distans* Ehrenberg (1.0- 13%) and *Stephanodiscus niagarae* Hakansson and Hickel (1.9 - 15.4%) with benthic diatoms such as *Rhopalodia musculus* Mullar (8.3 – 100%), *Rhopalodia gibberula* Mullar (2.9-50%),*Gomphonema undulatum* Kutzing (2.5 – 70%), *Fragillaria rumpens* Kutzing (2.9 – 18.6%), *Nitzschia palea* Smith (5 – 57.1%), *Encyonema minutum* Mann, *Gomphonema parvalum* Kutzing (2.5 – 37.5%), *Navicula cryptocephala* Kutzing (0.6 – 50%) and *Eunotia bilunaris* (Ehrenberg) Mills (1.4 – 9%). The planktonic diatoms were dominated by *A. granulata*, whereas benthic diatoms were dominated by *R. musculus*, *R. gibberula* and *G. undulatum*.

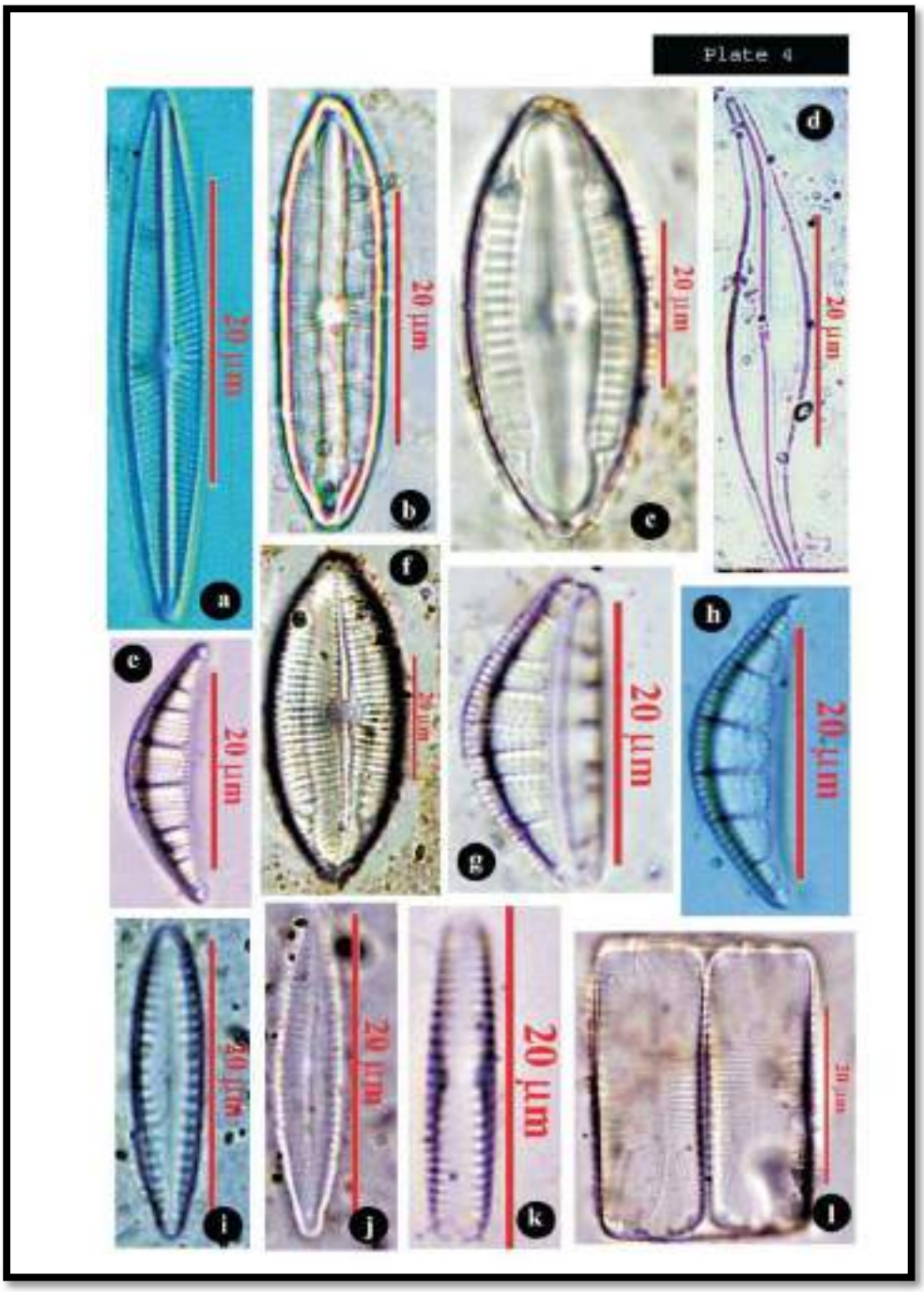

Plate 1. a) *Navicula radiosa (Valve view);* b) *Mastogloia brauni (Valve view);* c) *Mastogloia smithii (Valve view);* d) *Gyrosigma spencerili (Valve view);* e) *Rhopalodia gibberula (Valve view);* f) *Mastogloia elliptica (Valve view);* g) *Rhopalodia musculus (Valve view);* h) *Rhopalodia gibberula (Valve view);* i) *Gomphonema clevei (Valve view);* j) *Nitzschia palea (Valve view);* k) *Gomphonema undulatum (Girdle View);* l) *Eunotia bilunaris (Girdle View)*

A. granulata was abundant during ~ 1901-1980 A.D. and progressively decreased on the top of the core (~1983 and above) whereas in contrast *R. musculus* was dominated in the core, where *A. granulata* was decreased. *Synedra ulna* Ehrenberg (2.7-88.9%),

Cocconeis placentula Grunow (4.5-100%), *Diploneis ovalis* Hilse (1844) (2.7-83.3%), *Amphora ovalis* Kutzing (2.7-30%), *Epithemia adnata* Kutzing (1.8-60%), *Cymbella affines* Kutzing, 1844 (1.1 - 62.5%), *Cymbella lanceolata* Ehrenberg (1.8-40%) and *Rhopalodia gibba* Mullar (1.8-66.7%).

The planktonic diatoms were dominated by *A. granulata* and *S. minutulus* and benthic diatoms were dominated by *C. placentula*, *A. ovalis* and *D. ovalis*. The abundance of *S. niagarae* abruptly decreased in the core up to 40 cms below the lake bed (~1964 AD) and above it up to 1979 AD except minor presence at ~1980 AD and further appeared in minor concentrations after ~2008 AD. Whereas, *S. minutulus* appeared at 65 cm (~1899AD) and continued up to 60 cm (~1914 AD). Diatoms of the Navegaon Bandh Lake show considerable change of the centric diatom *A. granulata* at ~ 1901 AD and remained more or less constant till ~ 1961 AD (Juare, 2016). A major shift in speciation was seen at ~ 1983 AD with preponderance of the benthic species *R. musculus* and continued till ~ 2006 AD. The abrupt disappearance of *R. gibberula* was observed during this period (Fig. 2). The significant shift of diatoms from benthic to planktonic diatom assemblages have been assigned to climate warming (Chen *et al.*, 2014). The small size and fast growing planktonic and diatoms in the sediment cores indicate longer and stronger thermal stratification (Smol *et al.*, 2005; Rühland *et al.*, 2010; Chen *et al.*, 2014).

Conclusion:

a) The Navegaon Bandh Lake had mesotrophic, meso euryhaline and alkali biontic waters. The increased comparative salinity may be due to longer dry period / less rainfall prevailed in the watershed and swampy conditions of the lake.
b) During ~1862 – 1901 AD, *R. musculus reached to maximum with decrease in A. granulata, indicating again the mesotrophic, meso-euryhaline, alkalibiontic waters. This also points less rainfall/ dry period. The presence of highly eutrophic waters was observed during ~1902 – 1961 AD in the core, where R. musculus declined drastically.*

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Removal of Hexavalent Chromium By Using Newly Synthesized 4-HAMF-II Terpolymeric Resin

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Abstract

A novel 4-HydroxyAcetophenone-Melamine-Formaldehyde(4-HAMF-II)terpolymeric resin has been prepared by condensation of 4-HydroxyAcetophenone(4-HA), Melamine(M) and Formaldehyde(F) in 2:1:3 molar ratio using 2M HCl as a catalyst and was proved to be a good adsorbent for removal of Cr(VI). The characterization and the structural elucidation of the prepared terpolymer were confirmed by elemental analysis, FTIR, XRD, TGA and ^{1}H-NMR spectral studies. The metal removal properties of the terpolymer were studied by batch equilibrium method. The effects of various parameters like contact time, initial adsorbate, concentration, pH and 4-HAMF-II doses have also been studied and reported. The adsorption data were found to fit well with the Langmuir and Freundlich isotherm models. The percent removal of Cr(VI)was found to be increase with adsorbent doses from 1 to 8 gm. and maximum efficacy was found at 8gm. At optimum condition nearly 88 % abatement of Cr(VI) has been noted using 4-HAMF-II. The results revealed that the terpolymeric resin as adsorbent reported in this article is effective for removal of Cr(VI) from wastewater and thus can be successfully used for control of chromium pollution.

Keywords

Terpolymeric resin, wastewater treatment, Langmuir isotherm and Freundlich isotherm.

1. Introduction

Chromium is important element in periodic table. In nature, Cr is mostly found in the form of complex cubic isomorphic mineral called spinel. Trivalent chromium occurs naturally in many vegetables, fruits, meat, grains and often added to vitamins as dietary supplement, whereas chromium (VI) is most oftenly produced during industrial and mining processes. Chrome plate is used in the automobile parts such as bumpers where Cr is applied electrolytically[1]. Industrial application of chromium compounds which cause water pollution are electroplating, metal finishing, magnetic tapes, pigments, leather tanning, wood protection, chemical/brass manufacturing, catalyst, electrical and electronic equipment[2]. Water soluble Cr(VI) is irritating and toxic to human body tissue owing to its oxidizing potential and easy permebility of biological membrane[3]. It leads to liver damage, pulmonary congestation, oedema and skin irritation resulting in ulcer formation[4]. Exposure or excessive inhalation of Cr(VI) has been found to develop disorder like of dermatitis, gastric cancer and perforation of the nasal septum in workers[5]. The usual methods for removal Cr(VI) from aqueous effluents include chemical reduction, nano filtration, bioaccumulation, ion exchange and adsorption on silica composites/activated carbon materials[6]. However these approaches are not cost-effective and difficult to implement in developing/undeveloped countries. Bio-sorption a technically feasible and economical process has gained increased creditability during recent years[7].

Terpolymer resins now a days have wide range applications like adhesives, retardants, binders, dyes, fungiciders, ion–exchangers, biosensors, reversible electrical cell, surface coating material, solar cells and light emitting diodes etc[8]. A new chelating sorbent for metal ion extraction has also been studied[9]. The purpose of present study is to explore the adsorption behavior of chromium on newly synthesized terpolymer 4-HAMF-II at different condition. The present study deals with synthesis and characterization of 4-HAMF-II by spectral method for first time. One of the important application of functional terpolymer is their capablility to recover metal from wastewater.

2. Materials and Methods

All the chemicals used were of analytical or chemically pure grade. Distilled water was used throughout the investigation.

2.1 Synthesis of terpolymer

A mixture 4-HydroxyAcetophenone, Melamine and Formaldehyde(F) in 2:1:3 molar ratio in the presence of 200ml 2M HCl as a catalyst was taken in 500 ml round bottom flask fitted with water condenser and heated in an electrically operated oil bath at 110 ± 2^0C for 6 hrs. with occasional shaking. The temperature of the oil bath was controlled with the help of dimmer stat. The resinous mass obtained was removed as soon as the reaction period was over. The solid product obtained was repeatedly washed with hot water followed by methanol to remove unreacted monomers. The resinous product was then dried in air and powdered. The powder was washed many times with petroleum ether in order to remove hydroxyquinoline -formaldehyde copolymer which may be present with the terpolymer. The product so obtained was further purified by reprecipitation technique. The terpolymer was dissolved in 8% NaOH solution, filtered and reprecipitated by drop wise addition of ice cold 1:1 (v/v) conc. HCl /distilled water with constant stirring. The precipitated resin product was filtered off, washed with hot water until it was free from chloride ions. The purified polymer sample was dried in vacuum at room temperature, powdered and stored in air tight bottles. The reaction scheme and most probable structure of newly obtained terpolymer is given in figure 1, while elemental analysis is given in table1.

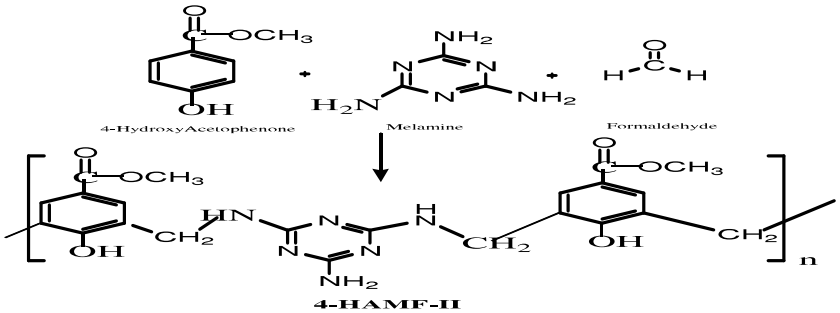


Fig.1 Reaction scheme and structure of 4-HAMF-II Terpolymeric Resin

Name of terpolymeric resin	Carbon (%)	Nitrogen (%)	Oxygen(%)	Hydrogen (%)	Empirical formula of repeated unit	Molecular formula of repeated unit
4-HAMF-II	54.54(Cal.)	29.37(Cal.)	11.18(Cal.)	4.89(Cal.)	$C_{22}H_{21}N_6O_6$	465
	54.40	28.80	11.00	4.89		

Table No.1- Elemental analysis of 4-HAMF-II Terpolymeric resin

2.2 Preparation of Cr (VI) solution

A Cr(VI) stock solution having 1000 mgl^{-1}concentration was prepared by dissolving 2.8287 g of potassium dichromate in 1000ml of distilled water. This solution was diluted to proper proportions to obtain various standard solutions ranging their concentrations 10-100mgl^{-1}. pH adjustment was done using 0.5N HCl and 0.5N NaOH solution.

2.3 Batch Experiment

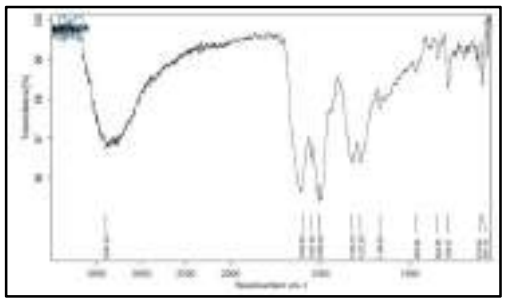
Batch equilibrium studies were conducted with different parameters such as pH, agitation time, initial concentration Cr(VI) solution and effect of adsorbent doses. The systems were agitated on rotary shaker at 200 rpm, filtered through Whatmman no.42 filter paper and filtrates were analyzed for Cr(VI) concentration using UV-Visible Spectrophotometer. From experimental data, the applicability of Freundlich isotherm and Langmuir model were judged. Linear regression coefficient (R^2) and isotherm constant values were determined from these models.

3. Characterization of 4-HAMF-II Terpolymeric Resin

3.1 FTIR Studies of 4-HAMF-II

FTIR spectrum of 4-HAMF-II terpolymeric resin has shown in Fig. 2. The broad band at 3400cm^{-1} indicates presences of stretching vibration of phenolic hydroxyl (–OH) group. The peak appears at 1168, 1272 and 785$cm^{-1}$are due to methylene

bridges coupled with aromatic ring[10]. The tetra substitution in the benzene ring is established by presence of medium band at 842cm^{-1} which is attributed to (C-H) bending vibration[11]. A peak at 1503cm^{-1} may be ascribed to N-H bending of secondary amide group[12]. A sharp peak at appearing a 1551cm^{-1} may be due to C=N stretching vibration[13]. The peak at 1323cm^{-1} indicates –C=C- stretching in aromatic vibration.



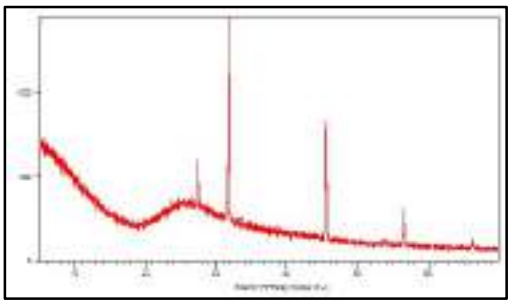


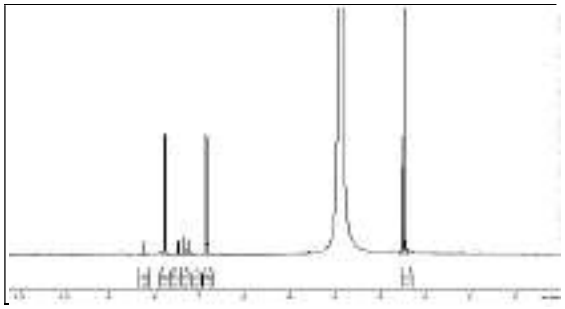
Fig. 2 FTIR Spectrum of 4-HAMF-II Fig. 3 X-Ray Diffraction pattern of 4-HAMF-II

3.2 XRD Studies of 4-HAMF-II

The X-ray diffractograph of 4-HAMF-II terpolymeric resin has shown in Fig.3. In spectrum a sharp peak obsevered at $2\theta = 32^0$ and 47^0 which show crystaline nature of newly synthesised material. Two low intense and sharp peaks observed around 27^0 and 57^0 confirm that terpolymer is crystaline in nature.

3.3 ^{1}HNMR- Studies of 4-HAMF-II

^{1}HNMR spectrum of 4-HAMF-II terpolymeric resin is represented in Fig.4. The signals at 3.8 (δ) ppm are assigned as Ar-CO-CH_3 protons. The signal at 2.3(δ) ppm is attributed to –NH-bridge. The Ar-CH_2 protons are assigned at 4.1(δ) ppm. ^{1}HNMR spectrum of 4-HAMF-II terpolymer resin show unsymmetrical pattern in the region 6.8-7.8(δ)ppm which is characteristic of aromatic protons (Ar—H). The signal at 2.6(δ) ppm is due to free N-H proton. The signal at 8.2(δ)ppm indicates presence of phenolic group (Ar---OH). The much downfield chemical shift for phenolic(–OH) clearly indicates involment of the -OH group in intermolecular hydrogen bonding[14].



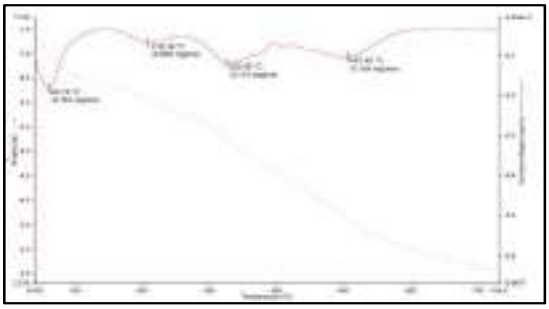


Fig. 4 ^{1}HNMR spectrum of 4-HAMF-II **Fig. 5 TGA Curve of 4-HAMF-II**

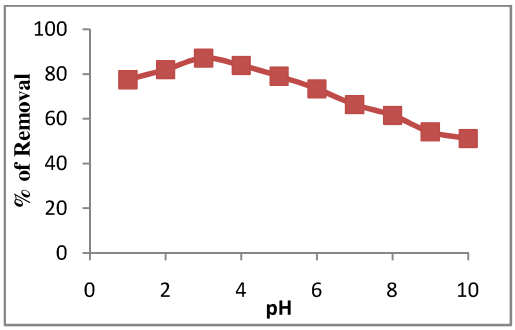
3.4 TGA studies of 4-HAMF-II

The TGA curve of 4-HAMF-II has shown in Fig.5**.** It can be seen from figure that four consecutive weight loss steps have been shown by 4-HAMF-II. The first derivative peak at 60^0C with a weight loss of 7% which may be due to the removal of water molecule present in the copolymer. The rate of weight loss is noticed to be slow at this stage. The second and third peaks respectively at 210^0C with 20% and 325^0C with 31% of weight loss may be assigned due to the elimination of –OH groups attached to the aromatic nuclei. In the fourth stage, the weight loss is observed in the range 450 to 650^0C with 52% of weight loss which may be due to the elimination of –CH_2 and the aromatic nucleus [15]. Up to 700^0C nearly 65% of weight loss has been noticed.

4. Results and Discussion

4.1 Effect of pH on adsorption

Effect of pH on Cr(VI) adsorption using 4-HAMF-II as an adsorbent has been studied in the pH range 1to10 and presented in Fig.6. It is seen that solution pH plays a very important role in the adsorption of Cr(VI). The percentage removal increases steadily from 77 to 87 % when pH is increased from 1 to 3 in Cr(VI) adsorption and slowly decreases on further increases in pH.



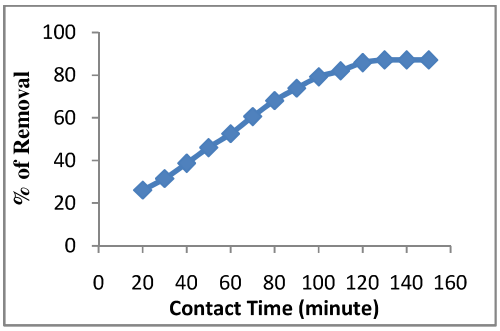
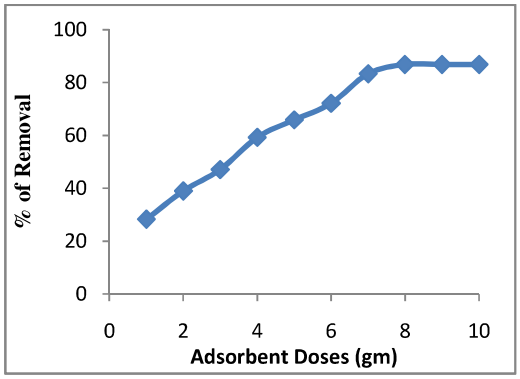


Fig. 6 Effect of pH on Cr(VI) by 4-HAMF-II Fig. 7 Effect of Contact time on Cr(VI) by 4-HAMF-II



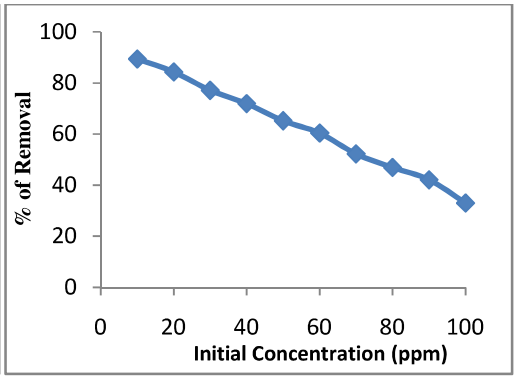
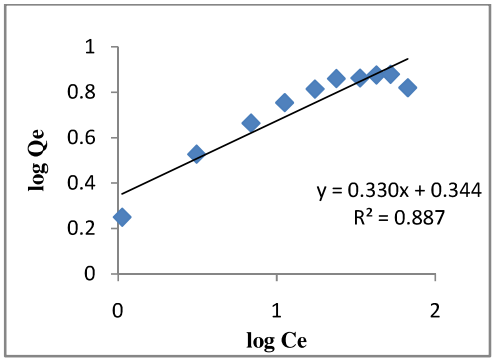


Fig. 8 Effect of adsorbent doses on Cr(VI) removal Fig. 9 Effect of initial concentration on Cr(VI) removal



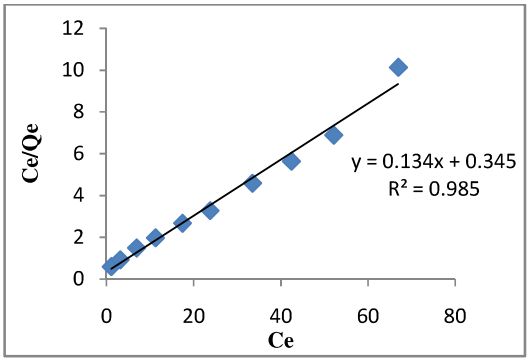


Fig.10 Freundlich isotherm for the adsorption of Cr(VI) Fig. 11 Langmuir isotherm for the Adsorption Cr(VI)

4.2 Effect of contact time on adsorption

Adsorption experiments were conducted as a function of contact time and results have shown in Fig.7. The rate of Cr(VI) binding with adsorbent was greater in the initial stages then gradually increases and remains almost constant near about 88%, after optimum period of 130 min.

4.3 Effect of adsorbent doses

The effect of adsorbent (4-HAMF-II) doses on percent removal of Cr(VI) in the range 1 to 10gm is represented in Fig.8. The initial Cr(VI) concentration was taken to be 30ppm. However after certain adsorbent dose it becomes constant and it is treated as an optimum adsorbent dose, which is found to be 8 gm/lit. for the 4-HAMF-II adsorbent.

4.4 Effect of the Initial concentration of Cr(VI) solution

The Experimental studies were carried with varying initial concentration of Cr(VI) ranging from 10 to 100 ppm using 8gm/lit. of adsorbent dose. The results have shown in Fig. 9. The results demonstrate that at a fixed adsorbent dose the percentage of Cr(VI) removal decreases with increasing concentration of adsorbate.

5. Adsorption Isotherm

5.1 Freundlich adsorption isotherm

The plot of $\log Q_e$ versus $\log C_e$for Cr(VI) is presented in Fig.10 which show linear curves and hence the adsorption process obeys Freundlich adsorption isotherms. Freundlich constants 'n' and 'k_f' for Cr(VI) were found to be 3.02 and 2.208mg/g respectively. The square of the correlation coefficient (R^2) values was found to be 0.8870 for Cr(VI) which shows well-fitting of the Freundlich isotherm. The 'n' values are in between 1 to 10 which indicate the favorable adsorption of Cr(VI) on 4-HAMF-II.

5.2 Langmuir adsorption Isotherm

The results obtained from Langmuir model for the removal of Cr(VI) by 4-HAMF-II has been represented in Fig.11. The values of square of the correlation coefficient (R^2) was found to be 0.9851for Cr(VI), which show the best fitting of equilibrium data. The values of 'Q_m' for Cr(VI) was found to be 7.40 mg/g while values of 'b' was 0.389. The lower values of b(less than one) implies an excellent the affinity between solute and sorbent sites. To confirm the adsorbility of the adsorption process, the equilibrium parameter also called separation factor (R_L) for Cr(VI) was calculated which were found to be 0.078.

6.Conclusion

Utilization of 4-HAMF-II for the removal of Cr(VI) from the industrial waste-water is investigated. 4-HAMF-II is found to be better adsorbent for removal of Cr(VI). The maximum percentage(88%) for removal of Cr(VI) is noticed at pH 3 with contact time 130 min. The percentage removal decrease with increase in initial Cr(VI)concentration. At 8 gm/lit of optimum adsorption dose maximum removal efficacy has been noticed. The adsorption data are best fitted with Freundlich and Langmuir isotherm model which confirms the monolayer adsorption of Cr(VI)onto 4-HAMF-II. Thus the terpolymer reported in this research article can be successfully used for abetment of toxic hexavalent chromium from contaminated water and thus applicable in pollution control.

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Yoga and Sports

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Abstract :

Aim of the present article is the role of some yoga elements in physical education and sports. Yoga is one of the Indian philosophical systems that emphasize the importance of the work with the body to develop healthy behaviours and thoughts. Among all its techniques the physical postures, called *asanas*in Sanskrit, are the ones that got. It is necessary to remember that sports and gymnastics belong to the scope of Physical Education.

Keywords: Yoga, sports, performance.

Introduction:

Yoga is the oldest system of personal development encompassing body, mind, and spirit. The word yoga is derived from the Sanskrit root *Yuj*, which means to join or to yoke. In philosophical terms, yoga refers to the union of the individual self with the universal self. Yoga is an ancient Indian practice, first described in Vedic scriptures around 2500 B.C., which utilizes mental and physical exercises to attain *samadhi*, or the union of the individual self with the infinite.

Yoga has long rich history can be divided into five main periods: Vedic Yoga, Pre-Classical Yoga, Classical Yoga, Post-Classical Yoga and Modern Vigor is the limit of a single physical framework to perform work, it is wanted in each parts of life i.e., for strolling, utilizing, sitting, standing, dozing, perusing, Dancing or any possible major or minor, things needs vigor. This vigor could be enhanced by Yogic asana and Yoga is very beneficial for your physical fitness levels. Not only does it reduce stress levels, but it also makes your whole body fitter and ensures longevity.

Health, physical fitness and emotional stability are the objectives which bring yoga and physical education on a common platform for the benefit of human individual. Health is a more general and comprehensive term conveying the 'feeling of well-being', while physical fitness is a more specific term. Physical fitness is the capacity of an individual to perform a given task at a particular time. Health and physical fitness are not static. They are always changing they follow the law can be maintained only by carefully selected physical activities which are called 'exercise'. The utility of the particular exercise program can be evaluated only in forms of the effects that one obtained in promoting a particular factor of physical fitness.

YOGA ON SPORTS PERFORMANCE

1. Mental Health

A good mental health is of paramount importance for being healthy physically as well. Breathing technique forms an integral part of Yoga. It really is very basic by breathing deep and right, something that you would be doing when you practice Yoga you are inhaling more oxygen and allowing the cells of your body to have access to that oxygen for a longer period of time.

A common practice in yoga is to breathe only from one nostril at a time, while holding the other one closed with the tip of your finger. Medical research has shown that this boosts increased activity of the opposite side of the brain, leading to better cognitive performance and tasks associated with the other side of the brain. Regular yoga practice helps children with attention deficit disorder and people suffering from anxiety, depression and mood swings. It also helps keep the mind calm and reduce stress and thereby increase the general wellbeing of the person.

2. Strength

Certain asanas of the yoga help generate inner strength. Inner strength is essential in doing day to day activities and in preventing you from injuries. This is especially useful, as we grow old and need more energy and strength to do the same activity.

3. Flexibility

The popular notion that you need to be flexible in order to do yoga is incorrect; it is really the other way round – you should do yoga so that you can be more flexible. If you have a flexible body, you find it easy to do tasks. A lot of poses in Yoga concentrate on stretching and improving your flexibility.

With yoga, not only the muscles of the body, but also the softer tissues of your body are worked out, resulting in less buildup of the lactic acid, which is responsible for stiffness in various parts of the body. Yoga increases a range of motions of the less used inner muscles and helps in lubrication of joints. The result is a more flexible body, able to perform tasks easily.

4. Cardiovascular

Yoga has a lot of positive effects on the cardiovascular system of our body. A healthy cardiovascular system is responsible for preventing heart attacks, strokes and International Journal of Multidisciplinary Research and Development hypertension. Heart disease is a problem which has roots in an improper lifestyle, faulty diet and negative thinking. Our thoughts, emotions and feelings affect our body and negative emotions/thoughts send a series of complex and unhealthy chemical processes throughout the body, given alarms that something is amiss. Yoga tends to control these by bringing in fresh life-giving oxygen. The antioxidant properties of Yoga help in preventing the negative emotions and promote a general wellbeing in the body.

5. Joint pain and arthritis

The general tendency of people suffering from joint pain, inflammation and stiffness is to avoid exercise. Yoga helps prevent advancement of this malady by toning the muscles and loosening the joints. When a person suffering from joint pain practices yoga, the gentle stretching and strengthening movements of the various Yogic poses, improves the blood flow to the muscles and tissues supporting the joints, thereby making it more comfortable to move.

6. Respiratory problems

Practice of certain asanas of Yoga has helped check chronic cases of Asthma and other respiratory problems. When the nasal passages get inflamed, they start producing mucous in excess making it difficult to breathe and often have common symptoms like coughing, wheezing etc. Respiratory problems could also be caused by multiple factors like allergy, exercise, weather change etc. By practicing yoga, the lungs capacities increase and so does stamina and stress on air passages is reduced.

7. Back pain

Yoga has helped innumerable cases of Back ache. Back ache is caused due to stress and tension in the muscles supporting the spinal cord. Back ache may be caused due to improper postures mild injuries, which have been left untreated etc. Yoga has seemed to help cases of back pain by enhancing flexibility and strengthening the muscle groups supporting the spine, helping the body to maintain an upright posture. It eases the back pain by increase in blood circulation and getting healing nutrients to the injured muscles. Apart from healing injured muscles, it also prevents further injuries by strengthening the muscles.

8. Memory improvement

Yoga helps in retaining information better and for a longer period of time due to its focus on concentration and meditation. By breathing right, concentrating and meditating, more blood flows to the brain, making it supple and ready to accept more information and reproduce that information when required.

12. High Blood Pressure

The relaxation and exercise components of yoga have a major role to play in the treatment and prevention of high blood pressure (hypertension).A combination of biofeedback and yogic breathing and relaxation techniques have been found to lower blood pressure and reduce the need for high blood pressure medication in people suffering from it.

13. Pain Management

Yoga is believed to reduce pain by helping the brain's pain center regulate the gate controlling mechanism located in the spinal cord and the secretion of natural painkillers in the body. Breathing exercises used in yoga can also reduce pain. Because muscles tend to relax when you exhale, lengthening the time of exhalation can help produce relaxation and reduce tension. Awareness of breathing helps to achieve calmer, slower respiration and aid in relaxation and pain management.

Effects of yoga on different factors

Physical Effects

1. Increase suppleness through stretching muscles
2. Improves joint mobility by lengthening ligaments to their healthy limits
3. Reduces risk of injury and assists with injury rehabilitation
4. Effective as a form of soft tissue and collagen fiber rehabilitation
5. Helps to bring the body back into alignment and improves posture
6. Increases stride length
7. Enhances co-ordination and agility
8. Contributes to improved cardiovascular fitness and stamina
9. Teaches athletes how the body performs and functions as a synergistic unit
10. Lowers resting heart rate

Psychological effects

1. Relieves performance anxiety and stress, and frees athletes from mental distractions
2. Develops determination and self-discipline
3. Teaches athletes to challenge themselves and go outside of their comfort zone
4. Reduces stress and provides a method of relaxation
5. Breath work provides athlete with techniques they can use whilst competing to control arousal levels

6. Helps athletes to achieve flow and get in 'the zone'
7. Teaches athletes how to use imagery and relaxation
8. Helps athletes to understand the importance of relaxing, resting, and recovering.

Conclusion:

Yoga offers new learning possibilities to a wider group of students than traditional sports or fitness curriculum, making it a valuable addition to any educational program. Yoga may be as effective as or better than exercise at improving a variety of health-related outcome measures, to improve subjective measures of fatigue pain, and sleep in healthy and ill populations. However, future clinical trials are needed to further examine the distinctions between exercise and yoga, particularly how the two modalities may differ. In their effects on sports performance.

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किशोरवयीन मुलींच्या अपुऱ्या पोषणाला कारणीभूत घटक वा त्याचा भविष्यकालीन आरोग्यावर परिणाम

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प्रस्तावना :–

बाल्या अवस्थेतील वाढचाल संपवून किशोरावस्थेकडे मुली वाटचाल करू लागतात. बाल्यावस्थेनंतरचा व प्रौढावस्था येण्यापुर्वीचा काळ किशोरावस्थेचा काळ समजला जातो. बालवय ते प्रौढपणा यातील ही एक महत्वाची स्थिती म्हणजेच"किशोरावस्था" या स्थितीत शारिरीक व मानसिक दोन्ही आघाड्यांवर खि चे विकसन होत असते. किशोरावस्थेमध्ये वर्तन, अभिवृत्ती , मुल्ये किशोरावस्थेच्या उत्तरार्धापेक्षा पूर्वार्धामध्ये जास्त घडत असल्याने किशोरावस्थेची विभागणी दोन भागात केली जाते.

१) पूर्व किशोरावस्था – १२ ते १७ वर्ष

२) उत्तर किशोरावस्था – १७ ते २१ वर्ष

किशोरावस्थेत मुलींची लैंगीक वाढ होते आणि त्यांची पाळी सुरू होते. ही पाळी वयाच्या साधारण ४० ते ५० वर्षापर्यंत टिकते. या काळात अधिक अन्नाची गरज भासते. पाळीमध्ये प्रत्येक महिन्यात रक्तस्राव होतो. या वयात खेळणे, धडकणे वैगेरे श्रम वाढतात. बाल वयातुन या वयोगटात पदार्पण करताच शरीराची वाढ झपाट्याने सुरू होते. आणि एकुण कालमानात ही अत्युच्च प्रमाणात असते म्हणूनच या काळात अधिक पोषक आहार आणि समतोल अन्नघटक शरीराला मिळायाला हवेत. बऱ्याच मुली नीट आहार घेत नाहीत आणि पुरेसे अन्नही सेवन करीत नाहीत ग्रामीण भागातील मुली तर अज्ञानामुळे अथवा मुलगा – मुलगी भेदभाव केल्याने समृध्द व समतोल आहारापासून वंचित राहतात. त्यांच्या आहारात शरीर वृध्दीसाठी शरीरास उर्जा मिळण्यासाठी लागणारे लोह,फोलीक ॲसीड, जीवनसत्व या अत्यावश्यक अन्न घटकांची उणीव आढळते. परिणामी या मुली ॲनिमिक, फिकट, निस्तेज दिसतात या मुलींना थकवा जाणवतो काम करण्याची त्यांची क्षमता कमी होते. रक्त क्षयामुळे त्यांची मानसिक एकाग्रताही विचलीत होते. खुपदा भारतीय मुलीची लग्ने लहान वयातच होतात. १०० पैकी किमान ६४ टक्के मुली १८ वर्ष पूर्ण होण्याच्या आतच विवाहीत होतात अशा परिस्थितीत त्यांची वाढ आणि विकास खुंटतो, वनज कमी उंची कमी आणि त्या खुरटया स्त्रिया बनतात शहरी सुस्थितीतील मुलींच्या बाबतीत वजन वाढु नये लठ्ठपणा येऊ नये व शरीर सडपातळ राखण्याच्या भ्रामक समजुतीपायी किशोरवयीन मुली चुकीचा आहार घेतात. यामुळे आरोग्य विषयक समस्या निर्माण होण्याची शक्यता वाढते. त्याच प्रमाणे बाहय खाद्य पदार्थाची विशेष आवड निर्माण होते. अशावेळी अन्नातील पोषण मुल्याकडे लक्ष दिल्या जात नाही. मुलींच्या गर्भाशयाचा व इतर अवयांचा विकास या काळात होत असतो म्हणुनच योग्य प्रकारे विकास होण्यासाठी समृध्द व समतोल आहार घेणे महत्वाचे ठरते.

अध्ययनाचे उद्देश :–

१) किशोरवयीन मुलींच्या आहार आरोग्य विषयक समस्या जाणून घेणे.

२) किशोरवयीन मुलींसाठी समृध्द व समतोल आहाराची गरज जाणून घेणे.

३) किशोरवयीन मुली घेत असलेल्या आहाराचा त्यांच्या सर्वांगीण विकासावर होणारा परिणाम जाणून घेणे.

४) किशोरवयीन मुलींच्या समृध्द व समतोल आहाराविषयी उपाय सुचविणे.

या अवस्थेत विशेष उत्साह, जोम असतो काहीतरी करून दाखविले पाहिजे असे मुलींना वाटते. त्यामुळे ते क्रियाशील असतात. त्याकरीता अधिक कॅलरीजची गरज असते. शरीर बांधणीसाठी, झीज भरून येण्यासाठी, रोगप्रतिकार क्षमता वाढण्यासाठी चांगल्या आहाराची गरज असते. मुलींना तर हा आहार सुखरूप गर्भारपण व बाळंतपण होण्यासाठी

सुध्दा उपयुक्त ठरू शकतो. भूक, व अपूरा आहार यांचे मुख्य कारण गरीबी आहे. या परिस्थितीतही आपण जर जागरूक राहीलो व नीट लक्ष दिले तर कमी खर्चातही चौरस आहार घेऊ शकतो.

सकस चौरस व पूरेसा आहार घेतल्यास बरेचसे आजार टाळता येतील गहू, तांदुळ, मका, ज्वारी, बाजरी, बटाटे, केळी ई. वस्तु रोजच्या आहारात जास्त प्रमाणात वापरण्यास शरीराच्या पुष्कळ गरजा भागविल्या जावू शकतात शरीर बांधणीसाठी प्रथिने लागतात. रोग प्रतिकार क्षमता वाढण्यासाठी म्हणजेच शरीर संरक्षणासाठी व झीज भरून काढण्यासाठी जीवनसत्वे व खनिजे लागतात. आणि शरीराला उत्साह देण्यासाठी , उष्मांक पुरविण्यासाठी चरबी व साखर युक्त पदार्थही लागतात.

समतोल आहार म्हणजे सर्व पोषक तत्वयुक्त आहार योग्य प्रमाणात घेणे. असा आहार आपले शरीर वाढण्यास/ आपल्याला सुदृढ ठेवण्यास व रोगापासून बचाव करण्यास उपयोगी होईल तसेच आहाराबरोबर योग्य व्यायाम व पुरेशी झोपही आवश्यक असते.

आवश्यक पोषक घटक :–

कॅलरी –

शरीरातर्गत बदल घडून येणाऱ्या या अवस्थेत मुलांना ३००० कॅलरी तर मुलीना २४०० कॅलरी दररोज मिळणे आवश्यक असते.

प्रथिने –

शरीर बांधणीसाठी तसेच झालेली झीज भरून निघण्यासाठी आहारात पुरेसे प्रथिने मिळणे आवश्यक असते. त्यासाठी दुध, मासे, मांस, अंडी , शेंगदाणे, डाळी, काजु , सोयाबिन ई. पदार्थांचा आहारात समावेश करावा.

खनिजे व लोह –

या कालावधीत मुलींची मासिक पाळी सुरु होते. रक्तस्त्रावातून लोहाचा नाश होतो. हिमोग्लोबीनच्या निर्मीतीकरीता लोह आणि प्रथिनांची गरज असते. यासाठी आहारात पिवळ्या, नारिंगी, लाल किंवा गडद हिरव्या रंगाच्या भाज्या व फळांचा आहारात समावेश करावा.

कॅल्शिअम –

वाढत्या वयात याची विशेष मागणी असते. दुध, दही, लोणी, चीज, तीळकुट, हाडाचे सुप, हिरव्या पालेभाज्या, बदाम, शेंगा, विशेषता सोयाबिन, नाचणी, इत्यादीचा आहारात समावेश करावा रोज १५ मिनिटे आपल्या अंगावर सुर्यप्रकाश, कोवळे ऊन घेतल्यास 'ड' जीवनसत्व तयार होते व अन्नातील कॅल्शिअम शरीरात आत्मसात होते.

आयोडीन – आयोडीन मिळण्यासाठी आयोडाईज्ड, मीठ, मासे, कोबी समुहातील भाज्या यांचा आहारात समावेश करावा.

संशोधन पध्दती – संशोधन कार्यासाठी लाखांदूर तालुक्यातील मध्यम उत्पन्न गटातील ५० किशोरवयीन मुलींची निवड करण्यात आली यासाठी प्रश्नावली तयार करून ती भरून घेण्यात आली.

तथ्याचे संकलन –

किशोरवयीन मुलींच्या आहारविषयक संशोधनात असे आढळुन आले की, त्यांच्या दैनिक आहारातून मिळणारे पोषक घटक आणि Nutnition Expert Group 1980 मध्ये केलेल्या दैनिक आवश्यकतेच्या शिफारशीनुसार हे प्रमाण अतिशय कमी आहे. दैनिक आहारातून कॅलरीचा अपूरा पुरवठा होत असल्याचे आढळुन आले.

अपुऱ्या पोषणाची कारणे –

वरील संशोधनावरून किशोरवयीन मुलींच्या अपुऱ्या पोषणाची कारणे खालीलप्रमाणे आढळुन आली आहेत.

१) आहारविषयक अज्ञान :–

बहुसंख्य गृहीणींना मुलीच्या आहारात कॅलरीज, प्रथिने, स्निग्ध पदार्थ जीवनसत्वे हे पोषक घटक दैनिक आहारात किती प्रमाणात असावेत. तसेच खाद्यपदार्थांची निवड कशाप्रकारे केल्यास आहार समतोल होईल याची कल्पना नाही.

किशोरवयीन मुलींना आवश्यक पोषक घटक कॅलरीज प्रथिने, स्निग्ध पदार्थ व जीवनसत्वे आदिविषयी माहिती नसल्याने चुकीचा आहार मिळतो त्यामुळे त्यांच्या आरोग्यावर प्रतिकुल परिणाम होतो.

२) खाण्याच्या अयोग्य सवयी –

आजचे वाढते औद्योगीकरण , यांत्रिकीकरण वेगाने होणारे जागतिकीकरण आदीमुळे खाण्याच्या अयोग्य सवयीच्या आहारी किशोरवयीन मुली जात असल्याचे दिसून येत आहे. त्यामुळे फास्ट फूड सेंटर हॉटेल या ठिकाणी मिळणारे खाद्यपदार्थ उदा. मॅगी, नुडल्स, बेकरीतील केक , पेस्ट्रीज, शीतपेय यासारखे खाद्यपदार्थ आवडीने घेऊन खात असल्याचे निदर्शनास आले. या पदार्थामधून फकत उष्मांक मिळतात. परंतु शारिरीक वाढिला ते पुरेसे नसतात. वाढत्या वयासाठी प्रथिने जीवनसत्वे, खनिजे आदींची आवश्यकता असते. अती उष्मांकामुळे मेद वाढण्याची प्रवृत्ती बळावत चालली आहे. याचा परिणाम मुलींमध्ये स्थुलपणा येणे तर काही मुलींना शारीरीक बदलामुळे संकोच वाटणे आदी परिणाम त्यांच्या आहारावर होतात. वजन वाढु नये म्हणून त्या कमी खाण्याची सवय लाऊन घेतात.

३) खाद्यपदार्थ शिजवण्याची अयोग्य पध्दत –

रूढी, रितीरिवाज, संसकृती, अज्ञान यामुळे अन्न शिजवण्याच्या योग्य पध्दतीचा वापर न करणे या व इतक्या अनेक कारणामुळे पोषक घटकांचा नाश होतो. उदा. तांदुळ खुप वेळा धासून धुणे, भात शिजवतांना त्यातील पाणी काढुन टाकणे, भाज्या जास्त वेळ चिरून ठेवणे किंवा चिरल्यानंतर धुणे आदी.

४) वजन कमी करण्याची अयोग्य पध्दत –

बऱ्याच मुलींना आपले वजन इतर मुलींच्या तुलनेत जास्त आहे असे वाटते. त्यामुळे त्या डायटींग करतात उदा. एकच वेळ जेवणे यामुळे मुलींची पोषक घटकांची गरज पूर्ण होत नाही. अपुऱ्या पोषणाअभावी त्यांच्यात अशक्तपणा वाढतो.

५) वातावरण –

अस्वच्छ वातावरणामुळे अनेक मुली आजारांना बळी पडतात. बाहेर विकत मिळणारे खाद्यपदार्थ उघड्यावर असतात उदा. भेळ, समोसे, कचोरी या पदार्थावर माश्या धुळ,घाण बसते शिवाय या ठिकाणी मिळणारे पिण्याचे पाणी दुषित असते त्यामुळे कृमीचा संसर्ग वाढतो व पचनसंस्थेचे विकार होतात.

किशोरावस्थेतील अपुऱ्या पोषणाचा भविष्यकाळातील आरोग्यावर होणारा परिणाम –

किशोरवयीन मुली हया भविष्यकाळातील होणाऱ्या माता असतात त्यांना योग्य आहार मिळाला नाही तर त्या स्वत: कुपोषित राहतील आणी त्यांच्या पासून जन्माला येणारे बाळ सुध्दा कुपोषीत जन्माला येईल. म्हणून सुप्रजनासाठी माता स्वत: आरोग्य संपन्न असणे अत्यंत आवश्यक आहे.

अन्नघटकांची पूर्तता जर व्यवस्थीत झाली नाही तर गर्भाची नीट वाढ होणार नाही कारण गर्भावस्थेत पहिल्या तीन महिन्यात परिपूर्ण अन्नघटक मिळाले नाहीत किंवा उपासमार झाली तर गर्भाच्या मेंदुवर विपरीत परिणाम होता. आय. क्यु. कमी असण्याची बालकांमध्ये शक्यता वाढते तसेच बालकामध्ये अनेक वर्तन समस्या निर्माण होऊ शकतात. म्हणून सृदृढ, सशक्त व निरोगी पिढी निर्माण करण्यासाठी मातांना योग्य आहार मिळणे आवश्यक असते.

अपुऱ्या पोषणाचा बालकाच्या भविष्याकाळातील विकास कार्यावर होणारा परिणाम

मुल जेव्हा जन्माला येते. तेव्हा ते आपल्या मातेच्या दुधाद्वारे स्वत:चे पोषण करतो आणि व दुधाद्वारेच त्याची रोगप्रतिकार शक्ती वाढते मातेला योग्य आहारा अभावी दुध कमी असल्यास त्याचा परिणाम बालकाच्या वाढ आणि विकासावर होतो. त्यामुळे त्यांची प्रतिकार शकती कमी होते. कोणत्याही रोगाचा संसर्ग लवकर होतो. पुरक आहार योग्य न मिळाल्यास पचनासंबंधी तक्रारी निर्माण होतात. केस गळतात व केसाची योग्य वाढ होत नाही. दृष्टिदोष आढळतो त्रिकल्याही वाटुन स्वभाव चिडचिडा बनतो. बौध्दीक विकास मंदावतो.

निष्कर्ष :–

१) किशोरवयीन मुलींना वेळे अभावी सकाळचा नास्ता मिळु शकत नाही आणि भुक लागल्यावर जेवण मिळत नाही त्यामुळे अपुरे पोषण घडून येते.

२) अयोग्य सवयीमुळे मुलींच्या आहारात बाहेरील खाद्यपदार्थांचा समावेश होतो. त्यामुळे पुरेसे पोषक घटक मिळू शकत नाही त्यामुळे अपूरे पोषण होते.

शिफारसी –

१) बाहेरच्या खाद्यपदार्थांचे दुष्परिणाम पालकांनी मुलींना पटवून द्यावे.

२) पालकांनी किशोरवयीन मुलींच्या आहाराकडे लक्ष दिले पाहिजे त्यांच्या आहारात प्रथिने, स्निग्ध, कर्बोदके, जीवनसत्वे लोहयुक्त पदार्थ यांचा समावेश होईल याची काळजी घ्यावी.

३) किशोरवयीन मुलींच्या आवडी निवडीचा विचार करून त्यांच्या आहाराचे नियोजन करावे.

४) खनिजे व जीवनसत्वाचा योग्य पुरवठा होण्यासाठी फळे व पालेभाज्यांचा भरपूर वापर करावा.

५) लोहाच्या अभावी होणारा रक्तक्षय टाळण्यासाठी गुळ, फुटाने, खजुर, मणुका आदींचा आहारात समावेश करावा.

संदर्भ ग्रंथ –

१) पोषण आणि आहारशास्त्र – त्रिवेणी फरकाडे / सुलभा गोगे
२) किशोरावस्था – प्रा.सौ.नलिनी चंदवासकर
३) मानवी पोषण व आहारशास्त्राची मुलतत्वे – डॉ. आशा देऊस्कर
४) आहारशास्त्राची मुलतत्वे – प्रा.डॉ. सौ. स्नेहा महाजनी
५) आहार आणि आरोग्य – गौरीप्रिया कोपीकर

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Trophic Status and Water Quality Study Based On Diatoms from the Coastal Lakes of Palghar District, Maharashtra

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ABSTRACT

The physicochemical characters and diatoms of two coastal lakes i.e. the Khajuri Lake and the Babule Lake from the Palghar District Maharashtra were studied to ascertain the relationship between water quality and diatom diversity. The prevalent diatom assemblage from the Khajuri Lake indicates fresh to brackish, alkaliphilous water with mild pollution and mesotrophic to eutrophic status. Similarly, dominant diatom assemblage from the Babule Lake indicates alkalibiontic, eutrophic water with the impact of anthropogenic pollution. The pH values clearly indicate alkaline nature of both the lakes, but very high values of pH were noted for the Khajuri Lake (9.6). Thus, these pH values clearly point moderate to high alkaline nature of water. However, higher values of the pH for the Khajuri Lake suggest increased decomposition of organic matter in addition to elevated photosynthetic activities. The conductivity of these lakes varies from minimum at the Khajuri Lake (255µs/cm) to a maximum at the Babule Lake (620µs/cm). The highest conductivity in the Babule Lake may be due to release of ions from the decomposed organic matter during summer. The total dissolved solids (TDS) content was higher in the Babule Lake (326 mg/l), followed by the Khajuri Lake (125 mg/l), respectively. The low- medium levels of TDS in these lakes may be due to the presence of low to moderate content of potassium, chloride and sodium. The higher values of the total hardness in both these lakes may be due to the usages of excessive fertilizers from the adjoining agriculture fields. The Calcium hardness of both the lake may be categorized as rich lakes. The phosphorous and total nitrogen content suggest fair to poor, eutrophic to hyper-eutrophic water quality for both the lakes.

KEYWORDS: *Diatoms, Trophic Status, water quality, Khajuri Lake, Babule Lake*

INTRODUCTION

Lakes are vital ecosystems of great economic, cultural, scientific and educational values (Dudgeon et al, 2006). Despite the small fraction of the earth surface occupied by lakes, they play an important role in climate system, by exchanging heat and water with atmosphere and contributing to the global carbon cycle (Krinner, 2003). In recent years, intense human activities and climate change have exerted significant effects on freshwater ecosystem, eutrophication and loss of bio diversity and degradation of ecological function (Liu and Diamond, 2005). Limnology is continuously giving us a new horizon for

the study of diatoms. Past climates studies of the Indian subcontinent based on multiproxy data and correlation with the global data are being carried out (Seker and Bera, 1999; Phartiyal *et al*. 2019; Mishra *et al.* 2014; Thakur *et al*., 2018). Furthermore, global warming and eutrophication could also play a role leading to increase in autochthonous sediments due to enhanced productivity (Rose *et al.*, 2011).

The diatoms are microscopic, single celled algae that build complex, cell wall made up of silica (Saade and Bowler 2009). These algae range in size from 2 to 500 µm in length, but most of the species that encountered are in size range 10-200 µm (Winder *et al,* 2008). The diatoms are very sensitive to limnological variables. Diatoms are indicators for reconstruction of past and present ecological status John, 2012; Tripathi *et al.,* 2017; Mishra et al., 2015. Diatoms are the ideal tools for a wide a range of applications such as oil exploration, forensic examinations, environmental indications, bio-silica pattern generation, toxicity testing and eutrophication of aqueous ecosystem (Garrison, 2000; Fitzpatrick *et al.* 2003). Diatoms are also been studied as ecological and paleoecological indicators in rivers environment (Stone *et al*, 2010). Various workers have studied the diatoms and their relationship with the lake and river water quality in the different Indian regions, (Venkatachalapathy *et al*., 2014 and Logannathan et al., 2014 and Sharma et al. 2011) and present and past trophic status of lakes and reservoirs of the central India (Humane et al. (2009, 2015a, 2015b. 2016; Humane et al. 2010; Humane and Humane 2015a and b).

Geologically, both the Khajuri Lake and the Babule Lake occur above the Deccan Volcanic Province, which is practically horizontal surface with dips of almost 0.5^{o} in more or less circular kind of pattern forming a shallow dome (Bodas *et al.,* 1988; Cox 1989; Godbole *et al.,* 1996; Subbarao, 1999). Here, two lava flows with a thick sequence of intertrappeans are present. These lavas are believed to represent a younger phase of Deccan volcanic Province.

The aim of the present research is to evaluate the water quality of the Babule Lake and the Khajuri Lake of the Palghar District, Maharashtra using diatoms and an attempt had been made to evaluate the trophic status of these lakes and to estimate the possible source of pollution by comparing the water quality of both the lakes with the dominant diatoms.

MATERIALS AND METHODS

The present work deals with the investigations of the two lakes i.e. the Babule Lake and the Khajuri Lake, Dahanu Taluka, Palghar District, Maharashtra state (Figure 1). Both the lakes are present in the northernmost part of the Konkan lowlands of the Maharashtra state. The Khajuri Lake is situated between latitude of 19°54’27.04” N and longitude of 72°40’50.52” E. This lake is used for fishing during the rainy reason, however in summer, it dries completely. The lake seems to be polluted by various anthropogenic activities around it (Figure 1 C). While, the second lake i.e. Babule Lake is situated in between latitude of 19°53’44.09” N and longitude of 72°41’32.46”E is also polluted and used for fishing during rainy season (Figure 1 D).

The sediment samples (grab) from each lake along with the water samples were collected from the centres of these lakes during June 2018 (Table 1). The positions of collected samples were noted using the GPS and numbered systematically i.e. BLS1/ BLW1: Latitude- 19°53’44.09” N, Longitude – 72°41’32.46”E, and KLS1/KLW1: Latitude-19°54’27.04” N and Longitude-72°40’50.52” E. The collected sediment samples were kept in the zip locked bags with proper labelling. The rocks samples were also collected from the periphery of each lake and named as KLR1 and BLR1 for the Khajuri Lake and the Babule Lake, respectively. The epilithic diatoms were collected in the labelled zip lock bags by scrapping the rock surfaces.

For collection of water samples from lakes, air tight water bottles were used. Precaution was taken while collecting the water samples by opening the water bottle caps inside lake water to avoid the atmospheric contamination and same was closed inside the water surface. The parameters that were done during sampling itself includes pH (Make: Hanna; Model 601), TDS (Make: Hanna; Model 101E) and other parameters like alkalinity, chloride, sulphate, magnesium, calcium, total

phosphorous (TP), nitrogen, sodium, potassium, silica and chlorophyll A were analyzed from the Government of Maharashtra Water quality Lab, Level II, Hydrology Division, Ajni Nagpur by using UV spectrometer (Make: Systronics; Model: 118).

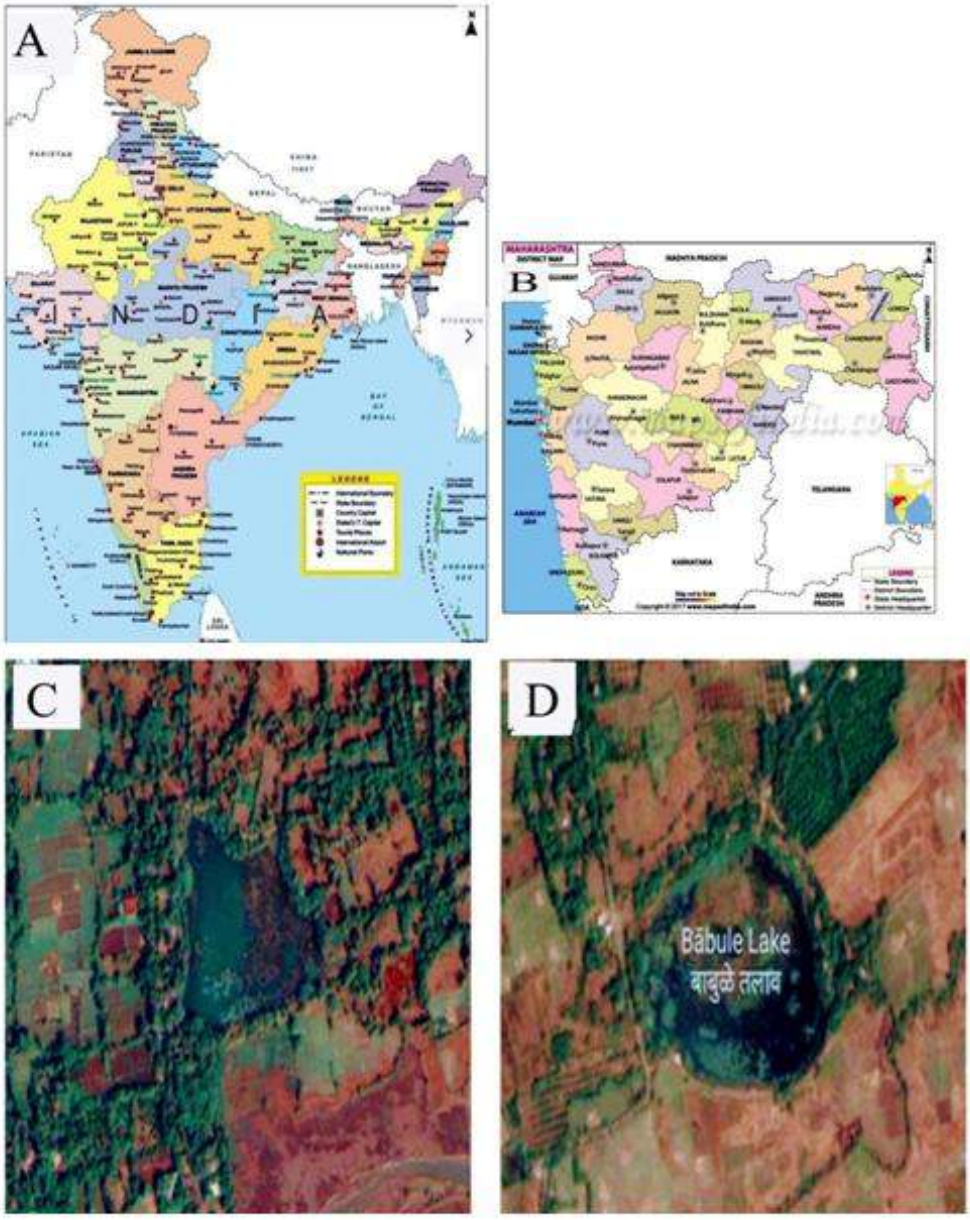

Figure 1: A) Map of India B) Map of Maharashtra C) Location map of Khajuri Lake D) Location map of Babule Lake, Palghar District, Maharashtra

Table 1: Sample locations of major lakes of Palghar district

Sr. No.	Lake	Sample no.	Lattitude	Longitude
1	Babule lake	BLS1	19° 53' 44.09" N	72° 41' 32.46"E
2	Khajuri lake	KLS1	19° 54' 27.04" N	72° 40' 50.52" E

About 0.2 -0.5 grams of the dry sample (1-2 grams wet sample) were taken in 100-200 ml beaker and 20 ml hydrogen peroxide (H_2O_2) was added to it. All the organic matter was removed by heating the sample with H_2O_2 on hot Plate (Battarbee, 1986). The process was repeated till the dark organic material gets removed (lighter colour appears). Few drops of Hydrochloric Acid HCl (30-50% normal) were added to remove carbonates from the samples. The supernatant solution was decanted and the washing process was repeated for two to four times. Clay was removed in the final wash by adding few drops of very weak ammonia solution (1%) to the processed samples. The diatom suspension was diluted to suitable concentration were allowed to settle, overnight in the cover slips. Thus, the finally processed samples were used to prepare the diatom slides by mounting dried cover slips on the glass slides using the mounting medium Naphrax. These slides were observed under the microscope at 40X and 100X magnification using Olympus Microscope and photomicrographs were taken for Identification of diatoms (Battarbee, 1986). The identification of the diatoms was done after John (2014a, b), Round *et al.* (1990), Mann (1996) and https://diatoms.org/genera/guide.

RESULTS AND DISCUSSION

The result of the hydrochemistry and sedimentary diatoms study of the major lakes of the Palghar District are discussed and significant conclusions are drawn.

(A) Hydrochemistry

Various physicochemical parameters were analysed from the collected water samples of the Khajuri and Babule Lakes (Figures. 2-4). The pH of water of the Khajuri Lake was 9.6 with 125 mg/l of TDS and 256 µs conductivity at 35° C temperature. According to WHO (2011) Standards values of pH, conductance, TDS, chloride, calcium, sodium, phosphorous of Khajuri Lake were not within the desirable limits (Table 2), whereas the pH of water from the Babule Lake was observed as 8.2 with 326 mg/l of TDS and 620µs/cm conductivity at 40° C. According to WHO (2011), the standard values of pH, conductance, TDS, chloride, calcium, sodium, phosphorous were within desirable limits of drinking water (Table 2).

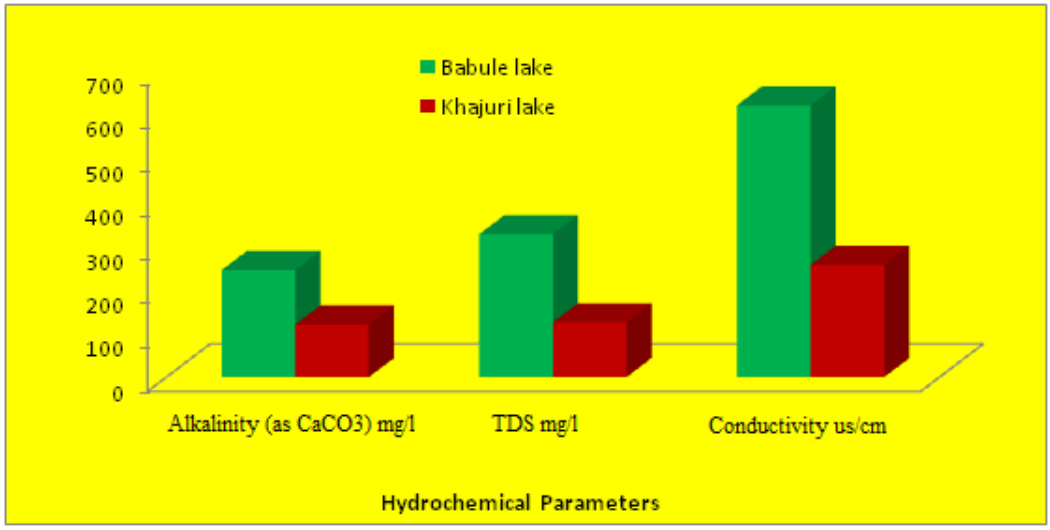

Figure 2: Graph showing variation in Alkalinity, TDS and Conductivity from the Babule Lake and the Khajuri Lake

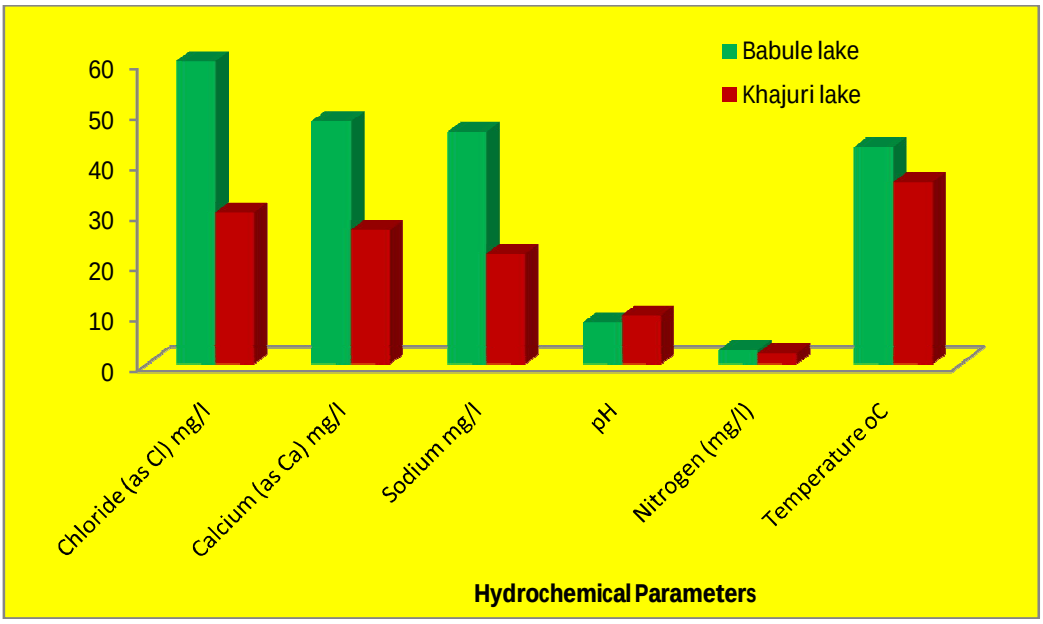

Figure 3: Graph showing variation in Cl, Ca, Na, pH, N and Temperature from the Babule Lake and the Khajuri Lake

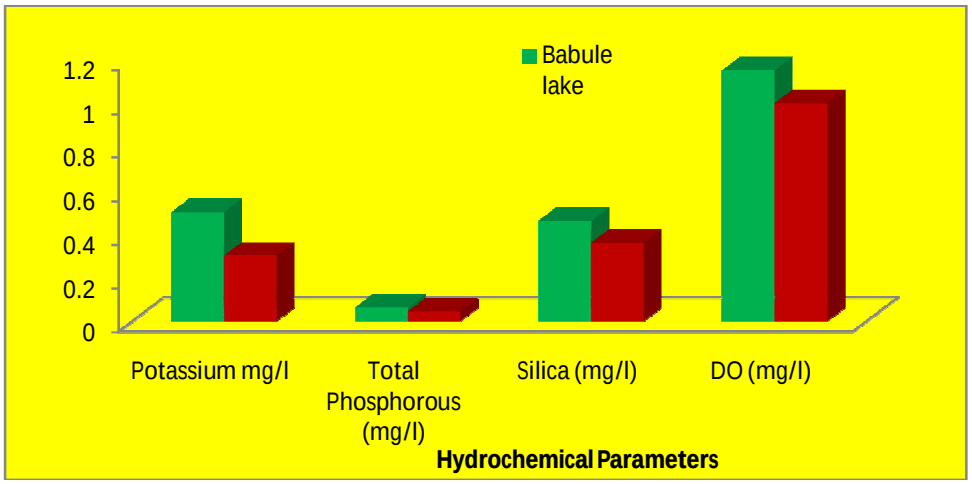

Figure 4: Graph showing variation in K, Total P, Silica and DO from the Babule Lake and the Khajuri Lake

The conductivity was 256 µs in the Khajuri Lake and 620 µs in the Babule Lake of the Palghar district. The values of Dissolved Oxygen (DO) were ranging between 1- 1.15 mg/l in both the lakes. The value of DO was high in the Babule Lake as compared to the Khajuri Lake. The total Phosphorus concentration in the Babule Lake was 0.062 mg/l and 0.045 mg/l in the Khajuri Lake. The values of chloride ranges from 30 mg/l to 60 mg/l for the Khajuri and the Babule Lakes, respectively. Sodium concentrations for the Khajuri and the Babule Lakes were 21.8 mg/l and 46 mg/l, respectively. The sodium concentration below 20 mg/l was permissible for the drinking purpose; hence water of these two lakes is not suitable for drinking purpose. Potassium concentrations for the Khajuri and the Babule Lakes were 0.3 mg/l and 0.5 mg/l, respectively. The potassium concentrations of the two lakes fall under the permissible level of drinking water (WHO, 2011). The chlorophyll content of the Khajuri and the Babule Lakes was below the detection limit

and hence consider as zero (WHO, 2011; Table 2). Temperature values of both the lakes vary from 30-45°C. The surface water temperature of these two lakes were slightly different i.e., 36°C and 40°C for the Khajuri Lake and the Babule Lake, respectively. The pH observed from both the lakes was above the neutral value i.e. above 7, which indicates alkaline nature of water. The hydrogen ion concentration i.e., pH is high in the Khajuri lake (9.6) and comparatively less in the Babule Lake (8.2). These pH values clearly indicate moderate to high alkaline nature of water. However, higher values in the pH of these lakes suggest increased alkalinity due to anoxic bacterial activity (Schindler *et al*. 1980; Cook, 1981) during decomposition of organic matter in addition to photosynthetic activity (Kumar *et al* 2008). The bicarbonate present in the water decides the alkalinity of the lake (Kumar *et al*. 2008). The water bodies having alkalinity less than 1000 mg/l may be categorized as nationally rich (Pearsall, 1930). Thus, the investigation clearly reveals that lakes can be categorised as nutritionally rich water bodies making them eutropic in nature.

Table 2: Physiochemical parameters of the water samples recorded during the sampling.

Parameter	Unit	Khajuri Lake	Babule Lake
Alkalinity (as $CaCO_3$)	mg/l	120	244
Chloride (as Cl)	mg/l	30	60
Calcium (as Ca)	mg/l	26.5	48.1
Sodium	mg/l	21.8	46
Potassium	mg/l	0.3	0.5
Total Phosphorous	mg/l	0.045	0.062
K jeldahl Nitrogen	mg/l	2.1	2.7
Chlorophyll	µg/l	Nil	Nil
Temperature	°C	35	41.5
pH	-	9.6	8.2
TDS	mg/l	125	326
Conductivity	µs/cm	256	620
Dissolved oxygen	mg/l	1	1.15

The total dissolved salt shows higher concentration in the Babule Lake (326 mg/l), and less in the Khajuri Lake (125 mg/l), respectively. Most often, low to medium levels of TDS are caused by the presence of low amount of potassium, chloride and sodium. These ions have little or no short time effects on water quality of lakes. The conductivity of the lakes varies from minimum at the Khajuri Lake i.e. 256µs to a maximum at the Babule Lake i.e. 620µs. The highest conductivity in the Babule Lake may be due to release of ions from the decomposed organic matter during summer (Kumar *et al.* 2008). Chloride concentration ranges between 30 mg/l to 60 mg/l in the two lakes under investigation indicating the low level of chloride concentration in the water bodies. The values of the water bodies having more than 58 mg/l of chloride are categorized as nutrient rich (Spence, 1964). Thus, both the lakes are classified as nutrient rich water bodies. The Calcium hardness more than 25 mg/l is categorized as rich water bodies. The Khajuri and the Babule Lakes have the calcium hardness values more than 25 mg/l. Thus, these two lakes can be categorized as rich lakes. Calcium and Magnesium in association with bicarbonate and carbonates, chlorides etc., decide the hardness of the water (Kumar *et al.* 2008). The higher values of the total hardness in the Khajuri and Babule Lake may be attributed to the addition of fertilizers in the agriculture fields. These two lakes show low concentration of dissolved oxygen suggesting the increase level of organic matter (Tsuda, 1965). The total phosphorous content in both the lakes lies in between 0.045 to 0.062 mg/l. The main source of the phosphorus may be through the sediments or may be due to the excessive use of fertilizers, detergents and municipal sewage entering into the water body (Kumar *et al.* 2008). Total Nitrogen ranges from 2.1 mg/l and 2.7 mg/l for the Khajuri and Babule Lakes, respectively. Nitrogen and Phosphorous are the important

nutrients for synthetic, autotrophs in the lake (Prakash, 1994). The low level of nitrogen content indicates minimal use of fertilizers around the Khajuri Lake, whereas, the input of cow dung from the cattle around the Babule Lake possible could have raised the values of nitrogen.

(B) Interpretation of diatoms from both Khajuri Lake and Babule Lake

The Babule Lake shows dominance of 14 types of diatoms species, which are from 11 different genera in which most dominant one is *Rhopalodia gibba* (19.90%) indicating mainly anthropogenic pollution with eutrophic trophic status of the lake (Hall, and Smol, 1992; Dixit et al., 1999). The Khajuri Lake shows dominance of 17 types of diatoms species, which are from 15 different types of genera in which *Diploneis ovalis* is the most dominant one (24.28%). All different diatoms from both the lakes are shown with their abundance in % (Tables 3 and 4).

Table 3: No. of occurrences of diatoms and their percentage from Khajuri Lake

Sr. no.	Name of Species	Number of Occurrence	Percent
1.	*Diploneis ovalis*	135	24.28
2.	*Amphora ovalis*	85	15.28
3.	*Eunotia* sp.	53	9.53
4.	*Pinnularia subcapitata*	52	9.35
5.	*Rhopaloidia gibba*	45	8.09
6.	*Aulacoseira granulata*	25	4.49
7.	*Gomphonema affine*	25	4.49
8.	*Encyonema minutum*	20	3.59
9.	*Gyrosigma spencerii*	15	2.69
10.	*Anomoeneis sphaerophera*	14	2.51
11.	*Amphora* sp.	13	2.33
12.	*Surirella* sp.	10	1.79
13.	*Nitzchia* sp.	10	1.79
14.	*Gomphonema* sp.	8	1.43
15.	*Pinnularia gibba*	7	1.25
16.	*Diploneis smithii*	7	1.25
17.	*Navicula sp.*	2	0.35
	Total	556	

Table 4: No. of occurrences of diatoms and their percentage from Babule Lake

Sr. No.	Name of Species	Number of Occurrence	Percent
1.	*RhopaloIdia gibba*	88	19.90
2.	*Encyonema minutum*	82	18.55
3.	*Pinnularia subcapitata*	52	11.76
4.	*Eunotia pectinalis*	48	10.85
5.	*Gomphonema undulatum*	32	7.23
6.	*Amphora ovalis*	28	1.4440
7.	*Navicula cryptocephala*	20	4.52
8.	*Mastogloia smithii*	20	4.52
9.	*Stauroneis anceps*	18	4.07
10.	*Cymbella similis*	18	4.07
11.	*Eunotia curvata*	17	3.84
12.	*Surirellla* sp.	12	2.71
13.	*Navicula tripuncata*	4	0.90
14.	*Eunotia incisa*	3	0.67
	Total	442	

The Principal Component Analysis (PCA) is performed on the uncorrelated variables by multiplying the original correlated variables with Eigen vector (loadings; PAST, Version, 2015). The Eigen values of the PCA are the measure of their related variance. The environment of the original variables in the PCA is provided by loadings (Helena et.al 2000). The contribution of each factor for both the lakes was calculated and score plots of first two PCA (PCA1 and PCA2) were constructed. The PCA was performed in order to understand the compositional variations among different physicochemical parameter with variation in water quality of both lakes and impact of anthropogenic activities. The result of PCA was produced by using software PAST (version 2015). PCA 1 of the 99.747% variation shows both positive and negative loadings for both Khajuri and Babule Lakes (Figure 5). *Diploneis ovalis* and *Amphora ovalis* are dominating diatom species in the Khajuri Lake, which is mainly controlled by Alkalinity and TOC in the Khajuri Lake. The high alkalinity (pH=9.6) of the Khajuri Lake positively signifies dominance of *Diploneis ovalis* and *Amphora ovalis* (Figure 6), similarly, *Rhopalodia gibba* and *Encyonema minutum* are dominating diatom species in the Babule Lake, which can be mainly correlated with total nitrogen concentration, phosphorous, Si, TDS and DO (Fig. 7). PCA 2 of 0.2527% variation is also characterized by positive and negative loadings for both the lakes (Fig. 8). Positive loading and negative loading may be due to different water chemistry during the present time. The geochemical analysis and PCA shows similar results. PCA 1 shows negative loadings i.e. -45.039 and PCA 2 shows 9.6166 for *Amphora ovalis* in the Khajuri Lake, similarly second most dominant diatom species is *Diploneis ovalis* representing PCA 1 showing negative loading i.e. -47.256 and PCA 2 shows positive loading 21.106. PCA 1 and PCA 2 show both the negative loadings i.e. -35.302 and -2.8273 for *Rhopalodia gibba* in the Babule Lake, similarly, second most dominant diatom species is *Encyonema minutum* representing PCA 1 and PCA 2 factor with the negative loadings i.e. -38.437 and -6.8376.

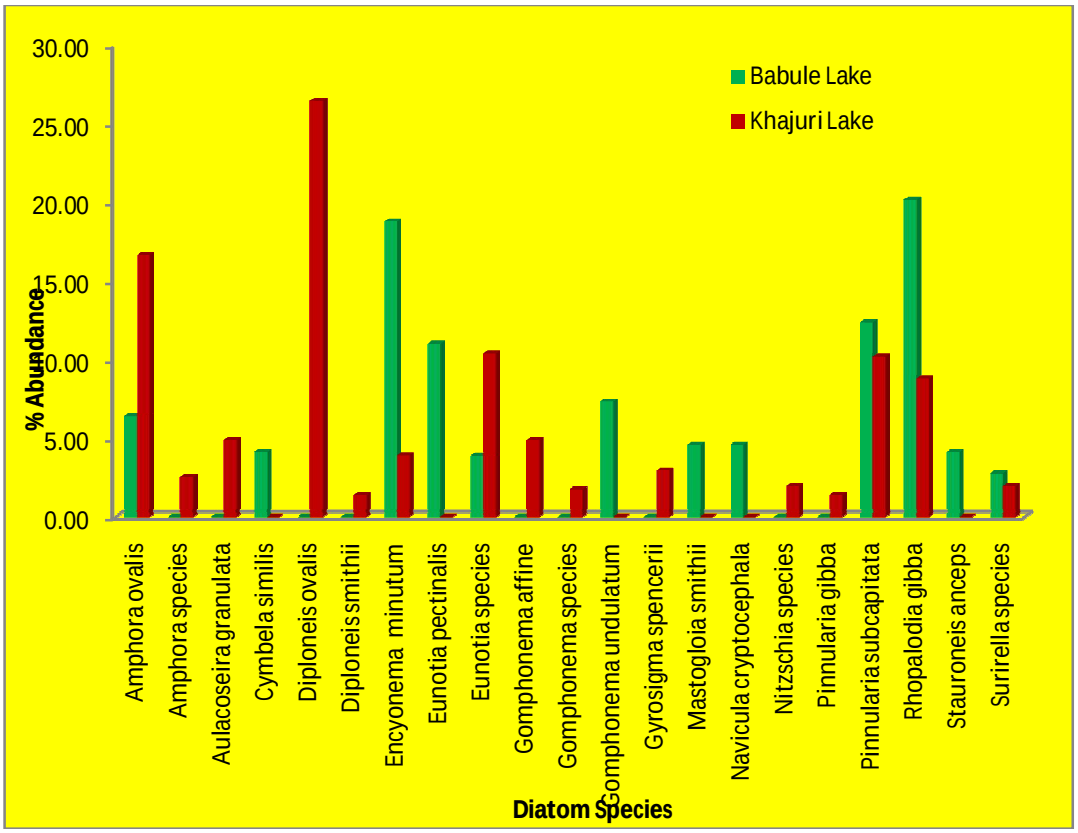

Figure 5: Abundance of Diatoms species in the Babule Lake and the Khajuri Lake

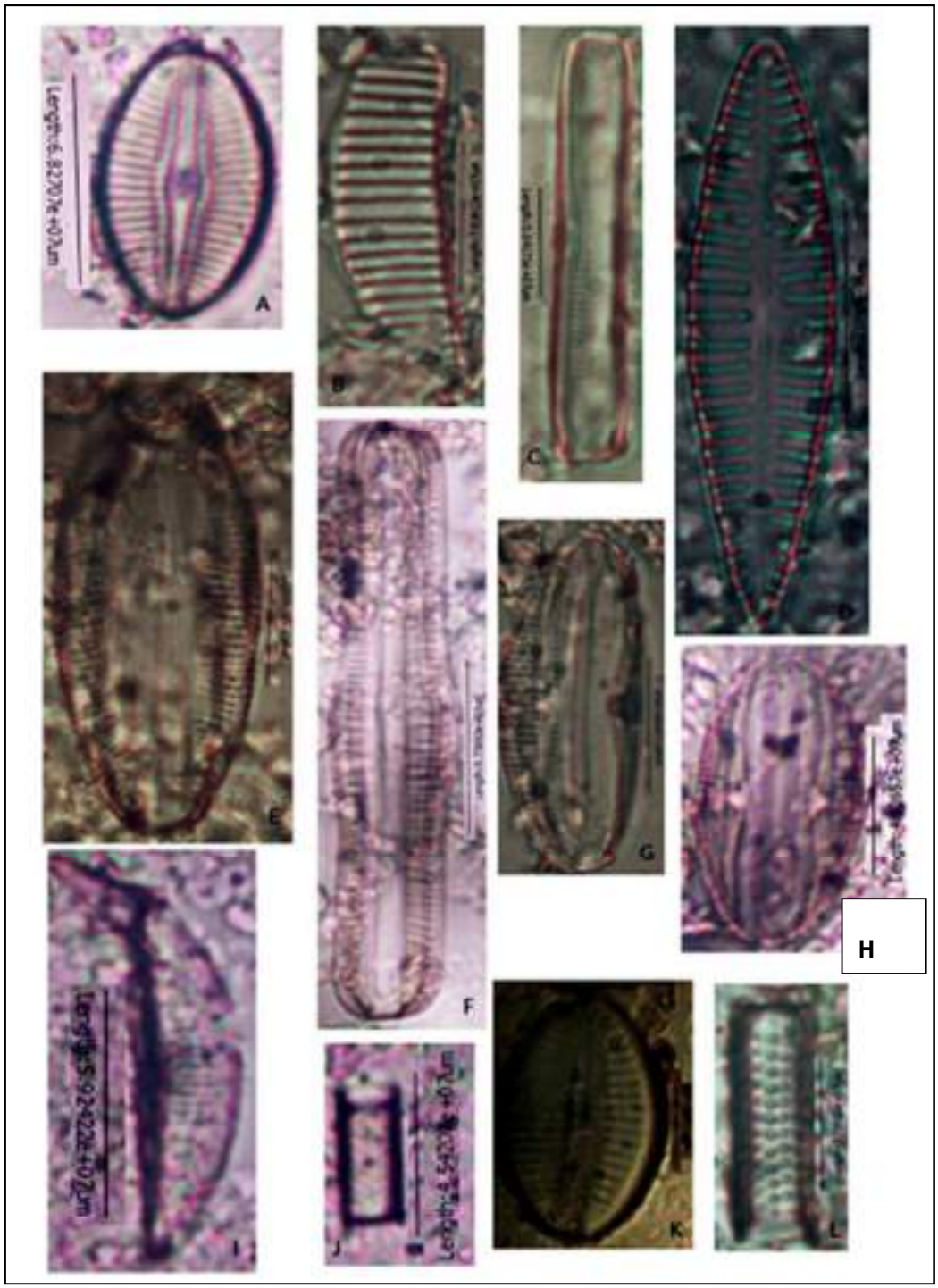

Figure 6: Microphotographs of dominant diatom species from the Babule Lake and the Khajuri Lake.

(A) *Diploneis ovalis* Rabenhorst, 1864 (KLS1); (B) *Eunotia* sp. (KLS1) ; (C) *Pinnularia subcapitata* Gregory, 1856 (KLS2); (D) *Gomphonema affine* Patrick, 1975 (KLR1); (E) *Amphora ovalis* Kutzing, 1884 (KLR2); (F) *Rhopalodia gibba* Muller, 1895 (KLR2); (G) *Amphora ovalis* Kutzing, 1884 (KLS1); (H) *Amphora ovalis* Kutzing, 1884 (KLS1); (I) *Encyonema* sp. (KLS1); (J) *Aulacoseira granulata* Rabenhorst, 1864 (KLR2); (K) *Diploneis ovalis* Rabenhorst, 1864 (KLR1); (L) *Aulacoseira granulata* Rabenhorst, 1864 (KLR1)

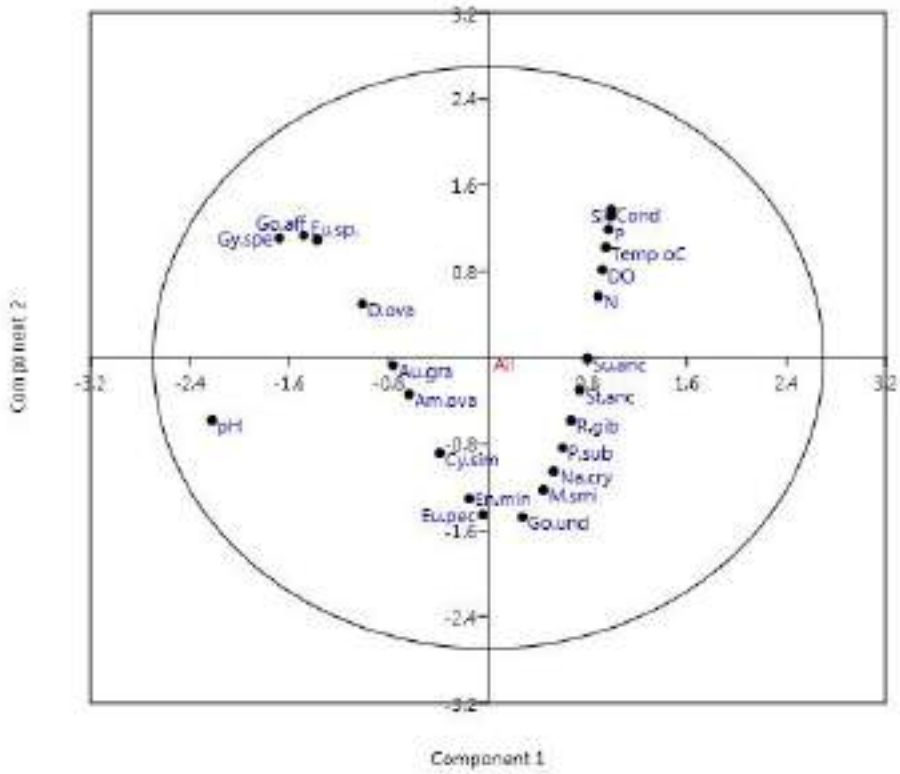

Figure 7: Principal Component Analysis of the Babule Lake and the Khajuri Lake

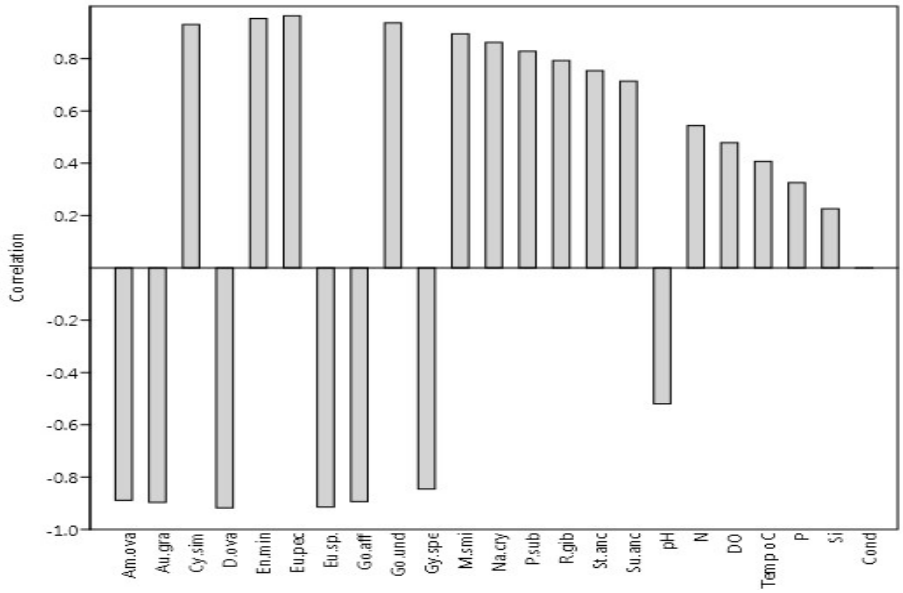

Figure 8: Loadings of physicochemical parameters

CONCLUSIONS

Both, the Khajuri and the Babule Lakes exhibit highly alkaline conditions i.e. pH- above 8, which may be due to discharge of detergents, soaps and animal waste in the lakes. The pH of lake water also indicates their alkaline status. Both these lakes are categorized as rich lake and their water is not suitable for drinking purpose. Total nitrogen content in both these lakes points increased anthropogenic activity such as use of fertilizers and detergent etc around the lakes. The Khajuri and the Babule Lakes reflect hyper-eutrophic condition on the basis of nitrogen concentration. On the basis of dominant diatom assemblage, it can be surmised that the Babule Lake was alkalibiontic (pH 8.2) and eutrophic in nature, while the Khajuri Lake indicates fresh to brackish, alkaliphilous water with pH above 7 and tolerant to mild pollution.

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CONTENTS OF ENGLISH PART - I

CONTENTS OF MARATHI PART - I

CONTENTS OF MARATHI PART - I

१५. भिवापूर तालुक्यातील सोयाबीन उत्पादक शेतकऱ्यांच्या आर्थिक स्थितीचे विश्लेषणात्मक अध्ययन

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वाणिज्य विभाग, एस.एस. जैस्वाल कॉलेज, अर्जुनी मोरगाव, जिल्हा गोंदिया.
डॉ. रिता रा. राऊत
वाणिज्य विभाग प्रमुख, यशवंतराव चव्हाण कला, वाणिज्य व विज्ञान महाविद्यालय, लाखांदूर, जिल्हा भंडारा.

सारांश

प्रस्तुत विषयाचे भौगोलिक क्षेत्र भिवापूर तालुक्याचा समावेश करण्यात आला आहे. यात भिवापूर तालुक्यातील सोयाबीन उत्पादन करणाऱ्या शेतक यांचा अभ्यास केला आहे. शेतक यांचा आर्थिक दृष्ट्या विकास व्हावा हाच दृष्टीकोन प्रस्तुत विषयाचे आहे.

तसेच अध्ययन विषयाच्या अभ्यासासाठी भिवापूर तालुक्यातील 10 गावाची व प्रत्येक गावातील 10 शेतक यांची निवड यादृच्छिक नमुना निवड पद्धतीने केली आहे. तसेच शेतक याच्या मुलाखती घेण्यात आल्या आहे. भिवापूर तालुक्यातील 100 शेतक–यांची मुलाखत नमुना निवड पद्धतीच्या आधारे घेण्यात आले आहे.

प्रस्तावना

राष्ट्राच्या अर्थव्यवस्थेत शेतीचे स्थान अतिशय महत्वपूर्ण असते. यादृच्या आर्थिक विकासावरोबर शेतीवरील लोकसंख्येचे अवलंबित्व कमी होत जाते हे जरी खरे असले तरी ही अवस्था साध्य करण्यासाठी शेतीच्या क्षेत्राची मदत मोलाची ठरते. जपानसारख्या वेगाने विकसित झालेल्या देशात सुद्धा शेतीने विकास–प्रक्रियेला हातभार लावला आहे. देश विकसित झाला तरी वाढत्या लोकसंख्येची, अन्नधान्याची आणि विविध उपयोगांची कच्चा मालाची गरज हेच क्षेत्र पूर्ण करते. विकसनशील अर्थव्यवस्थेत तर राष्ट्रीय उत्पन्न, निर्यात, अन्नधान्य आणि कच्चा मालाचा पुरवठा, रोजगार इत्यादी अनेक क्षेत्रामध्ये शेती क्षेत्राची भूमिका महत्वाची असते.

राजकारणापासून तर अर्थकारणापर्यंत सर्व क्षेत्रात कृषि उत्पादनाचे अत्यंत महत्व आहे. भिवापूर तालुक्यातील शेतकरी गेल्या कितेक वर्षापासून कापूस, ज्वारी, गहू, तूर, ऊस व भाजीपाला इ. पिकाच्या उत्पादनाबरोबरच सोयाबिन पिकाला सुद्धा अधिक महत्व देतांना दिसून येते. कारण या पिकासाठी आवश्यक असणारे वातावरण तसेच या पिकाला लागणारे बी बियाणे व इतर सोयीसुविधा पुरेशा प्रमाणात उपलब्ध असल्यामुळे शेतक यांच्या आर्थिक व सामाजिक स्थितीत सुधारणा घडवून येण्यास मदत होते. परंतु या पिकासाठी आवश्यक असणारे पुरेशी बाजारपेठ उपलब्ध नसल्यामुळे तसेच दलाल व आडते यांच्याकडून शेतक यांची पिळवणूक व शोषण थांबविण्यासाठी तसेच बाजारपेठेतील सोयाबिनच्या

जिंगतीमध्ये होणारा बदलतार यासारख्या अनेक प्रश्नांच्या सोडवणूकीसाठी संशोधनकर्त्याने प्रस्तुत विषय निवडला आहे.

मनुष्य हा समाजशील प्राणी आहे. तो समाजात राहू इच्छितो. एकटा राहून तो जीवन कंठीत करू शकत नाही. समाजाने आपली नोंद घ्यावी, सहकार्य करावे, मान द्यावा, आदर करावा असे प्रत्येक मनुष्याला वाटत असते. यातुनच सहकार्य, मैत्री, प्रेम, असहकार, इ. प्रकार घडत असतात. मनुष्य समाजशील असला तरी त्याच्या स्वभावातील, कृतीतील स्वाभिमान, अहंकार व मी पणा त्याला इतरांपासून दूर घेऊन जातो त्यामुळे तो सामाजिक असुनही सहकारी बनू शकत नाही तो इतरांवर अधिकार गाजवू इच्छीतो इतरांकडून अपेक्षा करतो पण इतरांचे अधिकार व इतरांच्या अपेक्षा मात्र जाणून घेत नाही त्याची त्याला काळजी नसल्यामुळेच समाज एकत्रित दिसून येत असला तरी त्यात किती दुरावा, असहकार आहे हे सामाजिक अभ्यासातून ध्यानात येऊ शकते. हे जाणून घेण्याची उत्सुकता निर्माण होणे अभ्यास करताना सहजिक आहे याच उत्सुकतेतून व समाजाला काही सत्य निदर्शनास आणून देण्याच्या उद्देशाने भिवापूर तालुक्यातील सोयाबीन उत्पादक शेतकऱ्यांच्या आर्थिक स्थितीचे विश्लेषणात्मक अध्ययन करण्यात आले ते पुढीलप्रमाणे निरूपित करण्यात आले आहे.

सारणी क्र. 1 भिवापूर तालुक्यातील सोयाबीन उत्पादक शेतकऱ्यांना सोयाबीन पिका मुळे प्राप्त झालेले उत्पन्न दर्शविणारी सारणी

शेतीचे क्षेत्रफळ	शेतकऱ्यांची संख्या	मध्यमान व प्रमाण विचलन (रूपये प्रती एकर)				
		2015 ते 2016	2016 ते 2017	2017 ते 2018	2018 ते 2019	2019 ते 2020
5 एकर पेक्षा कमी	12	3124 + 456	3217 ± 340	3552 ± 440	3948 + 572	4200 = 618
5 ते 10 एकर	45	3217 + 353	3402 : 347	3812 - 501	4107 ± 319	4356 ± 218
10 ते 15 एकर	31	3098 ± 213	3324 - 312	3517 : 609	4008 : 741	4294 ± 532
15 एकर पेक्षा अधिक	12	3072+107	3430—254	3642+328	4117+602	4289+325

आधार :— प्रश्नावलीचे वर्गीकरण

वरील सारणी वरून असे निदर्शनास येते की, शेतीचे क्षेत्रफळ 5 एकर पेक्षा कमी असलेल्या शेतकऱ्याना सोयाबीन लागवडीपासून मिळणाऱ्या उत्पन्नात वर्ष 2015—2016 ते 2019—2020 दरम्यान साधारण वाढ झाली. शेतीचे क्षेत्रफळ 5 ते 10 एकर असलेल्या शेतकऱ्यांना सोयाबीन लागवडी पासून मिळणाऱ्या उत्पन्नात वर्ष 2015 2016 ते 2019 2020 दरम्यान साधारण वाढ झाली आहे शेतीचे क्षेत्रफळ 10 ते 15 एकर असलेल्या शेतकऱ्याना सोयाबीन लागवडी पासून मिळणाऱ्या उत्पन्नात वर्ष 2015—2016 ते 2019 2020 दरम्यान साधारण वाढ झाली आहे. तसेच शेतीचे क्षेत्रफळ 15 एकर पेक्षा अधिक असलेल्या

शेतकऱ्यांना सोयाबीन लागवडीपासून मिळणाऱ्या उत्पन्नात वर्ष 2015–2016 ते 2019–2020 दरम्यान वाढझाली आहे

या वरून ते स्पष्ट होते की, भिवापूर तालुक्यातील सोयाबीन उत्पादक शेतकऱ्यांना सोयाबीन लागवडीपासून मिळणाऱ्या उत्पन्नात वर्ष 2015–2016 ते 2019–2020 दरम्यान साधारण वाढझाली आहे. तथापी या कालावधीतील सोयाबीन लागवड क्षेत्राच्या तुलनेत उत्पन्नात वाढझाली नाही

सारणी क्र. 2 : भिवापूर तालुक्यातील सोयाबीन उत्पादक शेतकऱ्याद्वारे शेतीव्यतिरीक्त इतर शेतीपूरक व्यवसाय करण्यासंबंधी प्रतिक्रीया दर्शविणारी सारणी

शेती व्यतिरीक्त इतर व्यवसाय	होय	नाही	एकूण
उत्तरदाते	55	45	100
प्रतिशत प्रमाण	55%	45%	100%

आधार : प्रश्नावलीचे वर्गीकरण

वरील सारणी वरून असे निदर्शनास येते की, 100 उत्तरदात्यांपैकी 55 (55%) उत्तरदाते शेती व्यतिरीक्त इतर शेतीपूरक व्यवसाय करीत असून, 45 (45%) उत्तरदाते शेती व्यतिरीक्त इतर शेतीपूरक व्यवसाय करीत नसल्याचे प्रत्यक्ष पाहणीतून दिसून आले

यावरून स्पष्ट होते की, भिवापूर तालुक्यातील बहुसंख्य सोयाबीन उत्पादक शेती व्यतिरीक्त इतर शेतीपूरक व्यवसाय करतात

सारणी क्र. 3 : भिवापूर तालुक्यातील सोयाबीन उत्पादक शेतकऱ्यांना शेतीव्यतिरीक्त इतर शेतीपूरक व्यवसायाद्वारे मिळणारे मासिक व वार्षीक उत्पन्न दर्शविणारी सारणी

शेतीपूरक व्यवसायातून मिळणारे उत्पन्न	मध्यमान (रू)	प्रमाप विचलन	किमान (रू.)	कमाल (रू.)
मासिक	3,000	±780	1200	4800
वार्षीक	32,000	± 2,300	24,000	38,000

आधार :– प्रश्नावलीचे वर्गीकरण

वरील सारणी वरून असे निदर्शनास येते की, शेती पूरक व्यवसाय करणाऱ्या एकूण 55 सोयाबीन उत्पादक शेतकऱ्यांना या व्यवसायातून सरासरी मासिक रू.3000±780 व सरासरी वार्षीक रू. 32,000±2,300 एवढे उत्पन्न प्राप्त होत असल्याचे सर्वेक्षणातून दिसून आले

निष्कर्ष

भिवापूर तालुक्यातील सोयाबीन उत्पादक शेतकऱ्यांच्या अभ्यास करतांना असे आढळून आले की उत्तरदात्यांची स्थिती समाधानकारक असली तरी फारशी चांगली नाही. त्यांच्या राहणीमानाचा दर्जा पाहिजे तितका उंचावलेला नाही त्यामुळे उत्तरदात्यांच्या आर्थिक परिस्थितीचा परिणाम सामाजिक जीवनावर विशेष झाला असे आढळून येते.

संदर्भ ग्रंथसूची

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4. डॉ कनिमडन विजय– कृषी अर्थशास्त्र
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7. जिल्हा पशुसंवर्धन अधिकारी, अमरावती, यवतमाळ, अकोला, बुलडाणा व वाशिम
8. जिल्हा निरीक्षक भूमी अभिलेख, अमरावती, यवतमाळ, अकोला, बुलडाणा व वाशिम
9. जिल्हा शल्य चिकित्सक, सामान्य रुग्णालय अमरावती, यवतमाळ, अकोला, बुलडाणा व वाशिम
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Record of Diatoms in Lakes of Amravati District, Maharashtra, India: Implications on Water Quality Changes

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Abstract

The trophic status of the two selected lakes *i.e.* the Shakkar Lake (SL) and the Kolkaz Lakes (KL) of Amravati District were assessed using diatoms to understand their relationship with the lake water quality. The SL revealed the dominance of the centric diatom taxon, *Aulacoseira granulata* (Ehr.) Simonsen (~74%). The abundance of this taxon indicates high nitrogen environments, low light saturation intensity and highly eutrophic water condition for the SL. The KL shows the prevalence of the pennate diatom species *Ulnaria ulnabiseriata* Liu et al. (~24%) indicating moderate to high level of organic matter in the lake. The dominance of phytolith type of wild emmer wheat (*Triticum dicoccoides*) suggests the existence of forest environment around both the lakes. Both the lakes have alkaline conditions. The comparison of the alkalinity values of the present lake data clearly signifies that the SL water is moderately hard and the KL is hard. Both the lakes point fair water quality on the basis of their phosphorous concentration. The total nitrogen concentration of the SL indicates eutrophic status, while the KL tends to be eutrophic to hyper-eutrophic in nature.

Keywords: Water quality, Diatoms, Sediments, Shakkar and Kolkaz Lakes, Amravati district, Maharashtra

Introduction

The limnology includes the study of structural and functional interrelationship of the biotic constituents in addition to the impact of physical, chemical and biological environments on biota (Basavarajappa *et al.*, 2014). It also encompasses the studies related to morphological studies of organisms and their interactions with the changing water quality, life histories and population densities. Lakes are the prominent inland features having the significant recreational qualities and considered as the precious natural resources (Parkinson and Gordon, 1999). The study of lakes is of paramount significance as the lake ecosystem can go through the fast environmental changes and intimately linked to hydrologic and climatic changes (Fritz *et al.*, 1999; Hall and Smol, 1999; Saulnier-Talbot, 2016; Mills *et al.,* 2017). The lakes occupy the foremost part of the freshwater resources and contain most of the aquatic life depending upon preponderance of nutrients (Labaj *et al.,* 2018; Michelutti *et al.,* 2015; Schroeder *et al*., 2016; Santos *et al*., 2017).

Diatoms are unicellular, siliceous algae (~2µm to ~200µm length or diameter) commonly present in the freshwater bodies along with chrysophycean cysts and phytoliths (John, 2014; Humane *et al.*, 2020). They are the obvious choice as an indicator to water quality and environmental changes due to their sensitivity to environmental changes and well preservation in sediments as fossil or sub-fossil (Karthick *et al*., 2009; Saros and Anderson, 2014; Wee *et al.*, 2005). The Indian wetlands have been studied for the environmental and paleoclimatic studies by several workers during the recent times (Humane *et al.,* 2019; Hussain *et al.*, 2020; Longanathan *et al.*, 2014; Tripathi *et al.,* 2017; Thakur *et al.*, 2018). The present work involves the investigation of diatoms in relation to water quality of the high altitude lakes of the Amravati district, Maharashtra, India to assess the anthropogenic impact and the possible source of pollution.

Study Area

The two high altitude lakes (the Shakkar Lake also known as Chikaldara Lake: latitude 21º 23' 41" N and

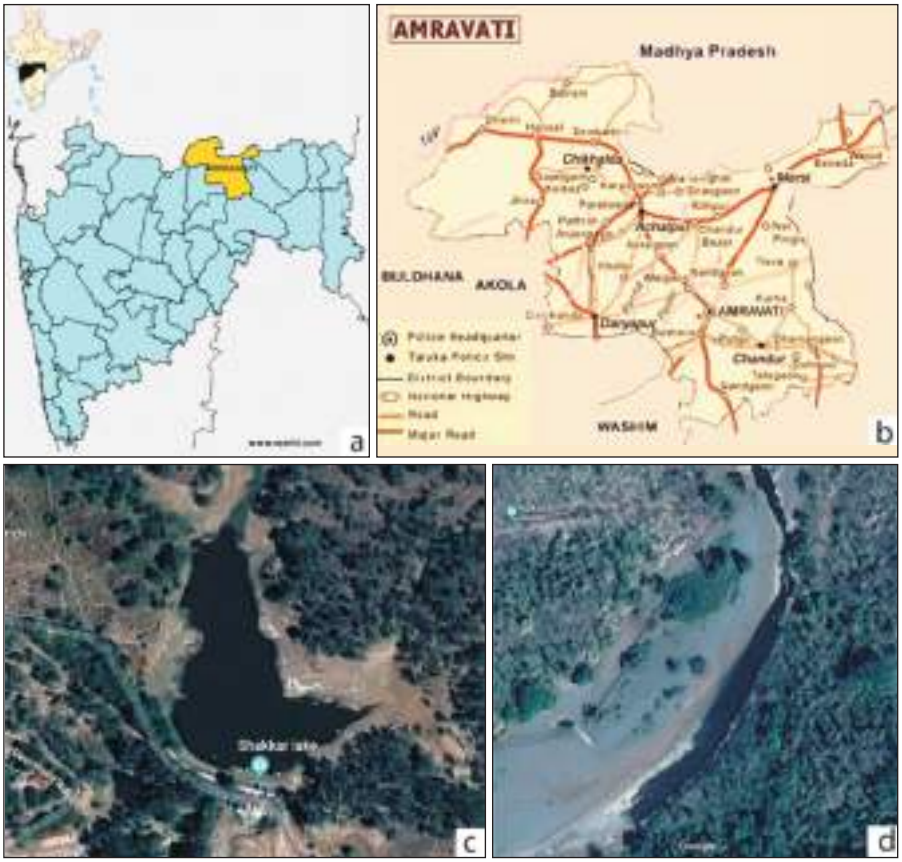

Fig. 1. (a) Geographical position of Maharashtra state in the map of India, (b) Map of the Amravati district, (c) Google Earth image of Shakkar Lake, (d) Google Earth image of Kolkaz Lake

longitude 77º 19' 50" E and the Kolkaz Lake also known as Kolkaz Doh: 21º 29' 46" N and 77º 12' 32" E) of the Chikaldara Taluka of the Amravati District, Maharashtra, India were studied under this research (Fig. 1). The SL comes under wasteland whereas the KL is present in the forest area of the Melghat Forest Reserve and geologically mainly situated on the Deccan Trap Basalt along with the presence of alluvium in the study area (DRM, 2001).

Materials and Methods

The samples were collected from the centre and the sides of both the lakes. The air tight plastic water bottles were used to collect the water samples from these lakes. The bottle caps were opened in the water while collecting the water samples to avoid contamination. The water parameters like conductivity, pH, temperature and TDS were measured during the sampling. The instruments used during sampling are pH meter by Hanna, model 101 E and conductivity meter by Hanna, model 601. The other parameters were analyzed from the Water Quality Lab, Hydrology Division, Government of Maharashtra, Level II, Ajni, Nagpur using UV Spectrometer (Systronics), Model 118.

Similarly, the grab sediment samples were also collected from these lakes and kept in the zip locked bag with proper labelling. The samples were labelled as SLS1, SLS2, KKLS1 and KKLS2. The rock samples were also collected from the periphery of the lake as well as nearby area to investigate the epilithic diatoms. The standard procedure was followed to process the samples for the diatom study (Battarbee *et al.,* 2001). About 1-2 grams of wet samples were taken in 200 ml beakers and 20 ml hydrogen peroxide (H_2O_2) was added to it and heated on the hot plate to remove the organic matter. The process was repeated till the dark organic material got removed. It is indicated by the appearance of lighter colour. A few drops of hydrochloric acid (HCl, 30% normal) were added to the beaker to remove carbonates. The supernatant solution was decanted and the washing process was repeated 2-4 times. Clay was removed in the final wash by adding few drops of very weak ammonia solution to the sample. The diatom suspension was diluted to suitable concentration and a few drops of the above suspension were allowed to settle overnight on the cover slips. The dried cover slips were mounted on the glass slides (75 mm x 25 mm) with Naphrax (diatom mountant). These glass slides were heated over the hot plate for few minutes and removed the air bubbles. These slides were removed from the hot plate and allowed to cool. The finally prepared slides were observed under the Zeiss microscope (Axioscope) at 600X and 1000x (oil) magnifications and were photographed for the identification

of diatoms and associated siliceous microfossils. About 300 diatoms valves were measured from each slide (wherever possible) and their number of occurrences were converted into percentage. The identification of diatoms species was done using the available standard literature (John 2012; Karthick *et al.,* 2013; Liu *et al.*, 2017; www.algaebase.org/search/species). The results of the Principal Component Analysis were developed using the software PAST (ver. 2015).

Results and Discussion

The results of the hydrochemistry and diatoms study of the SL and the KL of the Amravati district are discussed and significant conclusions are drawn.

Hydrochemistry

The hydrochemical study of water samples collected from both these lakes was done to generate the quantitative data useful for the correlation with the ecological optima and dominant diatoms. The results of the physicochemical parameters of the SL and the KL are provided in Table 1. The pH of the SL and the KL water was 9.1 and 8.6, respectively. The TDS for these lakes water was 104 ppm and 140 ppm, respectively. The conductivity of the KL (278 µs) is higher than that of the SL (203 µs). The temperature of these lake waters was ~34º C and ~35º C at time of sampling (Fig. 2). According to the standard values of WHO (2011), the pH, conductivity, TDS, Chloride, Calcium, Sodium, Phosphorous of both these lakes are within permissible limits of drinking water. The pH values distinctly indicate moderately alkaline nature of water of these lakes. The higher pH value of the SL suggests enhanced photosynthetic activity (Kumar *et al.*, 2008). Both these lakes fall in the category of the tropical latitudes (Das, 1989). The TDS has the greater concentration in the KL (140 ppm) followed by the SL (104 ppm) (Fig. 3). The higher content of potassium, chlorides and sodium elevates the level of TDS, but has meagre/ short term effects on the water quality. However, the toxic ions such as lead, arsenic, cadmium, nitrate and others may also be dissolved in water.

Table 1: The results of the physicochemical analysis of the SL and KL

Sr. No.	Parameter	Unit	Shakkar Lake	Kolkaz Lake
1.	Temperature	ºC	27.1	29.1
2.	Depth	Feet	26	20
3.	Secchi disc depth	Feet	1.5	5.5
4.	pH	-	9.1	8.6
5.	Conductivity	µs	203	278
6.	TDS	ppm	104	140
7.	DO	mg/l	4.75	4.55
1.	Alkalinity (as $CaCO_3$)	mg/l	88	136
2.	Chloride (as Cl)	mg/l	26	10
3.	Sulphate (as SO_4)	mg/l	10.2	8.8
4.	Calcium (as Ca)	mg/l	12.0	30.5
5.	Magnesium (as Mg)	mg/l	9.7	10.2
6.	Total Phosphorous	mg/l	0.032	0.049
7.	K jeldahl Nitrogen	mg/l	1.1	1.8
8.	Sodium	mg/l	14.9	6.9
9.	Potassium	mg/l	0.2	0.4
10.	Silica	mg/l	0.54	0.72
11.	Chlorophyll A	-	BDL*	BDL*

(*BDL- Below detection level)

The conductivity of the KL (278 µs) is higher than the SL (203 µs) (Fig. 3). The liberation of more ions from the decayed organic matter during summer possibly results in the higher conductivity in the KL (Kumar *et al.*, 2008). The alkalinity of the SL water (88 $CaCO_3$ mg/l) was lower than the KL (136 $CaCo_3$ mg/l). The high alkalinity may be solely due to the presence of bicarbonates in water (Kumar *et al.*, 2008). The comparison of the alkalinity values of the present lake data clearly reflects that the SL water is moderately hard whereas the KL water is hard (WLS, 2007). The Chlorophyll content of the both the lakes were below the detection limit (Table 1).

The key nutrients like Nitrogen, Phosphorous *etc.* are commonly associated with lakes (Garrison and Laliberte, 2010). The total phosphorous concentration of the lakes under study was compared with their concentrations on the Wisconsin Lakes (WLS, 2007). The total phosphorous concentration in the SL and the KL is 0.032 mg/L and 0.049 mg/l, respectively indicating their fair water quality (Fig. 4).

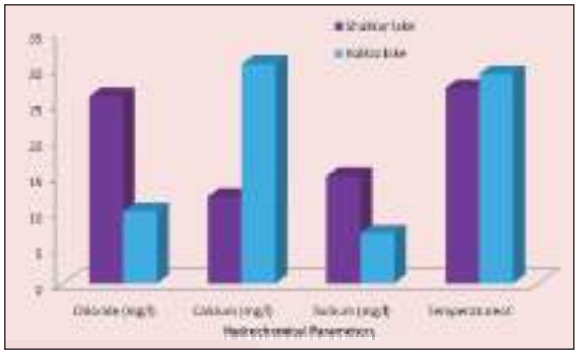

Fig. 2. Variation in Chloride, Calcium, Sodium and Temperature in the SL and the KL

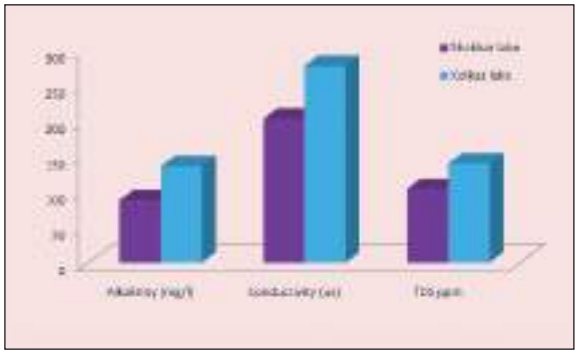

Fig. 3. Variation in Alkalinity, Conductivity and TDS in the SL and the KL

The main source of the phosphorus may be through the sediments or many a times could be due to the excessive use of fertilizers, detergents and municipal sewage entering into the water body (Kumar *et al.*, 2008). However, very low values of total phosphorous indicate less input of phosphorous through anthropogenic activity (Table 1). The nitrogen is the second most important nutrient for the development of aquatic plants and algal growth and its concentration varies due to the local anthropogenic activities. The total nitrogen concentration of the SL (1.1 mg/l) indicates eutrophic conditions and the KL (1.8 mg/l) points eutrophic to hyper-eutrophic status (WLS, 2007; Fig. 5). The potassium concentration in the SL and the KL is 0.2 mg/l to 0.4 mg/l, respectively. The amount of potassium concentration in both the lakes is good for drinking purpose (WHO 2011). The concentrations of Chloride and Sodium show their low levels in both the lakes (Fig. 2). The Calcium hardness more than 25 mg/l is categorized as rich water bodies (WLS, 2007). The Calcium hardness of the KL (30.5mg/l) is more than 25 mg/l and therefore categorized as rich lake (Fig 2). The Sodium concentration for the SL and the KL is 14.9 mg/l and 6.9 mg/l, respectively (Fig. 2). The sodium concentration below 20 mg/L is permissible for the drinking purpose, due to which we can categorize both the lakes as a good source for drinking water (WHO, 2011; Table 1).

Diatoms and Water Quality

Diatoms were studied from the high altitude SL and the KL of the central India to recognize their responses to the water quality. Diatom species respond to variation in nutrient supply of the water bodies caused due to the anthropogenic activities and for changing climatic conditions (rainfall and drought). The percentage distribution of diatom species from the SL and the KL is shown in Table 2-3. The implications of the most dominant diatom species discovered from the SL and the KL are discussed in the present work (Fig. 6a-i). The SL contains 32 species belonging to 22 genera of diatoms (Table 2). *Aulacoseira granulata* (~74 %) is the most abundant species of the centric diatoms in the SL. However, the very low abundance of the pennate diatoms (~12%) in the SL (12%) clearly indicates the high level of productivity in the lake (Table 2). The KL contains 38 species belonging to 22 genera of diatoms (Table 3). It shows the dominance of the pennate diatom species *Ulnaria ulnabiseriata* (~24%) and the centric diatom taxon *A. granulata* (12.73%). Thus, the KL suggests mesotrophic status with the availability of moderate level of nutrients. *A. granulata* is the most commonly present in the shallow and eutrophic to hyper-eutrophic waters (Stoermer *et al.*, 1995). *A. granulata* is also abundant in the high nitrogen environments (Kilham and Kilham, 1978). *A. granulata* exists in the less transparent eutrophic waters because of its lower light saturation intensity (Talling, 1957). *A. granulata* is the most prevailing taxon in the SL of Chikaldara (Fig. 6). Thus, the presence of this dominant taxon clearly indicates the high nitrogen environments, low light saturation intensity and highly eutrophic water conditions for the SL. *U. ulnabiseriata* indicates moderate organic pollution and alkaliphilous water condition. The optimum phosphorous ranges between 0.035 mg/l to 0.1 mg/l. It indicates oligotrophic to mesotrophic state (www.environment-agency.gov.uk). The dominance of *U. ulnabiseriata* is very clearly evident in the KL suggesting alkaliphilous (pH – 8.6) and mesotrophic status of the water. Moreover, the phosphorous concentration in the KL is 0.049 mg/l, which falls in the optimum range of phosphorous as discussed previously. The dominance of this species also suggests moderate to high level of organic matter in the KL. Thus, the comparison between the SL and the KL clearly suggests that the mesotrophic to eutrophic status for the earlier and mesotrophic conditions for the later. The dominance of the wild emmer wheat (*i.e. Triticum dicoccoides*) phytolith indicates the existence of forest environment developed under warm sub-humid tropical environments around the SL and the KL (Fig. 6j).

Principal Component Analysis

The Principal Component Analysis (PCA) involves the uncorrelated variables derived after multiplying the original correlated variables with the Eigen vector *i.e.* loadings. The involvement of original variables in the PCA is represented by

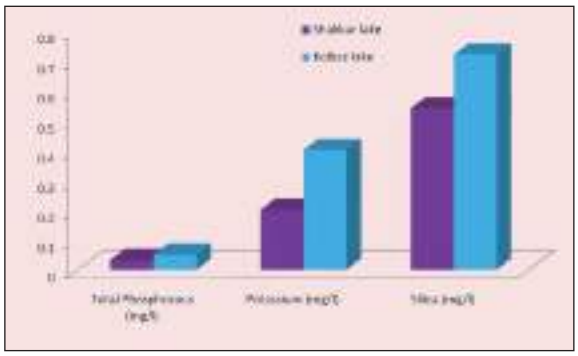

Fig. 4. Variation in Total phosphorous, Potassium and Silica in the SL and the KL

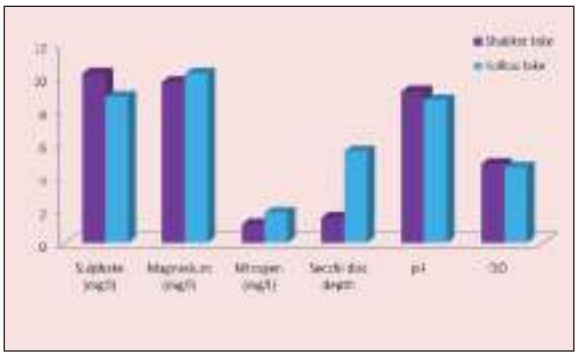

Fig. 5. Variation in Sulphate, Magnesium, Nitrogen, Secchi disc depth, pH and DO in the SL and the KL

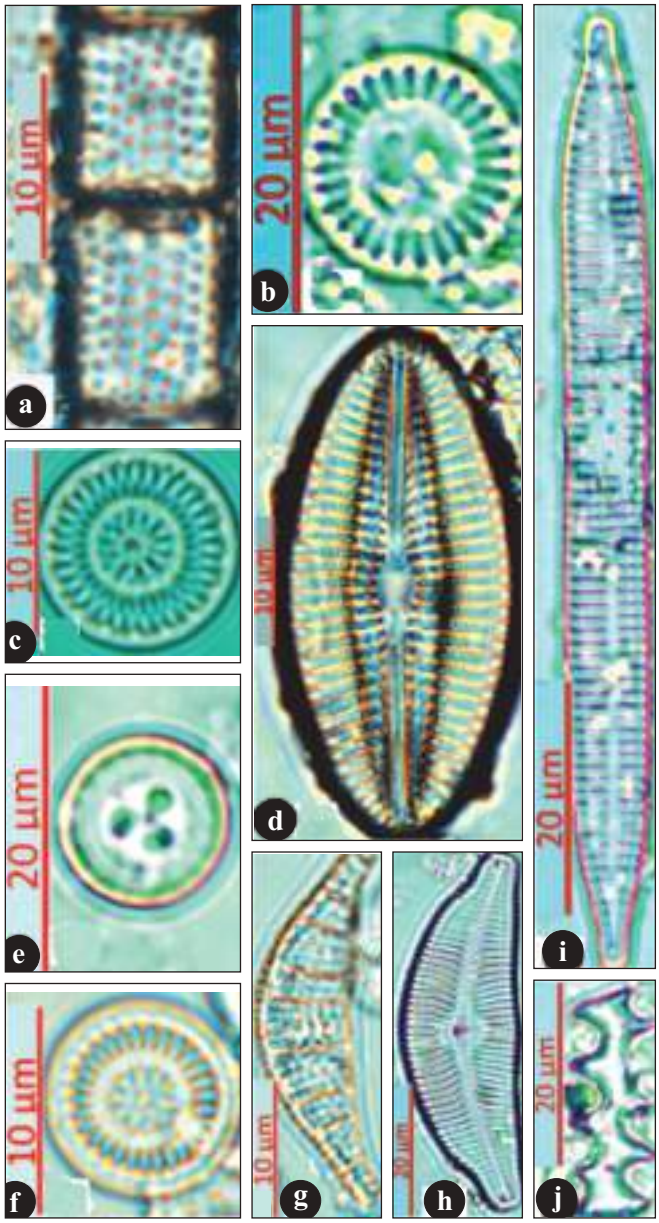

Fig. 6. The dominant diatom species from the SL and the KL, a. *Aulacoseira granulata* (Ehr.) Simonsen (PGDG/Diat/SLS2); b. *Cyclotella meneghiniana* Kützing (PGDG/Diat/KKLR1); c. *Discostella stelligera* (Cleve & Grun.) Houk & Klee (PGDG/Diat/KKLS2); d. *Diploneis smithii* Brébisson (PGDG/Diat/SLS1); e. *Pantocsekiella ocellata* Kiss & Ács (PGDG/Diat/SLS1); f. *Discostella stelligera* (Cleve & Grun.) Houk & Klee (PGDG/Diat/KKLS2); g. *Rhopalodia gibberula* Müller (PGDG/Diat/KKLS2); h. *Cymbella tumida* Brébisson (PGDG/Diat/KKLS2); i. *Ulnaria ulnabiseriata* Liu *et al.* (PGDG/Diat/KKLS1); j. *Triticum dicoccoides* (wild emmer wheat phytolith; PGDG/Phyt/SLS2)

the loadings, while the individual changed observations are called as scores (Helena *et al.*, 2000). The PCA was performed on the normalized variable for 19 parameters to understand their correlations. The contributions of each factor for both the lakes were computed and loadings of the first two principal components (*i.e.* PCA 1 and PCA 2) were constructed (Table 4). The coefficient of each variable for the first component

Table 2: Percentage abundance of diatom species in the SL

Sr. No.	Abbrev-iations	Name of Species	No. of Occurrences	Percentage
1.	AGRA	*Aulacoseira granulata*	4079	73.62
2.	CMEN	*Cyclotella meneghiniana*	350	6.31
3.	DSTE	*Discostella stelligera*	300	5.41
4.	DSMI	*Diploneis smithii*	148	2.67
5.	POCE	*Pantocsekiella ocellata*	135	2.44
6.	UULN	*Ulnaria ulnabiseriata*	81	1.46
7.	GSPE	*Gyrosigma spencerii*	80	1.44
8.	PSUB	*Pinnularia subcapitata*	66	1.19
9.	SOVA	*Surirella ovalis*	40	0.72
10.	NVIR	*Navicula viridula*	38	0.69
11.	RGIB	*Rhopaloidia gibba*	21	0.38
12.	CPLA	*Cocconeis placentula*	18	0.32
13.	AAMB	*Aulacoseira ambigua*	16	0.29
14.	STEN	*Surirella tenera*	16	0.29
15.	RGIB	*Rhopaloidia gibberula*	15	0.27
16.	GAFF	*Gomphonema affine*	15	0.27
17.	CTUM	*Cymbella tumida*	13	0.23
18.	PSP.	*Pinnularia sp.*	11	0.19
19.	GUND	*Gomphonema undulatum*	10	0.18
20.	AMIN	*Achnanthidium minutissimum*	10	0.18
21.	NRAD	*Navicula radiosa*	10	0.18
22.	GKUT	*Gyrosigma kützingii*	10	0.18
23.	AOVA	*Amphora ovalis*	9	0.16
24.	EMIN	*Encyonema minutum*	9	0.16
25.	CSP.	*Caloneis sp.*	9	0.16
26.	EARG	*Epithemia argus*	8	0.14
27.	TVIC	*Tryblionella victoriae*	8	0.14
28.	SNIA	*Stephanodiscus niagarae*	7	0.12
29.	PGIB	*Pinnularia gibba*	4	0.07
30.	NSP.	*Nitzchia sp.*	2	0.03
31.	HVIR	*Hantzchia virgata*	1	0.02
32.	CRAD	*Cyclotella radiosa*	1	0.02
		Total	5540	

against the second are mainly described here using the PCA loadings. The PCA loadings show strong correlation with alkalinity, Cl. SO4, Ca, Mg, TP, N, Na, K, Si TOC and depth (Secchi) in the SL and the KL (Table 4). The PCA loadings for the SL and the KL show moderate correlation of pH, conductivity, TDS, DO and *A. granulata* (Table 4). The variance of the principal components is known for the largest eigen values of the physicochemical parameters and diatoms from the SL and the KL. The physicochemical parameters and diatoms from the SL and the KL have the maximum eigen values with the variance of 79% and 10%, respectively for the component 1 and component 2 (Table 5).

PCA 1 of 79 % variance shows positively high loadings for conductivity, TDS, Cl, SO4, TOC, Si and depth (Secchi) and negatively high loadings for alkalinity, pH, DO, Ca, Mg, TP and *A. granulata* (Fig. 7). The PCA of both the lakes can be clearly categorized in to two parts as high affinity (right hand side) and moderate to least affinity group (left hand side; Fig. 8). The physicochemical parameters grouped to the right side

Table 3: Percentage abundance of diatom species in the KL

Sr. No.	Abbrev-iations	Name of Species	No. of Occurrences	Percentage
1.	UULN	*Ulnaria ulnabiseriata*	472	24.44
2.	AGRA	*Aulacoseira granulata*	246	12.74
3.	RGIB	*Rhopaloidia gibberula*	183	9.48
4.	GUND	*Gomphonema undulatum*	144	7.46
5.	CTUM	*Cymbella tumida*	141	7.30
6.	DSTE	*Discostella stelligera*	134	6.94
7.	EARG	*Epithemia argus*	80	4.14
8.	EMIN	*Encyonema minutum*	70	3.63
9.	NRAD	*Navicula radiosa*	53	2.74
10.	NVIR	*Navicula viridula*	48	2.49
11.	AAMB	*Aulacoseira ambigua*	44	2.28
12.	PHAU	*Planothidium hauckianum*	37	1.92
13.	PGIB	*Pinnularia gibba*	34	1.76
14.	SPUP	*Sellaphora pupila*	32	1.66
15.	NOBT	*Nitzchia obtuse*	29	1.50
16.	ASPH	*Anomoeneis sphaerophora*	28	1.45
17.	GAFF	*Gomphonema affine*	26	1.35
18.	GSP.	*Gomphonema sp.*	21	1.09
19.	RGIB	*Rhopaloidia gibba*	16	0.83
20.	CPLA	*Cocconeis placentula*	16	0.83
21.	EAP.	*Epithemia sp.*	14	0.73
22.	RMUS	*Rhopaloidia musculus*	11	0.57
23.	CMEN	*Cyclotella meneghaniana*	8	0.41
24.	NRYN	*Navicula ryhchocephala*	5	0.26
25.	PSUB	*Pinnularia subcapitata*	5	0.26
26.	NSP.	*Neidium sp.*	5	0.26
27.	NCRY	*Navicula cryptocephala*	4	0.21
28.	ETUR	*Epithemia turgid*	3	0.16
29.	GPAR	*Gomphonema parvulum*	3	0.16
30.	CLAN	*Cymbella lanceolata*	3	0.16
31.	COCE	*Pontocksiella ocellata*	3	0.16
32.	STEN	*Surirella tenera*	3	0.16
33.	PBRE	*Pseudostaurosira brevistriata*	2	0.10
34.	CCUS	*Craticulata cuspidate*	2	0.10
35.	CPUL	*Ctenophora pulchella*	2	0.10
36.	KTRI	*Kulikovskiyia triundulata*	2	0.10
37.	PSP.	*Pinnularia sp.*	1	0.05
38.	SANG	*Surirella angusta*	1	0.05
		Total	1931	

Table 4: The loadings of the PCA for the parameters of the SL and KL

Parameters	PC 1	PC 2
Alk	0.32	-0.32
Cl	-0.30	0.29
SO_4	-0.29	0.24
Ca	0.30	-0.23
Mg	0.30	-0.18
TP	0.29	-0.11
N	0.29	-0.04
Na	-0.25	-0.11
K	0.25	0.13
Si	0.24	0.19
TOC	0.23	0.24
Secchi (depth)	0.21	0.27
pH	-0.17	-0.33
Cond.	0.16	0.31
TDS	0.14	0.29
DO	-0.10	-0.27
Au gra	-0.06	-0.24
Dis stel	0.05	0.18
U uln	0.02	0.09

Table 5: The Eigen value and % variance of the PCA for the parameters of the SL and KL

PC	Eigen value	% variance
1	6.84782	79.233
2	0.869972	10.066
3	0.319113	3.6923
4	0.148619	1.7196
5	0.111968	1.2955
6	0.07086	0.81989
7	0.055434	0.64139
8	0.049745	0.57557
9	0.037419	0.43296
10	0.026526	0.30692
11	0.023804	0.27543
12	0.022312	0.25817
13	0.014533	0.16816
14	0.012543	0.14513
15	0.012333	0.1427
16	0.008495	0.098296
17	0.006041	0.0699
18	0.002927	0.033865
19	0.002188	0.025311

representing component 1 ? are distinguished by the higher concentrations of TDS, conductivity, depth (Secchi), TOC, Si, K, N and TP with their influence on diatoms species, *U. ulnabiseriata* and *D. stelligera* (Fig. 8). The parameters like pH, alkalinity, DO, SO4 and Cl have moderate to least effect on the water quality of these lakes. *A. granulata* population has moderately influenced by these water quality parameters (Fig. 8).

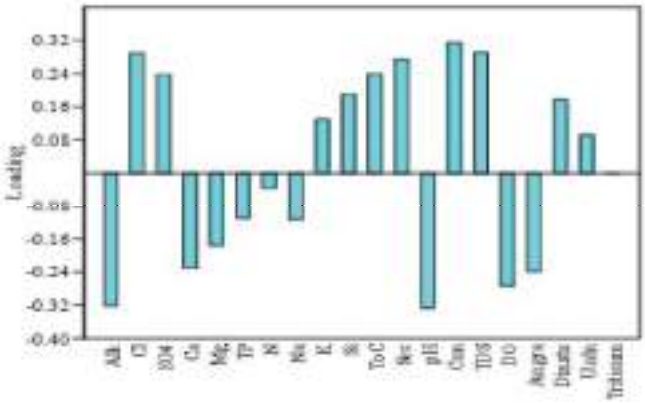

Fig. 7. PCA Loadings of hydrochemical components of the SL and the KL

Conclusions

The pH of the SL and the KL indicates the alkaline condition supporting the growth of more aquatic plants. The

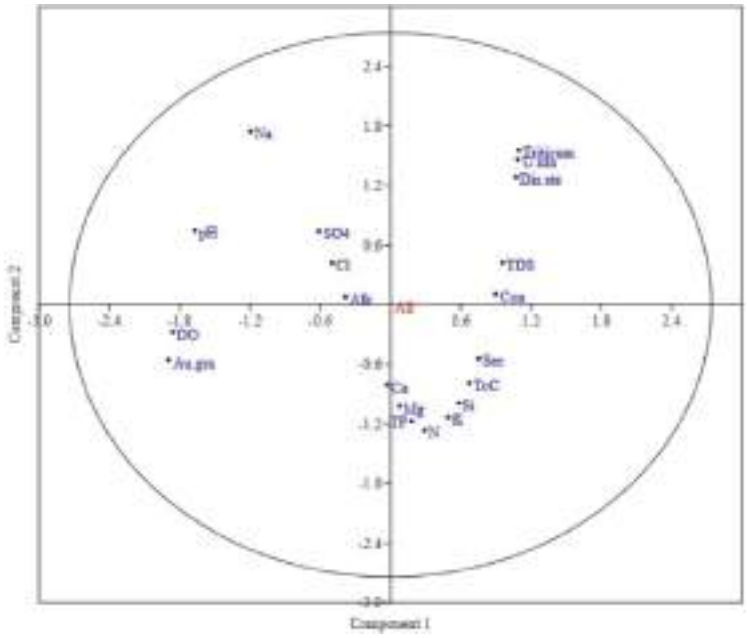

Fig. 8. Cross-plot of the PCA for hydrochemical components of the SL and the KL (Au. gra: *Aulacoseira granulata*; Dis. Ste: *Discostella stelligera*; U.uln: *Ulneria ulnabiseriata*; *Triticum dicoccoides*: phytolith)

comparison of the alkalinity values of these lakes clearly indicates moderately hard nature of the SL water and hard water for the KL. The total phosphorous concentration indicates the fair water quality for both the lakes. On the basis of the total nitrogen concentration, the SL water indicates eutrophic condition, while of the KL suggests eutrophic to hyper-eutrophic status. The dominance of *A. granulata* indicates high nitrogen environment, low light saturation intensity and highly eutrophic water condition for the SL. The abundance of *U. ulnabiseriata* suggests moderate to high level of organic matter in the KL. The dominance of wild emmer wheat (*T. dicoccoides*) suggests the existence of forest environment around both the lakes. The PCA results revealed the strong association of the hydrochemical parameters such as TDS, conductivity, depth (Secchi), TOC, Si, K, N and TP with *U. ulnabiseriata* and *D. stelligera*, while *A. granulata* has moderate to low correlation with pH, alkalinity, DO, SO4 and Cl in the lakes under study.

Authors' Contributions

Pranika Chahande: Investigation, Methodology, Formal Analysis, Writing – original draft. Samaya S. Humane: Conceptualization, Visualization, Investigation, Data Curation, Reviewing, Editing and Supervision. Sumedh Humane: Investigation, Writing - Reviewing and Editing. Snehal Juare: Investigation, Formal Analysis.

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CONTENTS

IMPACT OF MOBILE INTERNET ON RURAL DEVELOPMENT IN INDIA: A CASE STUDY

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Abstract:

The new trend of internet is very useful in human life especially in youngster. The present study examined the relationship of social media, IT and its application in users. In 2020, users are increases rapidly with new trends like androids that's why they having new education with new features. There are 29.98 million users founded in Maharashtra in 2021(link 1). Peoples are doing various tasks with mobile like banking, Shopping, education and entertainment etc. Internet Mobile plays an important role in Indian Economy. Indian Government has provides various digital platforms to accelerate the employment to society and to change the view of new generation according to the development of rural areas. Now a days, mobile using is becomes a habit for those people who work with it or only play with it for every time. So it could reach to rural areas from civil area. Peoples are from rural area also using E-Commerce. The Internet Education is expanded through digital platforms within short period in 2020-21; it may be due to the corona pandemic. This study is depend upon how the internet mobile useful for farmers, students, shoppers, women at home and other any employers in rural areas.

Keywords: *Internet Mobile, rural development, SocialMedia, E-Commerce, Digital Platform, SD*

INTRODUCTION:

The present generation is totally depends upon the mobile internet. During Corona Pandemic Period the mobile users were increased everywhere. Even rural area's peoples are also commonly come under the network system of internet mobile. Social Media is playing a major role in keeping interest among the people. In 2021, there are 61% mobile users in India founded which are households only as compare to 21% in 2017. In 2021, 80 million peoples came under the internet using out of them 38% are comes due to the corona pandemic period (link 2). Information Technology has provides transformation in the form of text, images, number, graphs, tables, video and any information's through various satellite links. Peoples can share information with various digital platforms. IT sector contributes in development of Indian Economy by providing facilities like-e-commerce, service area, income tax department, banking system etc. In this way peoples can use huge data of internet.

Most of rural areas peoples are farmer and the agriculture sector is very weak due to poor infrastructure and lack of knowledge. India has to push the agriculture sector as a part of Indian Economy. So at the globalization stage, agriculture has to come up once more with new knowledge and new approach. By empowering to farmer, they need to learn about internet facilities and use them. Communication by online mode also has done everywhere so famers can expand their market with communication by online using digital platforms. Social Media can reach to the agriculture sector and help to access farmer's requirements in media. Sometimes Farmers required information about climate change, mining,

weather report, product varieties, product disease, latest tools and techniques for production etc. are can get from IT. Similarly, in rural area, mobile users are rapidly spread among young generation. IT sector also contribute in green economy of India. Cashless Transaction is one of the popular schemes in growing green economy.

The scope of IT in rural area were seen especially in marketing, Banking, Entertainment and education. So rural areas peoples can get online based knowledge. Hence we can say that 'It is Sign of Development". Nature of Indian Economy is changed by the mean of technology. The touch button system converts into the touch screen system. The new look of Indian Economy is seen in the form of Technical Economy. Major part of technical sector is played mechanism role for integrating, transforming, adopting and challenging system. Development is required in the manner of psychological factor hence it is challengeable for them to accept advance criteria of technology.

OBJECTIVES OF THE STUDY

- To study the status of rural development.
- To observe the effect of internet facility on rural area
- To study the uses of internet mobile and its impact on SD.

Data Collection This study is depending upon qualitative and quantitative data analysis. The data is taken from secondary and tertiary sources i.e. newspapers, Books, websites, journals, articles etc.

Advance Technology and Rural Development: Rural Area is commonly known for limited roads, limited electricity, limited Water, limited earning and limited life. We can say commonly about population differences is that "Amdam Athani Kharcha Rupaya". Their first problem is about Roti, Kapda Aur Makan. But whatever they had gain all spend in their special addiction like drinking, smoking, rummy etc. No savings there where. They had faced many problems like credit of loan, mortgage of assets, lack of education, Marriage at child level, many health problems, superstitions and whole day only work. All over this, when technology is adopt by these peoples there are many changes happened amazingly. The Indian Government also support to these peoples to improve their life for living digital life. Due to the advanced technology these peoples can do their works like banking using various apps, can get agriculture data from internet, farmers can get solution about their crop diseases and can get suggestions from experts by various agricultural websites. We can differentiate them which are using technology or without using technology. There is difference between technology based person and non- technology based person is only development about living life, thinking about life. They become economically strong farmer or people.

There are some scheme launched by Indian Government by offline or online mode for the development of rural area like Pradhan Mantri Awas Yojna for providing homes to people in 2016(link3). Pradhan Mantri Gram Sadak Yojna for road connectivity, Din Dayal Upadhyay Gramin Kaushaly Yojna for carrear aspiration in youth, Gram Swarojgar Yojna, NREGA, Sampurn Gramin Rojgar Yojna, Sarv Shiksha Abhiyan, Sansad Adarsh Gram Yojna, National Social Assistant Programme and PURA etc. (link4)

Similarly there are another plans introduced by India Prime Minister Hon' Narendra Modi Government like Pradhan Mantri Kisan Samman Nidhi, Pradhan Mantri Kisan Pension Yojna, Jan Dhan Yojna, Skill India Mission, PM Mudra Yojna, Ujala Yojna, Bima yojna etc. Here, we just put the various schemes shortly which are related to economic development, life security, for secure all primary requirements.(link-5)

From above Government Schemes, most of these are very beneficial but some schemes are not suitable to rural peoples like pension yojna and ujala yojna etc. Some peoples are suffered from heavy electric bill; some peoples could not get pension amount completely and some farmers yet not get security and proper rate for their crop. Now days, Technology becomes mediator between farmer and government. Any person from rural area can contact direct to government and ask essential queries about their problems through advanced technology. Due to advanced IT sector

every farmer having androids with effective features which useful to share information about their products. Farmers can advertise through social Medias, various mobile apps and by creating their own websites. Government also helps to farmer for selling their products by giving insurance securities with help of various government schemes. Government also connected with peoples by technology on various platforms like eNAM- National agriculture market for online marketing. Advanced technology taking major role in technology based education which is most important in youth generation. Hence youth generation becomes internet survivor in rural area. In corona Period, it is compulsory to accept new technology for learning purpose. The people from rural area having a broad attitude due to advanced technology.

Ministry-wise expenditure in the year 2021 and 2022 in according Rural Development is as follows-(Rs. crore).

Table 1 Expenditure of Rural Development

	2019-20	2020-21	2021-22
Revised	124549	1,24,549	-
Budgeted	119874	1,22,398	1,33,690
Total	26,86,330	30,42,230	34,83,236

(Source-Budget at a Glance Union Budget Documents 2021-22 PRS)

Out of 13 allocation of expenditure explained in union budget, one is given about rural development expenditure differences occurred in referred years. According to the Table No. 1, Indian Government had spent for rural development near about Rs. 1, 33,690 crore in 2021-22. It is 3.84% of total expenditure.

India has at second largest rank highest internet market in world. Company such as Sigfox, Cisco System and Fujitsu are delving into the agricultural market, offering innovative solution to countries (link-14).

Social Media and Rural Behavior in India Social Media is creating a new angel to people for digitalization. Today, everyone having mobile and they are performing various activities with it. Social Media provides many platforms like Facebook, Twitter, Instragram, Youtube etc. With Social Media, peoples can share information's, news, innovations etc. It is strong platform for effective communication. These platforms are playing a very important role in rural people's life. The life can changed due sharing their thoughts from rural to urban. The media has reached at rural level due to these platforms and rural peoples can take a high jump to catch their target.

Now the Social Medias especially famous for marketing. This marketing can be about a product, talent, education, about awareness i.e. News etc. There are some famous e-commerce companies like Whats App, Amazon, Flipcart, Missho, Myntra etc and some personalities are also famous by using their talent like Bhojpuri Adarsh Anand and Group for dance and mimicry. Housewife's are also using social media and selling their talent with perfect act. This attitude is necessary for empowerment of economy. This is happening in rural and urban areas also.

The technology introduced from urban to rural has been development from Air India Radio up to smart T.V. and now android also. This helps to change people's opinion about living life with advanced technology. IT is mediator between all over world for communication. The rural area can attach to the all over world with digitalization. So some values can be implemented and accepted in rural peoples by providing new approach to backward and uneducated or illiterate society. In 2022, the Indian Population is 1,433 million, out of them 299 million population is active on internet in rural area. (link16). In 2018-19, the data consumption in rural area was 400% increases especially in official work by Bharat Net Connections. (link17).

E-Shopping Habit of Rural People: Rural Market is getting speed for acquiring products and services due to information technology. In rural area, peoples are going to market for buying some products and use it as usual. Sometimes they were bargaining for price to save money. Some products, if found damage that time, then they could exchange it with another products. They can take decision about the color, smell, use of product and can interact with seller face to face. Now in digitalization, everything is available on mobile. On one touch, one can purchase or sale their products by online with various medias. Now people in rural area also are using various apps related to banking transaction or online payment or money transfer or premium payment like phone pay, Google Pay, paytm etc. Other Websites like Amazon, Flipcart are providing a service to consumer by online form. These are E-Commerce Companies which are providing many products for many purposes. They were advertising using many ways and provide description about product, guarantee, warrantee, merits and demerits and everything about products. Also provide reviews for taking decision and easy payment methods, return facility, cash return guarantee etc. All this things are easier to everyone without going to market, whatever we want, we get it fast. We cant's bargaining with seller by online. Digital Market is reached at rural level and it is liked by people very much.

Internet Mobile and Sustainable Development: Internet Mobile is mostly use for entertainment in India. But Internet is very useful for gaining knowledge about any factor. We need physical document for any transaction in bank or any training program. For that we were stands in queue and waiting for our number. Over that, we maintained a file with many documents and kept it at home in proper place with providing security. In this process many papers were damaged, stolen, lost in many incidents at many places. So we need to make a new copy of it. So it was waste of time and money. For making paper, we have to cuts many trees and due to this environment are disturbed.

The Sustainable Development is the concept of saving environment from pollution. The concept Sustainable Development was started in 1992 in United Nations Conference. There was discussion about use of SD in problems of environmental degradation. From 2015 India has started working on SD with having concept of paperless transaction. So Now days, In Modi Government, many task has been completed with the help of internet by the concept of Digital India. There are many advantages of internet like online Banking, online shopping, online education, online news etc. by using many mobile apps and websites.

SD is a concept which seeks to balance economic and social progress with concern for the environmental and the careful stewardship of natural resources. The World Commission on Environment and Development Brundland Commission, 1987 defines "SD as the development that meets the needs of the present without compromising the ability of future generations to meet their own needs".18

SD is the responsibility of everyone to keep clean environment every time. There are many NGO's which are working on environment issue with new concept sustainable development. There are many ways for doing activities according to SD like making green market, green economy, and green business etc. There are many platforms also which are providing facilities for maintaining SD through saving papers like E-commerce, E-banking, E-shopping, E-filing, E-Marketing, Digital Transaction or Cashless Transaction. The concept cashless transaction is changed the concept of going to bank and doing all those things which are needed to physical transactions. Even in rural area, peoples are having transactions with debit card using ATM facility or online transaction using online payment apps. So we can say there is awareness about benefits of online facilities and benefits. In rural area Gondi Peoples are yet not completely understand the concept SD and main thing is that these peoples are really superhero in saving the ecosystem. So we educated persons are responsible for damaging the good environment by doing bad thing. The major role of internet banking in sustainable development is paperless transaction.

CONCLUSION:

Internet Mobile is the process of transforming new way into people for updating themself by digitalization. In this study, many aspects are taken regarding rural area and rural people. Some changes are found in peoples according to mobilization. In, 2021, there is growth about 21% in mobile users than in 2017. This growth may be due to corona pandemic period. In India, there are 299 million populations which are using internet mobile in 2022. The number of Internet users is increases because the concept of Digital India. Rural Peoples are come close with mobile internet by various digital platforms like Amazon, Flipcart, Snapdeal etc. and some Social Medias like Facebook, Twitter, Youtube, Google, Instragram, Whtas App etc. These things are become helpful to people for updating themselves. Rural People which are never known what androids are? What are the social Medias? Which are the e-commerce companies? They didn't know completely. But now they could talk on these things. They are using such Platforms and Medias. Internet Banking can change their mind and can help in changing rural people's life. Internet Banking is also helpful for maintaining sustainability. Education System is also reached to rural area by online mode. In other word, internet mobile is playing a vital role in developing people's traditional mind except they are facing costly data packages and so many network problems which are bringing difficulties in online education, online marketing, and online learning. They could not reach at the level of internet mobile education.

SUGGESTIONS:

There are many benefits about internet Mobile but some changes are required to fulfill their requirements regarding internet.

Government could control the price of **data pack** which will affordable to poor rural persons.

- Government needs to provide androids for villagers that they could get education by online mode with **reasonable price**.
- Economic development is possible when equality can reach everywhere. The urban area peoples can use androids because they having many earning sources but in rural area there were no any **job opportunities** so that's why rural people never learn new technology. They could not get androids even they could not get education on online mode. So the question is how can they provide empowered internet mobile in rural area?
- The major problem is **network connectivity**, due to this reason mobile literacy could not happened. There is need to provide proper connections for giving internet based knowledge. So they can use it and make some identity.
- Some peoples are not having, **skill of operating internet mobile**. They need some skills. If they provide skills for operating system at college level, schools then they will get confidence about that.
- E-Commerce Companies has to be introduced new platform for job opportunity while giving job opportunities in rural people like spot boy, delivery boy etc. that's why they can get **e- commerce skills.**
- Social Media also very helpful in educating the contents of internet mobile in rural area people. Internet Mobile has providing very interesting features which are useful for their carrier orientation. But if they are providing any facility to develop their hidden qualities by online way then they will automatically turns to the **self-improvement process**. And they could start their own platform.
- In rural area we generally see that one family one mobile concept, because of lack of source of earning in each family. So digitalization is not one of the solutions in economic development. The development is depends upon the **economic equality** at every places. It's time to give the economic equality through economic planning with equal humanity.

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Research Article

STUDIES ON DECOLOURIZATION OF TEXTILE DYES WITH IMMOBILIZED LACCASE PRODUCED BY FUNGAL STRAINS

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ABSTRACT

Potable water is becoming the scarcest commodity in the world. Rapid industrialization is leading to heavy water pollution and thereby causes further depletion in the availability of water. However, proper pollution abatement technologies can surely address this problem positively. Biotechnological approaches are becoming the newer tools to solve the problems of water pollution. Present investigation was taken up for production; immobilization of laccase enzyme from fungal strains namely *Pleurotus pulmonarius, Bartalinia sp. MM101, Rhizopus oryzae* and the reference strain *Trametes hirsute*. Also, decolorization of textile dyes were studied from immobilized laccase enzyme. Reactive Red M8B, Reactive Green 19 and effluent showed significant difference in percent decolorization with more than 30% decolorization in Reactive Red M8B and effluent and more than 55% decolorization of Reactive Green 19 dyes upon immobilization of the crude enzyme for 3 mg of protein immobilized on 100 ml of 2% Sodium Alginate. Two-way ANOVA analyses reflect that the treatment of Reactive Red M8B, Reactive Green 19 and effluent shows significant difference whereas the difference amongst four organisms is insignificant.

KEYWORDS: Immobilized laccase enzyme, *Pleurotus pulmonarius, Bartalinia* sp. *MM101, Rhizopus oryzae, Trametes hirsute*, Reactive Red M8B, and Reactive Green 19.

Citation

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INTRODUCTION

Wastewater containing dyes discharged from textile and dyestuff industries have to be treated due to their impact on water bodies and growing public concern over their toxicity and carcinogenicity. Many different and complicated molecular structures of dyes make dye wastewater difficult to be treated by conventional biological and physicochemical process. Therefore, innovative treatment technologies need to be investigated. Currently existing processes used to treat dye wastewater are ineffective and not economical [1, 2]. Therefore, the development of processes based on laccase seems an attractive solution due to their potential in degrading dyes of diverse chemical structure including synthetic dyes currently employed in the industry [3, 4, and 5].

Laccases (benzenediol: oxygen-Oxidoreductase, EC: 1.10.3.2) have very broad substrate specificity with respect to the electron donor. They catalyze the removal of a hydrogen atom from the hydroxyl group of *ortho*- and *para*-substituted mono and polyphenolic substrates and from aromatic amines by one-electron abstraction to form free radicals capable of undergoing further depolymerisation, repolymerization, demethylation, or quinone formation [6, 7]. Oxidation of methoxyhydroquinones during lignin degradation followed by auto-oxidation of the resulting methoxysemiquinones results in the formation of superoxide anion radicals, which can undergo further reactions [8].

Laccases can be used for the treatment of effluents from pulp mills or from other industries containing chlorolignins or phenolic compounds [9, 10]. The enzymes render phenolic compounds less toxic via degradation or polymerization reactions and/or cross-coupling of pollutant phenols with naturally occurring phenols [11, 12, and 13]. Several processes using laccases as well as immobilized laccases have been developed for the treatment of phenolic effluents and polycyclic aromatic hydrocarbons [14, 15, and 16].

With this background, the present investigation was taken up with the following objectives: Production and immobilization of the crude laccase for decolorization of reactive dyes by fungal strains.

MATERIALS AND METHODS

1. Reference Strain

The white rot fungi *Trametes hirsuta (NCIM-1201*) was procured from National Chemical Laboratory, Pune, India on dated 1/1/2008. *Trametes hirsuta* was rejuvenated and maintained in Potato Dextrose Agar *(PDA*) media and stored at 4°C.

2. Dyes

Reactive Red M8B and Reactive Green 19 dyes were selected for decolorization study. Dyes were procured from the dealer's name Mr. Pravin Vij, Itwari, Nagpur who supplied the dyes for textile industries. 100 mg of both dyes Reactive Red M8B and Reactive Green 19 were dissolved in 1 litre of distilled water and filtered by membrane filter assembly using 0.45µ filter paper and 5 ml of aliquot of each was used for degradation studies.

3. Confirmation of λ_{max} of the dyes

100 mg of the respective dye was dissolved in 1 litre of triple distilled water. 3 ml of these solutions were dispensing into the cuvette and the optical density was measured using Shimadzu UV-Spectrophotometer (UV-1800) from 400 nm to 750 nm. At an interval of 1 nm a graph was plotted for absorbance against lambda (λ) and the λ_{max} was determine from the graph as the highest peak observed for each dye. The λ_{max} for Reactive Red M8B was found to be 543 nm and that of Reactive Green 19 was found to 630 nm.

4. Confirmation of λ_{max} of the Effluent:

3 ml of effluent solution was dispensing into the cuvette and the optical density was measured using Shimadzu UV-Spectrophotometer (UV-1800) from 400 nm to 750 nm. At an interval of 1 nm a graph was

plotted for absorbance against lambda and the λ_{max} was determined from the graph as the highest peak observed for effluent. The λ_{max} for effluent was found to be 400 nm.

5. Laccase production and assay of laccase activity

Aqueous Media for Laccase Production

The medium for laccase production was contained 4.5% (w/v) wheat bran flakes, 1.5% yeast extract, 1% glucose, 0.25% NH_4Cl, 0.05% thiamine dichloride, 0.2% KH_2PO_4, 0.05% $MgSO_4$, $7H_2O$, 0.01% $CaCl_2$, and 0.05% KCl. Tap water was used for preparation of the medium, and the pH was adjusted to 5, by using NaOH or HCl. Incubation was carried out at 30°C on a rotary shaker (150 rpm) in cotton plugged 250 ml Erlenmeyer flasks containing 100 ml of media. Flasks were inoculated with 1 gm of mycelia spores from an actively growing fungus culture. Cultures were harvested after 10 days, filtered, and clarified by centrifugation at 8000 rpm for 20 min to remove the mycelia, and the clear supernatant was used for the enzyme activity assay and for further work [17].

Measurement of Laccase Activity:

The activity of laccase was measured using guiuacol by the following protocol [18].

Reagents	**Blank**	**Test**
100 mM Acetate Buffer (pH-5)	3ml	3ml
10 mM Guiuacol	1ml	1ml
Culture filtrate	-	1ml

Absorbance for blank is measured at 470 nm while that for the test samples were measured at 530 nm. The change in the absorbance of the reaction mixture with guiuacol is monitored for 10 min of incubation. Enzyme activity was measured in U/ml which is defined as the amount of enzyme catalyzing the production of one micromole of colored product per min per ml.

Calculation:

$$\boldsymbol{Volume\ activity\ in\ (U/ml) = \frac{\Delta\ A470nm/min \times 4 \times Vt \times dilution\ factor}{\epsilon \times Vs}}$$

Where,

Vt = final volume of reaction mixture (ml) = 5.00

Vs = sample volume (ml) = 1

ϵ = extinction co-efficient of guiuacol = 6,740 /M/cm

4 = derived from unit definition & principle.

Production of Laccase Enzyme from Fungal Strains

Three test organisms namely *Pleurotus pulmonarius*, *Bartalinia* sp. *MM 101*, *Rhizopus oryzae* and the reference strain *Trametes hirsuta were* grown in wheat bran media based on [19]. 100 ml wheat bran media was prepared in 250 ml flask for each organism. The respective flasks were then inoculated with 1 g wet weight 72 hours culture of the organisms. The flasks were incubated at 28±2°C and 150 rpm for 10 days. After 10 days the contents of the flasks were filtered and centrifuged at 8000 rpm for 20 min. The supernatant was used as the crude source for laccase enzyme.

6. Immobilization of Crude Laccase Enzyme

The supernatant obtained from the previous step was subjected to protein estimation by Bradford's method. Aliquots containing 3 mg protein were then slowly added in 100 ml of Sodium Alginate and the slurry was prepared. The slurry was taken in 5 ml syringe. Sodium Alginate and crude laccase slurry was then added drop-wise into 2% $CaCl_2$ solution kept on a magnetic stirrer. A large volume of spherical beads was prepared. After suitable decantation the beads were washed by acetate buffer of pH 5. The results of protein estimations are shown in Table-1.

7. Preparation of Column for Decolourization

A series of column of size 15 cm x 1 cm were set on clamp stands. Each column was washed thoroughly with Acetate Buffer of pH 5. The columns were filled with washed beads up to the height of 5 cm. After the beads filling the column was charged with Acetate Buffer of pH 5 and the running's were taken out.

RESULTS AND DISCUSSION

Decolourization of Dyes by Immobilized Laccase

Each column containing immobilized laccase from the respective test and reference organism was then charged with dyes. In the present study laccase from each organism was exposed to Reactive Red M8B, Reactive Green 19 and the Effluent separately. For the Reactive Dyes the charging solution contain 100 mg/lit of dye whereas the effluent was directly used without any supplementation. The column was filled up-to 15 cm level and kept for 10 min. After 10 min 3 ml of effluent was taken out and optical density was measured at respective λ_{max} of the dye and the effluent. Percent decolorization was calculated as described in earlier chapters. The results are shown in Table-2. Photograph-2 shows decolorization of Reactive Red M8B, Reactive Green 19 and effluent by immobilized laccase from all the four organisms.

Grouped analysis was performed using two-way ANOVA tool. Figure-1 shows percent decolorization by immobilized laccase from basidiomycetes after 10 min and Figure-2 shows percent decolorization by immobilized laccase from all the four organisms under study.

Major Outcomes

The production of extracellular enzyme laccase could be achieved using wheat bran medium. Protein estimation of the crude enzyme in the supernatant is sufficient enough for immobilization. 3 mg of immobilized protein significantly decolorizes the dyes in 10 min. As for as the dyes are concerned the effect of Reactive Red M8B, Reactive Green 19 and Effluent is considered very significant, however, there is not much significance of the individual organisms in decolorization except *Rhizopus oryzae* which shows significance difference between Reactive Red M8B and Reactive Green 19 dyes. As can be seen from Table-2 Reactive Red M8B, Reactive Green 19 and effluent showed significant difference in percent decolorization with more than 30% decolorization in Reactive Red M8B and effluent and more than 55% decolorization of Reactive Green 19 dyes upon immobilization of the crude enzyme for 3 mg of protein immobilized on 100 ml of 2% Sodium Alginate. Two-way ANOVA analyses reflect that the treatment of Reactive Red M8B, Reactive Green 19 and effluent shows significant difference whereas the difference amongst four organisms is insignificant. Immobilization of laccase has been reported by many workers. [18] have reported 80% decolorization of anthraquinone dyes and 40% decolorization of azo dyes under immobilized conditions. 55 to 80% decolorization of different dyes including Reactive Blue, Reactive Orange, Ramazole Black and Congo Red by sodium alginate immobilized system has been reported [19, 20]. Various immobilizing systems have been used for laccase immobilization apart from alginate. Polyurethane foam gives 60.73% decolorization by immobilized *Flavodon flavus* [21, 22]. Scotch-Brite™

(Spain) a kitchen scouring pad (80% polyester and 20% nylon, green color, size: 3×3 cm, thickness: 0.8 mm) has been used by [23] and [24] and have reported up to 75% decolorization in 24 hours.

Table-1: Estimation of protein by Bradford's Method.

Organisms	*T. hirsuta*	*P. pulmonarius*	*Bartalinia sp. MM 101*	*R. oryzae*
Conc.of protein (mg/ml)	0.7 mg/ml	0.1 mg/ml	0.6 mg/ml	1.5 mg/ml

Table-2: Percent decolorization by immobilized enzyme after 10 min.

Organisms	Percent decolorization by immobilized enzyme after 10 min		
	Reactive Red M8B	Reactive Green 19	Effluent
T.hirsuta	32	61.60	34.09
P.pulmonarius	39.26	66.54	38.13
Bartalinia sp. MM 101	39.86	56.97	33.70
Rhizopus oryzae	8.94	58.40	25.18

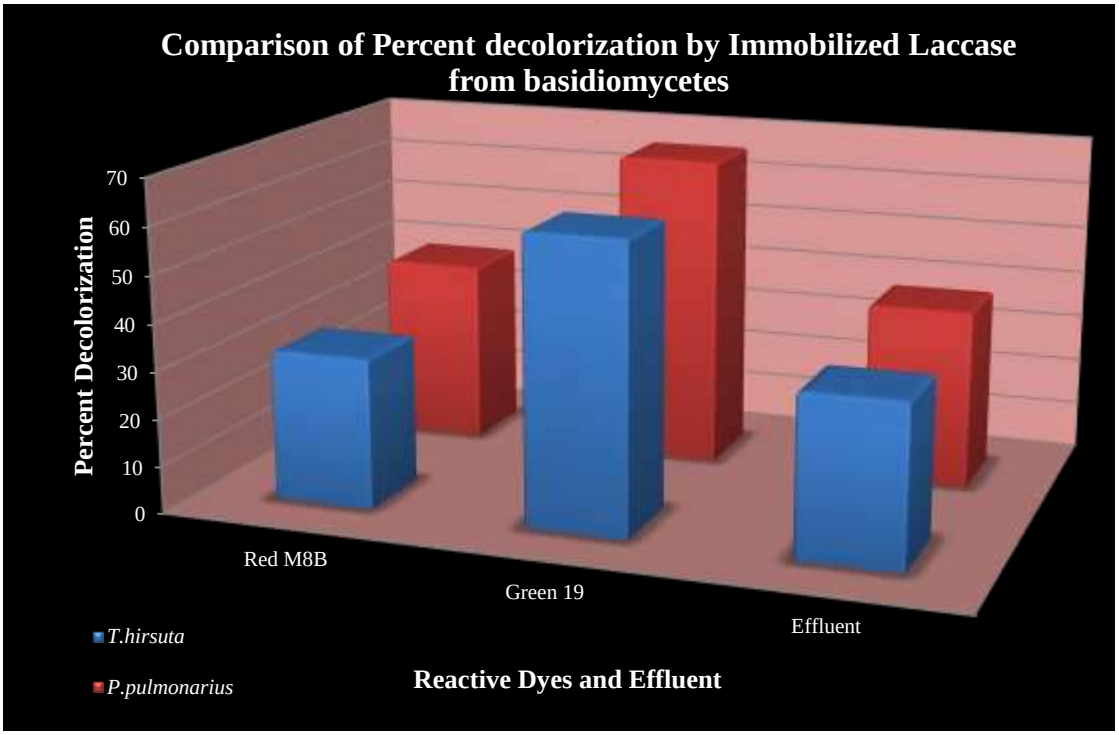

Figure 1: Percent decolorization by immobilized laccase from basidiomycetes after 10 min.

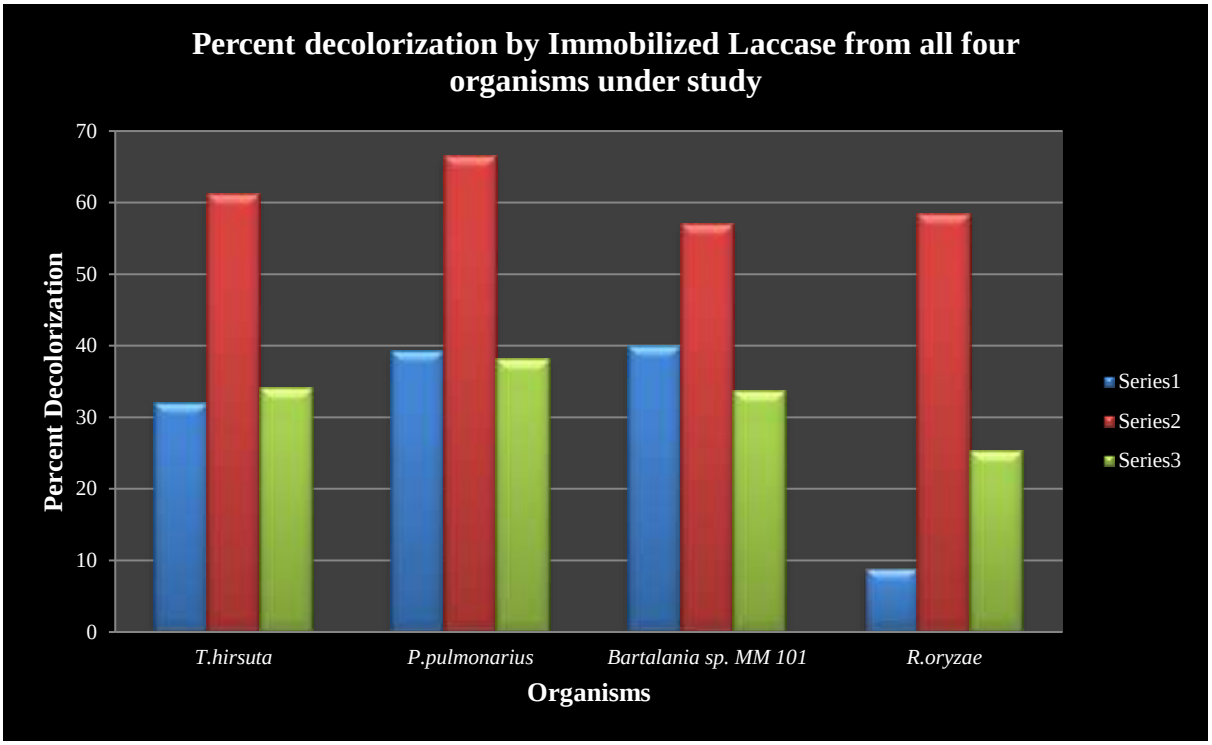

Figure 2: Percent decolorization by immobilized laccase from all the four organisms under study after 10 min.

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Green synthesis of cobalt oxide thin films as an electrode material for electrochemical capacitor application

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ABSTRACT

In this study, we report on the fabrication and characterization of cobalt oxide (Co_3O_4) thin film that is potentially important for electrochemical capacitor applications. For that purpose, the precursor powder of Co_3O_4 was prepared using the cost-effective sol-gel synthesis route and heat treatment at a relatively low temperature. A thin film of Co_3O_4 was prepared on a fluorine-doped tin oxide (FTO) substrate using a simple doctor-blade method. X-ray diffraction and Raman spectroscopy confirmed the formation of pure Co_3O_4 thin film on FTO, and scanning and transmission electron microscopy confirmed the nanoscale nature of the particles in the film. The electrochemical studies revealed a specific capacitance of 237 F g^{-1} for the Co_3O_4 electrode, with a remarkable cycling stability in 1 M NaOH electrolyte, and 77% capacity retention after 2000 cycles at 5 mA cm^{-2} current density (833 mA g^{-1}); this demonstrates that Co_3O_4 is a promising material for electrochemical devices. Further, the electrochemical impedance measurements revealed an internal (solution) of 10 Ω, whereas the charge transfer resistance between the electrode and the electrolyte was roughly 40 Ω.

1. Introduction

The accelerated increase in energy demand to foster sustainable social and economic development, coupled with the inefficiency of fossil fuel to meet these demands and the global environmental objectives, are strong driving forces toward a new energy transformation era. To address these issues, search for clean energy sources and development of efficient designs for energy harvesting and storage had become of utmost importance. The electrochemical capacitor (EC), or the supercapacitor, emerged as a potentially important energy storage device that offers several advantages including high power density, fast charge/discharge rates, long cycle lifetime, wide range of operating temperatures, environmental friendliness and safety [1–3]. These features are expected to place ECs in the list of important solutions for future energy management and the provision of high-pulse power needed for a variety of applications [1–4]. ECs are used as power sources for emergency energy applications, low-voltage portable devices such as cameras, computers, and mobile phones, and energy generating systems [3-5a]. To meet the requirements of a power source, appropriate electrode materials are needed to ensure satisfactory performance of a supercapacitor. To that end, several materials such as carbon materials, conducting polymers, metal[5b-f], metal sulfides, metal hydrides, metal carbides, metal nitrides, metal hydroxides, metal oxides [1-5g] and metal oxyhydroxides[5h-i] were used. In the middle of these electrode materials, hydrous ruthenium dioxide (RuO_2) finds a unique potential due to its high conductivity and substantial environmental, chemical and thermal stabilities. Nevertheless, several factors such as its high cost, scarcity, and toxic nature are prohibitive to commercial implementation [6]. Therefore, cheaper metal oxides with various oxidation states and excellent electrochemical behaviors, including nickel oxide [7], manganese oxide [8], cobalt oxide [9], iron oxide [10], etc., can be appropriate alternatives to RuO_2. On the other hand, cobalt oxide (Co_3O_4) demonstrated suitable functionality as an electrode material in pseudo capacitors [11,12]. This spinel oxide material is one of the most important metal oxides due to its abundance

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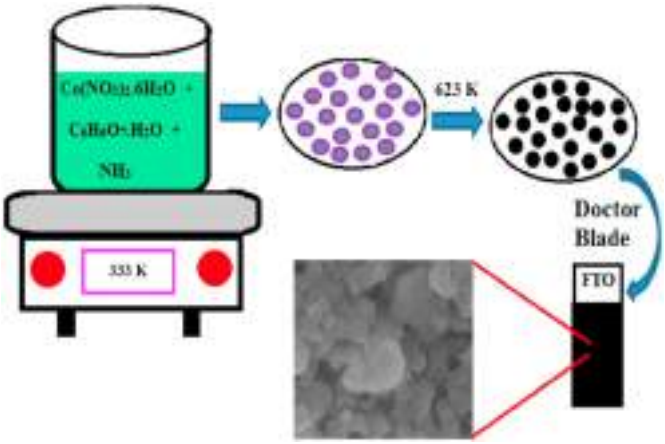

Fig. 1. A process of the formation scheme of the Co_3O_4 thin film.

and availability at acceptable commercial costs, and its potential applications in other fields such as gas sensors [13], catalysts [14], and Li-Ion battery [15a].

Data-driven science is a promising field that provides guidance to experimentalists in pursuit of developing high-performance materials. While traditional statistical models attempt to identify complicated relationships between unique physical variables, advanced machine learning (ML) techniques are efficiently employed to explore and classify complex data based on previously reported results concerning the properties of real devices. In several scientific fields, such as physical property prediction, corrosion rate, lattice parameter, crystal structure, 3D reconstruction of cells in microscopy, and many applications for Li-ion batteries, ML has been implemented to overcome many complex classification and regression issues [15b-d].

Motivated by the promising advantages of Co_3O_4 for practical applications, we investigated the performance of a thin film of this oxide material as an electrode component for electrochemical capacitor applications. The film was prepared on a fluorine-doped tin oxide (FTO) substrate which is a conducting oxide that is widely for different applications including electrode substrates for electrochemical applications. The sol-gel technique was adopted to prepare the Co_3O_4 precursor powder owing to its effectiveness in preparing high-quality nanoscale oxide particles with homogeneous distribution and controllable chemical stoichiometry. Citric acid was used in a sol-gel process as a chelating agent [16]. X-ray Diffraction (XRD), scanning electron microscopy (SEM), transmission electron microscopy (TEM), and Raman spectroscopy measurements were used to examine the structural and morphological properties of the produced Co_3O_4 film. Finally, a thorough electrochemical investigation of the Co_3O_4 electrode was carried out.

2. Experiential details

2.1. Chemicals

Analytical grade starting powders of cobalt nitrate [$Co(NO_3)_2.6H_2O$], citric acid [$C_6H_8O_7.H_2O$], and ammonia [NH_3 were provided by Merck Chemicals Ltd, and used in this study without additional purification. Throughout the experiment, double-distilled water was used.

2.2. Preparation of Co_3O_4 thin film

The sol-gel procedure was implemented for the preparation of the Co_3O_4 precursor powder. In the process, a solution of 0.3 M $Co(NO_3)_2.6H_2O$ was prepared by dissolving the powder in double-distilled water, and subsequently introduced drop-by-drop into an aqueous solution of 0.3 M citric acid under magnetic stirring. The pH value was adjusted to ~7 by adding liquid ammonium solution to the mixture, which was heated at 333 K under continuous stirring until the gel was formed after 5 h. The gel was then calcined for 60 min at 623 K to obtain the desired Co_3O_4 powder. A viscous paste of the powder was then prepared with the aid of polyvinyl alcohol (PVA) as a binder. Since fluorine-doped tin oxide (FTO) is a suitable electrode material for solar cells owing to its transparent and conducting nature, a thin film of the Co_3O_4 paste was spread on a 1cm × 1 cm FTO substrate using the doctor-blade method. The film was subsequently annealed to remove the binder and improve adherence and compactness. The mass of the total active material of Co_3O_4 on the FTO substrate was 6 mg. A schematic representation of the formation of a Co_3O_4 thin film on the FTO substrate is shown in Fig. 1.

2.3. Characterizations

The structural analysis of the Co_3O_4 thin film was carried out by XRD technique using RIGAKU, R1NT 2100 with Cu-K_α radiation ($\lambda = 1.5406$ Å) operating at 40 kV. The patterns were collected in the angular range of $10° < 2\theta < 70°$. Scanning electron microscope (SEM, Model: JEOL-JSM6360) and transmission electron microscope (TEM, model: Philips CM30) were used to examine the film's surface morphology, and obtain information relevant to the size distribution of the particles in the film. The vibrational modes of the film material were investigated by Raman

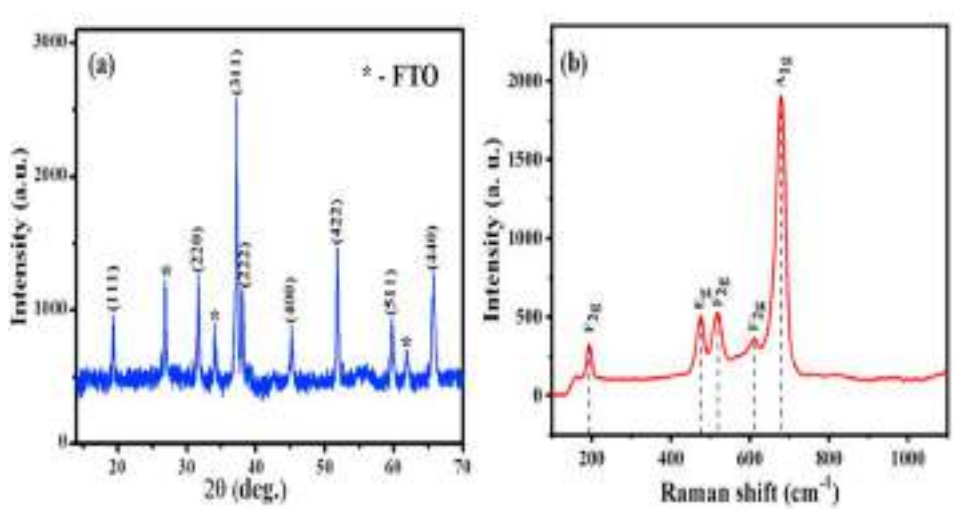

Fig. 2. (a) XRD, and (b) Raman spectrum, plots of Co_3O_4.

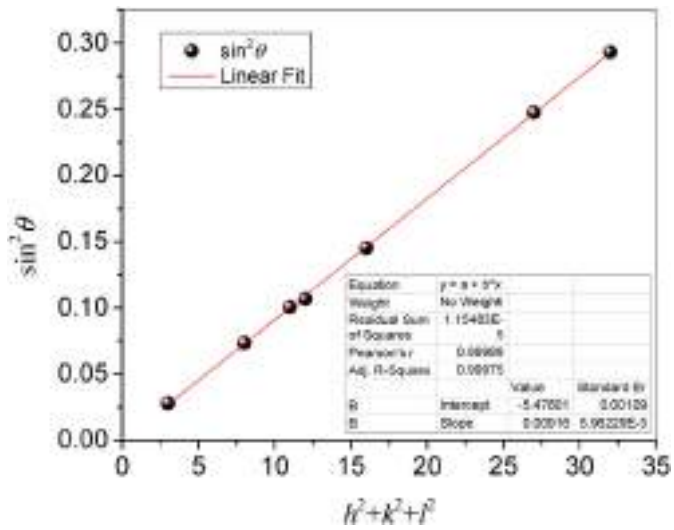

Fig. 3. a plot of $\sin^2\theta$ vs. (h [2] + k [2] + l [2]) for the observed reflections.

spectroscopy using a Hololab series 5000 Raman spectrometer (Kaiser Optical System, Inc.).

2.4. Electrochemical measurements

The electrochemical study was carried out using a single channel potentiostat (Model: WPG 100 Won A-Tech). In the three-electrode electrochemical cell configuration, a platinum plate serves as the counter electrode, silver-silver chloride (Ag/AgCl) as the reference electrode, and the Co_3O_4@FTO film was used as the working electrode. The experimental conditions were initially optimized for the electrochemical measurements, and based on the results, 1 M NaOH was chosen as the most appropriate electrolyte. Subsequently, the cyclic voltammetry (CV) measurements were carried out at a scan rate of 1–10 mV s^{-1} with a potential window of −0.3 to 0.6 V. In addition, the galvanostatic charge-discharge (GCD) measurements were performed at current densities of 1–5 mA cm^{-2} (167–833 mA g^{-1}) in the potential range of −0.3 to 0.6 V. Further, the electrochemical impedance spectroscopy (EIS) was carried out using an IVIUM electrochemical workstation system (Ivium, nState), and the real and imaginary parts of the impedance were determined in the frequency range of 100 kHz to 10 mHz.

3. Results and discussion

3.1. Structure confirmation

Fig. 2 (a) shows the XRD pattern of the as-prepared Co_3O_4 film on the FTO substrate. The figure shows the characteristic diffraction peaks of cubic Co_3O_4 consistent with the standard pattern (JCPDS Card No.: 43–1003). Specifically, the peaks at 2θ = 19.30°, 31.50°, 37.01°, 38.12°, 44.80°, 59.66°, 65.56° correspond to the (111), (220), (311), (222), (400), (422), (511), and (440) reflections of Co_3O_4. The peaks labeled by (*) correspond to the FTO substrate and no additional peaks were observed, demonstrating the formation of pure Co_3O_4 spinel phase. Following the analysis of Al-Hunaiti et al.[17], a plot of $\sin^2\theta$ versus the sum of squares of Miller indices ($h^2 + k^2 + l^2$) should give a straight line with slope equals to ($\lambda^2/4a^2$), where a is the lattice constant. Fig. 3 shows a linear fit to the experimental points, and the slope of ($0.00916 \pm 5.96 \times 10^{-5}$) indicated that the lattice constant $a = 8.05 \pm 0.03$ Å. This value is in good agreement with reported values [18].

The average crystallite size (D) was estimated from the full width at half maximum (β) for the most intense (311) reflection using Debye-Scherrer's relation ($D = \frac{0.9 * \lambda}{\beta^* \cos\theta}$), and was found to be 42 nm. This is the crystallite size along a direction perpendicular to the (311) reflecting plains in the crystal lattice. Generally speaking, this is an acceptable estimate of the crystallite size in almost spherical nanoparticles.

In order to further characterize the as-synthesized Co_3O_4 electrode, Raman study was carried out and the obtained results are displayed in Fig. 2 (b). The Raman spectrum of Co_3O_4 shows the prominent peaks at 194, 479, 516, 614, and 684 cm^{-1}. Raman active bands at 194, 516, and 614 cm^{-1} are assigned to F_{2g} phonon modes. The peak at 479 cm^{-1} is assigned to the E_g phonon mode, and the peak at 684 cm^{-1} is assigned to the A_{1g} phonon mode. All observed phonon modes are in good agreement with previously reported modes for Co_3O_4 [19].

3.2. Electron microscopy

Fig. 4 (a & b) shows the SEM images, recorded at various magnifications, of the Co_3O_4 thin film surface. SEM images confirmed the

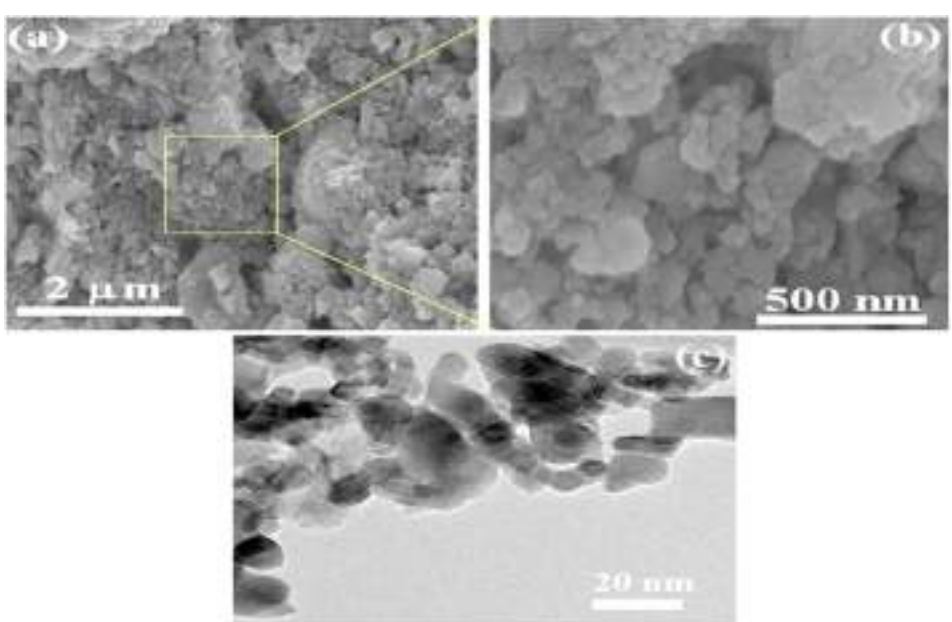

Fig. 4. (a & b) SEM images of Co_3O_4 thin film recorded at different magnifications and (c) TEM image of the Co_3O_4 thin film.

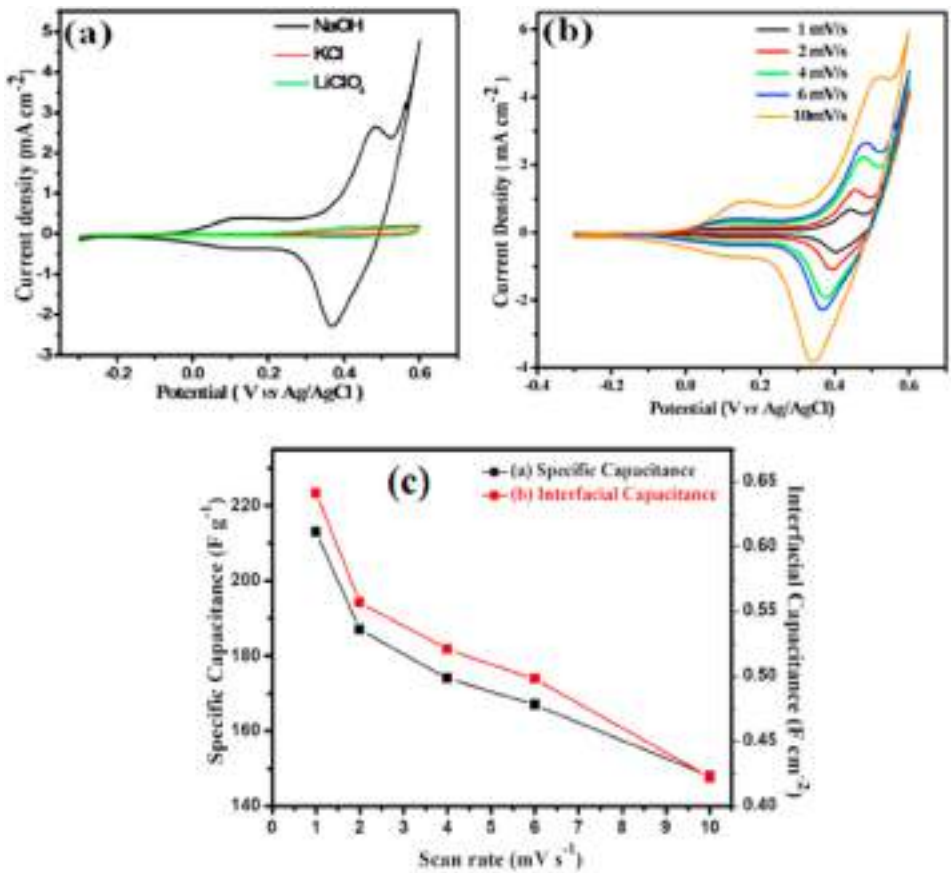

Fig. 5. a) CV scans in NaOH, KCl, and $LiClO_4$ electrolyte at a scan rate of 6 mV s^{-1}, b) CV curves in NaOH at 1, 2, 4, 6, and 10 mV s^{-1} scan rates, c) effect of scan rate on the specific and interfacial capacitance value of the Co_3O_4 electrode.

presence of agglomerated, almost spherical-shape Co_3O_4 nanoparticles of different sizes, mostly in the range of 35–50 nm. This is consistent with the crystallite size determined from the broadening of the diffraction peaks, and demonstrates that these particles are single-crystals. Irregular air voids are also detected. TEM of the Co_3O_4 is shown in Fig. 4 (c) with an average diameter of particles was found in the range of 15–20 nm. Since this diameter is significantly smaller than the average crystallite size, we conclude that the TEM image represents the lower end of the particle size distribution, probably due to the poor suspension of larger particles in the volatile solution carrying the particles.

3.3. Electrochemical measurements

3.3.1. Cyclic-voltammetry

The cyclic voltammetry (CV) and the galvanostatic charge-discharge (GCD) measurements were used to investigate the super capacitive performance of Co_3O_4 as an electrode material. To identify the most appropriate electrolyte for the present study, the CV measurements of the Co_3O_4 electrode were first performed at a scan rate of 6 mV s^{-1} using three different 1 M aqueous electrolytes, namely, NaOH, KCl, and $LiClO_4$, and the results are shown in Fig. 5 (a). The superiority of NaOH electrolyte compared to the other electrolytes is evidenced by the well-resolved oxidation and reduction peaks of the Co_3O_4 electrode. Also, the area under the curve that was obtained by using NaOH is significantly higher than that obtained by using KCl and $LiClO_4$ electrolytes. Consequently, NaOH was employed as an optimal electrolyte for the subsequent studies. Next, the CV measurements of the Co_3O_4 electrode in 1 M NaOH electrolyte were performed at scan rates in the range 1–10 mV s^{-1} and potential window of −0.3 to +0.6 V; the results are shown in Fig. 5 (b). Evidently, the anodic peaks shift positively with the increase of the scan rate, whereas the cathodic peaks shift negatively. This is attributed to the degree of diffusion behavior of OH into the Co_3O_4 matrix at different sweep rates [20]. Further, the observation of a couple of redox reaction peaks in the CV curves indicates that the electrochemical capacitance of the Co_3O_4 electrode originates predominantly from pseudocapacitance [21–23]. The oxidation of $Co^{II}\rightarrow Co^{III}\rightarrow Co^{IV}$ (charging) and the reduction of $Co^{IV}\rightarrow Co^{III}\rightarrow Co^{II}$ (discharging) produce the anodic and cathodic peaks, respectively [24]. According to previous reports concerning the CV measurements of Co_3O_4 electrode in alkaline electrolytes, the oxidation-reduction reactions may lead to the evolution of a number of cobalt oxide phases signified by the reactions [20–25].

$$Co_3O_4 + H_2O + OH^- \rightarrow 3CoOOH + e^- \quad (1)$$

$$3CoOOH + OH^- \rightarrow 3CoO_2 + H_2O + e^- \quad (2)$$

The specific capacitance (*SC*) is one of the most important indices for evaluating the electrochemical performance of the electrode material, and is defied as:

$$SC = \frac{i}{m * \frac{dV}{dt}} \quad (3)$$

where, '*i*' is the current in ampere, '*m*' is the mass of the electro-active material in grams and *dV/dt* is the scan rate in mV s^{-1}. Also, the interfacial capacitance (C_i) is given by the relation:

$$C_i = \frac{i}{A * \frac{dV}{dt}} \quad (4)$$

Where '*i*' is the current in ampere, *dV/dt* is the scan rate in mV s^{-1}, and *A* is the area in cm^2 of active material dipped in the electrolyte.

Fig. 5 (c) demonstrated that the specific and interfacial capacitance

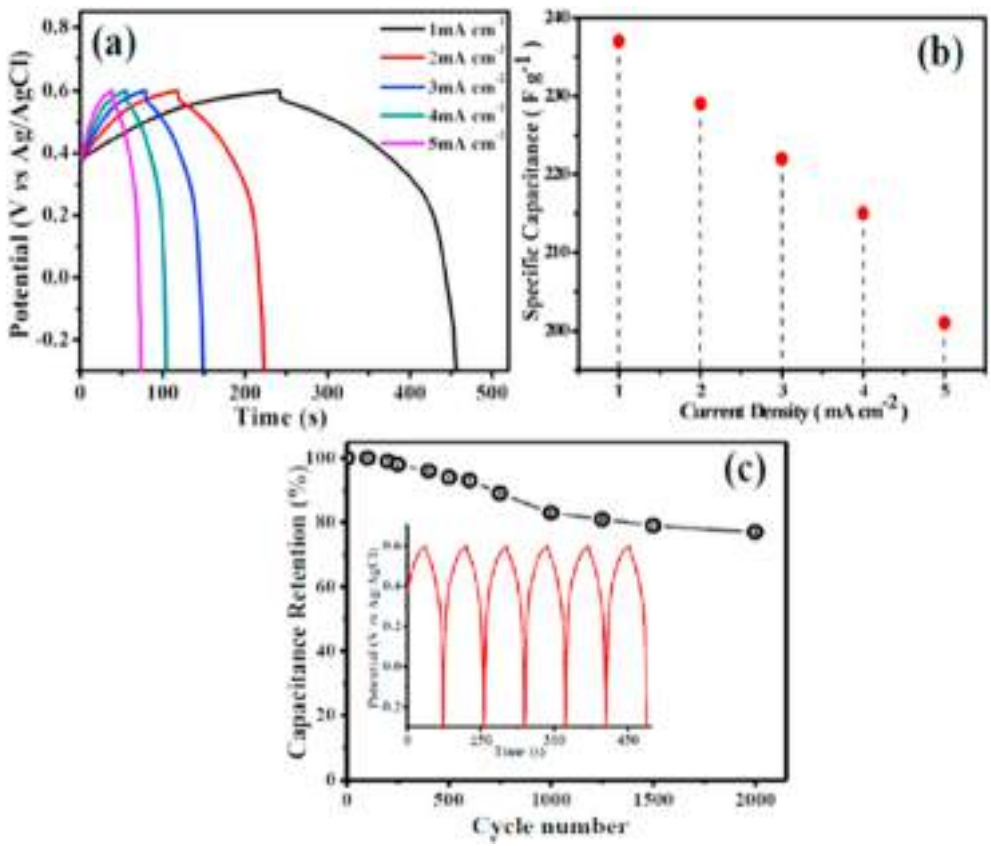

Fig. 6. (a) Galvanometric charge-discharge measurement recorded at a current density of 1, 2, 3, 4, and 5 mA cm^{-2}, (b) plot of the effect of current density on SC value of Co_3O_4 electrode, and (c) variation of capacitive retention as a function of the number of cycles.

values of the Co_3O_4 electrode decreased with the increase of the scan rate. The highest SC (213 F g^{-1}) of the Co_3O_4 electrode was observed at the scan rate of 1 mV s^{-1}. The behavior of the SC value with the increase of the scan rate can be predicted by the inverse relation in Eq. (3). A plausible explanation of the decrease in SC with the increase of the scan rate is based on the progressive weakening of the participation of inner active sites in the redox reactions, probably due to the hindrance of electrolytic ions' migration into the electrode material [22,23,26a-c,27]. For comparison, Kandalkar et al. [27] investigated the properties of amorphous cobalt oxide thin film grown on a Cu substrate by a simple chemical route, and reported a value of SC = 165 F g^{-1} and C_i = 0.42 F/cm^2 in 1 M aqueous KOH electrolyte at a scan rate of 10 mV/s. However, using 2 M aqueous KOH electrolyte and a scan rate of 5 mV/s, Shinde et al. [28] reported a value of SC = 74 F g^{-1} and C_i = 32 mF/cm^2 for Co_3O_4 thin film prepared by spray pyrolysis method onto FTO-coated glass substrate. On the other hand, Tummala et al. reported an SC value of 162 F g^{-1} for plasma spray deposited nanostructured Co_3O_4 electrode [29]. The results of the present study demonstrate the feasibility of improving the electrochemical performance by adopting the appropriate synthesis route of the electrode thin film and optimizing the scan rate.

3.3.2. Galvanostatic charge-discharge

The galvanostatic charge-discharge (GCD) curves were used to assess the rate performance of the Co_3O_4 electrode. Fig. 6 (a) shows the GCD curves recorded at various current densities of 1–5 mA cm^{-2} (167–833 mA g^{-1}) in an aqueous 1 M NaOH electrolyte at potentials ranging from −0.3 to 0.6 V. It is evident that the cycle period decreases with the increase of the current density, and the shape of the discharge curve is different from that for a pure doble layer capacitor. The curves demonstrated rapid charging and discharging with obvious non-linear behavior of the potential with time, confirming the pseudo-capacitance behavior observed in the CV curves. The small initial sharp drop in the discharge regime is associated with the internal resistance, whereas the subsequent slow potential decay is associated with the Faradaic redox reaction (Eq. (2)). The last rapid potential decay in the GCD curves is due to the electric double layer capacitance.

The SC value was calculated from the GCD data in accordance with the relation:

$$SC = \frac{I * t}{m * \Delta V} \tag{5}$$

Here I is the discharge current, t is the discharge time, m is the mass of the electro-active material, and ΔV is the potential window for the cycling test. The calculated SC values are 237, 229, 222, 215, and 201 F g^{-1} at the different current densities as indicated by Fig. 6 (b). Similar trends of decreasing the SC with the increase of current density were reported by others for different electrode materials [30,31]. The inaccessibility of some active surface areas for charge storage could be responsible for the decrease in the SC value.

For practical usage, good cycling performance is an important feature of high-performance supercapacitors. The cycle performance of Co_3O_4 electrode measured at 5 mA cm^{-2} current density for 2000 cycles is shown in Fig. 6 (c). Negligible decrease of the capacitance was observed in the first 200 cycles, and ~ 77% retention of SC was observed after 2000 cycles. This indicates good stability of the Co_3O_4 electrode performance. The decrease in performance after 2000 cycles could be associated with the loss of active material (due to shrinkage) in the current accumulator which results in blockage of the ordered structure [32,33].

Electrochemical impedance spectroscopy (EIS) measurements in the frequency range of 100 kHz to 10 mHz were carried out for further assessment of the electrochemical behavior of the electrode material. Fig. 7 shows the impedance Nyquist plot of Co_3O_4. The intercept of the curve with the real part of the impedance is slightly shifted, and the curve revealed a depressed semicircle characteristics in the high-frequency

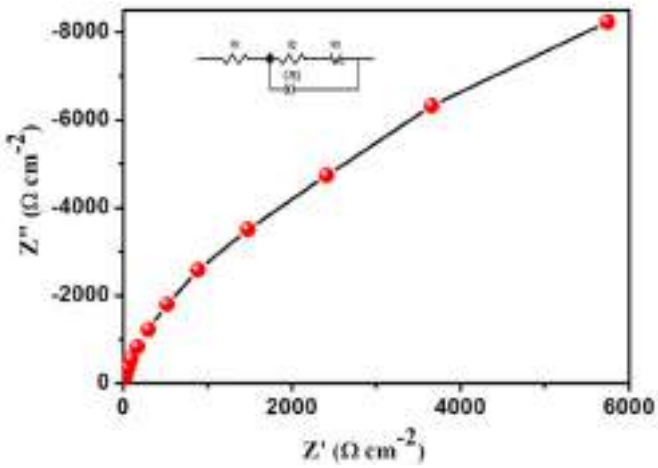

Fig. 7. Nyquist plot of Co_3O_4 electrode.

regime. In the low-frequency range, however, the curve revealed a linear relation with a slope of almost 1. Accordingly, an equivalent circuit consisting of bulk internal resistance (solution resistance R1) in series with the parallel circuit of the charge transfer resistance (R2) and the constant-phase element (CPE2) was constructed to fit the impedance spectrum. The Warburg impedance (W1) was added to account for the diffusion effects demonstrated by the linear behavior in the low-frequency regime. The characteristics of the impedance spectrum indicated a small internal (solution) resistance and a higher charge transfer resistance. The impedance data were fitted with the equivalent circuit in the inset of Fig. 7 using ZView software, and an internal resistance of 10 Ω and a charge transfer resistance of roughly 40 Ω were obtained.

4. Conclusions

In conclusion, using a simple sol-gel approach, we were able to successfully synthesize Co_3O_4 nanoparticles for electrode material and investigated its characteristics and potential for electrochemical applications. The super capacitive performance of Co_3O_4 electrode demonstrated high sensitivity to experimental conditions. Of the three electrolytes investigated in this study, NaOH was found to be the most appropriate. However, the specific capacitance decreased by ~ 30% with the increase of the scan rate from 1 mV s^{-1} to 10 mV s^{-1}. The GCD study of the Co_3O_4 electrode revealed a specific capacitance as high as 237 F g^{-1} at a current density of 1 mA cm^{-2} in aqueous NaOH electrolyte. However, the specific capacitance decreased monotonically down to 201 F g^{-1} with the increase of the current density up to 5 mA cm^{-2}. Further, after 2000 charge-discharge cycles at a current density of 5 mA cm^{-2}, the specific capacitance of the Co_3O_4 electrode retained 77% of its original value, indicating that the produced Co_3O_4 electrode could be a possible candidate in electrochemical storage devices.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Title **Nutritional status of Moringa oleifera (Lam) with reference of Phytochemical, Biochemical, Antioxidant activity their Application -A Review**

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Mukul M,Barwant, VishnuG.Jadhav, Vanita C. Karande, Aruna Kumari Nakellaa

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Nutritional status of *Moringa oleifera* (Lam) with reference of Phytochemical, Biochemical, Antioxidant activity their Application -A Review

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Abstract :
Moringa oleifera (L.) is one most nutritious plant . that use in different types of drugs preparation. In this investigation we have view the different author reported the different property of this plant such as Phytochemical content , biochemistry, hypersterolemia, hypolipidemic ,amino acid, protein, lipid, carbohydrate vitamins , separation of biochemical by chromatography HPLC and TLC. We have to also see that the different types element are present essential for human growth and development such Nitrogen, Calcium, Phosphorous, Magnesium, Iron, Copper, iron etc. the number of uses so this plant called golden tree and number of report available Antimicrobial, Antifungal, Antibacterial, anti-inflammatory, anthelminthic ,anticancer activity, Free scavenging activity. Its used as food source , and number industry raw material food industry .There number have reported that application of moringa plants in human life such as used to food, used cure disease, food product preparation, medicine preparation . It is popularly called, has been found useful both medicinally and economically. In a plants different chemical component contained in different plants root, stem ,leaf ,fruits and seeds. The Moringa plant is one important nutritious plant in sense of biochemicals , growth nutrients ,vitamins enzyme and their different biological property. Its intensive importance so it's a part of food in some Asian country its pods eating as vegetable due to its nutritive value

Keywords : Moringa plant, nutritious, Biochemicals, antimicrobial, antifungal, antioxidant and application

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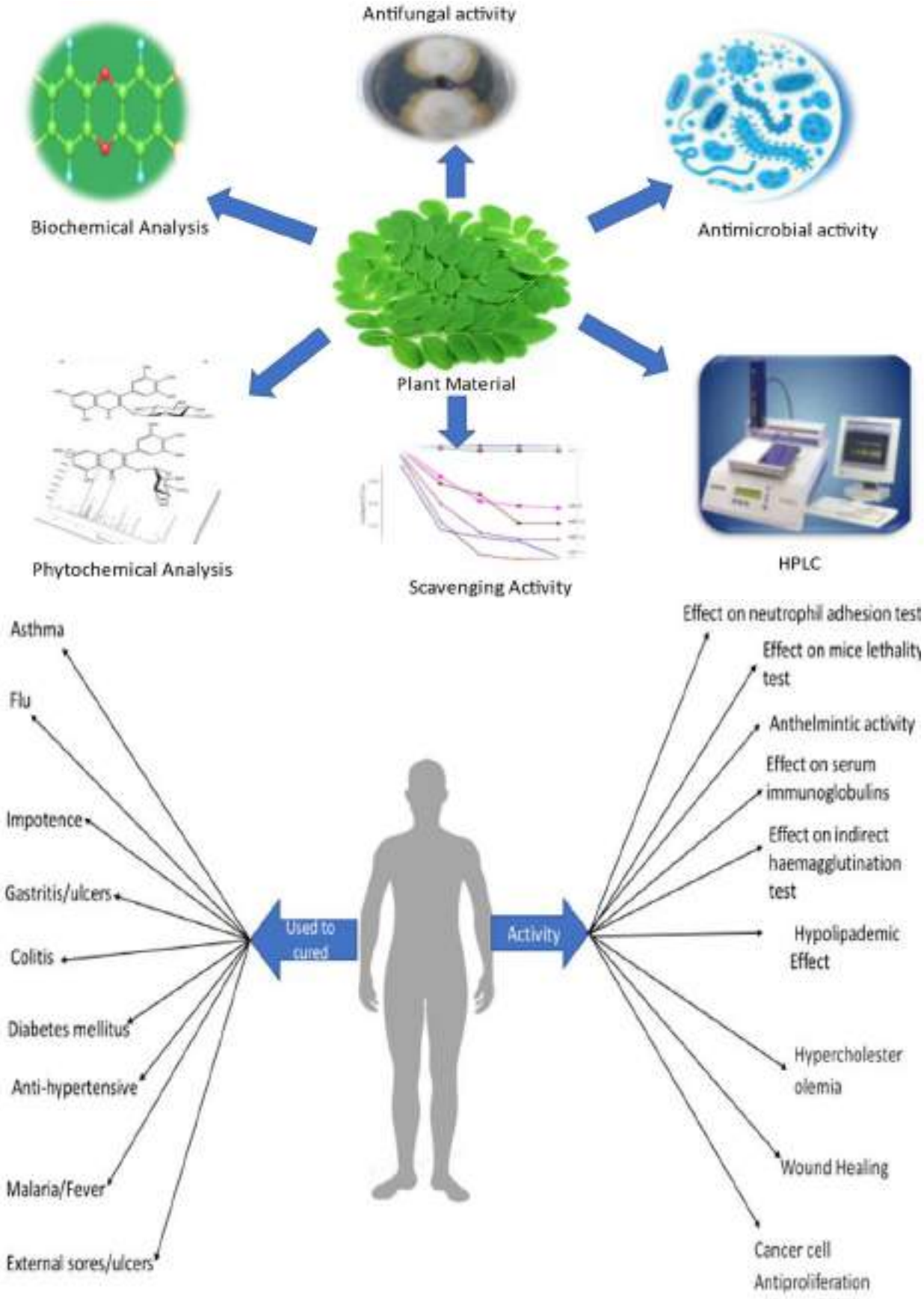

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Introduction :

Moringa oleifera Lam is a medicinally essential tree that containing the number of benefits chemical composition indicates that it is more nutritious than other plants due too their nutritive profile such as the mineral, vitamin, protein, and carbohydrate rich, It is indigenous to the sub-Himalayan region of India, Pakistan, and Afghanistan, as well as Africa, Arabia, South Asia, South America, it also found in himalayan region, pacific region , and the caribbeanislands.*Moringa oleifera* on the basis of their used and its structure is different names such as the as horseradish tree, drumstick tree, ben oil tree, miracle tree, and Mother's greatest friend, has become a naturalised species in many tropical and subtropical places across the world [28] . *Moringa oleifera* is often known as the "miracle tree" or "wonder tree"[5]. From ancient time plants are the useful of human life since the beginning of time, plants have always been significant to mankind, regardless of age or place[61].The moringa tree, also known as the elephant leg tree, is a type of tropical deciduous tree that belongs to a new generation of high-nutritional high-value crops. Moringa trees grow faster, taking about a year and a half to complete the nursery, planting, forest, flowering, and fruiting process[8] *Moringa oleifera* (Moringaceae) is a plant native to the Indian subcontinent. It has become diffused and spread throughout the world's tropical and temperate areas, where it is known by a number of vernacular names; in Tamil, it is known as Murungai[43]. *Moringa oleifera* Lam., also known as “Zogale” and “Gergedi” in Hausa and Igala languages of Nigeria, and drumstick in English, is a plant used as a food and in folkloric medicine in Nigeria and elsewhere[11].Plants have been used as dietary supplements and traditional remedies for a range of ailments for millennia all throughout the world. Herbal medicine is one of the oldest forms of treatment for a wide range of disorders, and it has a sizable following for obvious reasons such as cost effectiveness, accessibility, and compatibility with people's sociocultural lives [62].Different chemical components are found in the roots, stems, leaves, fruits, and seeds of different plants. So there is a growing interest in chemical composition in plant-based therapy now days. Plants featured a variety of bioactive chemicals as well as pharmacological activities. Plants have ability to produced different types of

chemicals is consider as phytochemicals it may be primary metabolites , may be secondary metabolites , *Moringa oleifera* is an angiosperm plant native to the Indian subcontinent, where its various parts have been used as food and medicine throughout history, Now a days moringa can be cultivated all tropical and sub-tropical regions of the planet. The nutritional, preventive, and medicinal properties of this plant are being praised on the Internet. Dietary consumption is encouraged as a strategy for maintaining personal health and self-medication in a variety of disorders [3].*Moringa oleifera* is a high-nutritional plant that has been utilised in folkloric medicine to treat a variety of ailments and provide socio-economic benefits[44].De-hulled seed (kernel) has a 42 percent oil content. The oil is a bright yellow colour. Because it has a low tendency to decay and become rancid and sticky, it is used as a lubricant for fine machinery such as watches. It can also be used as a vegetable cooking oil.Because of its ability to absorb and hold volatile chemicals, the oil is useful in the perfume business for smell stabilisation. The quantity of free fatty acids ranges from 0.5 to 3% [51].Nutritional status particularly for moringa leaf powder is maintained according to the standard code and the well inspect off the product good quality and sanitary and healthy practices are done for that more clinical study to gain more values and importance at international level of moringa can gain done by different community in the world [6] .We are familiar to Ayurveda number of plants are used as medicinally and clinical purpose , moringa is one of the plant that having many of the uses for the mankind inn india, Different study has been reported the *Moringa oleifera* has been used in number of disorder and diseases like a Chronic stress that can be reduced by giving the treatment of *Moringa oleifera*by inducing lipid peroxidation has been measured by the levels of malondialdehyde (MDA) in brain [34]. Moringa is one of the tree which growing faster and nutritious for the food purpose and its also cultivated as the source of economy ,This plant can be cultivated in any season like as the it can cultivated in rainy season, winter season or may be summer season also can do cultivation .In most of the part of world it can cultivated for the commercial purpose for their leaf due to their nutritional value has been reported in Nigeria .Due to all this nutritive character and clinical studies of moringa has been accepted as the food

supplement source by the some international scientific community, Moringa is a evergreen tree that grow up to height 10-12 meter and trunk have diameter 45 cm. Moringa oleifera is shown in scientific division to become from Kingdom: Plantae, Division: Magnoliophyta, Class: Magnoliopsida, Order: Brassicales, Family: Moringaceae, Genus: Moringa, Species: *Moringa oleifera*[77].Moringa is one the angiospermic plant which are being native to there origin is Indian subcontinent there are number of report are available that revealed that all parts of plant that being utilized that may be root , stem, leaf as purpose of the medicine Now days its cultivated in tropic and subtropics of the different parts of the country It very useful to curing disease due to its useful property like therapeutic, nutritional has been dominated in the most of plants Moringa composed of the different dietary fibres that are important in the health benefits improving immunity that can be preserved for long time there are number of evidence of there clinical evidence [3].Moringa is classified morphologically into root, stem, and leaf. The plant has a tap root system and grows best in black soil. The leaves are reticulate venation with compound leaf with alternate phyllotaxy, each leaf having a length of 7-60 cm and a green colour. The flowers are bisexual pentamerous white colour zygomorphic, and the fruits are capsule type with a size of 10-60 cm. that is known as pod type of fruit that pod is look like drumstick hence it is also known as drumstick plant .Its generally grown in month of April and June [9].*Moringa oleifera*has a wide range of characteristics and morphological variability, which could be used to improve the plant. Natural and cultivated accessions have a lot of genetic diversity, but there is currently no collection of cultivated and wild accessions[14].*Moringa oleifera* is a plant In various regions of the world, it is utilised as a folk medicine. [2]. Moringa helps in increasing breast in milk in breast feeding months .one tea spoon of moringa powder provide 14 % protein ,40 % calcium 23% iron and most of vitamin .The moringa seeds yield 38-40 % edible oil [15] *Moringa oleifera* has been reported as the it can be beneficial for the have the property like a chemo preventive and therapeutic effect on cancer and other oxidative damage-related diseases. Alkaloids, which are nitrogen-containing naturally occurring compounds that have antibacterial capabilities due to their capacity to intercalate with microbe DNA,

are also discovered in *M. oleifera* leaves. Glucosinolates are found in *Moringa stenopetala* [11].Due to tis nutritional property there are number of the people around the world have used this plant as a source of food, and some information has been reported that the leaves of *Moringa oleifera* have chemical and nutritional features that we have define in terms of chemical composition and protein [2].*Moringa oleifera* Lam (Moringaceae) is a valuable plant found in many tropical and subtropical areas. It's a popular nutritional herb with some interesting pharmacological properties. [89].It was reported that the medicinal plants have benefits in the local population in Uganda and Screening of the phytochemical present. Leaves are administered as powder at health benefits in different parts of the Senegal and Benin to treat malnutrition and another problem related to the health issue in children. [5].There are many benefits of *M. oleifera*but they may be leads to the problemslike overexploitation, posing a threat to natural variety in the near future. As a result, for ethnobotanical, medicinal, nutraceutical, and biodiversity considerations, the species must be protected[11].Moringa has a higher nutritional value. In some tribal areas, daily food sources have been utilised in food since ancient times, and in some parts of the world, they are employed in the treatment of certain disorders and diseases in humans, such as hypercholesterolemia and hyperglycemia. Active components can be found in any part of the plant, including the bark, leaves, flowers, roots, fruits, and seeds.The chemical makeup of plant-based medications is gaining popularity these days. Several bioactive components have been identified and pharmacological actions has been reported [10]

Biochemical Compound :

Moringa shows high nutrition in nature due its biochemical composition, There are one report available that's indicates that the leaf flour contained 28.7% crude protein, 7.1% fat, 10.9% ashes, 44.4% carbohydrate and 3.0mg calcium and 103.1mg iron per 100 g. The protein profile revealed levels of 3.1% albumin, 0.3% globulins, 2.2% prolamin, 3.5% glutelin and 70.1% insoluble proteins has been reported by various author .There are different agent are used to the to hydrolysed the sample Sodium dodecyl sulphate (SDS) and 2-mercaptoethanol (ME) which are used for the protein analysis the protein from leaf flour, yielding 39.5 percent and 29.5 percent, has

been reported . In vitro digestibility of the total protein was poor 31.8 percent . Tannins 20.7 mg , trypsin inhibitor 1.45TIU mg , nitrate 17 mg and oxalic acid 10.5 mg were the antinutritional compounds evaluated has been reported , in addition to the lack of cyanogenic chemicals With quantities of 161.0 and 47.0 g leaf, respectively, -carotene and lutein stood out as the primary carotenoids. Even following heat treatment and chemical attack, the crude protein in *M. oleifera* leaves is mainly insoluble and has limited in vitro digestibility. To better assess the utility of this product, in vivo studies are required[2] .Carotenoid major compound has been reported and the role in the secondary metabolism are observed in the most of plant parts of the moringa [31] [7].Phytochemicals are chemicals produced by plants in the purest sense of the term. However, the term is commonly used to refer to only those chemicals that may have an effect on human health or on plant flavour, texture, fragrance, or colour, but are not required by humans as necessary nutrients, It was the reported that the phytochemicals of *Moringa* species allows researchers to look at a variety of unusual compounds has been present has been observed by number documentation . This plant family is particularly rich in compounds containing the simple sugar rhamnose, as well as a group of chemicals known as glucosinolates and isothiocyanates [8].

Cholesterol, Brassica sterol, and methylene cholesterol are examples of chemical substances. Campesterol campestanol-campestanol-campestanol-campestanol-campestanol-campStigmasterol Ergostadienol Cholesterol -sitosterol -avenasterol,-isoavenasterolStigmastanol -sitosterol -avenasterol,-isoavenasterolstigmastadienol. has been reported.*Moringa*dried leaves contained 30.3 percent crude protein and 19 amino acids has been reported . The amino acids with the highest content were alanine (3.033%), followed by cysteine (0.01%). Calcium had the greatest value of 3.65 percent followed by pottassium (1.5 percent) and phosphorus had the least value of 0.30 percent among the macro-elements has been documented . Fe(iron) had the highest value of 490 mg/kg among the micro-minerals, followed by Se(serine) with 3.63 mg/kg. Copper's value was the lowest, at 8.25 mg/kg. The dried Moringa leaves contained 17 fatty acids, with the highest value being -linolenic acid (44.57 percent), followed by heneicosanoic (14.41 percent), g-linolenic (0.20 percent), palmiteic (0.17 percent), and capric acid

(0.07 percent). With 77 mg/100, vitamin E had the highest concentration. while Beta-carotene had 18.5 mg/100 g. The fibre content been NDF, ADF, ADL and ADC of the leaves were 11.4, 8.49, 1.8 and 4.01 percent , respectively. Condensed tannins accounted for 3.2 percent of total polyphenols, while total polyphenols accounted for 2.02 percent. Moringa leaves were shown to possess nutritive chemicals, according to the study. As a result, Moringa leaves have the potential to be an effective source of supplemental protein in animal diets. This level of crude protein content is nutritionally significant because it may meet the protein and energy needs of animals while also boosting their immune systems has been documented [12].Except for steam blanching for 5 minutes, the protein content of the blanched *Moringa oleifera* leaves powder was in the range of 24.70 - 30.68 mg 100 g–1 dry mass in the 6 samples. The boil blanching sample had the highest protein content (30.68 mg 100 g–1 dry mass) [45].In the leaf methanolic extract, sixteen chemical components were reported is 9-octadecenoic acid (20.89%), L-(+)-ascorbic acid-2,6-dihexadecanoate (19.66%), 14–methyl-8-hexadecenal (8.11%), 4-hydroxyl-4-methyl-2-pentanone (7.01%), 3-ethyl-2, 4-dimethyl-pentane (6.14) N-(1-methylethyllidene)-benzene ethanamine (1.54%), 4, 8, 12, 16-tetramethylheptadecan-4-olide (2.77%), 3-5-bis(1-methylethyllidene)-benzene ethanamine (1, 1-dimethylethyl) -phenol (2.55%), 1-hexadecanol (1.23%), 3, 7, 11, 15-tetramethyl-2 hexadecene-1-ol (1.17%), hexadecanoic acid (2.03%), 1, 2, 3-propanetriyl ester-9 octadecenoic acid (2.03%) (1.23 percent). Oleic acid (84 percent), L-(+) - ascorbic acid- 2, 6-dihexadecanoate (9.80 percent), 9-octadecenoic acid (1.88 percent), methyl ester-hexadecanoic acid (1.31 percent), and 9-octadecenamide were found as chemical ingredients in methanolic seed extract (0.78 percent) has been documented various author [39].The young leaves are edible and can be cooked and eaten like spinach or added to soups and salads. Provitamin A, vitamins B and C, minerals (especially iron), and the sulphur-containing amino acids methionine and cystine are all abundant in them has been documented [51].Carotene content of *Moringa oleifera* leaf powder under the three blanching procedures. The -carotene concentration of unblanched *Moringa oleifera* leaf DM was 16.51 mg 100 g–1 dry mass, however it reduced significantly (p0.5) in dried samples regardless of blanching method. The

blanched *Moringa oleifera* leaf had a greater -carotene concentration (p0.05) than the unblanched samples [45] The Ministry of Agriculture's Food and Nutrition Unit recently identified Moringa (*Moringa oleifera*), a nutrient-rich local tree commonly known as drumstick and grown in several parts of Malawi, as a potential solution to vitamin A deficiency [50].When compared to the normal FAO protein, lysine, leucine, phenylalanine , tyrosine, and threonine were lacking in kernels, meal, and their water-extracted residues, although sulphur-containing amino acids were higher[51].The biochemical investigation revealed that *M. oleifera* leaves contain both -α and β -carotene, with β-carotene levels consistently greater. There was no direct correlation between the values obtained for α- and β -carotene. That is, samples with high β-carotene concentrations did not always have neither high nor low α--carotene concentrations. . The flavonoids quercetin and kaempferol were found in abundance in Moringa leaves, with quercetin being the most abundant of the two. Quercetin levels in the leaves varied from 1.62 to 0.066 percent, whereas kaemperol levels were lower, ranging from 0.673 to 0.054 percent has been reported [18]

Its leaves (weight per weight) contain four times the calcium of milk, seven times the vitamin C of oranges, three times the potassium of bananas, three times the iron of spinach, four times the vitamin A of carrots, and two times the protein of milk[46]. The number of report are available reveal that tannins, alkaloids, steroids, triterpenoids, flavonoids, hydroxy-anthraquinones, cardiac glycosides, saponins, and carbohydrates (glucose and fructose) have preferential solubility in a series of polarity-varying solvents. All of the extracts, however, tested negative for proteins, fixed oils, and fats. The active components of many medications are secondary metabolites present in plants, hence basic phytoinvestigations of the extracts for their primary phytocompounds are critical. The yield achieved from successive *M. sativa* leaf extracts. In this study employing petroleum ether, chloroform, ethanol, and water (aqueous), oleifera was found to be the most effective in the case of ethanol, followed by water, and In this case, petroleum ether and chloroform were used in that order has been reported [52]*Moringa* leaves contain 0.19 percent phenols, 0.42 percent alkaloids, and 8.22 percent tannins, according to a quantitative phytochemical examination. Saponins

have a content of 1.75 percent [19].The phytochemical examination of moringa reveals the presence of terpenoids and saponins in several extracts from diverse parts of the plant, including the root, stem, and leaf, as well as the absence of alkaloids [26].Sodium (Na), Potassium (K), Calcium (Ca), Magnesium (Mg), Zinc (Zn), Iron (Fe), Copper (Cu), Manganese (Mn), and Phosphorus (P) are all found in *Moringa oleifera*, with the exception of Lead (Pb). The largest amount of magnesium was found in *Moringa oleifera* sources during the study has been done on the Quantitative Analyses of Anti–nutrients found in *Moringa oleifera* were seen and assessed. During the investigation, the largest amount of magnesium was found in *Moringa oleifera* sources. Quantitative Analyses of Anti–nutrients found in *Moringa oleifera* were detected and measured in percentages (percent). M*oringa oleifera* was found to contain all of the anti-nutrients examined, with flavonoid accounting for the greatest percentage component, while saponin was not found. It depicts the approximate percentage (%) of nutritional composition. It depicts the nutrient content of Ash, Moisture Content, Crude Protein, Fat, Fibre, and Carbohydrate in Moringa oleifera with carbohydrate [20].The crude proximate composition of the various nutrients as a percentage. The leaf's carbohydrate content was 45.4 percent, 16.2 percent protein, and 9.68 percent fibre [30]. The proximate composition of M. oleifera seeds revealed high quantities of lipids and proteins, according to studies. Protein, Lipid, Carbohydrate, and Ash Components were 332.5 g/kg, 44.3 g/kg, and 1.1 g/kg, respectively [48].Proximate analysis of Moringa leaves have been done . Moringa leaves contained crude protein (17.01% ±0.1) and carbohydrate (63.11% ±0.09). The leaves also contained amounts of crude fibre (7.09% ±0.11), ash (7.93% ±0.12), crude fat (2.11% ±0.11) and fatty acid (1.69% ±0.09). Ca (1.91% ±0.08), K (0.97% ±0.01), Na (192.95±4.4), Fe (107.48±8.2), Mn (81.65±2.31), Zn (60.06±0.3) and P (30.15±0.5) parts per million (ppm). Magnesium (0.38% ±0.01) and copper (6.10±0.19) were the least has been reported [24] .The leaves was found to be rich in Vitamin- C, it contained 2.18 ± 0.89 mg.AAE/g. Phytochemical analysis revealed high concentrations of Phenol and Flavonoids, it contained 627 ± 12.26 mgGAE/100 g of phenolic compound and it contained 22.16 ± 1.54mgQE/g of Flavonoid respectively[44].*M. oleifera* leaves have essential amino acids, including the sulfur-containing amino

acids in higher levels . *Moringa oleifera* leaf contain 8.13g/kg of vitamin A[48]

Phytochemical Screening : .

Nutritive profile has been estimated by the different analysis techniques one of that is the phytochemical analysis ,The ethanol leaf extract of *M. oleifera* contains alkaloids, tannins, carbohydrates, and cardiac glycosides, according to preliminary phytochemical screeninghas been reported [1]. Gallic tannins, Catechol tannins, Coumarins, Steroids and triterpenoids, Flavonoids, and Saponins are some of the phytochemical and chemical elements found in *Moringa oleifera* has been reported ,some report are available that indicates that the sugars are reduced by anthraquinones, which are alkaloids. Coumarin and reducing sugar present in low concentrations in the ether extract moringa has been seen Catechol tennins, Coumarins, and Alkaloids with low content are found in the ethanol extractwhile in water extract Coumarin is absent and other phytochemical are present in the rich contents [4], Both 4-(-l-rhamnopyranosyloxy)-benzylglucosinolate and benzyl glucosinolatehas been reported in the roots of *M. oleifera and M. stenopetala*. 4-(-l-rhamnopyranosyloxy)-benzylglucosinolate and three monoacetyl isomers of this glucosinolate were found in the leaves of both species. In *M. oleifera* bark tissue, only 4-(-l-rhamnopyranosyloxy)-benzylglucosinolate was foundQuercetin-3-O-glucoside and quercetin-3-O-(6‘ ‘-malonyl-glucoside) were found in higher proportions in M. oleifera leaves, while kaempferol-3-O-glucoside and kaempferol-3-O-(6‘ ‘-malonyl-glucoside) were found in lower amounts[10] The active components of many therapeutic use of some secondary metabolites present in plants, hence basic phytoinvestigations of the extracts for their primary phytocompounds are critical consideration .Number of investigation report are available , the yield obtained from consecutive extracts of *M. oleifera* leaves using petroleum ether, chloroform, ethanol, and water (aqueous) was highest in the case of ethanol, followed by water, petroleum ether, and chloroform. The phytochemical studies revealed that hydrolysable tannins were present in ethanol and aqueous extracts but not in petroleum ether or chloroform extracts.TheDragendorff's alkaloids test are used to testing, that indicating presence of low amounts of alkaloids in both ethanol and aqueous extracts, also some test like Hager's, Mayer's, and Wagner tests indicates the presence of low amounts of alkaloids exclusively in the

ethanol extract. In petroleum ether and chloroform extracts, the Libermann-test Burchard's for phytosterols was positive has been observed it was reported , while ethanol and aqueous extracts were negative. Only ethanol and water extracts passed the Salkowski test for triterpenoid reported in moringa .The Shinoda test used to indication amount of flavonoid It indicates the moringa plant extract a low amount of flavonoids in aqueous extracts, whereas the lead acetate and alkaline reagent tests revealed a large amount of flavonoids in ethanol and water extracts has been reported .The Saponin Foam test some time shows negative while the olive oil saponins test are positive in the aqueous extract. In petroleum ether, chloroform, and ethanol extracts, the kellarkillani test for cardiac glycoside was positive, whereas in aqueous extracts it was negative. Only chloroform, ethanol, and water extracts tested positive for hydroxyanthroquinone has been reported .The Molisch and Fehling's test revealed a high concentration of carbs in both the ethanol and aqueous extracts, whereas the Barfoed's test revealed a low concentration of carbohydrates in the ethanol extract and a negative result in the aqueous extract has been reported .The Seliwanoff test revealed the presence of keto sugars in all extracts, with the chloroform extract having the lowest level. In both ethanol and aqueous extracts, Millon's test for amino acid (hydroxyl phenol group of tyrosine) was positive. All of the subsequent extracts tested negative for protein (Biuret), lipids, and fixed oils has a reported [21].There are some study has been carried out on the phytochemistry and pharmacological effects of *Moringa oleifera* leaves because they are the most commonly used portion of the plant. *Moringa oleifera* leaves were found to have a number of bioactive chemicals. Vitamins, carotenoids, polyphenols, phenolic acids, flavonoids, alkaloids, glucosinolates, isothiocyanates, tannins, saponins, oxalates, and phytates are some of the categories has been reported [13]. In ethanolic extracts of plants, preliminary phytochemical screening revealed the presence of saponin, steroids, carbohydrates, alkaloids, tannins, proteins, and flavonoids. [54].The extract contained important types of phytochemicals such as tannins, alkaloids, flavonoids, and cardiac glycosides, according to preliminary phytochemical study has been reported [25]. Alkaloids, flavonoids, tannins, and saponins are detected qualitatively by phytochemical analysis has been reported by the several author [37]. Phytochemical

screening and antibacterial assays on *M. oleifera* leaves extract have been recorded in several papers [41].The extracts of *M. oleifera* can be produced by boiling the leaves with the respective solvents for 1 hour are screened for phytochemicals. There are some report are available that can indicates that extract shows Alkaloid Reducing sugar Flavonoid Saponin Tannin Volatile oil Glycoside Phenols are present [53].The phytochemical analysis of *Moringa oleifera* aqueous seed extract revealed that tannins and carbohydrates were present in low concentrations, saponins, alkaloids, cardiac glycosides, and anthraquinones were present in moderate concentrations, flavonoids were present in high concentrations, and phlobatannins and steroids were absent [29].Alkaloids, Phytosterols, Triterpenoids, Flavonoids, Tannins, Saponins, Glycosides, Carbohydrates, and Proteins are abundant in the Phytochemical are reported . There are no fats or fixed oils [44].Polyphenol, simple sugar, tannins, vitamins, rhamnose, carotenoids, phytates, phenolic acids, flavonoids, alkaloids, isothiocyanates, saponins, oxalates, and glucosinolates triterpenoid are all found in the leaves *of Moringa oleifera*has been observed [47].In several solvent extracts of *Moringa oleifera*, phytochemical components such as alkaloids, flavonoids, carbohydrates, glycosides, proteins, saponins, tannins, and terpenoids has been reported [17].*Moringa oleifera* contains phytochemicals such as Tannins, Alkaloids, Phlobatannins Saponins, and Phenol, which were extracted using different solvents such as ethanol, hexane, and ethyl acetate. Phlobatannins are absent in ethanol, Saponins are absent in hexane, and Phlobatannins are absent in hexane; yet, all phytochemicals show high contents such as Tannins, Alkaloids, and Phenol has been reported [19]. Tannin, saponins, flavonoids, alkaloids, anthraquinone, and reducing sugars are phytochemicals has been reported different parts of plants Only Moringa leaf and flower extracts were reported to contain terpenoids[40]. Alkaloids, tannin, flavonoids, and phenol were less than 1%, whereas saponin was 18.34%, according to phytochemical screening and quantitative estimation of percentage crude yields of chemical elements. Meanwhile, there were no steroid, terpenoids, or cardiac glycosides [30].

Chromatographic purification:

Chromatography with Thin Layers (TLC) All Successive extracts of *Moringa oleifera* pods prepared by Successive extraction

procedures were subjected to Thin Layer Chromatography (TLC) to confirm their nature biochemical composition by evaluating TLC chromatograms and to separate active saponin components from the extracts. TLC analysis of Moringa oleifera pod benzene extract revealed the presence of eight components (corresponding to 8 spots)When a solvent phase of chloroform: methanol: H2O (7:3:1) was utilised, TLC of benzene extract of *Moringa oleifera* pods revealed the presence of 8 compounds (corresponding to 8 spots) with Rf values of 0.30, 0.47, 0.62, 0.75, 0.87, 0.90, 0.95, and 0.98, respectively has been reported . The compounds with Rf values of 0.90 and 0.87 were the most visible and had definite spots (green spots). As can be observed from the preceding results, substances with similar RF values are of the same nature. These compounds have Rf values of 0.90 (IS1), 0.87 (IS2), 0.75 (IS3), 0.47 (IS4), and 0.30 (IS5) has been reported. Additionally, all of these saponins that have been separated (IS1-IS5). The most conspicuous spots in the benzene extract of Moringa oleifera pods have Rf of IS1 and IS2. As a result, this extract was chosen for further identification and purification, which included large-scale TLC collection of these two spots (IS1 and IS2). . To collect substantial amounts of IS1 and IS2, the spots were scratched from silica plates and placed in centrifuge tubes with the appropriate solvent (benzene). They are then centrifuged for 15 minutes at 4 degrees Celsius (15000 rpm). Because these chemicals were absorbed by silica, the supernatant was discarded. The sample was centrifuged with methanol as the solvent, After vacuum drying the supernatant, pure IS1 and IS2 were obtained. Percentage yield of chemicals recovered from Moringa oleifera pod benzene extract [14] The standard retention factor (Rf) values were used to identify flavonoids. Flavonols (myrcetin) (Rf-47), flavones (Rf-73), biflavonyl (kayaflavone) (Rf-98), kaempferol (Rf-84), delphinidin (Rf-45), triglycosides (Rf-27), and glycosylflavones (Rf-27) were among the flavonoid chemicals discovered in Moringa (Rf-32). [40] The phytoconstituents were separated by TLC using chloroform-methanol, The fractionated extract was separated by TLC using a chloroform-methanol solvent system, yielding substances with Rf values of 0.32, 0.53, 0.54, 0.55, 0.69, 0.89, 0.95, and 0.97 [41].

High Performance Liquid Chromatography (HPLC):

HPLC chromatograms of the isolated chemical from benzene extract obtained by successive extraction procedures were

analysed to validate its composition. TLC analysis revealed that benzene extract had the highest saponin level, which was confirmed by spot analysis. As a result, we adopted the SM (saponin) nomenclature for spot number one, i.e. IS1 (Rf 0.90). Out of all the spots (8) extracted from benzene extract, (saponin from Moringa pods) has the highest saponin concentration, as determined by phytochemical screening, and the compound yield is more than IS2, At a wavelength range of 200-400nm, the HPLC profile of successive benzene extract of Moringa oleifera pods was observed, together with its separated saponin SM. Peak sharpness, retention time (Rt min), height, and percent area were all taken into account. A benzene extract HPLC chromatogram revealed 12 peaks. Only four peaks stood up, each with a notable height and percent area (> 10%). At the retention time 14.981 (Rt min), one of the most significant peaks with 17.07 percent area and 61995 height is observed, which is comparable to that reported in the case of isolated compound SM (15.201 Rt min). Retention times of 3.215, 10.020, and 12.780 (Rt min) were measured for the other notable peaks, respectively. However, just one conspicuous peak was detected in the HPLC chromatogram of SM, with a 70.11 percent area and a height of 30259, and a Rt of 15.201. (min). Apart from this peak, a few inconspicuous peaks with percent area >10 percent were also found in the chromatogram of SM, which could be due to the presence of some contaminants in extremely low concentrations alongside isolated has been reported [14]. *M. oleifera* has a higher protein content than *M. peregrina.* MOLE had a crude protein of 13.69 while MOFE had a protein of 16.88. When compared to MPFE and MPLE, MPLE has a better nutritional value due to the inclusion of macro elements (Ca, K, Mg, Na, P) and micro elements (Cu, Co, Fe, Mn, Zn) in MPFE. Ca, Co, and K, Cu levels are higher in leaves of *M. oleifera* than in other species. Copper is a potent pro-oxidant that catalyses the oxidation of unsaturated fats, oils, and ascorbic acidha been reported [22]Crypto-chlorogenic acid, isoquercetin, and astragalin, the main active antioxidant components in M. oleifera leaves, were extracted and identified using chromatographic and spectroscopic techniques, giving 0.0027, 0.0080, and 0.0067 percent (w/w) dry powder has been reported [71].

Polyphenol and flavonoid contents :

Extracts of *M. oleifera*Folin-Ciocalteau assay was used to assess the polyphenol content of ME and DE. Has been seen, both extracts contained significant

quantities of polyphenol. ME contained more GAE per gramme of extract (216.45 ±4.64 mg GAE/g extract) than DE (100.12±3.7 mg GAE/g extract), The flavonoid concentration of *M. oleifera* extracts was measured using an aluminium chloride colorimetric technique in this work. ME had 65.382.37 mg QE/g extract of flavonoid, while DE had 40.143.31 mg QE/g extract[9]. The polyphenol extract of *Moringa oleifera* reduced cholesterol levels in rats with high serum cholesterol levels through influencing lipid metabolism, as evidenced by blocking a key enzyme and faecal excretion of cholesterol compounds[72].

Total phenolic content :

Moringa oleifera leaf extract powder's total phenolic content was has been reported number of author . The extract has been reported that have to be comparable to 205.8 0.22g/ml gallic acid at 10 mg/ml[16]. The total phenolic content of a leaf of *M. oleifera* Lam. was 2.28 mg/mL, while the total phenolic content of a floral extract of the same plants was 1.08 mg/mL has been reported [41] It has been documented that the total phenolic contents (TPC) of various plant materials utilising four solvent systems such as the absolute and aqueous methanol and absolute and aqueous ethanol, as well as two extraction procedures (shaking and reflux). The maximum TPC (16.5 g GAE/100g DW) was found in aqueous ethanolic extract of *Acacia nilotica* bark, followed by Aqueous ethanolic extract (aq. EE) of *Terminalia arjuna* bark (12.8 percent), aqueous ethanolic extract (aq. ME) of *Moringa oleifera* leaves (12.2%), aqueous ethanolic extract (aq. EE) of Azadirachta indica bark (12.0%), aqueous ethanolic extract (aq. ME) of Aloe barbadensis leaves (10.3 percent), a (0.31 percent) [48] The total phenolic content expressed in terms of GAE and yield (%) of *Moringa oleifrea* flower extract was determined to be (19.31±1.79) mg of GA/g and 8.69 percent (w/w), respectively has been reported [79].

Free radical scavenging activity :

Extracts of *Moringa oleifera* extracts' radical scavenging ability was assessed using two methods: DPPH and ABTS tests. The antioxidant activity of the extracts is has been reported has the ability of antioxidant activity . ME was found to have stronger scavenging activity than DE, with an IC50 of 1.60 ±0.03 mg/ml versus 2.31 ±0.02 mg/ml. In addition to the DPPH assay, ABTS radical cation decolorization was performed, To confirm the antioxidant activity of the extracts, ABTS radical cation

decolorization was performed. Both extracts demonstrated ABTS free radical scavenging activity, which was similar to the DPPH assay result. ME showed a higher radical scavenging capacity (1.02±0.06 mg/ml) than DE has been documented [9] The consecutive aqueous extracts of *Moringa oleifera* shown a substantial scavenging action on the free radicals 2, 2-diphenyl-2-picryl hydrazyl (DPPH), superoxide, and nitric oxide radical, as well as prevention of lipid per oxidation. *Moringa oleifera* leaf extract's free radical scavenging activity was comparable to that of the reference antioxidants[33]

Scavenging effects on DPPH radicals :

The effect of *Moringa oleifera* leaf extract on DPPH radical scavenging to see if it possessed radical scavenging properties. The IC50 for the leaf extract was 78.15± 0.92g/ml. In comparison, Trolox, the positive control, has an IC50 of 2.14 ±0.12g/ml has been reported [16]

The DPPH free radical scavenging effect of varied concentrations of *M. oleifera* flower extract was compared to that of the standard anti-oxidant, ascorbic acid. The results were expressed as a percentage of inhibition (%) seen in Flower extract, which demonstrated dose-dependent scavenging action. However, when compared to ascorbic acid, their scavenging ability was determined to be non-significant (P>0.05) [25]. Various proven in vitro systems, such as -carotene bleaching, reducing power, DPPH/superoxide/hydroxyl radical scavenging, ferrous ion chelation, and lipid peroxidation, were used to study the antioxidant effectiveness of different fractions of Moringa oleifera leaves[27]

Antibacterial Activity :

It has been reported the diameter of zones of inhibition of bacterial growth at varying concentrations of *Moringa oleifera* Lam fresh leaf juice, powder from fresh leaf juice, cold and hot water extracts of fresh leaves, cold and hot water extracts of dried leaves, ethanol extract , Fresh leaf juice had better antibacterial activity against Gram-negative and Gram-positive bacteria, with inhibition zones measuring 20.2±0.04, 17.00±0.66, 25.1±0.12, and 25.20.04, respectively, and 15.230.05, 22.40.28, 18.00.04, 21.60.04, 18.10.04, 19.00.04 mm. Again, powdered fresh leaf juice (dissolved in DMSO) revealed a strong inhibitory effect , Powder from fresh leaf juice (dissolved in DMSO) inhibited all Gram-negative and Gram-positive bacteria tested, with respective diameter zones of inhibition of

36.20±0.08, 39.60±0.49, 33.5±0.12, 42.3±0.16 and 36.4±0.08, 29.25±0.2, 35.15±0.12, 33.75±0.2, 34.4±0.44, 39.25±0.2 mm, respectively has been reported [35]

Antimicrobial Activity :

The moringa leaf exhibits antimicrobial effects against a variety of microorganisms, including *Staphylococcus aureus, E. coli, Salmonella typhi, Candida albicans,* and others. The extract is prepared using three solvents: ethanol, hexane, and ethyl acetate. *Staphylococcus* aureus 9mm NA 10mm *Escherichia coli* 4mm NA 8mm *Staphylococcus aureus* 9mm NA 10mm *Staphylococcus aureus* 9mm NA 10mm *Staphylococcus aureus* 9mm NA 10mm *Staphylococcus aureus 9mm* NA 10mm The inhibition zone in culture media is visible because to antimicrobial activity. *Staphylococcus aureus* is a type of bacteria that causes infections in humans. 4mm NA 8mm Escherichia coli 9mm NA 10mm NA 9mm NA 10mm NA 9mm NA 10mm NA 9mm NA 10mm NA 9mm NA 10mm NA 9mm NA 10mm *Mucor* 3mm 2mm 4mm *Candida albican* 3mm 2mm 4mm *Salmonella tiphy* 6mm 4mm 10mm Mucor 3mm 2mm 4mm [19]The petroleum ether extracts of *Moringa oleifera* were found to be very active against the growth of *Staphylococcus aureus*, with the 0.2g/ml concentration resulting in the highest zone of inhibition measurement (12.0 mm). *Moringa oleifera* ethanolic extract demonstrated an antibacterial impact on *Staphylococcus aureus*, but not as much as the petroleum ether extract.The aqueous extract of *Moringa oleifera* had the least antimicrobial effect on *Staphylococcus aureus*..It was discovered that the *Moringa oleifera* petroleum ether extract was significantly active against the growth of Streptococcus species, with the 0.6g/ml concentration giving the highest measurement of zone of inhibition (12.0mm*).Moringa oleifera* ethanolic extract demonstrated an antibacterial impact on Streptococcus species, but not as much as the petroleum ether extract. On Streptococcus species, the aqueous extract of Moringa oleifera demonstrated the least antibacterial activity [20].The ethanolic extract of the leaf had antibacterial action against all of the microorganisms that were tested. *Salmonella typhi, Pseudomonas aeruginosa, Escherichia coli, and Vibrio cholerae* have all been documented to be resistant to chloroform extract[32].On the test organisms, *M. oleifera* extracts had antibacterial action. Chloroform and aqueous crude extracts of M. oleifera leaf

leaves were found to be efficacious against the test organisms. On *E. coli and S. typhi,* the control (ampiclox) exhibited the largest zone of inhibition (23mm), followed by aqueous leaf extract (20mm) and chloroform extract (20mm) on *Pseudomonas aeruginosa* with An 18mm inhibition zone *P. aeruginosa* was resistant to the aqueous extract's action. [37].The antibacterial analysis revealed a broad activity spectrum against the test microorganisms, with inhibitory zones comparable to those seen with conventional antibiotics. For all species, the MIC was between 10mg/ml to 9Omg/ml [41].Antifungal and antibacterial activities of Moringa oleifera seed extracts: The results of antifungal activity of *Moringa oleifera* extracts showed inhibitory zones of different M. oleifera extracts against Bacillus subtilis and *Staphlococcus aureus,* respectively has been reported .Crude samples had high activity against *Fusariamsolani, Bacillus subtilis, and Staphlococcus aureus*, but almost no activity against *Rhizopus solani,* and less activity against *Pasturellamultocida, Aspergillus niger, Metarhisiumaniscoplae, and Escherichia coli*, whereas supernatant had low activity against *Rhizopus solani, Pasturellamultocida, Staphlococcus aureus*,Moderate activity against *Escherichia coli, Aspergillus niger, and Metarhisiumaniscoplae in Bacillus subtilis.*Dialyzed samples had modest activity against all four bacteria species and *Aspergillus niger* but no activity against *Rhizopus solani*. Only *Fusariamsolani and Metarhisiumaniscoplae* were found to be very sensitive to the dialyzed sample [36].Six bacterial species and two mould species have been discovered. *Staphylococcus aureus, Bacillus cereus, Escherichia coli, Streptococcus Spp, Pseudomonas aeruginosa, and Proteus vulgaris* were among the bacteria isolated, while *Rhizopus spp and Mucor spp* were among the moulds. The isolated microbes were found to contain Staphylococcus aureus and Bacillus cepacia.The major bacteria found in all of the beef offal samples were *Staphylococcus aureus and Bacillus cereus,* according to a microbial count of the isolated microorganisms. In addition to *Bacillus cereus and Staphylococcus aureus, Streptococcus faecalis, Escherichia coli, and Proteus vulgaris* were found in the intestine. [38]*Salmonella typhi and Klebsiella pneumoniae* were the most sensitive bacteria, while *Staphylococcus aureus and Escherichia coli* were the least sensitive

microorganisms, with *Proteus mirabilis and Enterobacter aeroginosa* proving resistant. The extract's minimum inhibitory concentration for all sensitive isolates was 100 mg/ml, but the minimum inhibitory value for all other isolates was 50 mg/ml.The extract's lowest inhibitory concentration for all sensitive isolates was 100 mg/ml, whereas the extract's minimum bactericidal concentration prevented the development of Staphylococcus aureus, Salmonella typhi, and Escherichia coli was 50 mg/ml has been reported [29].

The antibacterial efficacy of *M. oleifera* leaf extracts in aqueous, methanolic, and ethanolic forms is discussed. At 30 mg/ml, all of the leaf extracts had a zone of growth inhibition of less than 1.5 mm, indicating that they had limited inhibitory impact on enteropathogens. Except for *Streptococcus sp. and P. mirabilis,* all of the orthopaedic wound isolates were sensitive to the aqueous extract of the leaves, with inhibition zones ranging from 12 to 15 mm, whereas methanolic extract produced inhibition zones ranging from 12 to 19 mm with *Streptococcus sp, P. fluorescens, A. baumanii, B. cepacia, Y. enterocolitica, and P. mirabilis and S. pullorum inhibited K. pneumoniae, P. vulgaris, P. stuartii, E. coli , S. rubidae, and K. oxycota, but not K. pneumoniae, P. vulgaris, P. stuartii, E. coli), S. rubidae, or K. oxycota.* All of the orthopaedic wound microbes, on the other hand, exhibited resistance to the ethanolic extract of the leaves has been reported [30].

Anti-inflammatory::Using the rat paw edoema and rat 6-day air pouch inflammatory models, a crude methanol extract of the root of the plant Moringa oleifera Lam. was tested for anti-inflammatory activity. The extract reduced carrageenan-induced rat paw edoema in a dose-dependent manner following oral treatment, with a 50 percent inhibitory concentration (IC 50) of 660 mg/kg.The extract was substantially more potent in the 6-day air pouch acute inflammation caused with carrageenan, with IC 50 values of 302.0 mg/kg and 315.5 mg/kg for cellular accumulation and fluid exudation, respectively. With 600 mg/kg, the maximum inhibition was 83.8 percent and 80.0 percent, respectively [42].

Effect on neutrophil adhesion test – Incubation of neutrophils with nylon fibres (NF) produced a decrease in the neutrophil counts due to adhesion of neutrophils to the fibres. Both doses of MEMO and OSE showed significant increase in the neutrophil adhesion when compared to

control. The low dose of MEMO was found to be more effective than high dose of MEMO. There was also rise in neutrophil count in untreated blood of all treatment groups[28]

Effect on mice lethality test – When *Pasteurella multocida* was given to the control group, 100 percent of them died within 72 hours. Without any prior medication therapy, the vaccinated group had an 83.33 percent mortality rate. MEMO at low and high dosages reduced death to 66.66 and 83.33 percent, respectively, whereas OSE exhibited a 33.33 percent reduction in mortality, with four mice out of six surviving[28].

Effect on cyclophosphamide induced neutropenia –Cyclophosphamide treatment lowered TLC in control mice by 54.52 percent. With low and high dosages of cyclophosphamide, pretreatment with MEMO for 10 days before cyclophosphamide delivery resulted in TLC reductions of 48.91 percent and 52.81 percent, respectively. When animals were pretreated with OSE(Oscimum sanctum extract), TLC decreased by 45.93 percent compared to baseline levels. In the control and OSE groups, the percent reduction in neutrophil count was 57.01 and 38.53, respectively. When compared to initial values, the low and high doses of MEMO reduced neutrophil count by 40.00 and 48.23 percent, respectively[28]

Effect on serum immunoglobulins and haemagglutination:

When compared to control, the modest dose of MEMO (methanolic extract of *Moringa oleifera*) exhibited a substantial rise in serum immunoglobulin levels. When compared to control, the high dose of MEMO was unable to significantly enhance immunoglobulin levels. While in haemagglutination When animals were vaccinated with a low or high dose of MEMO their haemagglutinating antibody (HA) titre value was much higher than when they were vaccinated alone [28].

Hypolipademic Effect :

In experimentally generated hypercholesterolemia rats, the hypolipidaemic effect of ethanol leaf extract of Moringa oleifera was examined. The researchers employed 36 wistar rats, both sexes, weighing 130.53±4.86g . The animals were completely randomized into six groups (A-F) comprising 6 animals each. Groups A, B and C comprise female rats administered 1 ml of distilled water, high dose of 600 mg/kg and low dose of 300 mg/kg body weight of the extract respectively,Male rats in groups D, E, and F were given 1 ml of distilled water, a high dose of 600 mg/kg, and a low dose of 300 mg/kg body weight of the extract. Only the

high dose female group (600 mg/kg body weight) reduced or maintained body weight significantly (p 0.05) differently than the low dose and high dose male groups, indicating that the extract dose only had a little effect their body mass index In the case of blood lipids, both male and female serum total cholesterol concentrations decreased significantly (p 0.05) in comparison to the other groups. For those who received low dosages (300 mg/kg body weight) of the extract, serum low density lipoprotein cholesterol (LDLC) levels were also lowered significantly (p 0.05).concentration in both male and female reduced significantly (p 0.05) ,The LDLC of the male rats did not decrease significantly (p>0.05). In male and female rats given low and high doses of the extract, serum triacylglycerol (TAG) concentrations decreased significantly (p0.05). Overall, the results of this investigation reveal that *M. oleifera* ethanol leaf extract has a hypolipidaemic impact [1].*Moringa oleifera* has been shown to have potential anti-hyperglycaemic properties in animal models of diabetes by many scientific groups. We used various approaches to investigate the putative mechanisms of action of M. oleifera extract. In Type 2 diabetic rats, we first measured fasting blood glucose and then performed a glucose tolerance test[55].

Hypercholesterolemia:

If the animals were given a high-fat dietwhich caused hypercholesterolemia. Then after the 21-day feeding period, the extract was given for 14 days it become useful cured that abnormality [1] It was discovered by number of author that ingesting a *Moringa oleifera*-rich extract significantly lowered serum cholesterol, triglycerides, and low-density lipoprotein cholesterol levels. Feeding rats *Moringa oliefera* and a high fat-cholesterol diet had no effect on their apparent development. In the current study, *Moringa oliefera* treatment lowered total cholesterol levels[72].

Wound Healing :

Moringa oleifera reveals wound healing activity on albino rats utilising multiple wound healing models pharmacological investigation indicate the tensile strength drug treated we got model that explained the wound closure day and mean scar area as well as wound contraction and its impact on the granuloma tissue Zinc sulphate was abundant in Moringa oleifera, and zinc sulphate is used to treat wounds[56]

Anthelmintic activity:

Moringa oleifera has been reported that the it shows paralysis between 6-15 minutes, whereas death is comparable to piperazine citrate, with worms dying at 64 minutes. Vitex negundo was used for paralysis for 23-92 minutes and worm death after 4-8 hours.According to the findings, *Moringa oleifera* has significant anthelmintic activity, but *Vitex negundo* takes a long time to kill worms.The isolation of phytoconstituents responsible for activity will be required in the future[54].The anthelmintic activity of Moringa oleifera oil has been reported against the Indian earthworm *Pheritimaposthuma*. The oil of *Moringa oleifera* was reported that expressed in terms of the time it took for the worms to be paralysed and die. The reference standard was piperazine citrate (10 mg/ml), while the control group was pure water. Moringa oleifera oil was found to have strong efficacy that was comparable to that of the*Moringa oleifera* oil was found to have significant action that was comparable to the standard used[77].

At 100 mg/ ml concentrations, *Moringa oleifera* seed extract exhibits anthelmintic action, whereas Chloroform has moderate activity and Petroleum ether extract exhibits the least anthelmintic activity, Piperazine citrate (22.36±1.5) (43±6.8),Petroleum ether (60.22±1.2)(55.13±0.2)(81.08±2 .8)(65.14±3 .1 4),Chloroform (39.11±1.8)(33.05±1.2)(60.04±2 .1)(52.11±1 .1 5),Methanolic extract (32.13±0.3)(28.11±1.3)(45.22±1 .9)(38.12±0 .7) min required for paralysis and death of 10 ,50 ,100mg/ml concentration of extract has been reported [78]

Antifungal activity: As you know from ancient times plant are used as for the cure diseases The fungus *Saccharomyces cerevisiae*, *Candida albicans*, and *Candida tropicalis* were tested against *Moringa oleifera* has been reported . The ethanol and aqueous leaf extracts *of Moringa oleifera* had the best antifungal activity against *Saccharomyces cerevisiae and Candida tropicalis*, whereas the water extract of *Moringa oleifera* had the worst antifungal activity against *Saccharomyces cerevisiae and Candida tropicalis* was reported .Water and ethanol extracts of *Moringa oleifera* produced the biggest inhibitory zone against *Saccharomyces cerevisiae*. Because of their excellent therapeutic capabilities against pathogenic organisms, antifungal activity was reported by several author .Previous research has shown that the medicinal herb *Moringa oleifera* has antifungal properties against a variety of species, including

Saccharomyces cerevisiae and Candida tropicalis[17].The antifungal activity of the leaves extracts is shown in All of the fungal organisms developed resistance to both the aqueous and methanolic extracts of the leaves, with the exception of *A. Flavus*, which was sensitive to the methanolic extract with a growth inhibition zone of 12 mm at a concentration of 30 mg/ml.The ethanolic extract, on the other hand, reduced the development of several fungal organisms, resulting in a growth inhibition zone of 22 mm against *T. mentagrophyte*, 20 mm against *Pullariumsp*, and 15 mm against *A. flavus and Penicillium*sp has been reported [30].

Cancer cell Antiproliferation :

In the United States of America, almost 35% of cancer patients took herbal medications [74]Extracts of *Moringa. oleifera*has been used treatment in model likehepatocarcinoma (HepG2), colorectal adenocarcinoma (Caco-2) and breast adenocarcinoma (MCF-7), and human fibroblast cells were used to test the antiproliferation [73].*Moringa oleifera* has antitumor potential against a variety of malignancies. Hepatocellular carcinoma, acute lymphoblastic, and myeloid leukaemia cell viability were all decreased by*Moringa oleifera* leaf extract [76]. It was reported that methanol and dichloromethane extracts (ME and DE) Cancer cell viability patterns were similar whether of both extracts (0 to 250 g/ml) were used.DE was more harmful to cells than ME. It had IC50s of 120.37±2.55, 112.46±3.74 and 133.58±2.47 µg/ml for HepG2, Caco-2, and MCF-7, respectively, but ME had a lower cytotoxicity (IC50 > 250 g/ml) for all cancer cell lines. Both extracts were also tested in human fibroblasts to see if they inhibited cell proliferation in healthy cells. Both extracts demonstrated no toxicity on human fibroblasts at concentrations of 0 to 400 g/ml. The cancer cell growth inhibitor cisplatin was utilised as a positive control. For HepG2, Caco-2, and MCF-7, the IC50 13.34±1.44, 19.45±2.12 and 17.24±2.39 µM, respectively. According to the findings, M. oleifera extracts not only inhibit cancer cell proliferation but also [9]Niazimicin, -sitosterol-3-O—D-glucopyranoside, and 4-(-L-rhamnosyloxy) benzylisothiocyanate were identified as the bioactive chemicals responsible for the inhibition. MO leaves suppressed the proliferation of pancreatic cancer cells[75]

Application :

Anemia, arthritis, asthma, cancer, constipation, diabetes, epilepsy, hypertension, kidney stones, thyroid disorders, and infections are all conditions that *M. oleifera* can usefull*Moringa* has been demonstrated to have potent neuroprotective properties. Cerebral ischemia is caused by a blockage of blood flow to the brain. As a result, lipid peroxidation and reperfusion occur, resulting in reactive oxygen speciesThe antioxidants in moringa can help protect the brain by reducing reactive oxygen species[58,59].Most serious diseases like AIDS patients should take moringa, a plant that herbalists prescribe. Moringa is recommended as a food to include in one's diet to help HIV-positive persons enhance their immune system. However, more research is needed to prove moringa's effect on antiretroviral drugs. [60]*Moringa oleifera* is a medicinal plant commonly used in African and Asian folk medicine to cure ulcers, wounds, inflammation, heart problems, cancer, stroke, obesity, anaemia, and liver damage. *Moringa oleifera* is the nutrient-dense plant that has yet to be discovered.Since the 1970s, major nutritional study has been undertaken on this humble plant, which has been making strides in less-developed communities for thousands of years. They are employed in human and animal nutrition as well as traditional medicine in specific locations.Moringa leaves are used as dietary integrators in food preparations. These leaves are used to cure a variety of maladies in traditional medicine, including malaria, typhoid fever, parasite diseases, arthritis, swellings, and wounds, skin problems, genito-urinary ailments, hypertension, and diabetes.Protein, minerals, beta-carotene, and antioxidant chemicals are abundant in leaves, which are commonly insufficient in populations in undeveloped or developing countries. Moringa helps lower cholesterol levels in the blood, which lowers the risk of a heart attack. It also aids in the reduction of blood sugar levels.Malnourished people, particularly newborns and nursing mothers, have benefited from Moringa trees. One rounded tablespoon (8 g) of leaf powder supplies nearly all of a kid's protein, 40% of calcium, 23% of iron, and nearly all of the vitamin A requirements for a child aged 1-3.Six rounded spoonfuls of leaf powder offer nearly all of a woman's daily iron and calcium needs throughout pregnancy and breastfeeding[64].

We chose Moringa oleifera as a dietary ingredient for the most part because of its nutritional worth and health benefits.

Moringa Oleifera has anticancer, hepatoprotective, hypoglycemic, anti-inflammatory, antibacterial, antifungal, antiviral, and anti-sickling effects.They may also aid in cholesterol reduction, wound healing, Alzheimer's disease prevention, and stomach ulcer prevention [63]Vision, reproduction, embryonic growth and development, immunological competence, cell differentiation, cell proliferation and apoptosis, epithelial tissue maintenance, and brain function are just a few of the physiological processes in which vitamin A plays a critical part. Its deficiency is still common in many impoverished nations, and it's thought to be the cause of infant and maternal death.Cattle fed moringa leaves gained up to 32% more weight every day. Milk cows were fed 15 to 17 kg of fresh Moringa leaves each day, and milk output increased by 43%. Milk output increased by 58% when the feed was supplemented with 2 kg dry matter.According to sources, leaves can be eaten raw, roasted, or stored as a dry powder for months without losing their nutritional value. To improve nutrients without modifying flavour, a tablespoon of the powder can be added to baby food, soups, and vegetables[61].The milk output increased by 65 percent after the feed was supplemented with 3 kg dry matter each day. Consider what would be possible if developing-country milk output could be expanded in this manner. It has the potential to save patients suffering from protein deficiency a lot of pain. Moringa powder must be prepared and sold in urban marketplaces, thus the economic benefits must be examined.It was also discovered that rural Ugandans use *M. oleifera* leaves for twenty-four different HIV/AIDS-related illnesses. External sores/ulcers, Bronchiasis Malaria/Fever, Gastritis/ulcers, Diabetes mellitus, Coliti, Insufficiency, Syphilis, Flu, Asthma, and other respiratory illnesses Bone setting, heartburn Humans and livestock are both infested with worms. a skin condition, tenseness, Lactation booster, Malnutrition, Energy, Protein, Malnutrition, Malnutrition, Malnutrition, Malnutrition,,Antiseptic Soap, Tea Spices, and Vegetables [4].

Although oral and dental health in industrialised countries has dramatically improved over the last century, dental caries continues to be a serious clinical problem in developing countries like India. Cavities, often known as tooth decay, are a microbiological condition produced by bacteria in the mouth.The methanolic extract of *Moringa oleifera* possesses antibacterial properties and can be used as

an oral medicine to treat dental caries. The antibacterial action of *M. oleifera* methanolic extract is mostly due to the presence of phenolic compounds, particularly Flavonoids, and their synergistic effect with aerial components[61].Moringa's entire plant is beneficial, from the root stem to the leaf flower seed, with various uses such as antilithic, rubefacient, vesicant, carminative, antifertility, anti-inflammatory, stimulating in paralytic ailments; act as a cardiac/circulatory tonic, laxative, stimulant, aphrodisiac, abortifacient, and cholagogue, as listed in Table No 1.

Table no 1 :Plant Part uses of *Moringa oliefera*

Sr no	Plant part	Uses	References
1	Root	Antilithic, rubefacient, vesicant, carminative, antifertility, anti-inflammatory, stimulating in paralytic diseases; cardiac/circulatory tonic, laxative, abortifacient; used to treat rheumatism, inflammations, articular aches, lower back or kidney discomfort, and constipation.	[45,69]
2	Leaves	Purgative, used to sores as a poultice, massaged on the temples for headaches, used for piles, fevers, sore throats, bronchitis, eye and ear infections, scurvy, and catarrh; leaf juice is supposed to control glucose levels, applied to reduce glandular swelling.	[42,70]
3	Stem bark	Rubefacient, vesicant, and used to treat delirium, prevent spleen growth and the formation of tuberculous glands in the neck, eradicate tumours, and heal ulcers. Earaches can be treated with the root bark juice, which can also be used to ease discomfort in a tooth cavity. Anti-tubercular capabilities are also present..	[70,69]

4	Gum	Rubefacient and vesicant, it is used to cure delirious patients, inhibit spleen expansion and tuberculous gland growth in the neck, remove tumours, and heal wounds. Earaches are treated with root bark juice, which can also be utilised as a pain reliever in a dental cavity. It possesses antitubercular effects as well.	[42]
5	Flower	Used to cure inflammations, muscle illnesses, hysteria, tumours, and spleen enlargement; high therapeutic value as a stimulant, aphrodisiac, abortifacient, and cholagogue; In hypercholesterolaemic rabbits, lower serum cholesterol, phospholipid, triglyceride, VLDL, LDL cholesterol to phospholipid ratio, and atherogenic index; lowered lipid profile of liver, heart, and brain	[68, 70 .69]
6	Seed	The antihypertensive compounds thiocarbamate and isothiocyanate glycosids have been isolated from the acetate phase of Moringa pod ethanolic extract, and seed extract protects the liver by decreasing lipid peroxides.	[67 66 65]

Figures:

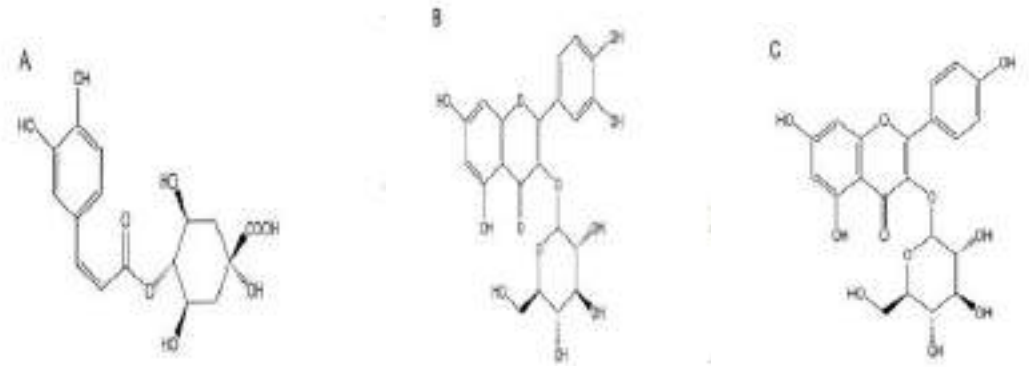

Fig no 2:Structure of crypto-chlorogenic acid, isoquercetin, and astragalin [71]

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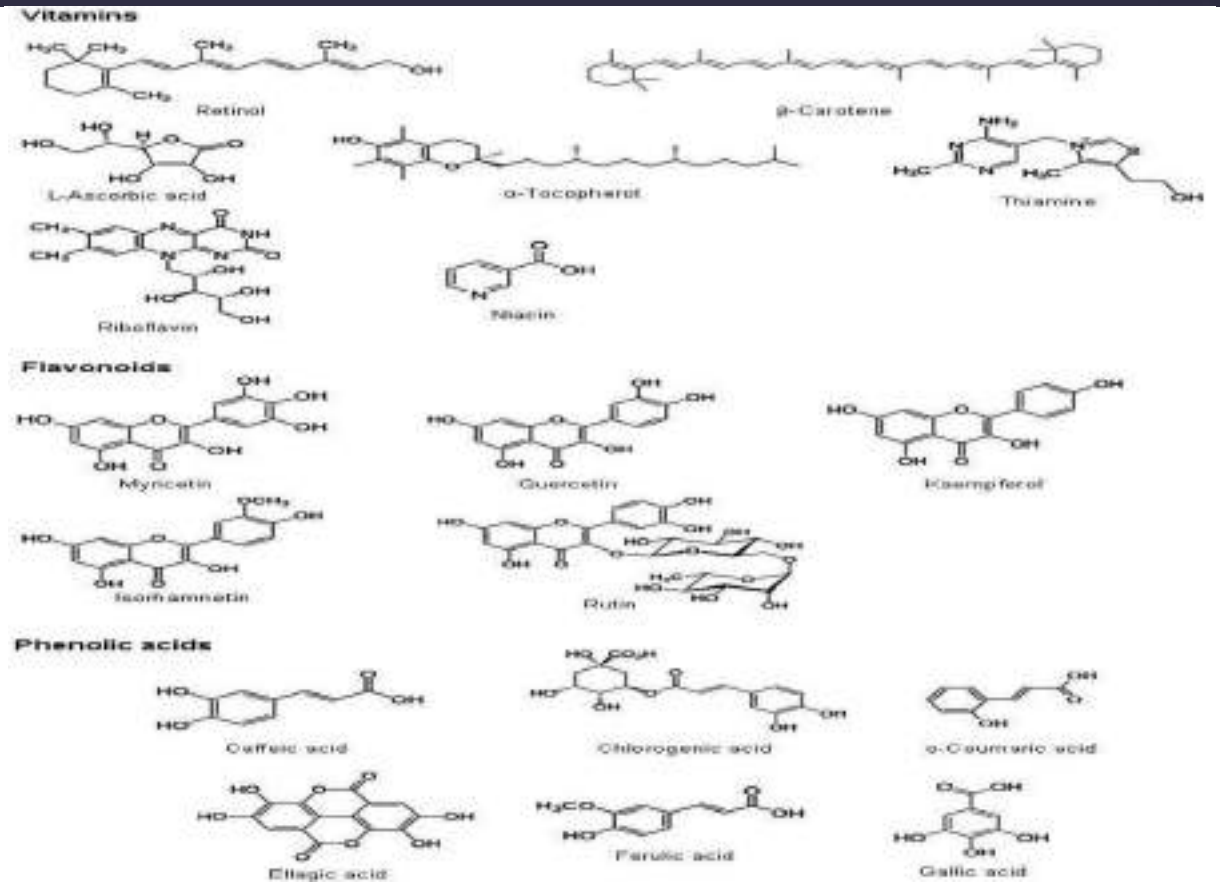

Fig no 1: Biochemical compound and secondary Metabolite found in Moringa oleifera

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Studies on Major Ion Chemistry of Groundwater in Lakhandur City (M.H.) India

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Abstract:

Currently, study on major ion chemistry of groundwater this is very essential to improve the groundwater quality. Good groundwater quality is very necessary to human health, plant growth, microbial growth and industrial sector. Present research work understanding the quality of ground water and to evaluate major ion chemistry and for promoting sustainable development and effective management of ground water. A total of 14 water samples were collected from selected parts of the area of Lakhandur city in Bhandara district of Maharashtra, India during pre monsoon season for the period of two years from 2018. For this water sample, water chemistry of various anion and cation viz. F^-, NO_3^-, SO_4^{2-}, HCO_3^-, CO_3^{2-},Cl^-, Na^+, K^+, Mg^{2+} and CO_3^{2-} are carried out. The nitrate ion appeared as a major problem of safe drinking water in this region. We recorded highest nitrate concentration, i.e., 255 mg/L in Eight groundwater sample. A comparison of groundwater quality in relation to drinking water quality standards revealed that about major nitrate and fluoride are ten groundwater locations are not suitable for drinking. The finding of the present study will be helpful to improve management plans for Groundwater quantity, control authority of the city.

Keywords: Groundwater quality, Sustainable development, Anion and cation chemistry, Drinking water, Lakhandur city, Control authority.

I. INTRODUCTION

In recent years observed that increase in population, industrialization, urbanization, deforestation and improving living standards. Then use of water has increased significantly which increase stress to supplying water from surface water resources such as lakes, rivers, streams and pounds therefore need to ground water[1]. It normally accumulate there when surface water, rain water and melting ice water seeps into the ground and moves downward due to gravity through the tiny pore between practical soil and rock. Ground water accounts nearly 95% of national fresh water resources. About 50 % of our drinking, municipal, domestic and agricultural water supply by ground water[2]. The use of groundwater has increased significantly in the last decades due to its widespread occurrence and overall good quality. Ground water is believed to be comparatively much hygienic than the surface water. Now this observed multifunctional activity of human ground water get pullulated drastically in many ways. As it soaks through soil, the water can dissolve hazardous materials that are present on or in the ground, becoming polluted. Some pollutants are naturally occurring that include contaminants such as bacteria, radon, arsenic, uranium and other minerals. Other pollutants find their way onto the land from Industrial and commercial activities, improper waste disposal, road salting and fuel spills can introduce hazardous substance to the ground. However, even typical residential activities, such as the use of fertilizers and pesticides, fueling of lawn equipment and disposal of household chemicals, can pollute the ground water when done improperly[3]. The quality of drinking water is the fundamental eminent of the health. Quality ground water is useful in deciding water use strategist for varies purposes. Limpid and immaculate dirking water is the basic necessity and hence, an internationally accepted human right and reducing the number of people without access to sustainable safe drinking water supply has been enlisted as one of the ten targets of the millennium development goals (MDGs) [4].

The present paper is evaluated that the cation, and anion other parameters for drinking water quality of the area of Lakhandur in Bhandara district of Maharashtra, India during pre monsoon season for the period of two years from 2018. Lakhandur is located at 20°.74" North and 79°.88" East with adjoining small village including Chicholi, Antargaon, Kinada, Madeghat and Asola. Main old city of lakhandur are crowded which are located on bank of chulband river. All border of lakhandur covered with agricultural land which have rice is main crop. About 85 % people of lakhandur economically depend upon agriculture and related job. Lakhandur has tropical wet and dry climate. The finding of the present study will be helpful to improve management plans for Groundwater quality, control authority lakhandur nagarpanchayet of the city.

II. METHODOLOGY

The study was conducted in Lakhandur city, Bhandara district, Maharashtra state, and belongs to survey of India topo sheet No. 55 P/13 and 55 P/14 and lies between 20°44'45" North latitude and 79°53'00" East longitude. A total number of 14 groundwater samples were collected from representative bore well/open well in Lakhandur city, Bhandara district, Maharashtra state, collected from Lakhandur area and send to analysis in divisional chemical laboratory of GSDA Nagpur MS and Department of Chemistry Yashwantrao Chawhan Arts, Commerce and Science College Lakhandur. Following parameters like pH, EC, TDS, TH and the major anion viz. (Mg^{2+}, Ca^{2+}, Na^{+}, K+) and cation viz. (Cl^{-}, CO_3^{2-}, HCO^{3-}, SO_4^{2-}, NO_3^{-}, F^{-}) were analyzed .

III. RESULTS AND DISCUSSION

The physicochemical parameters such as pH, EC, TDS, and major anions and major cations there minimum, maximum, and average concentrations are prescribed in table-1.The desirable and permissible limits given by WHO for drinking water purposes and the groundwater samples from the study area exist the desirable and permissible limit are shown in table-2[5,6].

Table .1. Chemical data of groundwater sampling silts

Sr. no.	pH	EC	TDS	TH	F^-	NO_3^-	SO_4^{2-}	HCO_3^-	Cl^-	Na^+	K^+	Mg^{2+}	Ca^{2+}
		µS/cm	Mg/l		Anions(mg/l)					Cations(mg/l)			
L-1	7.8	670	436	244	1.12	17	24	240	82	12	8	34	43
L-2	7.9	1230	800	392	1.31	33	58	440	114	31	5	44	86
L-3	8.3	1170	761	396	1.99	13	64	452	90	22	4	73	42
L-4	7.7	1330	865	480	1.17	52	58	380	170	75	11	67	117
L-5	7.8	2550	1657	552	1.88	38	72	536	292	24	5	118	32
L-6	7.7	840	546	392	1.19	10	32	432	38	16	15	50	77
L-7	7.8	1050	683	448	1.17	48	82	268	132	15	2	66	74
L-8	7.8	2400	1560	856	0.60	181	126	328	228	35	5	99	184
L-9	7.8	2040	1326	368	0.79	143	172	364	174	65	8	34	93
L-10	7.9	3180	2067	956	1.12	255	138	356	442	112	3	89	224
L-11	7.8	2130	1385	648	0.83	147	98	348	252	65	12	57	155
L-12	7.8	2430	1580	768	0.88	62	128	376	346	95	5	85	171
L-13	7.9	1510	982	560	0.75	113	84	328	210	65	7	60	128
L-14	7.9	730	475	268	0.41	17	38	256	38	12	8	21	58
Min	7.7	670	475	244	0.41	10	24	240	38	12	2	21	32
Max	8.3	3180	2067	956	1.99	255	172	536	442	112	15	118	224
Avg.	7.85	1661	1080	523	1.00	80.64	83.85	364.57	186.29	46	7	64.07	106

Table 2. Groundwater samples of the study area exceeding the desirable and permissible limits prescribed by WHO for drinking purposes

Parameters	WHO 1997		No. of samples exceeding desirable limit	No. of samples exceeding Permiable limit
	Desirable limit	Permissible limit		
pH	6.5-8.5	9.2	-	-
EC (µS/cm)	750	1500	12	7
TDS (mg/L)	500	1500	12	4
Ca2+ (mg/L)	75	200	9	1
F^- (mg/L)	0.6-0.9	1.5	8	2
Mg2+ (mg/L)	30	150	13	-
SO_4^{2-} (mg/L)	200	600	-	-
NO_3^- (mg/L)	-	45	-	8
Cl^- (mg/L)	250	600	5	-
Na^+ (mg/L)	50	200	6	-
TH (mg/L)	100	500	14	6

3.1 PHYSICOCHEMICAL PARAMETERS

3.1.1. pH

In general, water with a pH less than 7 is considered acidic and with a pH greater than 7 is considered basic. The pH value range from 6 to 8.5 is normal range for pH in groundwater systems. In the present study, pH value ranges are found from 7.7 to 8.3 (average 7.85, Table-1), The maximum groundwater sample indicating an alkaline nature. All collected sample show the value of pH are well within the safe limit as prescribed by[7]. Human health doesn't have any direct effect because of pH, But it react with other chemical constituent of water.

3.1.2. Electrical conductivity (EC)

Electrical conductivity is an important indicator for water quality assessment. Since the composition of mineral salts **affects the electrical conductivity of groundwater, it is important to understand the relationships between mineral** salt composition and electrical conductivity. EC is measured in units called Seimens per unit area (e.g. mS/cm, or miliSeimens per centimeter) [7]. In the present study, the values of EC shows 670 to 3180 µS/cm. (avg1661).

3.1.3. TDS

The salinity behaviors of groundwater indicated by TDS. It show the variation between 475 to 2067 mg/l average (1080 mg/l) [6]. According to WHO, the acceptable concentration of TDS from domestic purpose is 500mg/l, and excessive limit for permissible value is 1500 mg/l. The TDS values All groundwater samples are well within permissible limit of except four groundwater location (L-5,L-8,L-10,L-12). Classification of groundwater on the basis of TDS value, it is 500 mg/L (desirable for drinking); 500–1,000 mg/l (permissible for drinking) and 1,000 to 3,000 mg/L (useful for agricultural purposes). Depending on this classification, The observation of sample of the study area that, out of 14 samples collected, 2 samples (L-1 and L-14) are desirable for drinking, 6 sample (L-2,L-3,L-4,L-6,L-7,L-13) are permissible for drinking and 6 sample (L-5,L-8,L-9,L-10,L-11,L-12)are useful for agricultural purposes.

3.1.4. Hardness

For domestic application hardness is the very much useful property of water, boiler in industries, cause hard water problem. The acceptable limit for total hardness (as CaCO3*)* is 200 mg/L, which can be extended up to 600 mg/L in case of non-availability of any alternate water source[6]. In the study area total hardness (TH) as CaCO3 ranges from 244 to 956 mg/L with an average of 523 mg/l On the basis of TH classification, water as 0–60- soft; 61–120- moderately hard; 121–180- hard and >180 very hard water. In study area all samples are very hard type water.

3.2 ANION CHEMISTRY

The major anions are fluoride, nitrate, sulfates, bicarbonate and chloride and are analyzed. The Cl mainly derives from non-litho logical sources and contributed, mainly, from the surface sources through the domestic wastewaters, septic tanks, irrigation-return flows and chemical fertilizers.[7,8]

3.2.1. Fluoride (F^-)

The responsible constituent for increased floride, in groundwater of the study area is mainly apatite, biotite, clay and chemical fertilizer. Fluoride concentrations above 1.5 mg/l in drinking water cause dental fluorosis and much higher concentration skeletal fluorosis[9]. Low concentration (approximately 0.5 ppm) provides protection against dental caries. Or essential element for maintaining normal development of teeth and bones. [9]The concentration of F varies from 0.41 to 1.99 mg/L (average 1.00 mg/L) in the study area (Table- 1). Fluoride concentration found in two groundwater samples (L-3 and L-5) in study are they are above the permissible limits of 1.5 mg/L. and distribution of fluoride is shown in Fig-1.

3.2.2. Nitrate (NO^{3-})

The increasing use of artificial fertilizers, the disposal of wastes (particularly from animal farming) and changes in land use are the main factors responsible for the progressive increase in nitrate levels in groundwater[10]. Under natural conditions the concentration of $NO3^-$ does not exceed 10 mg/L in water. Nitrate concentration of - varies from 10 to 255 mg/L (average 80.64 mg/L) in the study area (Table 1). Nitrate levels above 10 ppm may present a serious health concern for infants and pregnant or nursing women anthropogenic contamination. Adults receive more nitrate exposure from food than from water. Excessive $NO3^-$ in drinking water can cause a number of disorders including metha emoglobinaemia in infants, gastric cancer, goiter, birth malformations and hypertensions.[11] The maximum acceptable limit of $NO3^-$ is 45 mg/L, only EIGHT groundwater locations (L-4,L-7,L-8,L-9,L-10,L-11,L-12,L-13) are exceeding prescribed limit (Table 2) and distribution of nitrate is shown in Fig-2.

3.2.3. Sulphate (SO_4^{2-}

Sulphate is a naturally occurring ion in almost all kinds of water bodies and is a major contributor to total hardness. Sulphate content more than 200 mg/L is objectionable for domestic purposes. Beyond this limit, Sulphate ion causes gastro-intestinal irritation particularly when Mg^{2+} and Na^+ are also present in groundwater[10]. It varies from 24 to 172mg/l (avg 83.85 mg/l) all the groundwater sample show so4 concentration below desirable limit of 200 mg/L (Table-2) and distribution of sulphate is shown in Fig-3.

3.2.4. Bicarbonate (HCO_3^-)

It is primary anion in groundwater derived from the carbon dioxide released by the organic decomposition in the soil, The dissolved bicarbonate in the groundwater originates mainly from the biologically active layers of the soil where carbon dioxide is generated by root respiration and decay of humus that in turn combines with rainwater to form bicarbonate[11]. The concentration of HCO_3^- are minimum 244 mg/l to maximum 536 mg/L as an average (364.57 mg/l) in study area.

3.2.5. Chloride(Cl^-)

Content of chloride varied from 38 to 442 mg/L,(186.29mg/l) it indicate that the groundwater of study area caused by chemical fertilizer and influences of irrigation return- flows. Intensive and long-term the agricultural activity shows the truths of ground are not other sources. However, none of the groundwater locations are exceeding maximum permissible limit of 600 mg/L (Table 2) and Distribution map of chloride is shown in Fig-4.

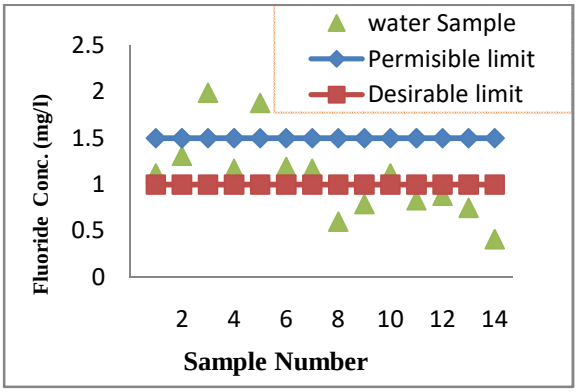

Fig. 1. Fluoride Distribution

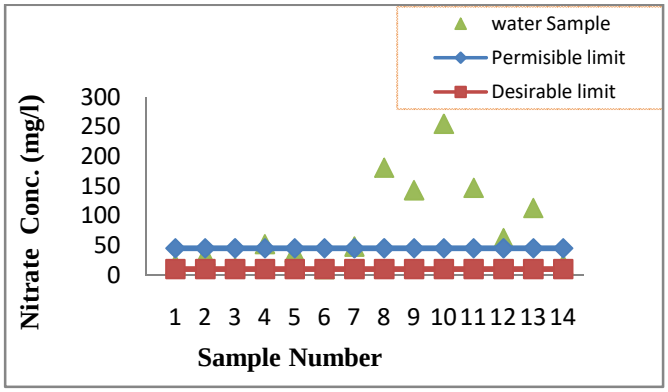

Fig. 2. Nitrate Distribution

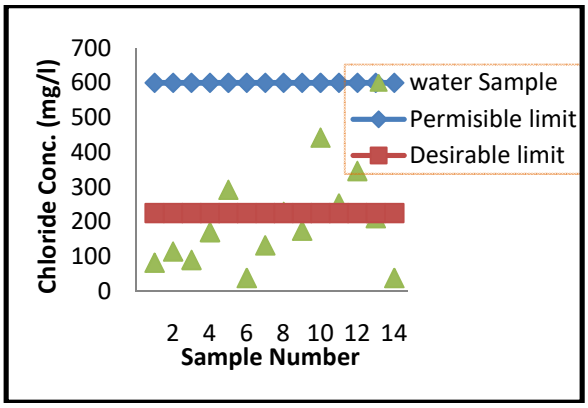

Fig.3. Sulphate Distribution

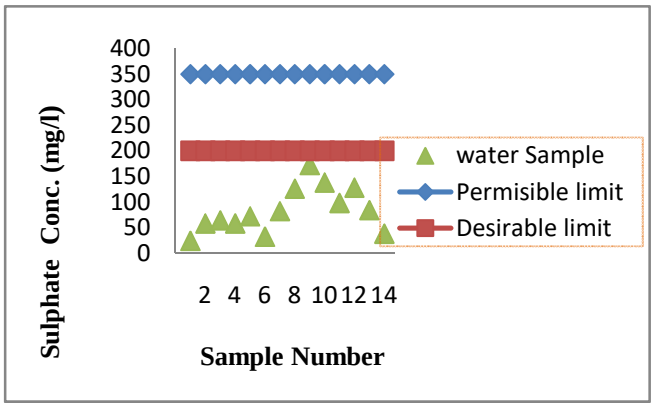

Fig. 4. Chloride Distribution

3.3 CATION CHEMISTRY

3.3.1 Sodium ion (Na^+)

Concentration are depending on the weathering of rock forming minerals like sodium plagioclase, halite and other silicate mineral. It is also depend upon anthropogenic sources just like domestic and animal waste. High doses of sodium chloride (about 1,570 mg sodium/kg body weight) have been observed to cause reproductive effects in various strains of pregnant rats. Effects on the dams have included decreases in pregnancy rates and maternal body weight gain. Developmental effects have included increased blood pressure and high mortality.[13] In the study area the Na concentration ranges from 12 to 112 mg/l(avg 46 mg/l) Table-1 the desirable limit of Na are 50 mg/l and permissible limit 200 mg/l (WHO 1997) [6]. There are non of the groundwater sample show above permissible limit Table-I, The distribution map of sodium is shown in Fig-5.

3.3.2 Potassium (K^+)

Potassium is an essential element and is present in all animal and plant tissues, and also essential element for human nutrition, But it is in excess condition may behave as a laxative. In study area it varies from 2 to 15mg/l (avg 7mg/l) with significant fluctuation. Only one (L-6) groundwater location have K+ concentration above the recommended value of 12 mg/l [12]. The distribution map of potassium is shown in Fig-6.

3.3.3 Calcium and Magnesium (Ca^+& Mg^+)

These are essential nutrients for animals and plant, and these are responsible for bone, nervous system and cell development. Ca and Mg are the main agent to contributors of hardness. These are in water are beneficial of presence of Ca & Mg in water. There were no limits prescribed for protection of human and aquatic health. In drinking water addition of Ca & Mg nutritional benefits to the people. One may possible effect are ingesting high concentration of Ca2+ for long periods or it may be an increased risk of kidney stone[12]. In the present study area calcium ranges from 32 to 224mg/l (avg 106mg/l), and the value of Mg2+ is varied from 21 to 118 mg/l (avg. 64.07 mg/l) (table-1). WHO prescribed limit for Ca are 200 mg/l and Mg are 150 mg/l respectively. There are only one sample show the (L-10) Concentration of Ca above permissible limit and non of the sample show the Mg concentration above permissible limit. The distribution map of **Calcium and Magnesium** are shown in Fig-7 and Fig-8 respectively.

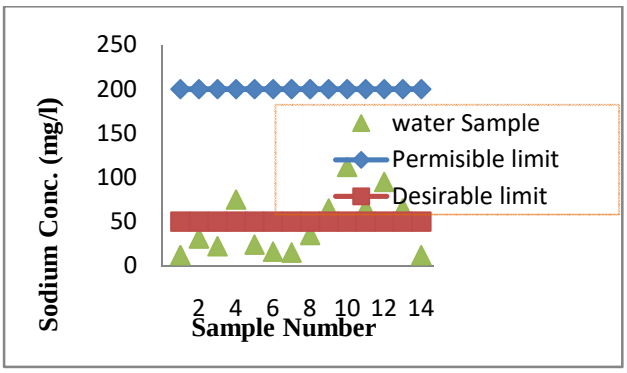

Fig. 5. Sodium Distribution

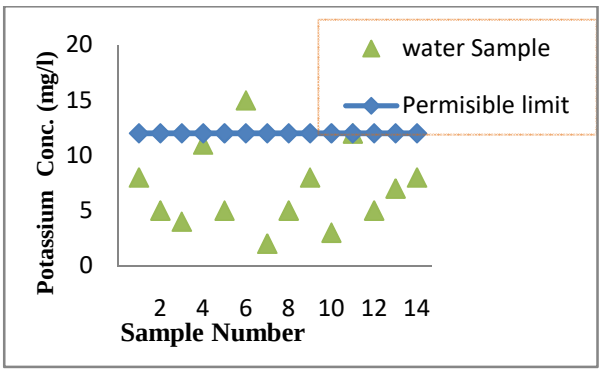

Fig. 6. Potassium Distribution

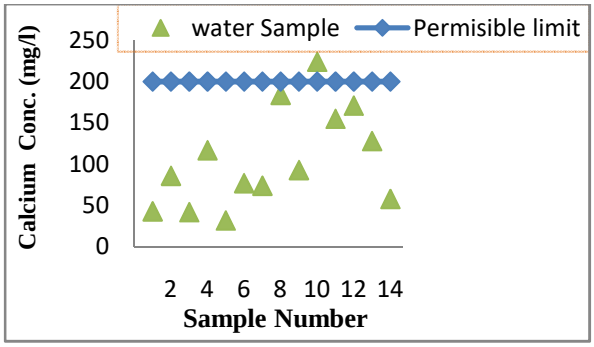

Fig. 7. Calcium Distribution

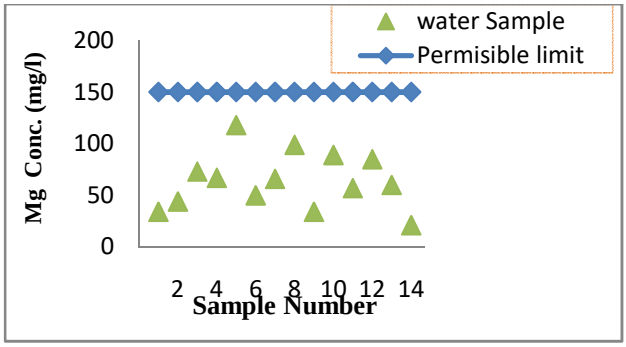

Fig. 8. Magnesium Distribution

IV. CONCLUSION

On the basis of results and discussion the major ion chemistry develop all the groundwater location from study area, are found very hard type. According to Davis and De Wiest classification, TWO sample are desirable for drinking. SIX sample are permissible for drinking and SIX sample are useful for agricultural purposes. Only EIGHT groundwater location have nitrate concentration above the permissible limit of 45 mg/l and not suitable for drinking. Elevated fluoride concentration TWO groundwater locations above permissible limit of 1.5 mg/L, which is not suitable for drinking.

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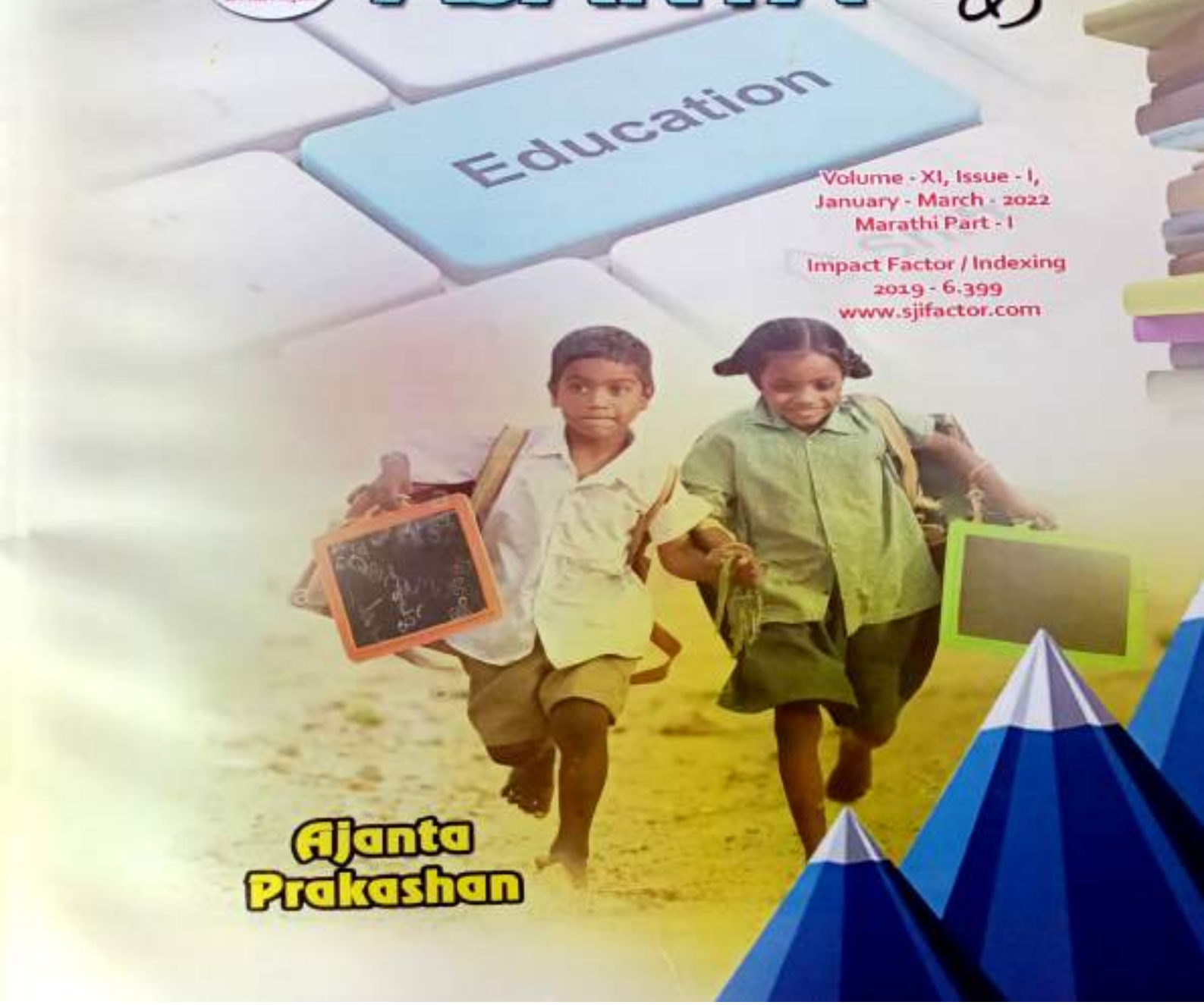

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CONTENTS OF MARATHI PART - I

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१४. महाराजा सयाजीराव गायकवाड यांच्या औद्योगिक सुधारणा

प्रा. भोजराज व्ही. बोदेले
यशवंतराव चव्हाण कला, वाणिज्य व विज्ञान महाविद्यालय लाखांदूर, जि. भंडारा
डॉ. शरयू बी. तायवाडे
तायवाडे महाविद्यालय महादुला कोराडी, जि. नागपूर.

सारांश

१९०८ मध्ये सयाजीरावांनी बडोदा संस्थानातील कृषी, सहकार, आणि औद्योगिक विकासाला आधारभूत अशी बडोदा बँक उभारली. या बँकेच्या माध्यमातून अनेक लोकोपयोगी योजना राबवल्या. कमी व्याजदरात कर्जपुरवठा होऊ लागल्याने नवउद्योजकांना उद्योग स्थापन करण्यासाठी प्रोत्साहन मिळाले. या बँकेच्या उद्घाटनप्रसंगी त्यानी बँक स्थापनेचा उद्देश पुढील शब्दात व्यक्त केला आहे. ते म्हणतात, ''ज्या आर्थिक चळवळीचे औद्योगिक राष्ट्राच्या मालिकेत अखेर आपल्याला स्थान मिळवायचे आहे त्या चळवळीचे द्योतक म्हणूनही या बँकेचे मी स्वागत करतो.''

बीजशब्द :— औद्योगिक विकास, बँका, कृषीवर आधारीत उद्योग, सहकार, ॲक्ट, औद्योगिक धोरण.

शिक्षणाची ताकत ओळखलेल्या सयाजीरावांनी हेही ओळखले होते की, भारत हा शेतीप्रधान देश असल्याने शेतीपूरक उद्योगधंद्याची सांगड नीट न घातल्यास आपण जगाच्या स्पर्धेत मागे पडू, हे शंभर वर्षांपूर्वी ओळखलेल्या महाराजांनी आपल्या राज्यात यासंदर्भात टप्प्याटप्प्याने नियोजन केले. राज्यकारभार हाती आला त्यावेळी काही लाखांचा तोटा असलेले राज्य पंचवीस वर्षात आर्थिक नियोजन, काटकसर, कर आकारणी, महसूल वसुली आणि शेतीपूरक उद्योगाच्या संगतीने ते जगातले सातव्या क्रमांकाचे श्रीमंत व्यक्ती बनले. हे त्यांच्या सुप्रशासनाने मुख्य सूत्रच आहे. या राज्याचे उत्पन्न व खर्चाची वाट याची तपासणी करण्यासाठी स्वतंत्र खाते निर्माण करून जमाखर्चाचे उत्तम नियोजन करत उद्योगधंद्याची नीट घडी घातली. शेती, सहकार आणि उद्योग या तिन्हींचा समन्वय साधून सयाजीराव हिंदुस्थानात कृषी—औद्योगिक प्रयोगाचे उदाहरण घालून दिले.

शेतीपूरक एरंडेल तेलप्रक्रिया, सुतगिरण्या, सहकारी पतपेढ्या, सहकारी बँका, सहकारी साखर कारखाना, कापसावर प्रक्रिया करून पूरक निर्मिती विणकाम, दुध डेअरी, विट कारखाने, कागद उद्योग, विद्युतनिर्मिती, मीठ कारखाना, सयाजी स्टील वर्क्स, महाराणी वूलन मिल, फिशरी उद्योग, डिंक उद्योग, पेन्सिल कारखाना, मातीची भांडी निर्मिती कारखाना ही चौफेर उद्योगांची महाराजांची दृष्टी बडोदा राज्याचे श्रीमंतीचे रहस्य होते. एवढेच नाही तर उद्योगपती जमशेटजी टाटा हे महाराजाचे मित्र आणि बडोदा राज्यातील नवसारीचे उद्योगपती होते. टाटा स्टील आणि टाटा केमिकलच्या उभारणीत महाराजांची प्रेरणा, प्रत्यक्ष मदत होती.

बडोदा तुरूंगातील गुन्हेगारांच्या कौशल्याच्या मदतीने कपडे, गालीचे, बास्केट, बॉक्स करून घेऊन त्यांना मुक्तीनंतर उद्योगाचे जणू प्रशिक्षणच देत होते. बडोद्यातील उद्योगधंद्यांच्या भरभराटीसाठी महाराजांनी वेळोवेळी कायदे केले. यात मालक आणि कामगारांचे हितही सांभाळले जाई. औद्योगिक प्रदर्शनांतून उद्योगधंद्यांना जोडून घेण्याची महाराजांची राष्ट्रीय दृष्टीही दिसून येते.

१९०८ मध्ये सयाजीरावांनी बडोदा संस्थानातील कृषी, सहकार आणि औद्योगिक विकासाला आधारभूत अशी बडोदा बँक उभारली. या बँकेच्या माध्यमातून अनेक लोकोपयोगी योजना राबवल्या. उद्योग स्थापन करण्यासाठी कमी व्याजदरात कर्जपुरवठा होऊ लागल्याने नवउद्योजकांना उद्योग स्थापन करण्यासाठी प्रोत्साहन मिळाले. या बँकेच्या उद्घाटनप्रसंगी त्यांनी बँक स्थापनेचा उद्देश पुढील शब्दात व्यक्त केला आहे. ते म्हणतात, ''ज्या आर्थिक चळवळीमुळे औद्योगिक राष्ट्राच्या मालिकेत अखेर आपल्याला स्थान मिळवायचे आहे त्या चळवळीचे द्योतक म्हणूनही बँकेचे मी स्वागत करतो.'' या बँकेकडे सयाजीराव एका वेगळ्या भूमिकेतून पाहत होत. बँकेच्या माध्यमातून लोकांच्या आर्थिक सवयी बदलतील व आर्थिक व्यवहार पैसा खेळता राहील अशा व्यापक दृष्टिकोनातून या बडोदा बँकेचा विस्तार केला.

१९११ मध्ये बडोद्यामध्ये असलेल्या ८६ उद्योगांची संख्या १९२१ मध्ये वर गेली. या उद्योगांमध्ये ओखा मीठ कारखाना, सयाजी स्टील वर्क्स, अश्विनी उद्योग, टाटा केमिकल्स, महाराणी वूलन मिल, फिशरी उद्योग, डिंक उद्योग, पेटलाद येथील पेन्सिल निर्मितीचा कारखाना, मातीची निर्मितीचा कारखाना अशा विविध उद्योगांचा समावेश होतो. सयाजीरावांनी औद्योगिक धोरण आखताना यामध्ये केवळ पुरूषांनाच विचारात न घेता महिला व किमान पात्रता वय पूर्ण असणाऱ्या बालकांना देखील बारकावयाने विचार केला असल्याचे आढळते. १९१७ मध्ये महिलामध्ये उद्योगासंबंधी तांत्रिक ज्ञान व कौशल्याचा विकास करण्यासाठी चिमणाबाई स्त्री उद्योगालय सुरू केले.

उद्योगधंद्यांच्या विकासासंदर्भात विविध कायदे करून सर्व उद्योगधंद्यांना कायदेशीर पाठबळ दिले. यामध्ये १८९७ चा कंपनी ॲक्ट, १८९८ सालचा बॉयलर ॲक्ट, व यल्स फॉर ओपनिंग फॅक्टरीज ॲंड ॲक्वीजिशन ऑफ लँड व याचवर्षी वेट ॲंड मेजर्स ॲक्ट, १९१३ साली फॅक्टरीज ॲक्ट आणि १९१५ सालचा यल्स ऑफ डेवलपमेंट ऑफ कॉमर्स ॲंड इंडस्ट्रीज इत्यादी कायद्यांचा समावेश आहे.

सयाजीरावांनी उद्योग धोरणांची अंमलबजावणी करताना ज्या काटेकोरपणाने ही धोरणे राबविली त्याचा परिणाम म्हणून बडोदा संस्थान त्यावेळीच्या इतर प्रगत संस्थानांच्या तुलनेत औद्योगिक विकासामध्ये अग्रेसर राहिले. उद्योगधंद्यांच्या जडणघडणीमध्ये सयाजीरावांनी समाजातील प्रत्येक घटकाला सामावून घेतले. कोणताही भेदाभेद न करता उद्योग विकासाचे उद्दिष्ट साध्य केले. कोणत्याही राजाने अशाप्रकारे जनतेच्या कल्याणासाठी हे अखंड कार्यरत राहणे हे तसे दुर्लभच म्हणावे लागेल. सयाजीरावांचा उद्योगाकडे बघण्याचा दृष्टिकोन केवळ एक संस्थानापुरता मर्यादित नव्हता, तर बडोद्यातील कोणत्याही क्षेत्रातील सयाजीरावांचे धोरण हे राष्ट्रीय वृत्तीने प्रेरित झालेले दिसून येते. याचबरोबर बदलत्या काळात निर्माण होणारे नवे ज्ञान आणि तंत्रज्ञानाशी पारंपारीक ज्ञानाची योग्य प्रकारे सांगड घालून कारागीर जातींना औद्योगिक विकासाच्या मुख्यप्रवाहात आणले. महाराज

सयाजीराव गायकवाड हे किती दूरदृष्टी असणारे राजे होते हे त्यांच्या ६४ वर्षाच्या राज्यकारभारात बडोद्यात केलेल्या विविध उद्योगधंद्याच्या आजच्या स्थितीवरून लक्षात येते.

बडोद्यात मुबलक प्रमाणावर उपलब्ध असलेल्या दुधावर आधारीत डेअरी फार्म सारखा उद्योग १९२५ मध्ये मकरपुरा, बडोदा येथे सुरू केला. जगभरात प्रसिद्ध असणारा अमूल हा दूध उत्पादनातील ब्रॅण्ड जेथे आहे तो मेहसाणा जिल्ह्यातील आनंद हे ठिकाण बडोदे संस्थानातच येते. सयाजीरावांच्या उद्योगविकासाचे आणखी एक वेगळेपण म्हणजे उद्योगांची उभारणी करताना कच्चा मालाची सहजासहजी उपलब्धता होईल अशाच ठिकाणांची निवड करत. समाजातील परंपरागत विचारसरणीच्या लोकांना देखील पारंपारिक मानसिकतेतून बाहेर काढणारी आपली धोरणे विनासायास आत्मसात करायला लावण्याचे सयाजीरावांचे कौशल्य अनोखे वाटते. कोणत्याही उपक्रमाच्या यशस्वितेसाठी त्या कामाप्रतीचा एक ध्येयवाद संबंधित नेतृत्वाकडे असावा लागतो तरच अपेक्षित उद्देश साध्य होतो. सयाजीरावांच्या सर्व यशस्वी कामांमध्ये त्यांचा ध्येयवाद स्पष्टपणे जाणवतो. असा ध्येयवाद प्रत्येकाने आत्मसात करण्याची गरज आहे. जर तसा ध्येयवाद बाळगून काम करण्याची सवय लागली तर आपण कोणत्याही क्षेत्रामध्ये असो हमखासपणे आपणाकडून उत्तम कामगिरी घडते.

महाराज म्हणायचे, ''तुम्हालाही वाटतच असले पाहिजे की, औद्योगिक गुलामगिरीचे जे जू आपण आपल्या मानेवर बसू दिले आहे ते आजच्या आणीबाणीच्या वेळी झुगारून देऊन जर त्यापासून आपण आपली सुटका करून घेतली नाही, तर पुन्हा सुटकेचीच काय पण कसलीही आशा नको'' प्रत्येक देशाचा विकास हा मुख्यत: त्या देशातील प्रमुख उद्योगधंद्याच्या प्रगतीवर अवलंबून असतो. भारत हा कृषिप्रधान देश असला तरी देशाचे राष्ट्रीय उत्पन्न, लोकांच्या जीवनमानाचा दर्जा, स्वयंलित अर्थव्यवस्था आणि कृषी क्षेत्राच्या विकासाबरोबरच उद्योगांचा विकास होणे देखील आवश्यक आहे. आंतरराष्ट्रीय पातळीवर औद्योगीकरणाची मोलाची भूमिका असल्याचे दिसून येते. मात्र प्राचीन काळामध्ये अन्न, वस्त्र, निवारा अशा मानवाच्या मूलभूत गरजा असल्यामुळे उद्योग व व्यापाराचे अस्तित्वच नव्हते. मानव निसर्गाच्या सानिध्यात राहून येथे उपलब्ध होतील ती कंदमुळेखाऊन आपला उदरनिर्वाह करीत असत. वस्त्र म्हणून झाडाच्या पानांचा किंवा मृत जनावरांच्या चामड्याचा वापर करत आणि निवाऱ्यासाठी गुहेचा वापर करत असे. कालानुरूप मानवाचा विकास होऊन प्राचीन मानव प्रगती करू लागला.

द्वितीय हिंदी औद्योगिक परिषदेमध्ये श्रीमंतांच्या हस्ते उद्घाटन करताना महाराज म्हणतात, ''मोठ्या धंद्यांना आवश्यक सहाय्य करा व प्रोत्साहन द्या; परंतु छोट्या धंद्याच्या पोटापाण्याकडेही अवश्य पहा. त्यांना जरूर ती मदत कराच. कारण त्या लहानसहान धंद्यांवरच आपले लाखो गावठी कारागीर गुजराण करीत आहेत.'' या विधानावरून सयाजीरावांचे उद्योगविषयक धोरण स्पष्ट दिसते. संस्थानातील शेवटच्या घटकाचा देखील इतक्या बारकाव्याने विचार करून त्यांना डोळ्यासमोर ठेऊन उद्योगविषयक धोरण ठरवली जात. यामुळे सर्व घटकांचा समान विकास होणे शक्य झाले. समाजात आर्थिक समानता प्रस्थापित झाल्याने सामाजिक स्वास्थ्यदेखील टिकून राहीले.

अलेंबिक केमिकल वर्क्सचा रौप्यमहोत्सवामध्ये बोलताना महाराज म्हणतात, ''आपल्या देशातील कामगारवर्गापैकी एक प्रचंड बहुसंख्याक वर्ग शेतकीवर उपजीविका करणारा आहे. वर्षातील सुमारे चार महिने त्यांचे काम त्यांना पुरते. बाकीच्या आठ महिन्यांत तो जवळजवळ निरुद्योगीच असतो. सक्तीच्या फुरसतीचा हा काळ कोणत्या किफायतशीर व्यवसायात गुंतवून टाकावयाचा हा हिंदी अर्थशास्त्रज्ञांपुढे एक सर्वांत महत्त्वाचा व बिकट असा प्रश्न आहे. शेतीला जोडून नवे उद्योगधंदे किंवा शेतीला आनुषंगिक असलेले पोटधंदे जर खेड्यापाड्यांतून सुरू करण्यात येतील तर हा बिकट प्रश्न सोडविण्यास बरीच मदत होईल.'' आधुनिक भारताच्या औद्योगिक विकासाचा विचार करता ब्रिटिशांच्या अंकित असणारा भारत आणि ५६२ संस्थानिकांच्या अधिपत्याखाली असणारा भारत अशा दोन टप्प्यांमध्ये आधुनिक भारतातील औद्योगिक विकासाचा विचार करावा लागतो. ब्रिटिश भारतातील औद्योगिक धोरणाचा प्रभाव त्रावणकोर, हैद्राबाद, बडोदा, मैसूर यांसारख्या औद्योगिकदृष्ट्या प्रगत संस्थानावर दिसून येतो. या संस्थानाचा तुलनात्मक विचार करता बडोदा संस्थान औद्योगिक विकासाबाबत आपली वेगळी ओळख निर्माण करणारे ठरले. याचे प्रमुख कारण म्हणजे महाराजा सयाजीराव गायकवाड यांचे नेतृत्व होय. सयाजीरावांनी आपल्या संस्थानाच्या सर्वांगीण विकासासाठी शैक्षणिक, धार्मिक, आर्थिक, राजकीय, शेती, सहकार, उद्योग अशा सर्व क्षेत्रात आपल्या द्रष्ट्या भूमिकेतूनन पायाभूत काम करून ठेवले. त्यामुळेच आधुनिक भारतातील प्रगती, विकास, सामिक सुधारणा अशा सर्वच क्षेत्रात सयाजीरावांनी उभे केलेले काम आदर्श म्हणून विचारात घ्यावे लागते.

निष्कर्ष

१. शिक्षणाची ताकद ओळखलेल्या सयाजीरावांनी हेही ओळखले होते की, भारत हा शेतीप्रधान देश असल्यामुळे या देशात शेती पुरक उद्योग उभारले पाहिजे.

२. बडोदा तुरुंगातील गुन्हेगारांच्या कौशल्याच्या मदतीने कपडे, गालीचे बास्केट, करून घेऊन त्यांना मुक्तीनंतर उद्योगाचे जणू महाराज प्रशिक्षणच देत होते.

३. हिंदुस्थानात उद्योग जर यशस्वी करावयाचे असतील तर प्रथम ज्यांना बाजारात मागणी आहे अशाच प्रकारचे धंदे सुरू केले पाहिजेत असे महाराज म्हणत असत.

संदर्भ

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REVIEW ARTICLE

Nitrogen-containing Fused Heterocycles: Organic Synthesis and Applications as Potential Anticancer Agents

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Abstract: The fused Nitrogen heterocyclic compounds and their derivatives have grown in prominence over the past several decades as a result of their significant medical value. The adaptable and easily synthesized N-Heterocyclic scaffolds are particularly exciting in both synthetic organic chemistry and the biological sector due to their powerful pharmacological properties, which are taken into consideration while considering their numerous uses. For the synthesis of N-heterocycles and their derivatives, several attempts were undertaken to create a variety of synthetic protocols. The N-Heterocyclic compounds provide a variety of adaptable structures for specific biological applications and represent novel, broad-spectrum antibacterial and anticancer agents. They typically have minimal toxicity profiles. The majority of these N-Heterocycles have demonstrated more cytotoxicity than the effective anticancer medication cisplatin. The design, synthesis, structural characterisation, and biological uses of N-Heterocycles are reviewed in this work. In this article, the developments made in this specific field are comprehensively examined.

Trimurti L. Lambat

Keywords: Organic synthesis, N-heterocycles, anti-cancer agents, novel synthetic protocols, fused N-heterocycles, biological activities.

1. INTRODUCTION

Heterocyclic compounds [1-8] are a fundamental branch of organic chemistry that has its origins in organic synthesis and medicinal chemistry [9-14]. The physicochemical qualities are greatly influenced by the kind and size of the ring structures, as well as the substituent groups of the core scaffold [15-23]. Heterocyclic compounds play an important role in a variety of medicinal applications, including antibacterial [24-26], antiviral [27], antifungal [28], anti-inflammatory [29], and anti-tumor drugs [30-33].

The ongoing identification of novel heterocyclic scaffolds gives new tools for modulating or modifying a variety of disease states [34-38]. A novel scaffold has the advantage of disrupting a signal pathway or blocking an enzyme's active site [39-43]. Synthesis of novel heterocycles using better and easier methodologies [44-50], therefore, attracts synthetic organic chemists' attention. A medium-sized ring-fused heterocycle has a variety of biologically significant properties [51-53]. Furthermore, attaching a suitable substitute as well as adding another fused five- or six-member ring to the scaffold has greatly increased activity [54].

N-containing heterocycles [55-58] are compounds with a distinct structural motif that is abundant in natural products including hormones, alkaloids, and vitamins [59-62]. Pharmaceuticals, natural goods, pigments, organic materials, and biologically active compounds all contain N-heterocycles [63]. For their various actions, heteroaromatic chemical compounds such as benzimidazole, benzothiazoles, indole, acridine, oxadiazole, imidazole, isoxazole, pyrazole, triazoles, quinolines, and quinazolines have sparked a lot of interest in the development and pharmacology in recent years [64-68]. By suppressing cell growth and inducing cell differentiation and apoptosis, these N-heterocyclic compounds have anticancer effects in a variety of cancers [69-72].

The N-heterocycles are the most commonly used structural skeletons of medications in the market. Indeed, at least one nitrogen atom can be found in 84 percent of all molecules, while at least one nitrogen heterocycle being found in 59 percent [73]. Furthermore, the use of heterocycles in drug discovery was stressed in a recent study published by Martins and collaborators [74] on oncological medications approved by the FDA between 2010 and 2015. During that time, 26 of the 40 newly approved chemotherapeutic medicines have heterocyclic fragments in their molecular structure. Nitrogen-based heterocycles accounted for 73 percent of these heterocycles, vastly outnumbering nitrogen-oxygen (15%), oxygen (8%), and nitrogen-sulfur (4%) heterocycles.

Despite their broad spectrum of biological activities, including anticancer activity, there is still a need for creative, practical, and effective methods for nitrogen-containing heterocyclic synthesis,

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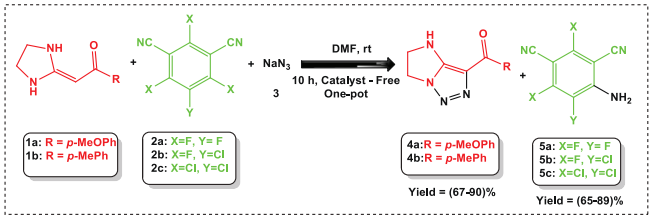
which has become a major aim in modern organic synthesis. Furthermore, the development of drug resistance to cancer chemotherapeutic drugs by chance poses serious medical issues [75]. Drug resistance, either inherent before treatment (intrinsic) or acquired after treatment (acquired), is responsible for the majority of cancer relapses and is one of the leading causes of cancer death [76]. As a result, the discovery of innovative medications with fewer side effects and broad spectrum capabilities is unavoidable if cancer treatment is to improve [77].

2. 1,2,3-TRIAZOLE DERIVATIVES

2.1. Heterocycle-fused 1,2,3-triazole Derivatives

2.1.1. Synthetic Strategy

Yan *et al.* [78] synthesised a series of heterocycle-fused 1,2,3-triazoles by 1,3-dipolar cycloaddition of heterocyclic ketene aminals or N, O-acetal with sodium azide and polyhalo isophthalonitriles in a one-pot reaction at room temperature without a catalyst (Scheme **1**).



Scheme 1. Synthesis of heterocycle-fused 1,2,3-triazole derivatives.

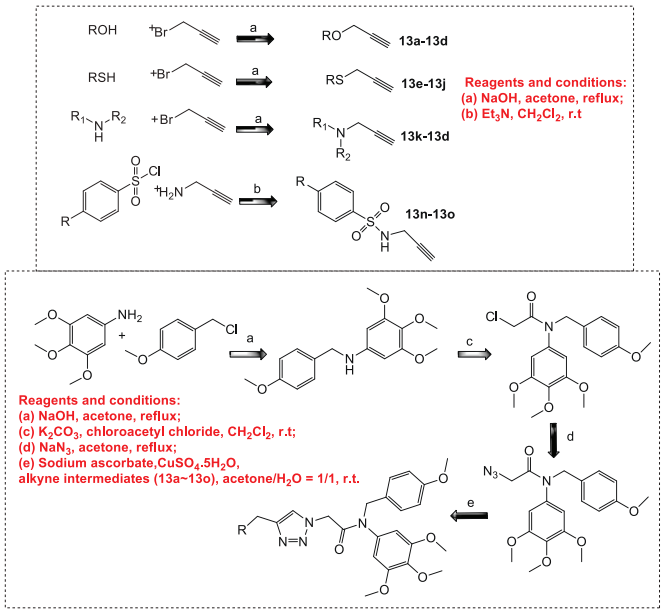
2.1.2. Biological Activity

A series of heterocycle-fused 1,2,3-triazoles were tested *in vitro* against a panel of human tumour cell lines. The most effective derivative was discovered to be 4-methoxyphenyl substituted 1,3-oxazoheterocycle fused 1,2,3-triazole, with IC_{50} values of less than 1.9 g/mL against A431 and K562 human tumour cell lines.

2.2. 1,2,3-triazole Hybrid Moieties

2.2.1. Synthetic Strategy

Fu *et al.* [79] developed and synthesised structurally different trimethoxyphenyl-1,2,3-triazole hybrids (Scheme **2**).



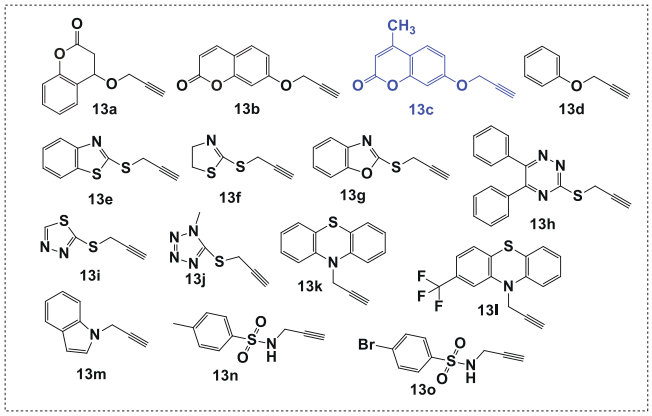
Scheme 2. Synthesis of trimethoxyphenyl-1,2,3-triazole hybrids.

2.2.2. Biological Activity

The synthesized products were tested for antiproliferative efficacy against three cancer cell lines (PC3, MGC803 and HepG2) (Table **1**). Trimethoxyphenyl-1,2,3-triazole containing the coumarin fragment

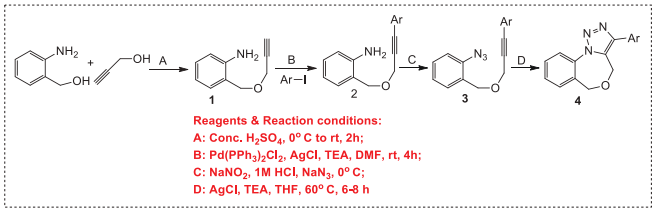
13c showed higher antiproliferative action than the anticancer medication colchicine, with IC_{50} values ranging from 0.13 µM to 1.74 µM. The lead Compound (**13c**) inhibits MGC803 cell growth and colony formation, induces G2/M phase arrest by inhibiting CDK1 expression, and promotes apoptosis *via* regulating the DR5 and Bcl-2 families. Furthermore, tubulin polymerization was substantially suppressed by (**13c**), which interacted with the colchicine site.

Table 1. Chemical structure of synthesized lead moieties of trimethoxyphenyl-1,2,3-triazole hybrids.



2.3. Triazolo-benzoxazepine Derivatives

Banerji *et al.* [80] synthesised small triazolo-benzoxazepine scaffolds employing one-pot four-step synthetic approach incorporating the click reaction (Scheme **3**) and tested them against several cancer cell lines. The MTT assay revealed that these compounds have low micromolar anticancer activity, and phase contrast, fluorescent, and confocal pictures were used to confirm cell death.



Scheme 3. Synthesis of Triazolo-benzoxazepine scaffolds using a one-pot four-step synthetic methodology involving click reaction.

2.4. N-substituted-3-mercapto-1,2,4-triazoles, triazolo [1,3,4]thiadiazines and triazolo [1,3,4]thiadiazoles

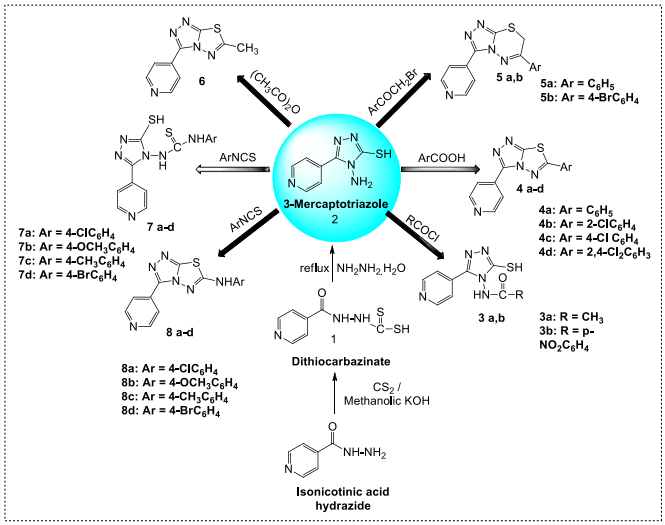
2.4.1. Synthetic Strategy

Kamel and co-workers [81] synthesized a series of novel N-substituted-3-mercapto-1,2,4-triazoles (**3a**-**3b**, and **7a**, **7e**, **7d**), triazolo [1,3,4]thiadiazines (**5a, 5b**), and triazolo [1,3,4]thiadiazoles (**4a**, **4e**, **4d**, **6** and **8a**, **8e**, **8d**) starting with isonicotinic acid hydrazide (Scheme **4**). On the basis of spectrum data and elemental studies, the structure of the newly synthesised chemicals was validated.

2.4.2. Biological Activity

All compounds were tested for anticancer activity *in vitro* against six human cancer cell lines as well as normal fibroblasts. Most cell lines showed considerable cytotoxicity to seven of the

examined scaffolds (**3a**, **3b, 4c**, **5a**, and **8b**, **8e**, **8d**). Compound (**4c**), among these derivatives, had a cytotoxic impact on a gastric cancer cell line that was comparable to the standard CHS 828 (IC_{50} 14.25 µM). Normal fibroblast cells (WI38) were only slightly affected (IC_{50} > 10.00 µM).

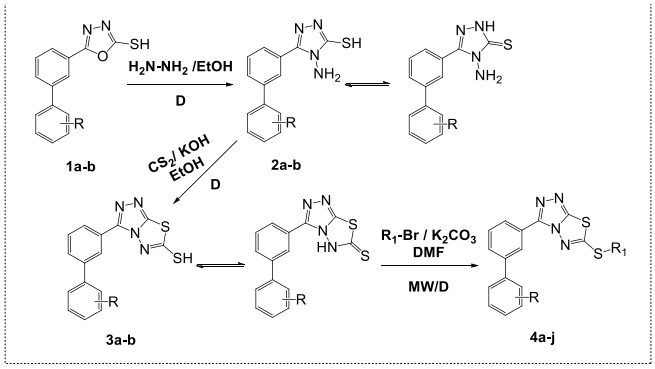


Scheme 4. Synthesis of N-substituted-3-mercapto-1,2,4-triazoles (3a,b, and 7a-d), triazolo[1,3,4]thiadiazines (5a,b) and triazolo[1,3,4]thiadiazoles (**4a-d, 6** and **8a-d**).

2.5. Alkyl Derivatives of 3-(substituted-(1,10-biphenyl)-3-yl) [1,2,4]triazolo [3,4-b] [1,3,4]thiadiazole-6-thiol

2.5.1. Synthetic Strategy

Ramprasad and coworkers [82] used conventional and microwave irradiation methods to synthesize a series of S-alkyl derivatives of 3-(substituted-(1,10-biphenyl)-3-yl) [1,2,4]triazolo [3,4-b] [1,3,4]thiadiazole-6-thiol (**4a–j**) (Scheme **5**). In comparison with the conventional method, the microwave method produced a faster and higher yield.



Scheme 5. Synthesis of alkyl derivatives of 3-(substituted-(1,10-biphenyl)-3-yl)[1,2,4]triazolo[3,4-b][1,3,4]thiadiazole-6-thiol.

2.5.2. Biological Activity

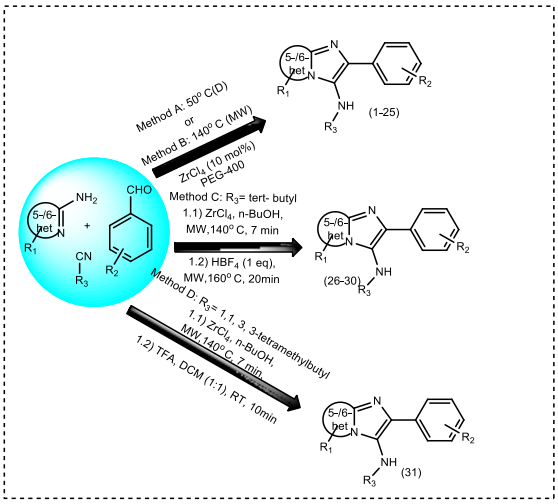
The MTT assay was used to test these substances for anticancer activity *in vitro*. The moiety (**4c**) was the most promising anticancer agent in the HT29 cell line, with an IC_{50} value of 12 µM.

3. BENZIMIDAZOLE DERIVATIVES

3.1. N-Fused Aminoimidazoles

3.1.1. Synthetic Strategy

Baviskar *et al.* [83-85] employed multicomponent protocol to make N-Fused aminoimidazoles using different approaches (Scheme **6**).



Scheme 6. Methods of preparation of investigational compounds as potential htopoiiα inhibitors.

3.1.2. Biological Activity

N-Fused aminoimidazoles were tested *in vitro* against human topoisomerase IIα (hTopoIIα) in decatenation, relaxation, cleavage complex, and DNA intercalation assays. These scaffolds showed substantial anticancer activity in kidney and breast cancer cell lines, as well as low toxicity to normal cells, higher potency in kidney cancer cell lines than etoposide and 5-fluorouracil, and potent suppression of cell migration. In the G1/S phase, several chemicals were discovered to have an apoptotic impact.

3.2. Benzimidazole Associated with Triazolo-thiadiazoles and Triazolothiadiazines

3.2.1. Synthetic Strategy

Two series of Benzimidazoles were synthesised by Husain *et al.* [86] in combination with triazolo-thiadiazoles (**5a-q**, **5r**, **5s**, and **5x-a**) and triazolothiadiazines (**5t-5w**) to produce promising anticancer agents (Scheme **7**).

3.2.2. Biological Activity

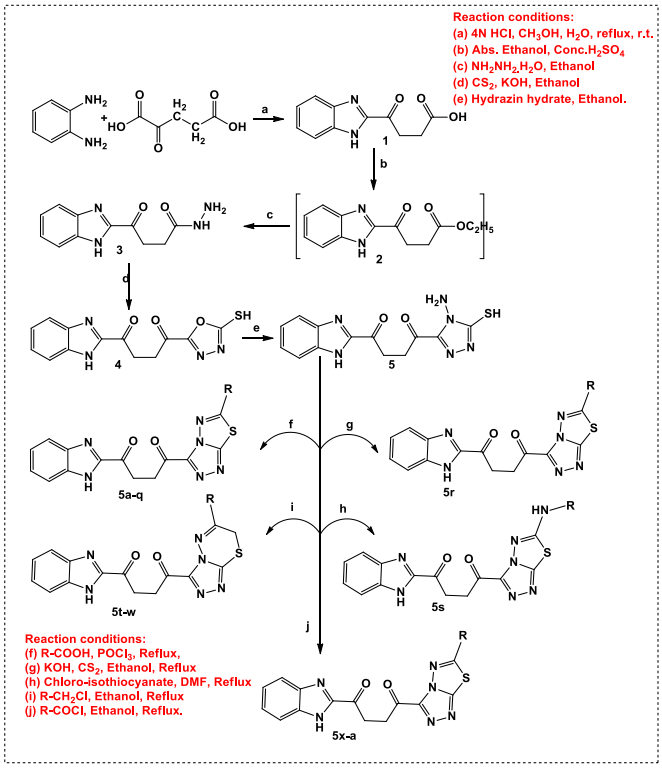
The National Cancer Institute (NCI) tested the *in vitro* anticancer activities of synthesised compounds against the NCI60 cell line panel, and the results showed good to remarkable broad-spectrum anticancer activity. Compound (**5h**) (NCS: 760452, 1) is one of them. 3-(6-(2,4- dichlorophenyl)- [1,2,4]triazolo [3,4-b]-3-(6-(2,4-dichlorophenyl)- [1,2,4]triazolo [3,4-b]-3-(6-([1,3,4]thiadiazol-3-yl) propan-1-one) inhibited growth significantly, with IC_{50} values ranging from 0.20 to 2.58 µM, and was found to have superior selectivity for leukaemia cell lines. It was then screened at 10-fold dilutions of five different concentrations (0.01, 0.1, 1, 10, and 100 µM). **5h** could be used as a lead compound in the development of new anticancer agents.

3.3. Benzimidazole Associated with Oxadiazole and Triazolo-thiadiazoles

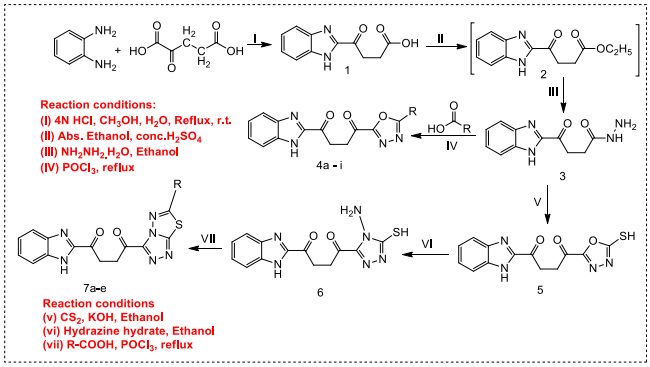
3.3.1. Synthetic Strategy

Husain *et al.* [87] effectively synthesised two new series of benzimidazole-bearing oxadiazole [1-(1H-benzo [d]imidazol-2-yl)-3-(5-substituted1,3,4-oxadiazol-2-yl)propan-1-ones (**4a-l**)]. and triazolo-thiadiazoles [1-(1H-benzo [d]imidazol-2-yl)-3- (6-hydroxybenzo [d]imidazol-2-yl)-6-hydroxybenzo [d]imidazol-2-yl)-6-hydroxybenzo [d]imida (substituted) - [1,2,4] triazolo [3,4-b] [1,3,4]thiadiazol-3-yl)propan-1-one (**7a-e**)] triazolo [3,4-b] [1,3,4]thiadiazol-3-yl)propan-1-one (**7a-e**)] triazolo [3,4]thiadiazol-

3-y with the goal of developing effective anticancer medicines from 4-(1H-benzo [d]imidazol-2-yl)-4-oxobutanehydrazide (**3**) (Scheme **8**).



Scheme 7. Synthesis of Benzimidazole associated with triazolo-thiadiazoles (**5a-q**, **5r**, **5s** and **5x-a**) and triazolothiadiazines (**5t-w**).



Scheme 8. Synthesis of benzimidazole bearing oxadiazole[1-(1H-benzo[d]imidazol-2-yl)-3-(5-substituted-1,3,4-oxadiazol-2-yl)propan-1-ones (**4a–l**)] and triazolo-thiadiazoles[1-(1H benzo[d]imidazol-2-yl)-3- (6-(substituted)-[1,2,4]triazolo[3,4-b][1,3,4]thiadiazol-3-yl)propan-1-one (**7a–e**)]

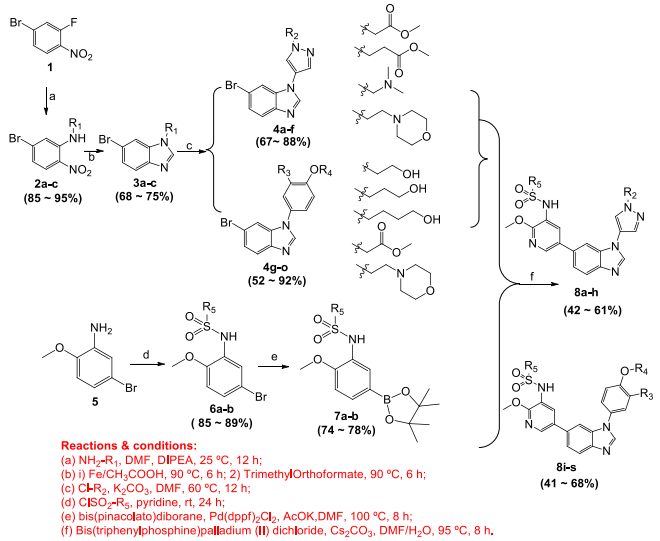
3.3.2. Biological Activity

The anticancer activity of produced compounds was tested *in vitro* against the whole NCI60 human cell line panel at the National Cancer Institute (NCI) in the United States, according to their methodology; the results revealed good to outstanding anticancer activity. Compound (**4j**, NCS: 761980) showed significant growth inhibition and was screened at 10-fold dilutions of five different concentrations (0.01, 0.1, 1, 10, and 100 µM) with IC_{50} values ranging from 0.49 to 48.0 µM. It was found superior for non-small cell lung cancer cell lines like HOP-92 (IC_{50} 0.49, TGI 19.9, IC_{50} >100 and Log10 IC_{50}- 6.30, Log10 TGI- 4.70, Log10 IC_{50}>-4.00).

3.4. 1H-benzo [d]imidazole Derivatives

3.4.1. Synthetic Strategy

Ding *et al.* [88] developed a library of 1,6-disubstituted-1H-benzo [d]imidazole derivatives using multistep synthesis (Scheme **9**).



Scheme 9. Synthesis 1,6-disubstituted-1H-benzo[d]imidazoles derivatives.

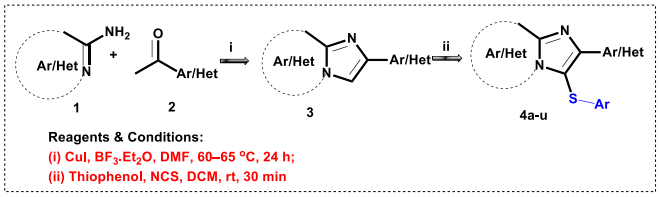
3.4.2. Biological Activity

The synthesized compounds were investigated *in vitro* for their antiproliferative efficacy against the T47D, HCT116, and MCF-7 cancer cell lines. The scaffold (**8i**), which has a 2,4-difluoro substitution pattern on the sulfonyl phenyl ring, demonstrated substantial action against the T47D, HCT116, and MCF-7 cancer cell lines, with IC_{50} values of 0.36 µM, 0.14 µM, and 0.31 µM, respectively. Furthermore, in HCT116 cells, the active scaffold (**8i**) significantly suppressed cell growth by suppressing PI3K kinase and blocking the PI3K/Akt pathway.

3.5. Sulfinylated Imidazo [1,2-a]pyridines

3.5.1. Synthetic Strategy

Chitrakar *et al.* [89] described the design, synthesis, and investigation of the anticancer properties of sulfenylated 2-phenylimidazo [1,2-a] pyridines and their analogues (Scheme **10**).

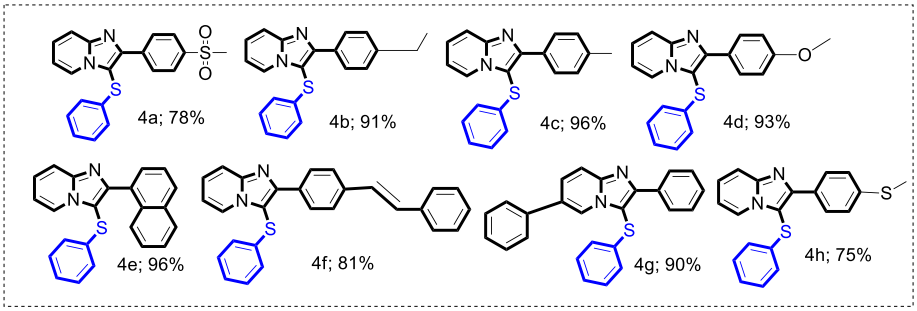


Scheme 10. Synthesis of sulfinylated imidazo[1,2-a]pyridines.

3.5.2. Biological Activity

The MTT assay was used to test the anticancer activity of twenty sulfenylated imidazo [1, 2-a] pyridine derivatives (Table **2**) in seven different human cancer cell lines, MDA MB 231 (breast), HepG2 (liver), Hela (cervical), A549 (lung), U87MG (glioblastoma), SKMEL-28 (skin melanoma), and DU-145 (prostate). Compounds (**4e**) (naphthalene), (**4f**) (styrene), and (**4h**) (thiomethyl) in the series demonstrated potent activity against human liver cancer cells HepG2. Cell cycle analysis revealed that these compounds arrested the cell cycle at the G2/M phase and induced apoptosis in HepG2 human liver cancer cells.

Table 2. Chemical structure of synthesized sulfinylated imidazo[1,2-a]pyridine analogues.

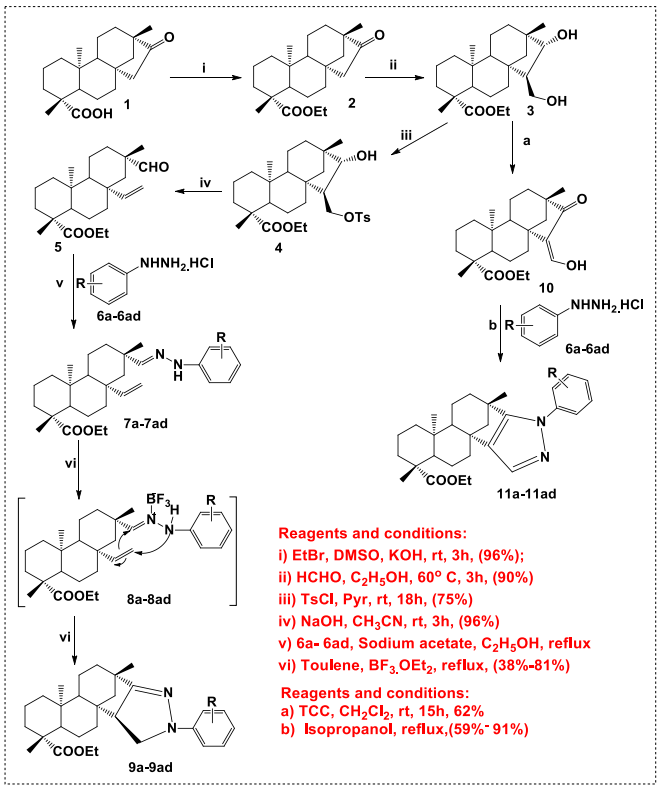


4. FUSED PYRAZOLINE AND PYRAZOLE DERIVATIVES

4.1. Isosteviol-fused Pyrazoline and Pyrazole Moieties

4.1.1. Synthetic Strategy

Zhu *et al.* [90] developed two series of new isosteviol-fused pyrazoline and pyrazole derivatives *via* intramolecular 1,3-dipolar cycloaddition and condensation reactions, respectively (Scheme **11**).



Scheme 11. Stereoselective synthesis of novel isosteviol-fused pyrazoline and pyrazole Scaffolds *via* intramolecular 1,3-dipolar cycloaddition and condensation reaction.

4.1.2. Biological Activity

The four human cancer cell lines (SGC7901, A549, Raji, and HeLa) were investigated *in vitro* for their antiproliferative activity of structurally similar pyrazoline and pyrazole derivatives. The findings demonstrated that isosteviol-fused pyrazole derivatives had significant cytotoxic properties. When compared to cisplatin (IC_{50} values 7.56, 17.78, 17.32, and 14.31 µM, respectively), 2,4-di-Cl-phenylpyrazole derivative (**7**) had improved cytotoxicities with IC_{50} values of 2.71, 3.18, 1.09, and 13.52 µM against SGC7901, A549, Raji, and HeLa.

4.2. Pyrazolylthiazole Derivatives

4.2.1. Synthetic Strategy

Abbas *et al.* [91] developed a novel series of pyrazolylthiazole derivatives by reacting 5-(4-fluorophenyl)-3-aryl-4,5-dihydropyrazole-1-carbothioic acid amide derivatives with various reagents (Scheme **12**).

4.2.2. Biological Activity

The anticancer activity of all synthesized compounds was tested against a breast cancer cell line. Eight of the investigated drugs' derivatives demonstrated effective action against MCF7. In comparison to tamoxifen, some of the investigated compounds demonstrated substantial activity against the breast cancer cell line (MCF7). Compounds (**14g**, **7c**, **7d**, **14f**, **7e**, **5a**, **6b**, and **14d**) have IC_{50} values of 8.10, 8.11, 8.33, 8.65, 8.77, 9.30, 9.60, and 9.90 µg/mL, respectively, and are equivalent to tamoxifen (IC_{50}=8.00 µg/mL). The structure-activity relationship revealed that the antitumor efficacy of these compounds is strongly linked to the type of substituent at positions 4 and 5 of the thiazole ring, as well as position 3 of the pyrazole ring.

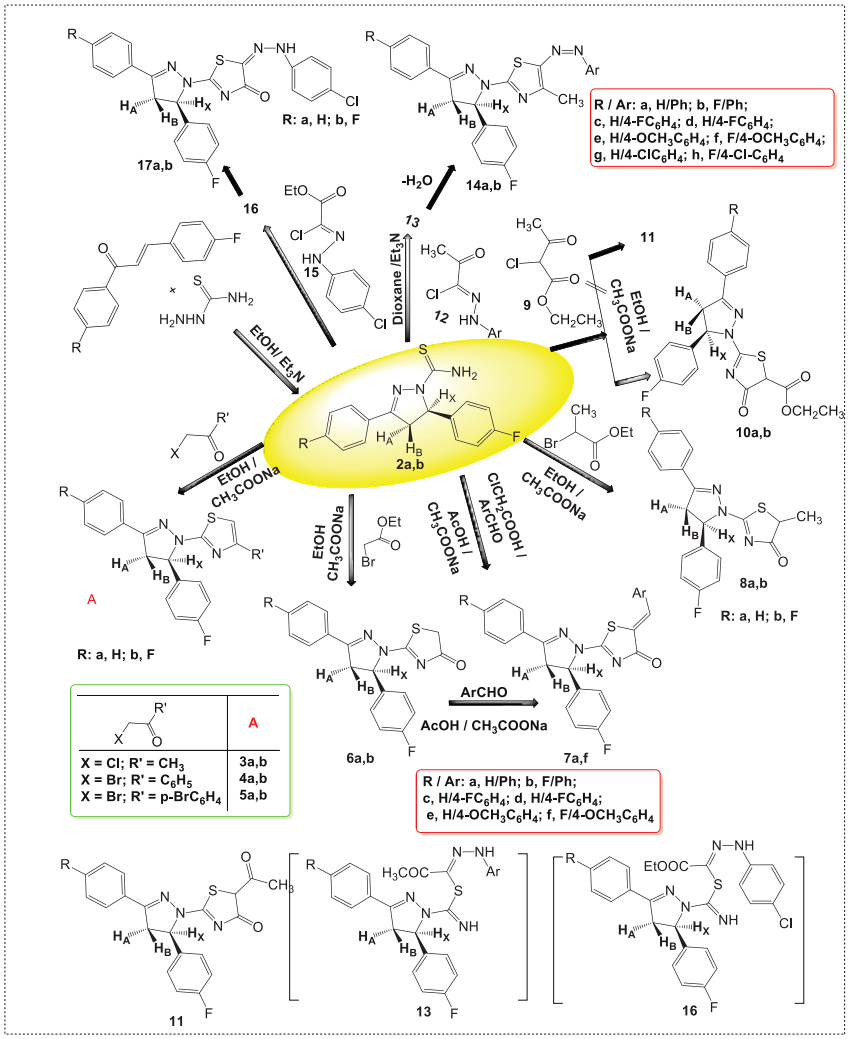
5. NITROGEN-PHOSPHORUS HETEROCYCLES AND PHOSPHONATES

5.1. Synthetic Strategy

Abdou *et al.* [92] synthesised substituted N, P-heterocycles and derived phosphonates efficiently in a tandem process without intermediate isolation (Scheme **13**). The reaction of dialkyl phosphites with Schiff base, Kabachnik–Field intermediates, which are produced in situ from 2-amino-4,6-di-tert-butylphenol and substituted benzaldehydes in a dry THF/FeCl3 (10%) solution, yielded fused oxazole-2-phosphonates in moderate yield (≈55%). By directly applying the same P(III) reagent to the parent Schiff bases, the latter products could be produced in an excellent yield (≥76%). When the Schiff bases were allowed to react with hexaalkyltriamidophosphites at room temperature, oxazaphosphinine2-amines were extracted in high yields (≈77%). When the same reagents were applied to another imino derivative, more P-heterocycles and phosphonates were produced.

5.2. Biological Activity

The anticancer properties of the produced scaffolds were tested biologically and found to be potent. Bioassay data shows that N, P-heterocycles generated have exceptional anticancer efficacy against seventeen human carcinoma cell lines, including breast, prostate, and melanoma (compounds **11a** and **11b**). Several phosphonates (compounds **6a** and **6b**) have been discovered to have anti-breast cancer action particularly in MDA-MB-435 cell lines, while other



Scheme 12. Synthesis of pyrazolylthiazole derivatives by reacting 5-(4-fluorophenyl)-3-aryl-4,5-dihydropyrazole-1-carbothioic acid amide derivatives with various reagents.

compounds (**6d** and **6e**) have anti-melanoma activity in MI4 and SK-MEL-2 cancer cell lines.

6. THIOPHENE BIOISOSTERES

6.1. Synthetic Strategy

Sztanke *et al.* [93] manufactured thiophene bioisosteres (**10-18**) by condensing compound 1-aryl-2-hydrazonoimidazolidine hydroiodides with ethyl 2-thiophen-2-yl-2-oxoacetate in a methanolic medium and triethylamine (TEA) *via* reflux in DMF/MeOH combination (Scheme **14**).

6.2 Biological Activity

All synthesized compounds were found to be significantly more effective than pemetrexed against human tumour cells: A549, HeLa, T47D, and TOV112D, and to be more cytotoxic than pemetrexed against A549, HeLa, and T47D cells. The revealed three thiophene bioisosteres (**11**, **17**, and **18**) are proposed as the most promising anticancer lead structures for the rational design of more selective antitumor medicines because they were found to be significantly less cytotoxic to normal cells than tumour cells. The results of the bioassay based on double fluorochrome staining are noteworthy because they reveal the mode of action of one of the series' most promising anticancer lead structures (**18**).

7. N-SUBSTITUTED INDOLINE AND MORPHOLINE DERIVATIVES

7.1 Synthetic Strategy

Doan *et al.* [94] synthesised indoline and morpholine moieties using sec-amine, boric acid and hetero-substituted aromatic aldehyde in the presence of glycerol at 50-80°C for 24 to 48 hr. (Scheme **15**).

7.2. Biological Activity

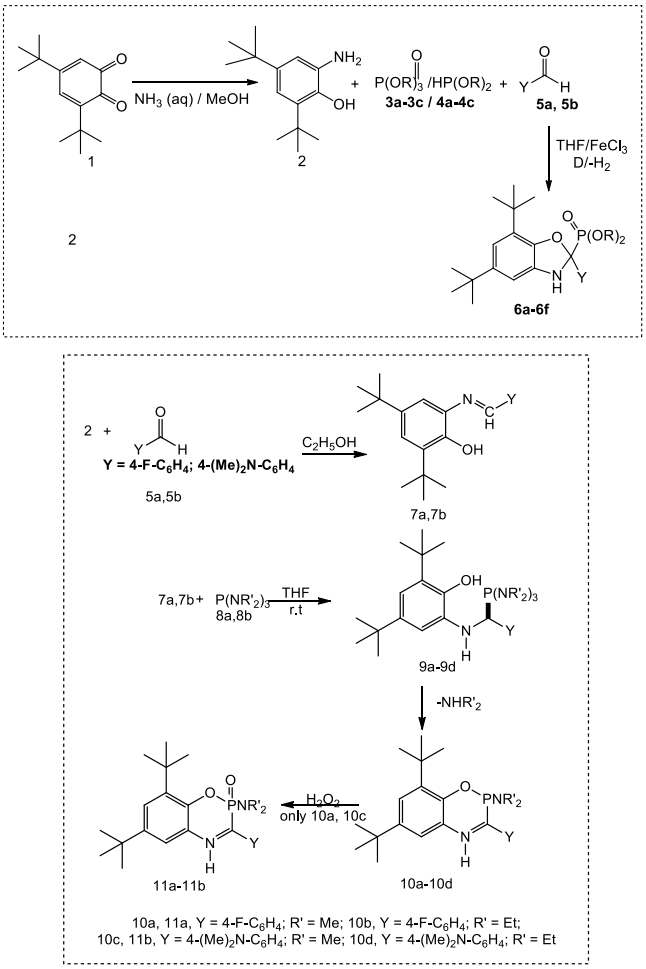
The novel indoline and morpholine derivatives were tested for their cytotoxic effects on osteosarcoma and human embryonic kidney cells. Cytotoxicity, migration, apoptosis markers, and mitochondrial calcium assays were used to characterize cytotoxicity and the mechanism of cell death. Among the compounds tested, indoline derivatives produced a greater cytotoxic effect in osteosarcoma cells than morpholine derivatives. With an IC_{50} of ~74 µM, the new indoline derivative N-(2-hydroxy-5-nitrophenyl(4'-methyl-phenyl) methyl)indoline demonstrated effective cytotoxic activity. The same molecule caused cell death *via* apoptosis and inhibited cell migration. In addition, an examination of mitochondrial calcium levels revealed the presence of calcium-dependent cell death mechanisms in various cell types.

8. QUINOLINE AND THEIR HYBRID DERIVATIVES

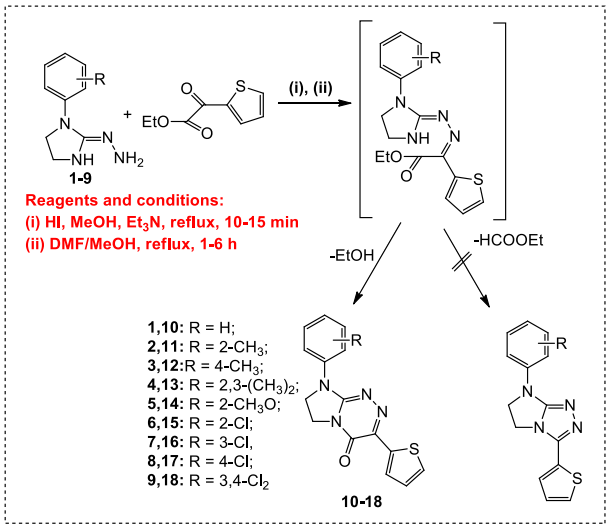
8.1. Quinoline Scaffolds

8.1.1. Synthetic Strategy

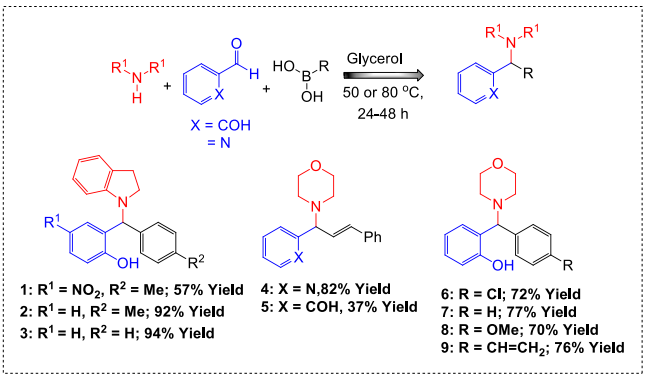
Su *et al.* [95] developed and synthesised a variety of novel quinoline compounds, which were tested for antiproliferative properties (Scheme **16**).



Scheme 13. Synthesis of fused nitrogen-phosphorus heterocycles and derived phosphonates.



Scheme 14. Synthesis of a novel class of 8-aryl-3-(2-thienyl)-7,8-dihydroimidazo[2,1-c][1,2,4]triazin-4(6H)-ones (**10–18**).



Scheme 15. Synthesis of N-substituted indolines and morpholines.

8.1.2. Biological Activity

The results showed that compounds (**4p**, **4s**, **4v**, **4x**, and **4y**) had potent antiproliferative activity against seven human tumour cell lines with IC_{50} values of less than 10 µM, with N-(3-methoxyphenyl)-7- (3-phenylpropoxy)quinolin-4-amine (**4x**) being the most potent antiproliferative agent against HCT-116, RKO, A2780, and HeLa cell lines having IC_{50} values of 2.56, 3.67, 3.46 and 2.71 µM, respectively. The anticancer efficacy of the representative compound (**4x**) was further examined in mice, with the results revealing that compound (**4x**) efficiently controlled tumour development (82.1%) and reduced tumour weight in animal models. Further research into the mechanism of action revealed that compound (**4x**) could inhibit colorectal cancer from growing by inhibiting the ATG5-dependent autophagy pathway. As a result, these quinoline derivatives represent a novel class of compounds that could be used to generate new anticancer medicines.

8.2. Benzo and Tetrahydro Benzo- [h]quinolines

8.2.1. Synthetic Strategy

Jafari *et al.* [96] developed and synthesised a new class of benzo- and tetrahydro benzo- [h]quinolines with a flexible (dimethylamino) ethylcarboxamide side chain as DNA intercalating anticancer drugs (Scheme **17**).

8.2.2. Biological Activity

The synthesized compounds were tested for cytotoxicity against four human cancer cell lines: MCF7, A2780, C26, and A549. The cytotoxic activity of compounds with a slight electron donating substitution in the para-position of the phenyl ring was higher than that of the other quinolines. In general, saturated quinolines (tetrahydrobenzo [h]quinolines) were shown to be more cytotoxic than their unsaturated counterparts (benzo [h]quinolines).

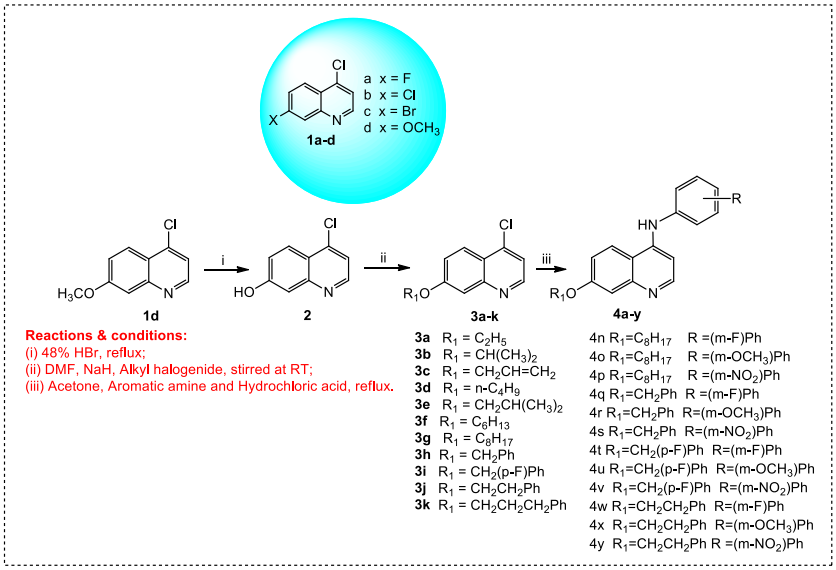
8.3. Pyrano [3,2-c]quinoline Derivatives

8.3.1. Synthetic Strategy

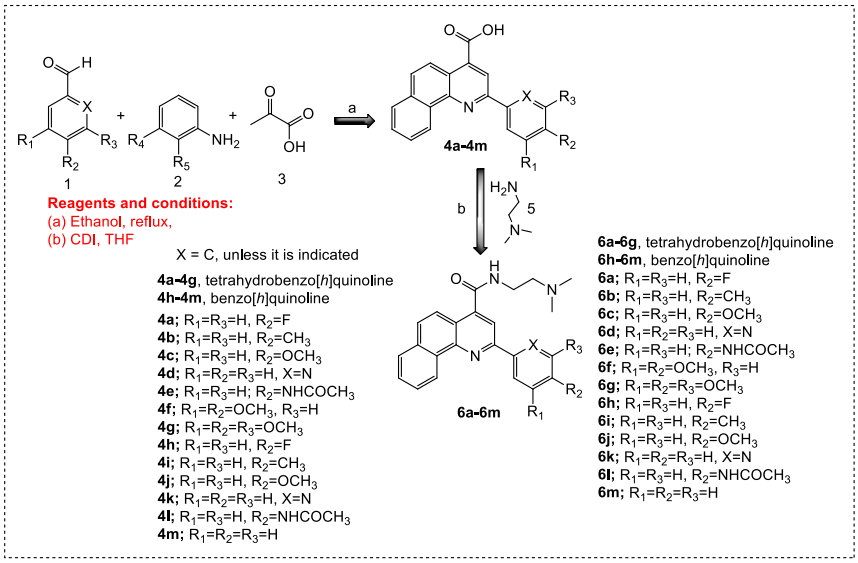
Using a one-pot multicomponent condensation between 2,4-dihydroxy-1-methylquinoline, malononitrile, and various un(substituted) aromatic aldehydes, Upadhyay and group [97] developed a variety of pyrano [3,2-c]quinoline-based structural analogues (Scheme **18**).

8.3.2. Biological Activity

The anti-inflammatory and cytotoxic activity of the produced compounds was tested. All substances were first tested for percent inhibition of cytokine release, as well as cytotoxicity activity and 50% inhibitory dose (IC_{50}). The capacity of the compounds to decrease TNFα production in human peripheral blood mononuclear cells (HPBMC) was investigated further based on the preliminary



Scheme 16. Synthesis of novel quinoline derivatives.



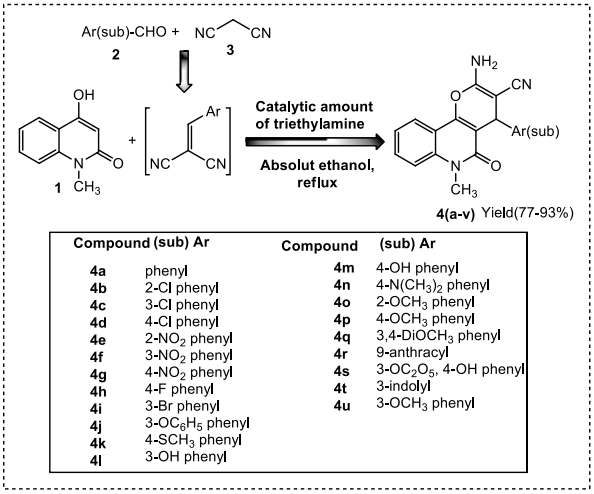
Scheme 17. Synthesis and biological evaluation of novel benzo- and tetrahydrobenzo-[h]quinoline derivatives.

findings. Compounds (**4c**, **4f**, **4i**, and **4j**) were identified to be the most active compounds of the series in terms of anti-inflammatory and anticancer activities, according to the screening results. The structure-activity correlation is explored, and it appears that 3-substitution on the aryl ring at C4 of the pyrano [3,2-c]quinolone structural motif is significant for both TNFα and IL-6 suppression, as well as anticancer action. Structural diversity with electron withdrawing, electron donating, sterically hindered, and heteroaryl substitution, on the other hand, had a significant impact on both inflammation and anticancer activity.

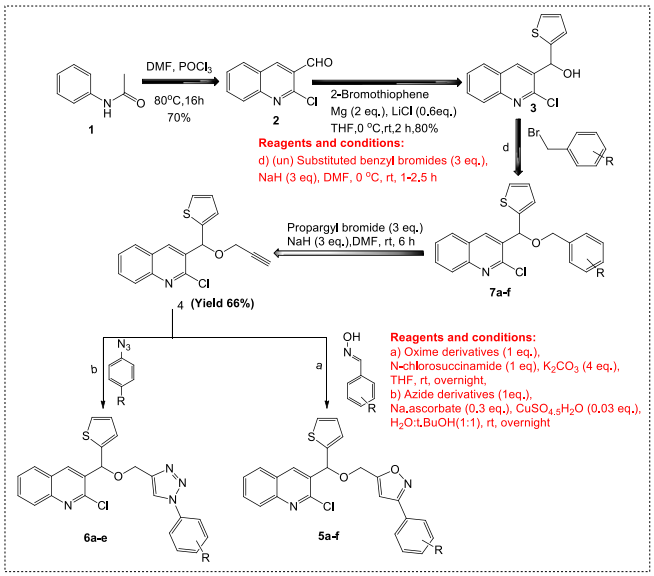
8.4. Thiophen-2-yl-quinoline Scaffolds

8.4.1. Synthetic Strategy

A series of novel 3-thiophen-2-yl-quinoline compounds based on isoxazolyl, triazolyl, and phenyl have been produced (Scheme **19**). In addition, Othman *et al.* [98] announced the discovery of a new valuable synthon, (2-chloroquinolin-3-yl)-(thiophen-2-yl) methanol.



Scheme 18. Synthesis of 2-Amino-6-methyl-5-oxo-4-sub(aryl)-5,6-dihydro-4H-pyrano[3,2-c]quinoline- 3-carbonitrile (**4a-v**).



Scheme 19. Synthesis of (2-chloroquinolin-3-yl))thiophen-2-yl)methanol (**3**), 2-Chloro-3-[(prop-2-yn-1-yloxy)(thiophen-2-yl)methyl]quinoline(**4**), isoxazole derivatives (**5a-f**), triazole derivatives (**6a-e**).

8.4.2. Biological Activity

The antitumor activity of the synthesized products was examined. All derivatives were investigated *in vitro* against a panel of four human cancer cell lines: liver (HepG-2), colon (HCT-116), human cervical cancer (HeLa), and breast cancer (HeLa) (MCF-7). Two compounds, (**7d** and **7e**), were found as potent and selective cytotoxic agents against HeLa and MCF-7 cell lines from the synthesised library.

8.5. Quinoline-thiosemicarbazone Scaffolds

8.5.1. Synthetic Strategy

Lafayette *et al.* [99] synthesized and studied the biological characteristics of twelve 2-(quinolin-4-ylmethylene) hydrazinecarbothioamide compounds (Scheme **20**).

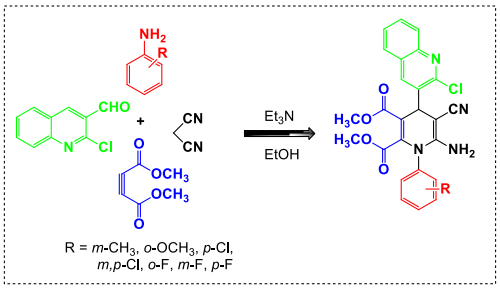
8.5.2. Biological Activity

The tumor cell lines MCF7 and T-47D, all of JF's compounds showed DNA and BSA binding capabilities as well as cytotoxic action. The derivative JF-92 was singled out because it had higher Kb and Ksv values for DNA and BSA binding, indicating a possible mechanism of DNA intercalation, which was confirmed by absorption tests, CD, and molecular docking. This derivative also had a lower IC_{50} value for MCF-7 line (0.82 µM) and partially inhibited topoisomerase IIα, making it an interfacial antitumor inhibitor.

8.6. Quinoline Associated with Dihydropyridine

8.6.1. Synthetic Strategy

Nkosi *et al.* [100] used a four-component reaction of 2-chloro-3-fomyl quinoline malononitrile, arylamines, and dimethyl acetylenedicarboxylate in the presence of a catalytic amount of triethylamine to synthesize a new series of eight quinoline bearing dihydropyridine derivatives in high yield and short reaction times (Scheme **21**).



Scheme 21. Synthesis of novel quinoline associated with dihydropyridine.

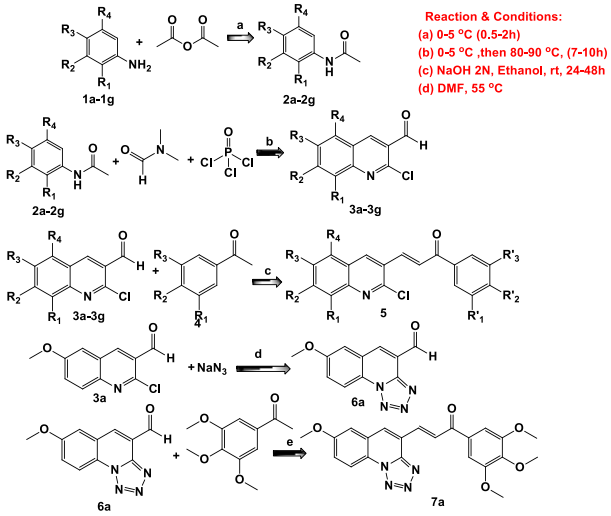
8.6.2. Biological Activity

These synthesized scaffolds were tested for their biological activity in A549 lung cancer cell line and for antibacterial activity. **A2**, **A3**, **A4,** and **A8** all have shown antiproliferative activity, with (**A4**) having maximum toxicity at 250 µg/mL and (**A8**) having high toxicity at 125, 250, and 500 µg/mL, respectively.

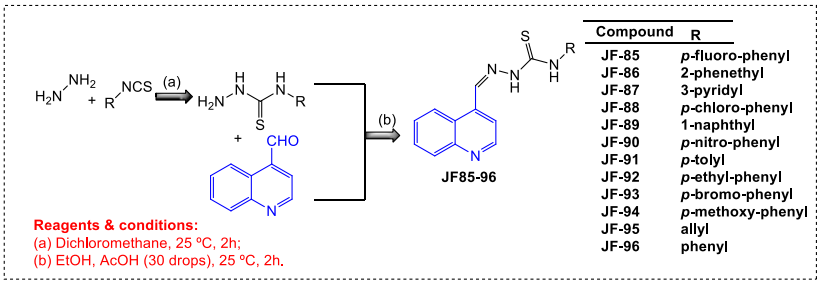
8.7. Quinoline-chalcone Hybrid Derivatives

8.7.1. Synthetic Strategy

Mirzaei and colleagues [101] have developed a new class of quinoline-chalcone hybrids (Scheme **22**).



Scheme 22. Synthesis of quinoline-chalcone hybrids.



Compound	R
JF-85	*p*-fluoro-phenyl
JF-86	2-phenethyl
JF-87	3-pyridyl
JF-88	*p*-chloro-phenyl
JF-89	1-naphthyl
JF-90	*p*-nitro-phenyl
JF-91	*p*-tolyl
JF-92	*p*-ethyl-phenyl
JF-93	*p*-bromo-phenyl
JF-94	*p*-methoxy-phenyl
JF-95	allyl
JF-96	phenyl

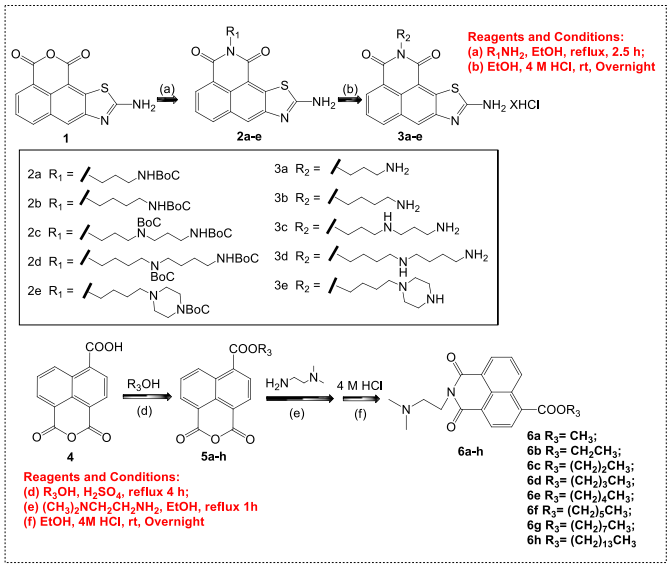
Scheme 20. Synthetic route of the derivatives 4-quinoline-thiosemicarbazones (**JF's**).

8.7.2. Biological Activity

All the compounds were tested for cytotoxicity against four human cancer cell lines: A2780 (human ovarian carcinoma) and A2780/RCIS (Cisplatin resistant human ovarian carcinoma), MCF-7 (human breast cancer cells), MCF-7/MX (Mitoxantrone resistant human breast cancer cells), and normal Huvec cells. The link between the structure and action of produced chemicals was examined. The benzoyl group of quinolines (**5e**, **5g**, and **5j**) demonstrated considerable cytotoxic effects on both resistant cancer cells and their parents. The antiproliferative activity of compounds (**5g** and **5j**) was the highest, with IC_{50} values ranging from 2.32 to 22.4 µM. They were also discovered to be tubulin inhibitors, causing cell cycle arrest in the G2/M phase as well as apoptosis. In four cancer cell lines, compound (**5j**) caused higher G2/M phase arrest than compound (**5g**). Finally, molecular dynamics simulations and molecular docking investigations of compound (**5j**) into tubulin's colchicine-binding site revealed that this compound may interact with tubulin's active site.

9. SYNTHESIS AND BIOLOGICAL ACTIVITY OF NAPHTHALIMIDE DERIVATIVES

Ge *et al.* [102] developed two types of naphthalimide compounds and tested their anti-hepatocellular carcinoma properties *in vitro* (Scheme **23**). Compound (**3a**) suppressed cell migration in SMMC-7721 and HepG2, and additional *in vivo* testing with two animal models indicated that compound (**3a**) substantially inhibited primary H22 tumour development (52.6%) and potently disrupted lung metastasis (75.7%) without noticeable systemic toxicity at the therapeutic dose. Compound (**3a**) suppressed malignant liver cell development primarily by triggering G2/M phase arrest, according to mechanistic studies. (**3a**) might have unregulated the cell cycle-related protein production of cyclin B1, CDK1, and p21, and restricted cell migration by elevating E-cadherin and attenuating integrin α6 expression, according to Western blotting investigations.

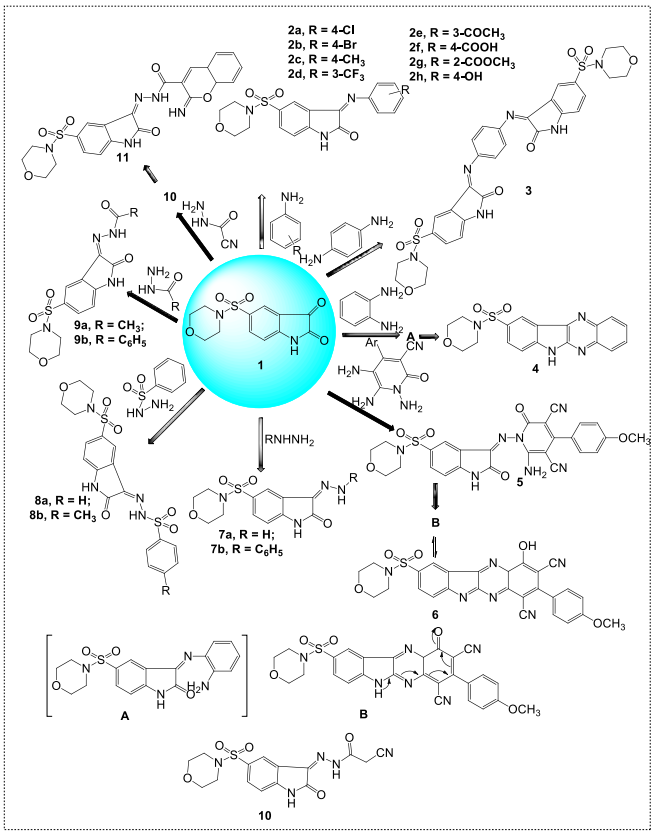


Scheme 23. Synthesis of Naphthalimide Derivatives (**3a-e**) & (**6a-h**).

10. 5-(MORPHOLINOSULFONYL) ISATIN DERIVATIVES

10.1. Synthetic Strategy

Ammar *et al.* [103] developed and synthesised a new class of 5-(morpholinosulfonyl) isatin derivatives (Scheme **24**). Analyses of spectral and elemental data were used to characterise the novel compounds.



Scheme 24. Synthesis of Schiff's bases of 5-(morpholinosulfonyl)isatin and indolo[2,3-b]quinoxaline derivatives (**2a-h** and **3-6**) & hydrazones and hydrazides (**7a-11**) of 5-(morpholinosulfonyl)isatin.

10.2. Biological Activity

The synthesized compounds were tested using the SRB assay on four cancer cell lines, including HepG2, HCT116, CACO, and MCF7, as well as a non-cancerous human cell line, to see if they were cytotoxic. The normal generated cell line was not cytotoxic (IC_{50} > 130 µ M). In three of the cell lines evaluated, HepG2, HCT116, and CACO compounds (**3**, **6**, **10**, and **11**) had IC_{50} values less than 10 µM. On HepG2, CACO, and HCT116, compounds (**2h**, **5**, and **7b**) had IC_{50} values that were less than or almost equivalent to 10 µM, respectively. On MCF7, compounds (**3** and **6**) had IC_{50} values of less than 12 µM. These IC_{50} values are comparable to those of doxrubicin, which has an IC_{50} range of 4.5 to 8.28 µM in the cell lines studied. With IC_{50} values less than 2 µM, all of these intriguing compounds displayed inhibitory efficacy against EGFR. The most powerful EGFR inhibitors, (**7b**) IC_{50} = 46 µ M and (**10**) IC_{50} = 23 µ M, were found to produce G2/M phase cell cycle arrest and apoptosis.

11. SPIRO DERIVATIVES

11.1. Hybrid Spiro Compounds

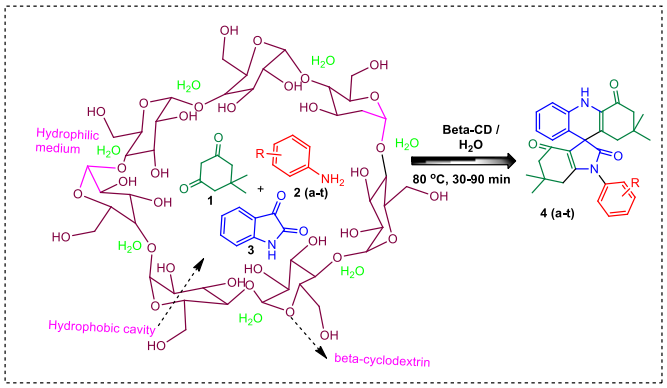
11.1.1. Synthetic Strategy

Chate *et al.* [104] developed a series of novel hybrid compounds called spiro [pyrimido [5,4-b]quinoline-10,5'-pyrrolo [2,3-d]pyrimidine] (Scheme **25**) using beta-cyclodextrin (Beta-CD) as a novel catalyst under greener conditions.

11.1.2. Biological Activity

The synthesized scaffolds were tested *in vitro* against four human cancer cell lines: A431, PC3, MCF7, and MCF-10A. The fused heterocycles (**4m**, **4q**, and **4t**) having a chloro or trifluorome-

thyl group on the benzene ring were shown to be the most effective compounds against a human breast cancer cell line, with IC_{50} values ranging from 7.82 to 9.88 µM. (MCF-7). Compound (**4q**) was shown to be the most effective derivative against the human breast cancer cell line studied, being more active than standard and having cytotoxic activity specific for MCF7.

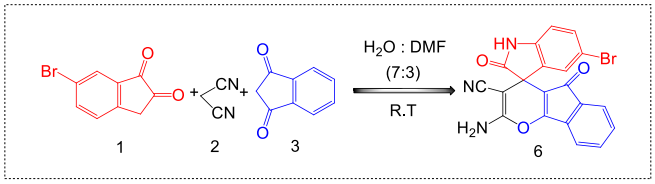


Scheme 25. Synthesis of 3,3,6,6-tetramethyl-10-phenyl-3,4,6,7-tetrahydro-1*H*-spiro [acridine-9,30-indoline]-1,20,8(2*H*,5*H*,10*H*)-trione.

11.2. Indeno-spiro Compounds

11.2.1. Synthetic Strategy

Patravale *et al.* [105] described a sustainable, catalyst-free, bio-oriented multicomponent synthesis of 2- amino-3-cynospiro (5H-indeno [1,2- b]pyran-4,3' indoline)-2'5,-dione using isatin, malono-nitrile, and 1,3- indandione. This study describes a simple method for synthesising indeno-spiro compounds (Scheme **26**).



Scheme 26. Synthesis of 2-amino-3-cyno-5-bromospiro(5H-indeno[1,2-b]pyran-4,3'-indoline)-2'5,-dione.

11.2.2. Biological Activity

The synthesized compounds were tested against breast carcinoma cell lines (MCF7 and MDA-MB-435) as well as normal Vero monkey cell lines. The bromo- and chloro-substituted indeno-fused spirooxindole derivatives were found to have selective potency against the MDA-MB-435 cancer cell lines, with IC_{50} values of 1.8 and 2.1 µM, respectively. The compounds were also tested against the normal Vero monkey cell line, which demonstrated good to excellent selectivity against cancer cell inhibition. Furthermore, *in vitro* confocal microscopy cell imaging of selected compounds revealed cellular shrinkage and apoptosis in cancer cells, implying that indeno-fused spirooxindoles can be investigated as selective oestrogen negative receptors with a favourable safety profile.

12. QUINAZOLINE DERIVATIVES

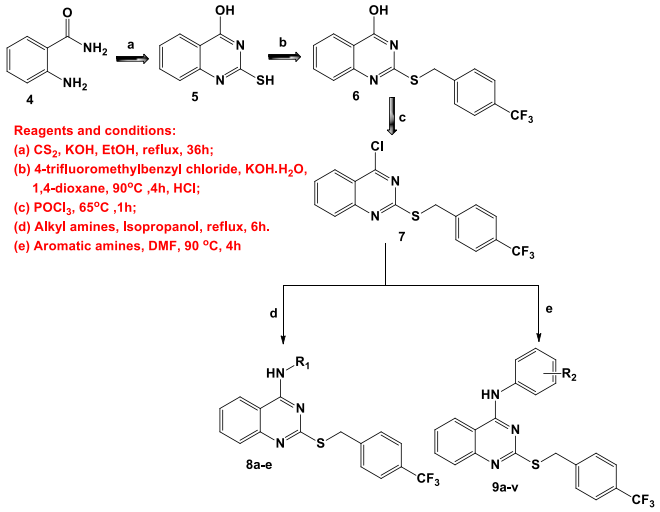
12.1. Substituted Quinazoline Analogues

12.1.1. Synthetic Strategy

Li *et al.* [106] (Scheme **27**) developed a library of 2,4-disubstituted quinazoline conjugates.

12.1.2. Biological Activity

The MTT assay was used to screen the derivatives for anti-cancer activity against five human cancer cell lines, including breast (MCF-7 and MDA-MB-231), gastric carcinoma (HGC-27 and MGC-803), and prostate (PC-3) cancer cells. When compared to regular gefitinib (IC_{50} = 7.34 µM), the trifluoromethyl derivative (**9n**) showed the most promising anticancer activity (IC_{50} = 5.10 µM) with the MCF-7 breast cancer cell line.



Scheme 27. Synthesis of 2,4-disubstituted-quinazoline derivatives.

12.2. Benzimidazole-quinazolinone Hybrid Scaffolds

12.2.1. Synthetic Strategy

Fan *et al.* [107] (Scheme **28**) produced benzimidazole-quinazolinone hybrids.

12.2.2. Biological Activity

The MTT assay was used to assess the synthesized compounds for cytotoxicity and Aurora-A kinase inhibitory activity. All three cancer cell lines tested demonstrated good cytotoxicity activity, with IC_{50} values ranging from 0.38 to 18.13 µM for breast cancer (MDA-MB-231), prostate cancer (PC3), and neuroblastoma (SH-SY5Y). The morpholinoethyl compound (**7h**), for example, showed outstanding activity with IC_{50} values of 0.38 µM (MDA-MB-231), 1.09 µM (PC3), and 0.77 µM, respectively (SH-SY5Y). Compound (**7h**) had a promising inhibitory effect on Aurora-A kinase (IC_{50} = 21.94 µM). Furthermore, by inhibiting Aurora-A kinase, compound (**7h**) triggered G2/M phase cell cycle arrest and cell death.

12.3. Indenoquinoxaline and pyrazine derivatives

12.3.1. Synthetic Strategy

Tantawy *et al.* [108] synthesised some indenoquinoxaline and pyrazine compounds (Scheme **29**).

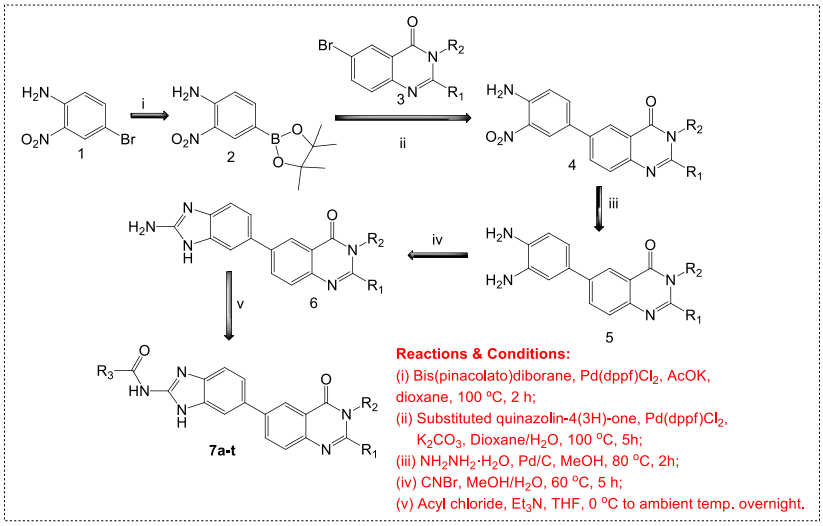
12.3.2 Biological Activity

The newly synthesised compounds were screened for cytotoxicity against MCF7 and A549 cell lines using the MTT assay. Compounds (**6**, **8a**, **9**, **10**, and **11**) have a strong cytotoxic effect. Especially compound (**11**), which has IC_{50} values of 5.4 and 4.3 µM, respectively, against MCF7 and A549 cells.

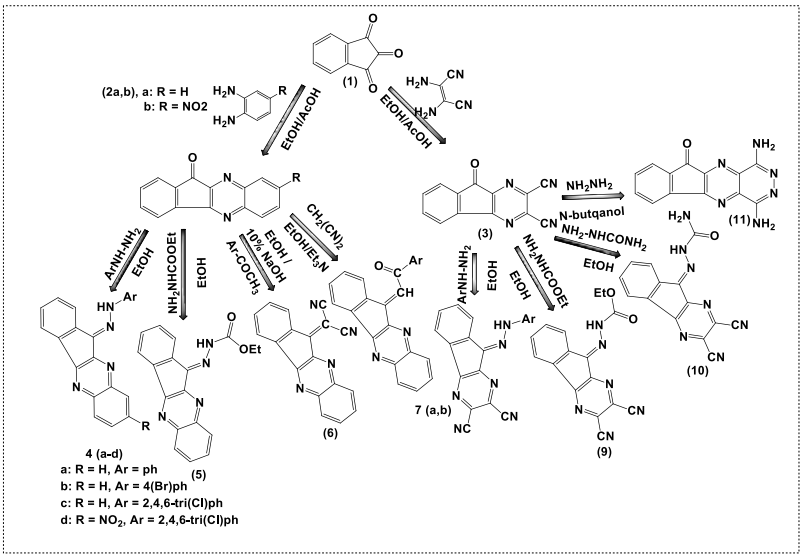
13. TETRACYCLIC ACRIDONES WITH AMIDE FRAMEWORKS

13.1. Synthetic Strategy

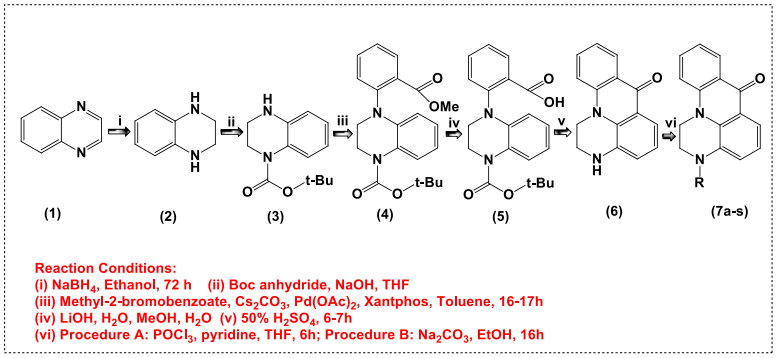
Valigeti and group [109] developed and synthesised a set of tetracyclic acridones with amide frameworks (Scheme **30**), including 3-(alkyloyl/ aryloyl/ heteroaryloyl/ heteroaryl)-2,3-dihydropyrazino [3,2,1-de]acridin-7(1H)-ones.



Scheme 28. Synthesis of 6-(2-amino-1H-benzo[d]imidazol6-yl)quinazolin-4(3H)-one derivatives.



Scheme 29. Synthesis of indenoquinoxaline and pyrazine derivatives.



Scheme 30. Synthesis of 3-aryl/aroyl-2,3-dihydro-1H,7H-pyrazino[3,2,1-de]acridin-7-one derivatives.

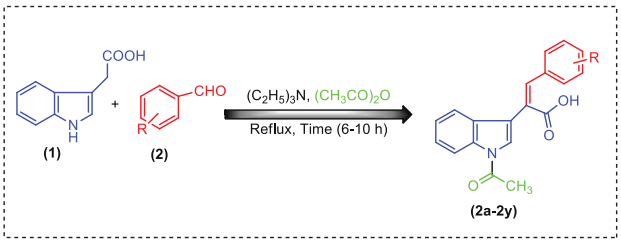
13.2. Biological Activity

The synthesized compounds containing cyclopropyl-acetyl, benzoyl, p-hydroxybenzoyl, p-(trifluoromethyl)benzoyl, p-fluorobenzoyl, m-fluorobenzoyl, picolinoyl, 6-methylpicolinoyl, and 3-nicotinoyl groups were found to be potent against the HT29, MDAMB231 and HEK293T cancer cell lines.

14. 2-(1-ACETYL-1H-INDOLE-3-YL)-3-(PHENYL) PROPIONOIC ANALOGUES

14.1. Synthetic Strategy

Kumar *et al.* [110] synthesized twenty-five new combretastatin 2-(1-acetyl-1H-indole-3-yl)-3-(phenyl) propenoic acid analogues (Scheme **31**) using triethyl amine with acetic anhydride at reflux condition (**2a** to **2y**).

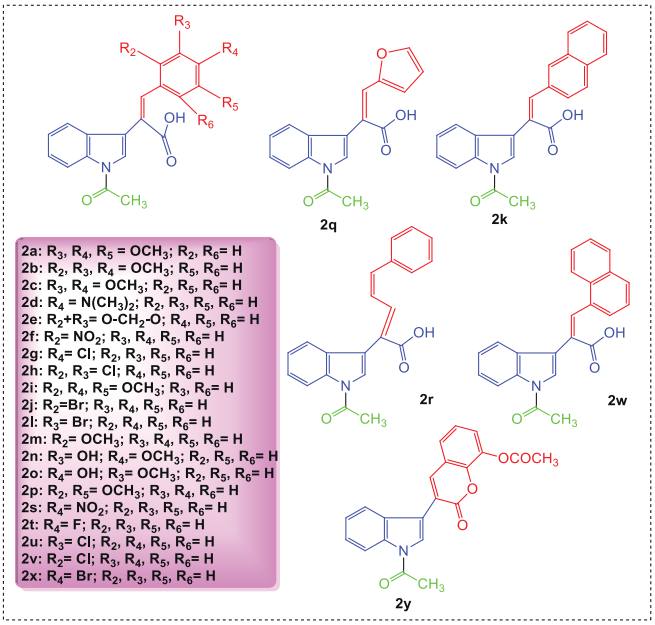


Scheme 31. Synthesis of 2-(1-acetyl-1H-indole-3-yl)-3-(phenyl) propenoic analogues.

14.2. Biological Activity

The Combretastatin 2-(1-acetyl-1H-indole-3-yl)-3-(phenyl)-propenoic acid analogues (**2a** to **2y**) (Table **3**), bearing an indole moiety in place of ring (A) of combretastatin (CA-4), were tested for anticancer activity against cancer cell lines such as THP1(leukaemia), A549 (lung), IGROV1 (ovary), HEP2 (liver), MCF7 (breast), and DU145 (prostate). Compounds (**2d** and **2y**) both demonstrated anticancer action against THP1 and MCF7, with IC_{50} values of 0.80 and 0.37 µM, respectively, and (**2y**) had an IC_{50} of 3.60 µM, which was comparable to paclitaxel.

Table 3. Chemical structure of synthesized 2-(1-acetyl-1H-indole-3-yl)-3-(phenyl) propenoic analogues.



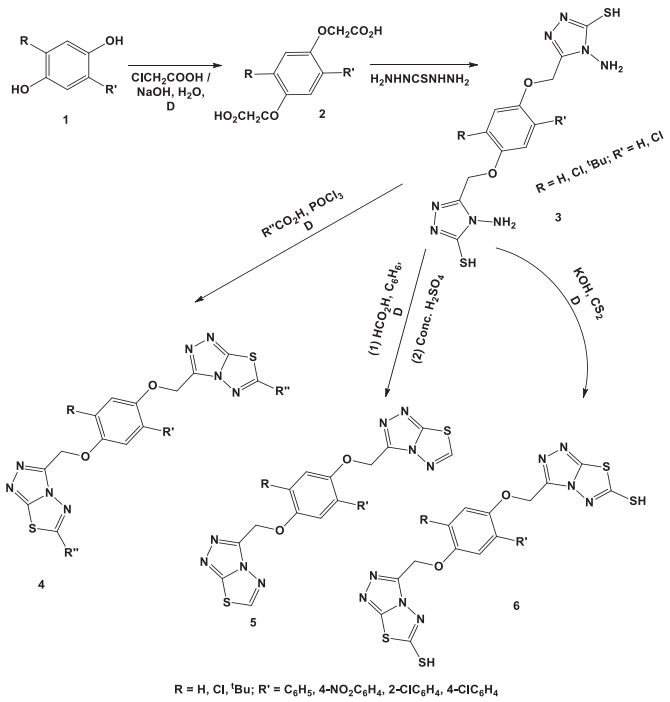
15. BIS-PHENOXYACETIC ACIDS

15.1. Synthetic Strategy

Shivarma *et al.* [111] synthesised a series of bis-phenoxyacetic acids (**2**) from matching unsubstituted/substituted 1,4-quinols (**1**). In a one-pot procedure, bis-phenoxyacetic acids (**2**) were fused with thiocarbohydrazide to get bis- [4-amino-5-mercapto-1,2,4-triazol-3-yl-methyleneoxy]phenylenes (**3**) (Scheme **32**). N-bridged heterocycles (**4** to **6**) were obtained in good yields by reacting bis-triazoles (**3**) with different reagents.

15.2. Biological Activity

The anticancer activity of the newly synthesised compounds was tested against a panel of 60 cell lines drawn from seven cancer types: lung, colon, melanoma, renal, ovarian, CNS, and leukaemia. Some of the substances studied have anticancer characteristics that were promising.



Scheme 32. Synthesis of bis-[4-amino-5-mercapto-1,2,4-triazol-3-ylmethyleneoxy]phenylenes (**3**);1,4-bis-(6-aryl-1,2,4-triazolo[3,4-b]-1,3,4-thiadiazol-3-ylmethoxy)phenylenes Scaffold (**4**,**5**,**6**).

CONCLUSION

The structural variety provided by the fused N-heterocyclic frameworks has proven advantageous in the discovery of novel therapeutics by enhancing pharmacology and other physical and chemical properties. Numerous medications are now being used to treat numerous types of cancer with significant therapeutic efficacy. N-heterocyclic framework in medicinal chemistry has received a lot of attention. The vast majority of benefits of pharmaceuticals containing nitrogen in the medical area, such as simple production, low toxicity, fewer side effects, high bioavailability, reduced drug resistance, strong biocompatibility, *etc.*, motivate efforts for more research and development. The synthetic approach in the present drug development and design system, therefore, depends heavily on the characteristics of these scaffolds. We extensively discussed the recent status of the families of nitrogen-based heterocyclic molecules in this review, including 1,2,4-triazole, fused aminoimidazole, Bis-phenoxyacetic acids, benzimidazole with oxadiazole and triazolo-thiadiazoles, pyrazole, pyrimidine, quinoline, and quinazoline derivatives, among many others, with highly promising biological properties like anticancer and other therapeutic properties. We have also investigated several synthetic routes, including green chemical protocols for their production. The biological investigations of the molecules under discussion provided a deeper comprehension of both the arrangement of various substituents on their N-heterocyclic skeleton and the various substituents present responsible for their efficiency. These key details support the great potential of different fused N-heterocycles and indicate a wide range of possible uses for these intriguing moieties due to their variety of molecular targets. We think that this review paper will be helpful in promoting the synthesis and anticancer development of nitrogen-based medicines that are sustainable, effective, and have few adverse effects against a variety of malignancies.

LIST OF ABBREVIATIONS

hTopoIIα = Human Topoisomerase IIα

NCI = National Cancer Institute

HPBMC = Human Peripheral Blood Mononuclear Cells

Beta-CD = beta-Cyclodextrin

CONSENT FOR PUBLICATION

Not applicable.

FUNDING

None.

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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PHYTOCHEMICAL SCREENING, ANTIOXIDANT AND ANTIBACTERIAL ACTIVITIES OF *PHYSALIS MINIMA* AND *LANTANA CAMERA* WILD MEDICINAL PLANTS

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ABSTRACT

Medicinal plants have great value for the treatment and cure various diseases. Now scientific research has expanded our knowledge to discovered chemical composition and active constituents present in medicinal plants. Present research work was undertaken to the phytochemical, antioxidant and antibacterial activity of *Physalis minima* and *Lantana camera*. Phytochemical screening of all medicinal plants has been done with the use of solvent methanol, ethanol and water. Extracts of leaves were obtained by soxhlet extraction to find out the active constitution of plants. Phytochemical analysis of leaves extract has discovered the presence of medicinally important phytochemicals such as Saponin, Steroid, Tannin, Anthocyanin, Coumarin, Flavonoid, Diterpine, Phenol, Phlobatannin and Chalcone. The antioxidant of leaves extracts was assessed based on the radical scavenging effect of the stable 1,1-diphenyl-2-picryhydrazyl (DPPH). Antibacterial activity of aqueous and ethanolic extracts of *P. minima* and *L. camera* was studies for standard bacteria one Gram-positive (*Bacillus Subtilis*) and Gram-negative (*Escherichia coli*). The optimum inhibition zone size value for both the bacteria *Bacillus Subtilis* and *Escherichia coli* are 02 mm in *P.minima* and *L.camera*. The methanol and ethanol extracts of both plant show significant antioxidant and antibacterial activity. The

diversity of phytochemicals founds in *P. minima* and *L. camera* leaves could serve as a source of useful drugs.

Keywords: *P. minima, L. camera*, Phytochemical, Antioxidant, Antibacterial Activity

INTRODUCTION

Medicinal plants are plants that have all their parts leaves, stems, roots and flowers used for therapeutic purposes. Then desperately need to conservation of medicinal plants and cultivation of wild medicinal plants. Herbal wild medicinal plants are easily available, less expensive, no side effect and more efficient make them more attractive as therapeutic agents when compared to modern medicine **[1, 2]**. India has top ranked herbal medicinal producer because Indian plant biodiversity is the largest source of herbal plant medicine **[3]**. In the word there are 60 to 80 % of people in word use medicinal plants and their products for therapeutic purposes **[4]**. The medicinal value of these plants lies in the bioactive phytochemical constituents present in plants and that are beneficial to humans. Many active phytochemical like flavonoids, terpenoids, vitamins, alkaloids etc. were found to be responsible for these activities **[5]**. Present research work was undertaken on the phytochemical, antioxidant and antibacterial activity of Physalias minima and Lanthena camera. The methanol and ethanol extracts of both plants show significant antioxidant and antibacterial activity. The diversity of phytochemicals found in *P. minima* and *L. camera* leaves could serve as a source of useful drugs.

MATERIALS AND METHODS

Collection of plant materials *P. minima* and *L. camera* were collected from roadside area of near Lakhandur Tahsil of Bhandara district. The plant materials were identified by D. N. Lanjewar, Department of Botany, Yashwantrao Chawhan arts, commerce and science college Lakhandur. The *P. minima* and *L. camera* leaves was washed with tap water and used for the present study. Leaves were cut into small pieces, shade dried and ground to make fine powder. Process for Extraction 500 gm of each powder of the leaves were taken along with the 1000 ml of distilled water in a container. The mixture was shaken continuously with used of rotary shakers and place in a dark for 72 hour with occasional shaking. After 72 hour the mixture was filter and filtrate was concentrated to one third of the original amount. The resultant was used for phytochemical, antibacterial and antioxidant analysis **[6]**.

Phytochemical analysis

The ethanol extract of leaves of *P. minima* and *L. camera* was used for qualitative phytochemical analyses. Phytochemicals such as flavonoids, tannins, steroids, glycosides, saponins, phenolic compounds, terpenoids and alkaloids are analyzed **[5]**.

Antioxidant Activity By 1, 1-diphenyl-2-picrylhydrazyl (DPPH)

The antioxidant activity of the ethanol extracts of *P. minima* and *L. camera* leaves were assessed based on the radical scavenging effect of the stable DPPH **[7, 8]**. 0.005% of DPPH was prepared in ethyl alcohol and 4 ml of this DPPH solution was mixed with 4 ml of ethanolic plant extract solutions. These solution mixtures were kept in dark for 30 min and optical density was measured at 517 nm using UV Visible spectrophotometer. 4ml ethanol with 0.005 DPPH solutions was used as blank. The optical density was recorded in spectrophotometer and % inhibition was calculated using the following formula.

Percentage (%) Inhibition of DPPH (% AA) = A – B × 100 /A

Where A=Optical density of the blank and B=Optical density of the sample.

Extraction concentration providing 50% inhibition IC_{50} values was calculated maximum and minimum values of %AA

Antibacterial activity (disk diffusion method)

Antibacterial activity was carried out to examine the sensitivity of some bacterial species against plant extracts of *P. minima* and *L. camera* leaves with a comparing the antibiotics for it by Disk Diffusion Method **[9]**. These bacteria included Gram-positive (*Bacillus Subtilis*) and Gram-negative (*Escherichia coli*).

RESULTS AND DISCUSSION

Phytochemical analysis

Preliminary screening of phytochemicals of ethanol extract of leaves of *P. minima* and *L. camera* are carried out as follows **[10-12]**.

Saponin:- 5 ml plants extract was mixed with 20 ml of double-distilled water then agitated in graduated cylinder For 15 min formation of foam indicates Saponin.

Steroid:- 1ml extract was dissolved in 10 ml of $CHCl_3$ and 1ml of concentrated H_2SO_4 acid was added from the side of a test tube. The upper layer turns red and the H_2SO_4 layer showed yellow with green fluorescence. This indicates the presence of steroids.

Tannin:- 4ml extract was treated with 4 ml Ferrous chloride formation of green color indicates that presence of condensed tannin.

Anthocyanin:- 2 ml of aqueous extract is added to 2 ml of 2N HCl & NH_3, the

appearance of pink-red turns blue-violet indicates the presence of anthocyanin.

Coumarin:- 3 ml of 2N NaOH was added to 2ml of aqueous extract formation of yellow color indicates coumarins.

Proteins:- Extract was treated with a few drops of concentrated nitric acid formation of yellow indicates the presence of proteins.

Flavonoid:- Extract was treated with 2N NaOH solution, formation of intense yellow color indicates presence of Flavonoid.

Diterpine:- Extract were dissolved in water and treated with 10 drops of $Cu(OAc)_2$ solution, formation of emerald green color indicates the presence of Diterpine.

Phenol:- Test extract were treated with 4 drops of Alcoholic ferrous chloride solution. Formation of bluish black color indicates the presence of Phenol

Phlobatannin:- when extract plant sample is boiled with dilute 0.1N HCl was taken red ppt was obtained as evidence for presence of Phlobatannin.

Chalcone:- 2ml of Ammonium Hydroxide was added to 0.5 ml ethanolic extract, the appearance of the red color showed the presence of Chalcone.

Carbohydrate:- Extract were dissolved individually in 5ml of distilled water and filtered. The filtrate was used for the following test. Filtrate was treated with 2 drops of alcoholic a-naphthol solution, the formation of violet ring at the junction indicates the presence of carbohydrates **(Table 1)**.

Table 1: Test of Phytochemical

Test of Phytochemical	*P. minima* Leaves	*L. camera* leaves
Saponin	+	-
Steroid	+	+
Tannin	+	+
Anthocyanin	+	+
Coumarin	+	+
Protein	-	+
Flavonoid	+	+
Diterpine	+	+
Phenol	+	+
Phlobatannin	+	-
Chalcone	-	+
Carbohydrate	+	+

Note: + = Present and - = Absent

Antioxidant Activity

The stock solution 1 mg/ml of ethanol extracts and DPPH solution was prepared. The required dilutions from 0.01 mg/ml to 0.1 mg/ml were prepared by appropriate dilutions **[7, 8]**. The optical densities of bank DPPH solution and sample solution can be calculate and found. With use of optical density of both solution percent antioxidant activities were calculated in **Table 2**.

Table 2: Optical Density and % Antioxidant Activity for Ethanolic Extract of P. minima leaves: (O.D. of Black DPPH = 0.585)

Conc.mg/ml	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.1
O.D. of P. minima	0.432	0.353	0.274	0.216	0.201	0.187	0.131	0.112	0.104	0.075
%AA P.minima	26.15	39.65	53.16	63.07	65.64	68.03	77.6	80.85	82.22	87.17

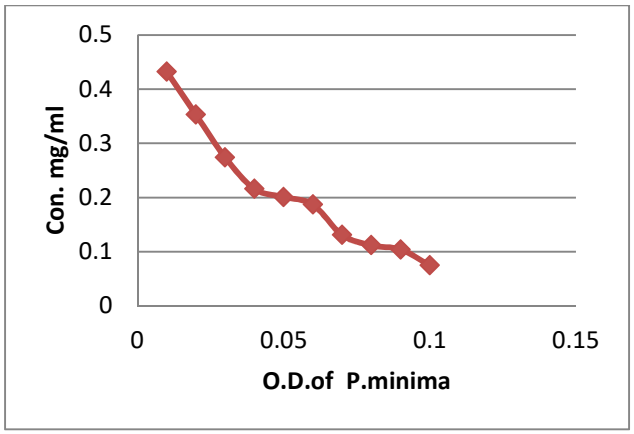

Figure 1: Decrease in Optical Density of Sample with Increase in Concentration of Ethanolic Extracts of P. minima leaves

Table 3: Optical Density and % Antioxidant Activity for Ethanolic Extract of *L. camera*: (O.D. of Black DPPH = 0.585)

Conc.mg/ml	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.1
O.D. of L. camera	0.412	0.345	0.261	0.214	0.198	0.179	0.127	0.107	0.095	0.042
%AA L. camera	29.57	41.02	55.38	63.41	60.15	69.4	78.29	81.7	83.76	92.82

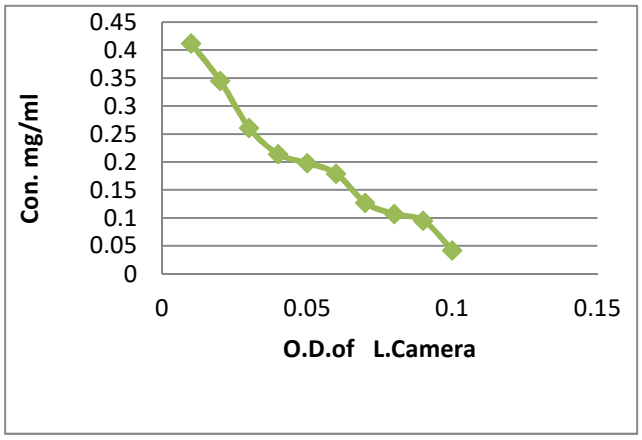

Figure 2: Decrease in Optical Density of Sample with Increase in Concentration of Ethanolic Extracts of *L. camera* leaves

Increase in Percent Antioxidant Activity with Increase in Concentration for ethanolic extract of *P. minima* leaves. Calculation of IC_{50} Value for *P. minima* leaves : = max – ½ (max-min)

= 87.17– ½ (87.17 – 26.15)

=56.66

IC_{50} value from graph corresponding ethanolic extract of P. minima leaves is 0.036 mg/ml.

Increase in Percent Antioxidant Activity with Increase in Concentration for ethanolic extract of *L. camera* leaves. Calculation of IC_{50} Value for *L. camera* leaves : = max – ½ (max-min)

= 92.82– ½ (92.82 – 29.57) =61.20

IC_{50} value from graph corresponding ethanolic extract of *L. camera* leaves is 0.052 mg/ml.

Antibacterial Activity:-

The examined bacterial species included Gram-positive (*Bacillus Subtilis*) and Gram-negative (*Escherichia coli*). Sterile discs 6 mm prepared from Whatman filter paper No. 1 were made to absorb 50 µg of the test samples **[13]**. Standard reference antibiotic discs (Nitrofurantoin 30 µg, and Nalidixic acid 30 µg) for bacterial species were used as positive control and solvent discs (Distilled water and Ethyl Alcohol) were used as negative control **[14]**. The bacterial isolates were first grown in a nutrient broth for 18 h before use and standardized to 0.5 McFarland standards (1.5 x 108 cfu / mL)(15). Mueller-Hinton agar was prepared on the plates as the medium for the test organism **[16]**. The bacterial inoculums were spread evenly onto the surface of the agar plate using the sterile cotton bud and then the extracts discs, 20% DMSO impregnated discs and standard antimicrobial discs were situated on the inoculums agar superficial. The antimicrobial activity was interpreted from the size of the diameter of the zone of inhibition measured to the adjacent mm as experiential from a clear zone surrounding the disc.

Methanol and ethanol extract for *P. minima* and *L. camera* leaves are effective to antibacterial activity while aqua extracts are less effective. The optimum inhibition zone size value for both the bacteria *Bacillus Subtilis* and *Escherichia coli* are 02 mm in both plants. In case optimum inhibition zone size value of antibiotic Nitrofurantoin is 06 mm and Nalidixic acid is 5mm were the details results for antibacterial activity are shown as shown in **Table 4**.

Table 4: The effectiveness of three elements (Plant extracts, Antibiotics and bacteria)

Medicinal Plants		Bacterial Species	Antibiotic	Bacterial Species	Antibiotic
		Bacillus Subtilis (mm)	Nitrofurantoin (mm)	*Escherichia coli* (mm)	Nalidixic Acid (mm)
P. minima	Aqus Extr.	01	02	0.5	02
	Methanol Extr.	02	04	02	03
	Ethanol Extr.	02	05	01	04
L. camera	Aqus Extr.	0.5	01	0.25	01
	Methanol Extr.	01	04	01	05
	Ethanol Extr.	02	06	02	05

Legend: (mm) = Millimeter

CONCLUSION

- Phytochemical screening of selected wild medicinal plants clearly reveals that the maximum classes of photochemical are present in P.minima and L.camera
- The P.minima and L.camera Leave extracts demonstrate good DHHP radical activity with IC_{50} value for P.minima is 0.036 mg/ml and L. camera is 0.052 mg/ml which show good antioxidant activity.
- Leaves extract of P.minima and L.camera are exhibited significant antibacterial activity for bacterial species including Gram-positive (*Bacillus Subtilis*) and Gram-negative (*Escherichia coli*). The optimum inhibition zone size value for both the bacteria *Bacillus Subtilis* and *Escherichia coli* are 02 mm in P.minima and L.camera.
- Phytochemicals in plant extract serve as a source of drugs that are useful in the medicine of some diseases caused by bacteria and also as antioxidant agents.

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REVIEW OF DISCOVER ADULTERATION IN SOME COMMON FOODS ITEM BY BIOCHEMICAL QUALITATIVE ANALYSIS

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Abstract: Food is one most important basic need for all leaving organism, which useful for growth and maintnus. Now day's foods are contain by different adulterants. Adulteration is a substance which reduces the vital importance of foodstuff. Some of the common adulterants are sugar or jiggery in honey, Starch and melamine in milk, Red lead salts and brick powder in chilli powder, Metanil yellow colours in turmeric powder, Malachite green in vegetable, Mineral oil and castor oils in edible oils, Vanaspati ghee in butter, Lead chromate in pulse, Chalk powder in wheat flour, Prussian blue coloring substances in tea powder, Chicory in coffee powder, Papaya seed in black pepper etc. which is causes various diseases such as epidemic dropsy, glaucoma, cardiac arrest, paralysis, brain damage, anemia, abortion, cancer etc. The aim is to evaluate the presence of adulterant from daily uses food materials like honey, milk , sugar, chilli powder, turmeric powder, green vegetable, edible oil, butter, pulses, wheat flour, tea powder, coffee powder and black pepper which we collected from different local grocery stores and discover food adulterants by biochemical qualitative analysis. The colour change of the sample indicate the according to the reagents is indicates the presence of different adulterants. This information can help to grow the food safety and also people can be aware about the food brands for a healthy life which are very beneficial to our society and our future.

Keywords:-Foods, Adulterants, Diseases, Biochemical analysis, Food Safety, Healthy life

I. Introduction

Food, sleter and cloth are basic needs for every living being. Food is the very necessity needs of life because which are use for growth and various life processes. Food contains important nutritional constituent carbohydrates, vitamins and proteins [1]. Almost all foods are of plant or animal origin. Many plants or plant parts such as roots, leaf, flower and fruit are eaten as food. There are around more than 2,000 plant species which are cultivated for food, and many have several distinct cultivars. Maize, wheat, and rice together account for 87% of all grain production worldwide. Animals are also used as food which included such as meat, milk cheese, butter and honey [2].

Nowadays, Food can be contaminated by different adulterants. Food adulteration is the process in which the quality of food is lowered either by the addition of inferior quality material or by extraction of valuable ingredient [3]. There are four different types of food adulteration included intentional adulteration, incidental adulteration, metallic adulteration and packaging

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Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Dec 2022

hazard [4]. In intentional adulteration substances that look similar to the constituents of the food are added to it, to increase its weight and gain more profit. Example- mixing of pebbles, stones, marbles, sand, mud, filth, chalk powder, contaminated water etc. Incidental adulteration occurs due to negligence while handling food. Example- residues of pesticides in grains, larvae growth, presence of droppings of rodents, etc [5,6]. In metallic adulteration addition of metallic materials into food like lead or mercury is metallic adulteration. It may happen accidentally or even intentionally. The packing materials in which the food is packed may also interfere and mix with the constituents of the food, leading to packaging hazards [7]. Various food adulteration methods included mixing, substituting, using decomposed food, additions of toxic substances, misbranding, and artificial ripening. Also important reason for food adulteration are overgrowing population, urbanization, industrialization, decrease the land of agriculture, environmental hazards, and depleting natural resources then decrease food production [8].

In India normally the adulteration in food is done either for financial gain or due to carelessness and lack in proper hygienic condition of processing, storing, transportation and marketing. Such types of adulteration are quite common in developing countries. Food adulteration has a great impact on our health. Be it any kind of adulteration, prolonged consumption of this type of food is very harmful to the body [9]. Consuming such food increases the toxicity in the body. As the nutritional value of the adulterated food goes down, such food is no longer nutritive for the body. The addition of chemical adulterants and colours many times proves to be fatal [10]. Adulterated food may also affect our internal organs directly leading to heart, kidney, liver, and many more organ disorders and failure. Which is causes various diseases such as epidemic dropsy, glaucoma, cardiac arrest, paralysis, brain damage, anemia, abortion, cancer etc. The Present research work to evaluate the presence of adulterant from daily uses food materials like honey, milk , chilli powder, turmeric powder, green vegetable, Edible oil, Butter, Pulses, wheat flour, tea powder, coffee powder and black pepper which we collected from different local grocery stores and discover food adulterants by biochemical qualitative analysis [11]. The colour change of the sample indicate the according to the reagents is indicates the presence of different types of adulterants. This information can help to grow the food safety and also people can be aware about the food brands for a healthy life which are very beneficial to our society and our future [12].

II. Materials & Methods

Food materials like honey, milk, sugar, chilli powder, turmeric powder, green vegetable, edible oil, butter, pulses, wheat flour, tea powder, coffee powder and black Pepper which we collected from different departmental and local grocery stores. Some reagents like Iodine reagent, Con. HCl, Sucrose, 0.5N ethanolic KOH, Con. HNO_3, Solvent ether, Resorcinol, Carbon tetra-chloride (CCl_4), Con. H_2SO_4, Chloroform, Aniline, some apparatus such as Test tube, Beaker, Conical flask, Watch glass, Glass rod, Funnel, Burette, Pipette, Wash bottle and some paper such Filter paper, Litmus Paper, Cotton plug, blotting paper, were collected which were used for chemical tests. Biochemical qualitative analyses are done for detecting presence of

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Dec 2022

adulterants [13].

III. Result & Discussion

Biochemical qualitative analyses of some food are as follows.

1. Food:- Honey

Common adulterant: - Sugar

Biochemical qualitative analysis: - Take 5 ml of honey in a porcelain dish. Add aniline chloride solution (3 ml of aniline dissolved in 7 ml of HCL) and stir well. Orange red colour indicates presence of sugar[14].

2. Food:- Milk

a) Common adulterant:- Starch

Biochemical qualitative analysis: - Take a little amount 3ml of the sample in a test tube. Add a drop of 1% aqueous solution of iodine. Blue or deep blue colorations indicate starch in milk .

b) Common adulterant:- Melamine

Biochemical qualitative analysis: - Take a little amount 5 gm of the sample in a test tube. Add a little amount of soybean powder. After 5 minute, dip a red litmus paper that are change in colour from red to blue indicate the use of Melamine in milk [15].

3. Food:- Sugar

a) Common adulterant:- stone powder or white sand

Biochemical qualitative analysis :- A small amount of sugar was taken in a test tube and shaken with little water. Pure sugar dissolved in water but insoluble stone powder or white sand didn't dissolve.

b) Common adulterant:- washing soda

Biochemical qualitative analysis :-To a small amount of sugar in a test tube , few drops of diluted HCl were added. A brisk effervescence of carbon dioxide confirmed the presence of washing soda in the given sample of sugar[16].

4. Food:- Chili powder

a) Common adulterant:- red lead salts

Biochemical qualitative analysis:- To a sample of chili powder, dil. Nitric Acid was added. The solution was filtered and two drops of potassium iodide were added into it. Yellow ppt. obtained indicated the Presence lead salts in a chili powder.

b) Common adulterant:- brick powder

Biochemical qualitative analysis :- A small amount of given red chili powder was added in a beaker containing water. Settling of some powder at the bottom & floating pure chili powder over water indicates the presence of brick powder in a given sample[17].

5. Food:- Turmeric powder

Common adulterant:- Metanil Yellow colours

Biochemical qualitative analysis Add a few drops of HCl to turmeric in water. Instantly the solution will turn to violet colour [18].

6. Food:- Green vegetables.

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Dec 2022

Common adulterant:- Malachite green

Biochemical qualitative analysis:- Take a vegetable and rubbing moistened white cotton plug. Green colour impressions on cotton plug indicates the presence of Malachite green[19].

7. Food:- Ice cream

Common adulterant:- Beaking Soda

Biochemical qualitative analysis Take small Sample of ice cream in beaker add drop of Hydrochloric acid or some lemon juice on this, bubbles are observed if Beaking Soda is present[20].

8. Food:- Edible oil

Common adulterant: - argemone oil

Biochemical qualitative analysis: - take 1 ml of the oil in test tube after add mixture of 1 ml of 2% salicylic acid in methanol and 2 ml of conc. HNO_3, followed by 0.5 ml of conc. H_2SO_4 this mix shake indicate crimson red or deep orange-red colour develops within 20-30 sec- which indicate argemone oil adulteration is present [21].

9. Food:- Butter

Common adulterant:- Starch and hydrogenated vegetable oils

Biochemical qualitative analysis: - Take 2 gm butter in test tube after add 2-3 drops of iodine solution appeared blue colours indicate presence adulterated in butter [22].

10. Food:- Pulses

Common adulterant:- Metanil Yellow and Lead Chromate

Biochemical qualitative analysis:- Take 5 gm of the pulses sample with 5 ml of water in a test tube and add a few drops of concentrated Hydrochloric Acid. A pink colour shows presence of adulterations metanil yellow and lead chromate [23].

11. Food:- Wheat Powder

Common adulterant:- chalk powder.

Biochemical qualitative analysis:- You can check for the presence of adulterant chalk powder by adding 2 to 3 ml dil. HCl to the wheat powder sample in a test tube. Chalk powder creats effervescence in test tube [24].

12. Food:- Tea powder

a) Common adulterant:- Cashew husk

Biochemical qualitative analysis:- Spread a few tea leaves sample on a blotting paper, sprinkle some water on them. Once done, remove the tea leaves and wash the blotting paper under tap water. Observe the colour stains on blotting paper indicate presence of Cashew husk adulterant in tea.

b) Common adulterant:- iron fillings

Biochemical qualitative analysis:- For this you will need a magnet. Spread out a small quantity of tea leaves on a glass plate and gently move the magnet above the tea leaves. If the tea leaves are pure then the magnet will be clean. However, adulteration will manifest when iron fillings get stuck to the magnet.

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Dec 2022

c) Common adulterant:- some colorant

Biochemical qualitative analysis:- a glass of water. Ensure that the water is either cold or at room temperature but not hot. If the tea is pure then there will be no change in the water's colour. If the tea leaves have some colorant added to it, the colour will immediately change to red, so beware [25].

13. Food:- Coffee Powder

Common adulterant:- Chicory

Biochemical qualitative analysis:- Drop a pinch of coffee powder on it gently. If the powder floats for some time before sinking, it is coffee. If the powder sinks quickly, it is chicory or some other seed. If it readily diffuses brownish or yellowish colour, it contains Caramel or Chicory [26].

14. Food:- Black Pepper

Common adulterant:- papaya seeds

Biochemical qualitative analysis:- Add some amount of black pepper to a glass of water. Pure black pepper settles at the bottom. In the adulterated black pepper, papaya seeds float on the surface of water [27].

IV. Conclusion

From the above review and discussions adulteration present in some common foods such as honey, milk , sugar, chilli powder, turmeric powder, green vegetable, edible oil, butter, pulses, wheat flour, tea powder, coffee powder and black pepper which we collected from different local grocery stores. Also explain some biochemical method which discovered food adulteration in the food items. Food adulteration can cause tremendous affect on health without our knowledge. Adulteration can be prevented by few alerting steps of our society. Hike of price of food items should be checked by government. While purchasing food items, selection of wholesome and non-adulterated food is necessary to make sure that such food do not cause and health problems. Though presence of adulterants cannot be ensured by visual examination as toxic contaminants are present in very low level but visual examination before purchase can ensure absence of insects, fungus and other foreign materials. The consumer should avoid buying food from places which do not maintain proper hygiene conditions. Both local and branded food stores should be inspected by government bodies. The above general consciousness is simple and easy to initiate for our healthy life. If we tend to actively participate in these changes then we can bring about a healthy and non venturous future for the upcoming generations.

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Current Organic Chemistry, 2023, *27*, 223-241

REVIEW ARTICLE

Synthesis of Oxygen and Nitrogen Containing Heterocycles using Zirconium Dioxide/Mixed Oxide Nanoparticles as Reusable Green Catalysts: A Comprehensive Update

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Abstract: The remarkable improvements in organic synthesis facilitated by zirconium dioxide-based nanoparticles are updated and summarized in this review. The ZrO_2 acts as a versatile heterogeneous nanocatalyst and is used in various elementary organic reactions and many multicomponent reactions. The employment of these catalysts in organic synthesis leading to bio-active scaffolds provides the opportunity to carry out the reactions using facile synthetic protocol under mild environments that furnish the equivalent products in high yields and shorter reaction times. According to reports in the literature, ZrO_2-based catalysts were removed from the reaction mixture and recycled many times.

Trimurti L. Lambat

Keywords: Green chemistry, ZrO_2 nanoparticles, heterogeneous nanocatalyst, O & N-heterocycles, bio-active scaffolds, reusable green catalyst.

1. INTRODUCTION

Green synthesis routes have recently attracted significant attention leading to important developments in the fields of click reactions [1] and green chemistry [2-9], with the advances of environmentally and proficient benign protocols [10-15] being in focus. As catalysts, nanoparticles (NPs) demonstrated superiority to conventional catalysts in several aspects relevant to sustainable development [16-18]. Additionally, NPs were extensively investigated for potential use in nanomedicine, particularly for drug delivery [19] and early detection of cancer cells. Mesoporous nanomaterials were also employed for a variety of organic reactions [20]. The high specific area and active surface sites in nanomaterials render these materials more important than their bulk counterparts for a wide range of science and technology applications [21].

Metal oxides are frequently employed as solid catalysts that can either function as the active phase or the supports [22], exhibiting favorable catalytic activity and providing perhaps the largest class of heterogeneous catalysts [23-30]. In addition to metal oxides, metals are also widely employed in chemical synthesis [31-40]. The catalytic activity of transition and noble metals is attributed to the electronic configuration of the outer valence electrons [41]. Further, mixed metal oxides account for many solid catalysts frequently used in the pharmaceutical industry [42, 43].

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Zirconium dioxide (zirconia, ZrO_2) demonstrated efficacy and potential for a number of significant applications, including catalysis, fuel cell electrolytes, buffer layers for superconductor development, oxygen sensors, gate dielectrics, and ceramics wear-resistant optical coatings [44–55]. This oxide can exist in three structural phases, monoclinic, tetragonal, and cubic [56], which exhibit different catalytic activities.

The surface of ZrO_2 NPs [57] can support active hydroxyl groups and oxyanions and contains Zr^{4+} ions, enabling zirconia to function as a dual acid-base catalyst [58]. Even though the employment of ZrO_2 NPs for the preparation of biologically active blocks *via* solvent-free multicomponent reactions was rarely addressed [59, 60], The development of green synthesis methods and research on the synthesis of isatin-based heterocycles were reported. [61-75]. The interesting properties of sulfated zirconia, including its cost-effectiveness, thermal stability, and super acidity, render these materials industrially important for a number of reactions [76]. In addition, zirconia NPs were reported to improve the mechanical properties of ceramics [77] and modify their electrical, thermal, magnetic performance and optical properties [78]. Further, nanoscale zirconia exhibited catalytic activity for the dehydration of alcohols, the selective synthesis of dimethyl carbonate, the selective oxidation of methanol, and redox activity [79-85]. For creating zirconia NPs, several synthesis methods have been used, including but not limited to hydrothermal, sol-gel, chemical vapour deposition (CVD), and sputtering approaches [86-90].

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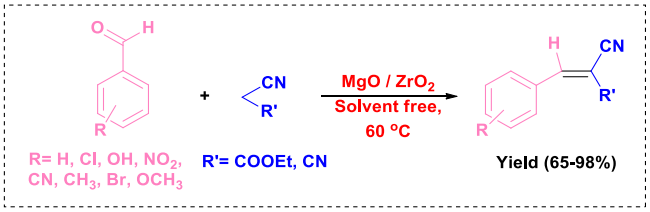
One of the most extensively researched reactions in organic synthesis, organic transformations employing zirconium dioxide/mixed oxides are well displayed on the surface of zirconium dioxide/mixed oxides under various reaction circumstances. Zirconium dioxide/mixed oxides serve an equally significant role in the overall catalyst system used as other heterogeneous catalysts do. We will briefly discuss the use of zirconium dioxide and mixed oxides in this review's synthesis of fine chemicals, organic synthesis, and industrial, and green chemistry.

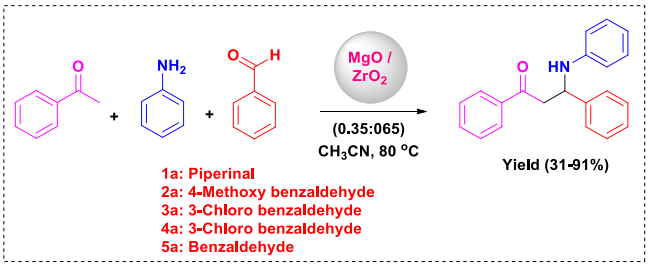
2. SYNTHESIS *VIA* MgO/ZrO_2 AS A CATALYST

Gawande & coworkers [91] in 2006 introduced MgO/ZrO_2 as a novel green catalyst for the Knoevenagel condensation of ethyl cyanoacetate with aromatic aldehydes and malonitrile (Scheme **1**). The structural characterization of the catalyst indicated that the crystallization of the catalyst oxide components is highly dependent on the sintering temperature. X-ray diffraction pattern (XRD) of the catalyst sintered at 600°C revealed the existence of a cubic MgO and a monoclinic ZrO_2 phases, as well as evidence of the presence of a secondary tetragonal ZrO_2 phase. Before utilizing the catalyst in the 60°C, solvent-free processes, the catalyst was ground to a particle size of 0.5 to 0.7 m. The catalyst gave relatively high yields of the products. It exhibited a high degree of recyclability, whereas, in the case of 4-fluoro benzaldehyde, the yield (95%) decreased slightly to 91% after the fifth cycle of reusing the catalyst.



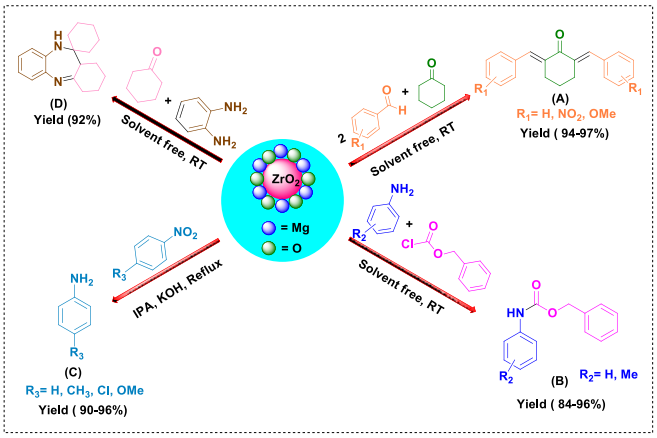
Scheme 1. Knoevenagel condensation of an aromatic aldehyde with ethylcyanoacetate and malononitrile.

In 2010, Nagrik *et al.* [92] described an efficient three-component one-pot condensation of ketones, aldehydes, and amines using MgO/ZrO_2 catalyst for Mannich reaction for the synthesis of *β*-amino carbonyl compounds (Scheme **2**). The yield depended on the ratio of the two oxides in the catalyst, and the highest yield of 91% was achieved at the MgO/ZrO_2 molar ratio of 0.35/0.65. It was demonstrated that the catalyst could be used repeatedly for five runs without significantly losing its catalytic activity.



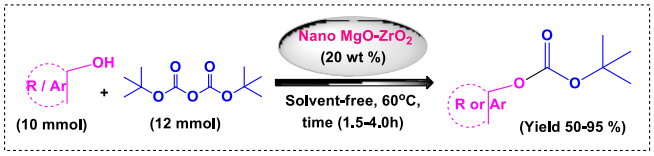
Scheme 2. Synthesis of β-amino carbonyl compound by Mannich reaction *via* MgO/ZrO_2 catalyst.

Later in 2011, Gawande *et al.* [93] have prepared MgO–ZrO_2 (MZ) catalyst by an ultra-dilution method, and tested its versatility for a number of organic reactions (Scheme **3**). The XRD pattern indicated the presence of Monoclinic ZrO_2 and cubic MgO phases in the catalyst. The catalyst provided superior to outstanding yields of the products. For example, it gave 94-97% yield in the cross-aldol condensation of aromatic aldehydes with cyclohexanone, and 84-96% yield in the *N*-benzyloxycarbonylation of amines by using 10 wt.% of the catalyst. According to reports, catalyst weight percentages up to 10% led to an increase in catalytic activity, after which no significant improvement was observed. Also, the catalyst was found to be effective up to six successive cycles of the synthesis of the target products.



Scheme 3. Organic reactions catalyzed by MgO-ZrO_2 **(A)** Cross-Aldol condensation under solvent-free condition, **(B)** N-Benzyloxycarbonylation of amine under solvent-free condition, **(C)** Reduction of aromatic nitro compounds, **(D)** 1,5-benzodiazepine synthesis by using cyclohexanone and orthophenylene diamine**.**

MgO-ZrO_2 NPs were used by Gawande *et al.* [94] in 2012 to establish a straightforward solvent-free chemoselective O-tert-Boc protection of phenols & alcohols. (Scheme **4**). This method's advantages include using a heterogeneous, reusable catalyst, superior chemoselectivity, enhanced substrate compatibility, high reaction rates, operational simplicity, and moderate reaction conditions. The size of the catalyst is in the nano range (20–35 nm), according to the TEM investigation of MgO–ZrO_2 mixed metal oxides. Under solvent-free conditions at 60°C, the reusability of the catalyst was tested for the reaction of phenol with Boc anhydride. The catalyst was filtered out and rinsed twice or three times after the reaction was finished. with ethyl acetate, dried at 120°C in an oven for 3 hours, and then used again for the reaction. Even after six cycles, the catalytic activity reduced marginally.



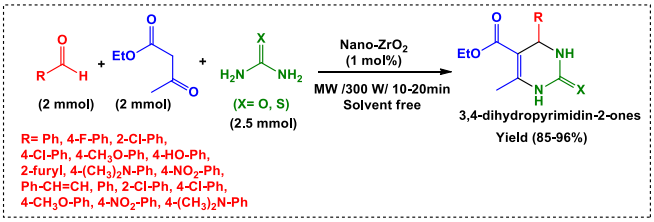
Scheme 4. O-tert-Butoxycarbonylation of phenol by using nano MgO-ZrO_2 catalyst.

3. SYNTHESIS USING ZrO_2 NANOPARTICLE AS A CATALYST

Bhojegowd *et al.* [95] (Zirconium nitrate with alanine were combined in stoichiometric proportions in aqueous solutions to synthesize nano crystalline-ZrO_2.) developed nanocrystalline zirconium (IV) oxide (nc-ZrO_2) with a bulky surface area in 2011 (Scheme **5**). For characterization of nc-ZrO_2, SEM, powder XRD and surface area measurements were used. The powder XRD results show that the nc-ZrO_2 possesses a pure tetragonal phase. The crystallite size and BET surface area computed using Scherrer's formula were determined to be around (53-57 nm) and 275 m^2/g, respectively. SEM image revealed the microporous character of the powder. The synthesis of 3,4-dihydropyrimidin-2-ones was accomplished without solvents in the microwave (MW)-aided multi-component,

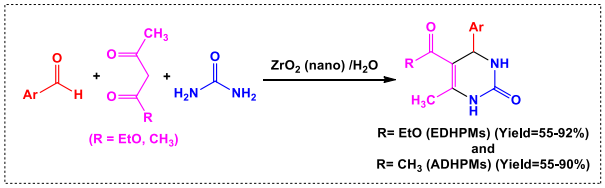
one-pot Biginelli condensation reaction of ethylacetoacetate, aryl aldehydes and urea or thiourea (DHPMs). In this reaction scenario, DHPMs are produced quickly (10–20 minutes) and in good to exceptional yields (85%-96%).

By using repeated filtering, the catalyst may be readily removed from the mixture, repeated washings with distilled water and ethanol, and dried under vacuum for 2-3 hours before re-use. The recycled catalyst was employed five times to get 5-ethoxycarbonyl-4-(phenyl)-6-methyl-3,4-dihydropyrimidin-2(1H)-one with no discernible yield loss. For 1-5 cycles, the yields were 96%, 93%, 93%, 90%, and 89%, respectively; the drop in yield could be attributed to substrate adsorption on active sites. The catalyst was filtered out of the reaction mixture and replenished after each reaction.



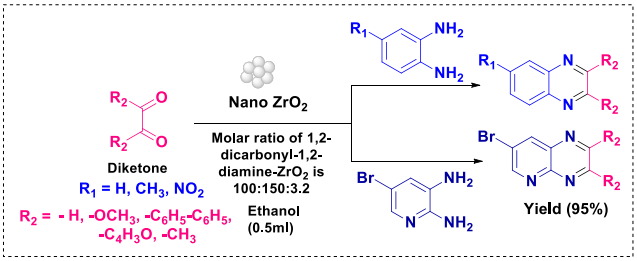
Scheme 5. Synthesis of 3,4-dihydropyrimidin-2-ones by Biginelli condensation of aldehyde, ethylacetoacetate and urea or thiourea using ZrO_2 as a nanocatalyst.

Farhadi *et al.* [96] discovered a simple and efficient one-pot three-component reaction of various aromatic aldehydes, b-keto compounds, and urea in the presence of a catalytic quantity of nano-ZrO_2 catalyst in the presence of water in 2013 (Scheme **6**). The results show that by employing nano-ZrO_2 as a catalyst, several aldehydes may be converted to their corresponding 3,4-dihydropyrimidin-2(1H)-ones in good to exceptional yields, comparable to the $SO4^{2-}/ZrO_2$ catalyst.



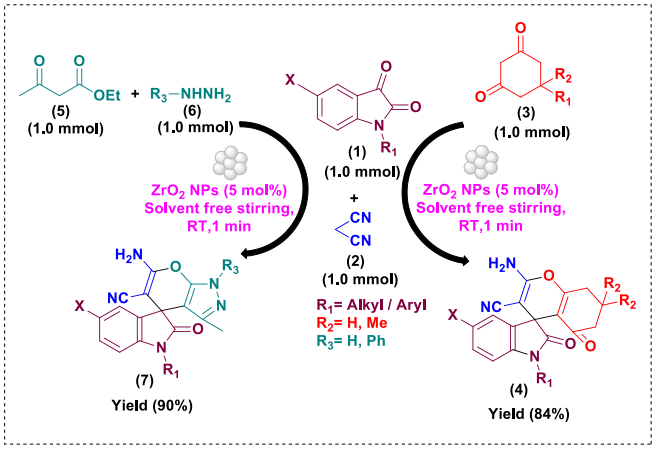
Scheme 6. Nano-ZrO2-catalyzed synthesis of monosubstituted derivatives of 3,4-dihydropyrimidin-2(1*H*)-ones.

In 2014 Jafarpour *et al.* [97] described the synthesis and characterization of monoclinic ZrO_2 nano catalyst using the sol-gel technique. The catalyst was used for the condensation of 1,2-diamines with Quinoxaline and pyridopyrazine heterocyclic compounds may be made using 1,2-dicarbonyl chemicals (Scheme **7**). The catalyst displayed high activity, which also produced products with acceptable to exceptional yields (up to 96%). Without noticeably losing much of its catalytic activity, the catalyst was recycled and utilized for up to five further cycles.



Scheme 7. Synthesis of quinoxaline derivatives and pyrido pyrazines in the presence of m-ZrO_2 nanoparticles in ethanol.

In 2015, Bodhak *et al.* [98] examined the effectiveness of the catalysis using ZrO_2 NPs for the synthesis of multi-functionalized spirooxindole derivatives using two different condensation protocols. They compared the results with reactions performed by using different catalysts and solvents in one-pot multi-component reactions. The study revealed the superiority of zirconia nano catalyst, which provided 84% and 90% yields of spiro[4*H*-pyran-3,3′-oxindoles] and spiro[indoline-3,4′(1*H*′)-pyrano-[2,3-*c*]pyrazol-2-ones in an amazingly short time of 1 min. by using 5 mol.% of the catalyst (Scheme **8**). Only a small increase in the yields (86% and 91%) was seen when using a greater catalyst loading of up to 20 mol%. The study also showed that the catalyst may be used again for up to five runs without substantially reducing activity. The suggested mechanisms of the spirooxindole compounds' formation are demonstratedin Figs. (**1** & **2**) below.



Scheme 8. Synthesis of spiro[4H-pyran-3,3'-oxindoles] (**4**) and spiro[indoline-3,4'(1H')-pyrano-[2,3-c]pyrazol-2-one derivatives (**7**).

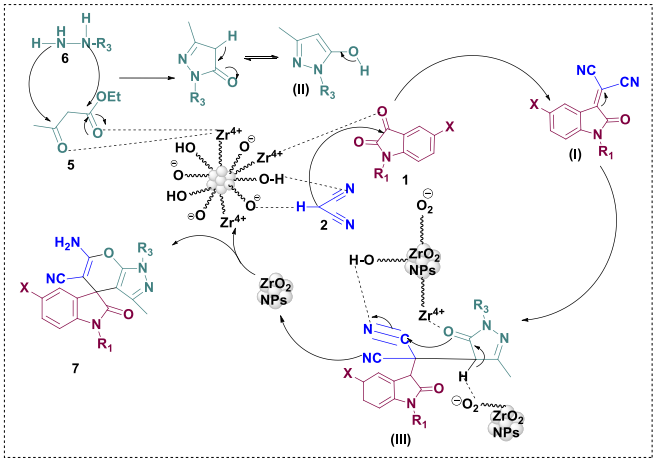


Fig. (1). possible mechanism for the preparation of spirooxindoles (**7**).

At the surface of the ZrO_2 NPs, the hydroxyl, oxide and Zr^{4+} ions enable the NPs to function as a dual acid-base catalyst for the reactions. The reactants are adsorbed at the active sites of the NPs surfaces, leading to a significant increase of the local concentration of the reactants, and resulting in a significant acceleration of the rate of reaction. The catalyst's acid-base properties facilitate the first Knoevenagel condensation of malononitrile (**2**) with isatins (**1**), which leads to the production of the common intermediate (I). Next, intermediate (I) undergoes Michael-type condensation with intermediate (II) to generate the intermediate, and pyrazole intermediate (II) originates in situ from the reaction of ethylacetoacetate (**5**) and hydrazine (**6**). (III). Finally, Intermediate

(III), assisted by the acidic and basic nature of the of the surface sites of the ZrO_2 NPs, undergoes intra-molecular electrophilic cyclization followed by tautomerization, resulting in the formation spirooxindoles (**7**). In a similar fashion, the intermediate (I) undergoes Michael-type addition with the enol form of cyclohexane-1,3-diones (IV), leading to the formation of intermediate (V), which subsequently transforms into spirooxindoles (**4**) assisted by the catalytic activity of the zirconia NPs.

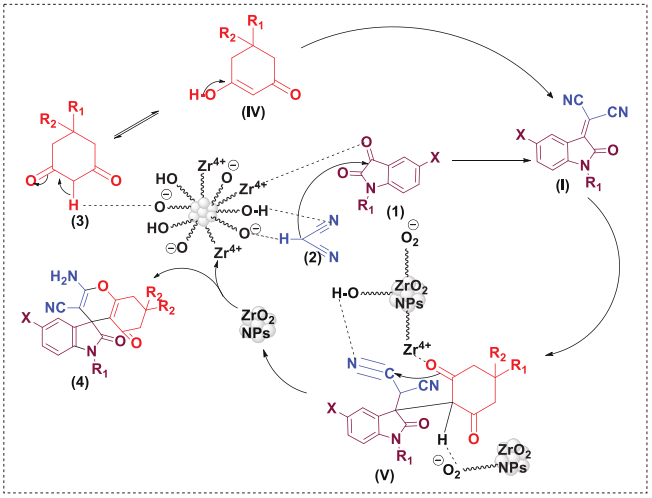
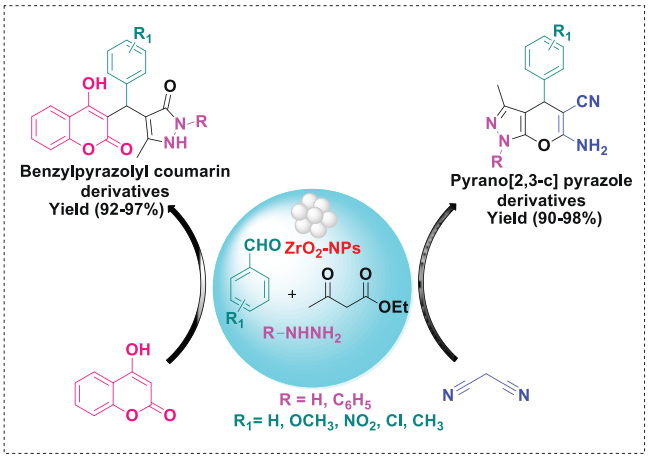


Fig. (2). Probable mechanism for the preparation of spirooxindoles (**4**).

Subhash Banerjee *et al.* [99] and collaborator reported the synthesis of ZrO_2 NPs catalyst with tetragonal symmetry to be used in a synthesis of bioactive pyrano[2,3-c]pyrazole and benzylpyrazolyl coumarin derivatives *via* a one-pot multicomponent reaction at room temp. (Scheme **9**). The authors investigated the effects of experimental conditions, including the catalyst loading, reaction time and solvent, and obtained high yields (92-98%) of the products in 2-10 min. Further, the authors demonstrated the high catalytic of the catalyst even after recycling for up to 10 successive runs. The authors concluded that the catalytic activity of the tetragonal phase of ZrO_2 NPs is higher than that of the monoclinic phase.



Scheme 9. Synthesis of benzylpyrazolyl coumarin and pyrano[2,3-c] pyrazole scaffolds *via* ZrO_2 NPs as a catalyst.

The active hydroxyl, oxide, and Zr^{+4} ions bound to the surface of the ZrO_2 NPs enable their dual activity as Lewis acids or bases, which is how the ZrO_2 NPs play a part in the MCR for the synthesis of pyrano[2,3-c]pyrazoles. In (Fig. **3**), a potential pathway for the production of pyranopyrazole derivatives aided by ZrO_2 NPs is shown. First, pyrazolone (I) and 2-phenylidenemalononitrile (II) intermediates are simultaneously formed by cyclo-condensation and Knoevenagel reaction, respectively, promoted by the ZrO_2 NPs (Fig. **3**). The activation of (I) by the Lewis basic (O) sites of the NPs leads to the formation of these two intermediates, which subsequently undergo Michael type addition to yield the enolate intermediate (III). Lastly, the NPs' Lewis acidic and basic sites help promote intramolecular electrophilic cyclization and tautomerization, which results in the required pyrano[2,3-c]pyrazole derivative. The manufacture of pyrano[2,3-c]pyrazole utilizing a step-by-step process, where the precursors (I) and (II) were synthesized individually from the corresponding starting materials *via* ZrO_2 NPs as a catalyst, allowed the authors to demonstrate the viability of the proposed mechanism. The resulting reaction of these two precursors in the presence of ZrO_2 NPs produced the required pyrano[2,3-c]pyrazole derivative, supporting the viability of the proposed process.

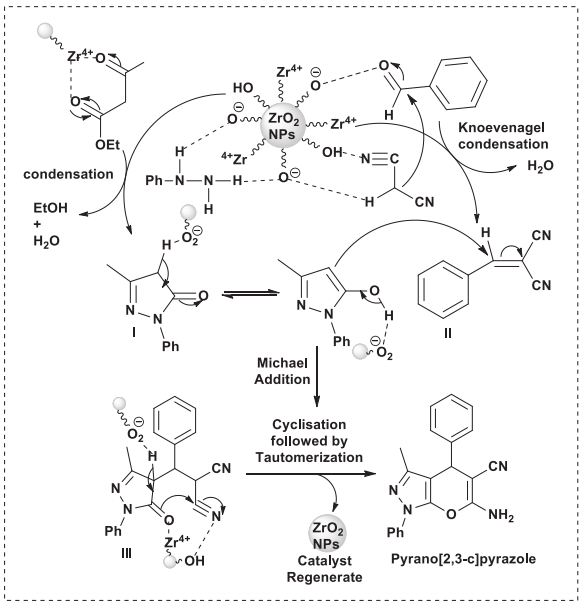
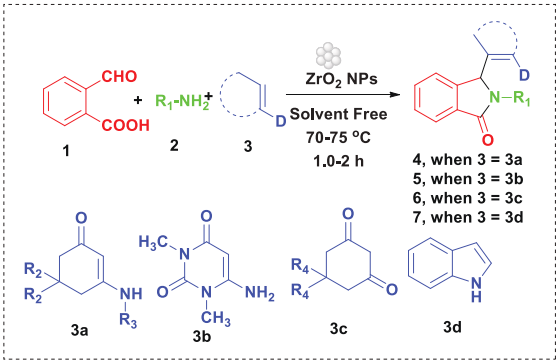


Fig. (3). probable mechanism for ZrO_2 NPs-catalyzed synthesis of 6-amino-3-methyl-1,4-diphenyl-1,4-dihydro-pyrano[2,3-c]pyrazole-5-carbonitrile.

A straightforward one-pot three-component reaction catalyzed by ZrO_2 NPs in solvent-free conditions was introduced by Debnath *et al.* [100] for the synthesis of multi-functionalized 2,3-disubstituted isoindoline-1-ones. The active surface sites of the ZrO_2 nanoparticles facilitating the dual acid-base functionality of the catalyst were reported to be efficient in the condensation of 2-carboxybenzaldehyde, aliphatic amines and nucleophile (enamines/6-amino 1,3-dimethyluracil/1,3- cyclohexadiones/ indole) to produce 2,3-disubstituted isoindoline-1-ones with high yields (Scheme **10**). The reported additional advantages of the adopted methodology include simplicity, short reaction time and low temperature, avoiding the use of hazardous solvents, wider substrate scope, and the recyclability of the catalyst for successive cycles of the reaction.

In the presence of ZrO_2 NPs in solvent-free conditions, the authors postulated a likely mechanism for the synthesis of the isoindoline-1-one derivatives 4-7 (Fig. **4**). The active sites on the surface of the ZrO_2 NPs, which function as a dual acid-base catalyst, have been suggested by other researchers in the discussion above as an aid to condensation processes. The 2-carboxybenzaldehyde (1) and aliphatic amines (2) are condensed to produce intermediates in a

first step in which the Zr^{4+} ion at the surfaces of the NPs functions as a potent Lewis acid acceptor and triggers the carbonyl group (**8**). The intermediate is then created *via* a Michael-type addition involving (**8**) and the nucleophile (**3**) that is catalysed by ZrO_2 NPs (**9**). To produce the end products, the intermediate (**9**) is then made easier to cyclize and tautomerize intramolecularly by the acidic and basic sites of ZrO_2 NPs (isoindoline-1-ones).



Scheme 10. Synthesis of multi–functionalized isoindoline-1-one derivatives (**4-7**).

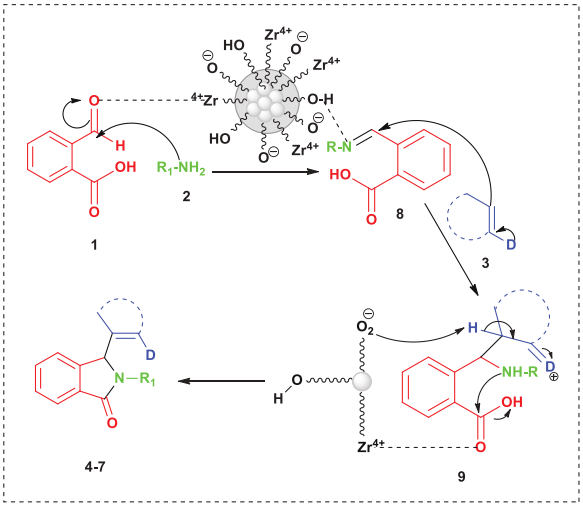
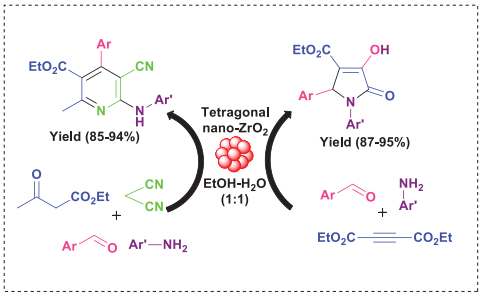


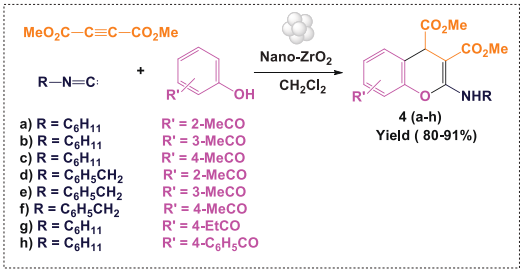
Fig. (4). A probable mechanism for the formation of isoindoline-1-one derivatives.

Saha *et al.* [101] in 2016 further explored the catalytic activity of tetragonal *t*-ZrO_2 NPs for the synthesis of poly-substituted 6-arylamino pyridines and 2-pyrrolidone derivatives (Scheme **11**). The authors reported a high yield of the products, and the recyclability of the catalyst revealed a small reduction of the yield (92% to 83%) after eight successive runs using the recycled catalyst.



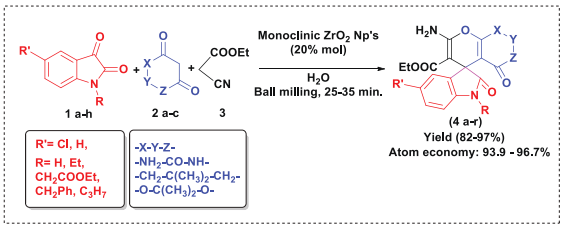
Scheme 11. Tetragonal nano-ZrO_2 catalyzed synthesis of functionalized pyridine and 2-pyrrolidinone derivatives.

In order to synthesise novel functionalized chromenes, Zonouzi *et al.* [102] developed a fresh, succinct, and effective procedure (Scheme **12**). ZrO_2 nanoparticles with a specific surface area of 25 m^2/g (100 nm particle size (TEM), d = 5.89 g/Lit) substantially altered and regulated the reaction's pathway. The anticipated findings, indenes, were not generated; rather, chromene derivatives were.



Scheme 12. Preparation of some new 2-amino-4H-chromenes using nano-sized zirconium oxide.

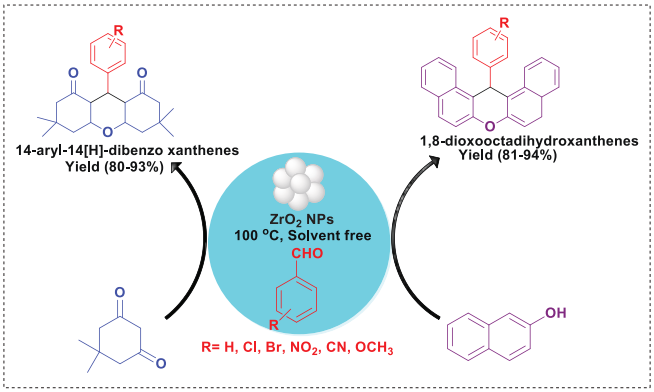
On the other hand, Bajpal *et al.* [103] reported an efficient green protocol for employing a monoclinic m-ZrO_2 NPs catalyst in a multicomponent reaction of isatin derivatives with ethyl cyanoacetate and 1,3-dicarbonyl compounds in a ball mill to create substituted spirooxindoles (Scheme **13**). The approach was put out as a workable synthesis strategy for industrial-scale manufacturing in medicinal chemistry. Under ideal reaction circumstances, the reusability of the m-ZrO_2 NPs was investigated. The catalyst showed good catalytic activity in subsequent reactions up to 10 runs, at which point the yield marginally dropped from 97% to 90%. It was also reported that calcination of the recycled catalyst at 750°C after washing and drying resulted in an improvement of the yield (from 90% in the 9th cycle to 95% in the 10th cycle).



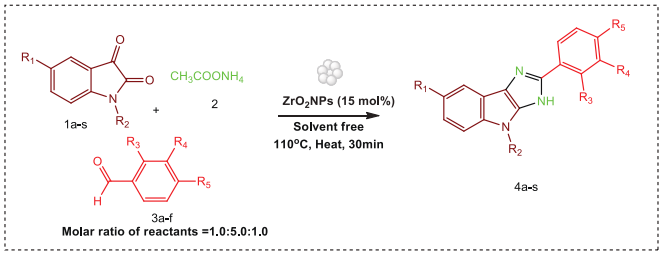
Scheme 13. Synthesis of Spirooxindole using m-ZrO_2 NPs catalyst by Ball milling method.

Recently, Bansal *et al.* [104] also used ZrO_2 NPs catalyst for effective solvent-free one-pot synthesis of biologically active xanthene derivatives (Scheme **14**). For this purpose, the co-precipitation technique prepared tetragonal t-ZrO_2 NPs with sizes in the range of 8-11 nm and average pore size of ~ 3 nm. Xanthene derivatives were achieved with high yields (80-94%) within 16-33 min. by the use of a *t*-ZrO_2 nanocatalyst. The catalyst was demonstrated high yielding up to four additional runs.

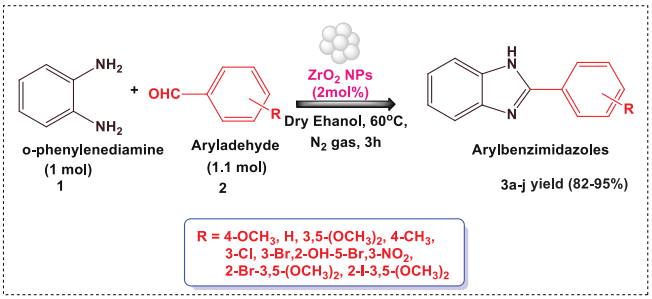
Singh and his coworker [105] in (2019) developed an ecologically friendly and highly effective approach for the synthesis of modified imidazoles employing a multicomponent reaction of isatin derivative products with ammonium acetate and aromatic aldehydes under solvent-free conditions. (Scheme **15**). Because of the cheap and widely available starting materials, easy methodology, and bioactive nature of imidazoles, this strategy is beneficial to medicinal chemistry. Due to the presence of various m- and t-phases in the sample, some aggregation of the NPs can be seen in the TEM micrograph of the sample. After each reaction, the catalyst was filtered, washed, air-dried, and reused for the next reaction up to run number ten. The study revealed that there is no discernible loss in product yield during subsequent reuse, demonstrating ZrO_2 NPs' reusability and recyclability.



Scheme 14. Synthesis of 14-aryl-dibenzo xanthenes and 1,8-dioxooctadihydroxanthenes by using ZrO_2 NPs.



Scheme 15. Nano ZrO_2 catalyzed synthesis of imidazole derivatives.



Scheme 16. Nano ZrO_2 catalyzed synthesis of 2-aryl benzimidazoles.

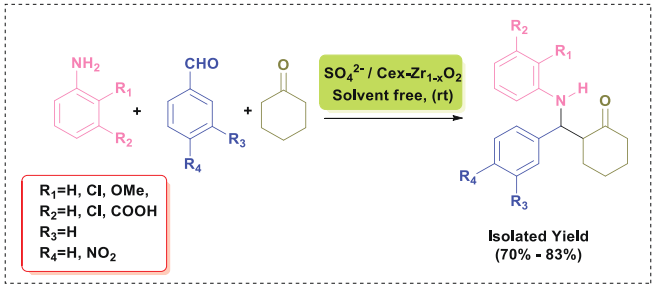
Recently, a zirconia-based nano-catalyst (Nano-ZrO_2), with intermolecular C-N bond formation for the synthesis of various benzimidazole-fused heterocycles in a concise method is reported by Rao *et al.* [106] (Scheme **16**). The robustness of this reaction is demonstrated by the synthesis of a series of benzimidazole drugs in a one-pot method. More importantly, the nano-ZrO_2 catalyst showed excellent recyclability of up to five cycles in dry ethanol.

To check the reusability of nano-ZrO_2, when the reaction of o-PDA (ortho-Phenylenediamine) with various substituted aromatic aldehydes was over, the product formed was extracted with ethyl acetate and the catalyst was purified. It was washed with ethyl acetate repeatedly, dried, and reused for the reaction of o-PDA with various aryl aldehydes.

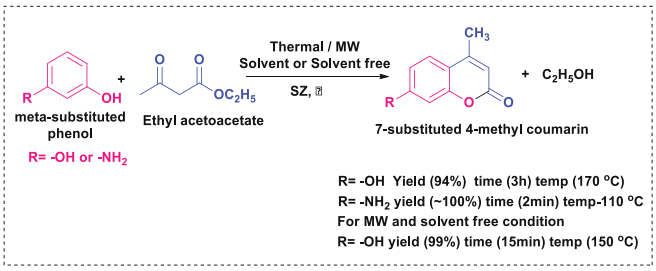
4. SYNTHESIS USING CRYSTALLINE NANO-SULFATED-ZIRCONIA (SZ) AS A CATALYST

Reddy *et al.* [107] invented the synthesis of an interesting solid super-acidic $SO_4^{2-}/Ce_xZr_{1-x}O_2$ catalyst by co-precipitation of cerium ammonium nitrate and zirconium nitrate to produce cerium and zirconium hydroxide gel, which was subsequently added with H_2SO_4 to impregnation the sulfate ions on the Ce-Zr hydroxide surface. In the three-component Mannich-type reactions at room temperature without using solvents, the sulfated $Ce_xZr_{1x}O_2$ catalyst demonstrated significant catalytic activity and produced product yields ranging from 72% to 83%. (Scheme **17**).

Tyagi *et al.* [108] described employing a nano-crystalline sulfated-zirconia catalyst made using the sol-gel method and calcining it at 600°C to produce coumarin derivatives. The sulfated zirconia catalyst's XRD pattern showed a purely tetragonal crystalline phase with nano-crystallite sizes between 9 and 16 nm. The catalyst has high catalytic activity for the solvent-free Pechmann reaction's production of 7-substituted 4-methyl coumarins (Scheme **18**). The authors reported higher reactivity of *m*-aminophenol compared to *m*-hydroxy phenol, where 100% conversion of *m*-aminophenol with ~100% selectivity of 7-amino 4-methyl coumarin was obtained at 110°C within 2 min. On the other hand, 94% yield of 7-hydroxy 4-methyl coumarin was obtained after 3 h at 170°C using a phenol-to-catalyst weight ratio of 80. Compared to thermal heating, where the slow diffusion rate of the reactant molecules in polar nitrobenzene and non-polar toluene solvents resulted in slow kinetics of the reaction, the authors concluded that the solvent-free microwave-assisted synthesis of the hydroxy derivative is an advantageous alternative which provides an excellent yield of 99% in a much shorter time of 15 min at a lower temperature (150°C). The reported synthesis of coumarins is economically feasible, since small amounts of sulfated-zirconia catalyst were required, and the activated catalyst was reusable for several successive runs (up to six cycles).



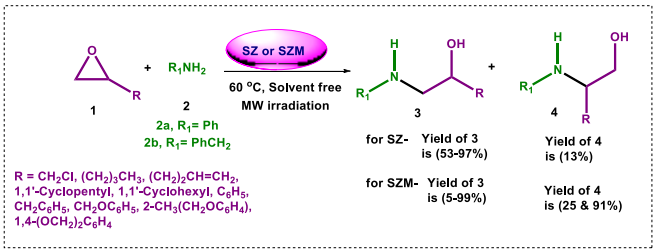
Scheme 17. $SO_4^{2-}/Ce\text{-}Zr_{1-x}O_2$ catalyzed three-component Mannich-type reactions.



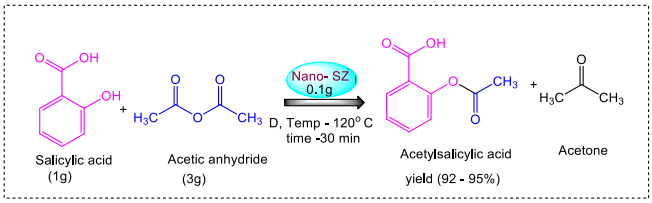
Scheme 18. Synthesis of 7-substituted 4-methyl Coumarin by Pechmann reaction using nano crystalline sulfated- Zirconia (SZ) as a catalyst.

Negron-Silva *et al.* [109] described a solvent-free approach for the regioselective synthesis of *β*-amino alcohols using sulfated zirconia (SZ) and sulfated zirconia over MCM-41 (SZM) as catalysts (Scheme **19**). The employment of microwaves in the synthesis reduced the time significantly and improved the yield compared to conventional heating. The catalysts were recovered and reactivation at 550°C for 1 h, and subsequently reused for at least three successive cycles without a significant decrease in the yield and regioselectivity. The results of the study revealed that reactivating of the SZ catalyst resulted in the development of a secondary monoclinic phase along with the original tetragonal phase. However, the authors reported evidence that the reactivation of SZM destroyed the MCM-41 phase, and concluded that the sulfated zirconia drove the catalytic activity, be it tetragonal or monoclinic.

Tyagi *et al.* [110] in 2010 used solid acid catalysts such as nano-crystalline sulfated zirconia, sulfated titania, zeolite H-beta, H-Y, H-ZSM-5, and acid-treated K-10 clay to synthesize acetylsalicylic acid, often known as aspirin or Ecotrin, in an environmentally friendly way (Scheme **20**). The tetragonal phase of sulfated zirconia was discovered to have a crystallite size of 11 nm. Nano-crystalline sulfated zirconia had the highest catalytic activity of all the solid acid catalysts examined and was shown to be efficient in a small amount to produce an excellent yield (95 wt percent) of acetylsalicylic acid crystals. The yield of the thermally regenerated catalyst was comparable to that of the fresh catalyst. After washing with acetone, drying at 110°C for 2 hours, and activation at 450°C for 2 hours, the spent sulfated zirconia catalyst was recovered from the reaction mixture and reused under comparable reaction conditions. Until the fifth reaction cycle, a thermally regenerated catalyst gave the same yield of acetylsalicylic acid as the fresh catalyst.

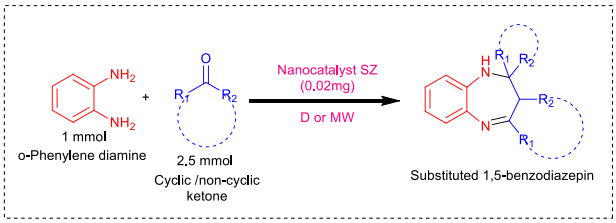


Scheme 19. Ammonolysis of Oxirane using sulfated Zirconia (SZ) and Sulfated Zirconia over MCM-41 catalyst (SZM).



Scheme 20. Synthesis of acetyl salicylic acid by O-acetylation of salicylic acid with acetic anhydride over solid acid catalyst.

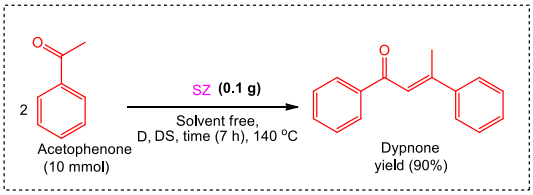
Gondaliya *et al.* [111] also employed sulfated ZrO_2 NPs catalyst for the synthesis of 1,5-benzodiazepine derivatives by conventional and microwave-assisted protocols (Scheme **21**). The catalyst was prepared by the sol-gel method and heat treatment at 600°C, and the structural analysis indicated a structural transformation from the monoclinic phase of the un-sulfated zirconia to the triclinic phase. The conventional heating method provided high yields of the products in 40-50 min, whereas the microwave-assisted method provided the yields in a much shorter time of 2-4 min. Also, the catalyst was reusable for 3-4 successive reactions.



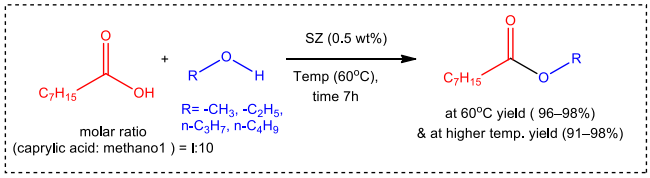
Scheme 21. Synthesis of 1,5-benzopdiazepine derivatives using Sulfated-Zirconia as a nanocatalyst in solvent-free conditions by conventional and microwave methods.

Saravanan *et al.* [112] investigated the solvent-free self-condensation of acetophenone to dypnone using a Nano-crystalline sulfated zirconia catalyst produced by a two-step sol-gel technique (Scheme **22**). The catalyst had a maximum dypnone selectivity of 92 percent and 68.2 percent acetophenone conversion at 170°C after 7 hours of calcination at 650°C. The used SZ-650 catalyst was recovered from the reaction mixture, properly washed with acetone, and dried at 120°C overnight before being re-used for another reaction cycle under comparable reaction conditions to investigate its reusability.

Saravanan *et al.* [113] examined the catalytic activity of a nano-crystalline sulfated zirconia catalyst produced by the sol-gel process. They described using various analytical techniques for the esterification of caprylic acid with various short-chain alcohols (Scheme **23**). At 60°C, the lower catalyst concentration (0.5wt%) resulted in 96–98% caprylic acid conversion with methanol and 100% selectivity for methyl caprylate. At 60°C, conversion decreased with increasing carbon chain lengths of alcohols, such as ethanol, n-propanol, and n-butanol, but increased dramatically (91-98 percent) at higher temperatures. Due to the water generated during the reaction, the catalyst's activity dropped marginally with each of the next five reaction cycles. To test the catalyst's reusability, it was extracted from the reaction mixture, washed with methanol, dried, and activated at 45°C for 2 hours before being employed in another reaction cycle.



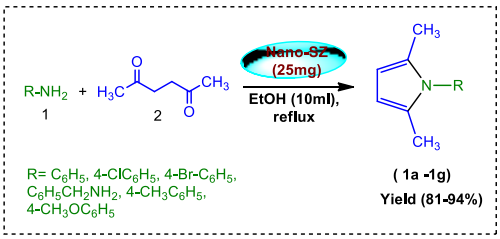
Scheme 22. Synthesis of dypnone by self-condensation of ACP over sulfated zirconia catalyst using Dean-Stark (DS) apparatus



Scheme 23. Esterification of caprylic acid with various alcohols using nano-sulfated zirconia as a catalyst.

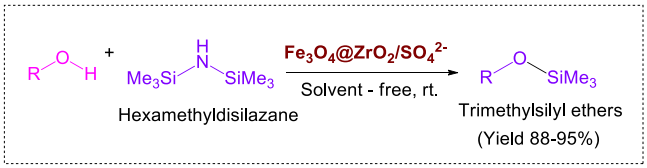
Abbas *et al.* [114] devised a novel and effective one-pot green synthesis method for producing Pyrrole by using Sulfated Zirconia as a solid acid nano crystalline catalyst in ethanol as a solvent at moderate temperature Scaffold from the Paal-Knorr condensation reaction (Scheme **24**). The advantages of this unique procedure are easy availability, stability, reusability, catalyst eco-friendliness, high to exceptional yield, and simple experiment setup.

After the reaction was completed, the catalyst was separated by filtering, washed three times with 5 mL acetone, then rinsed numerous times with doubly distilled water before being dried at 110°C. The recovered catalyst was then utilized in the following run. Three successive runs revealed that the catalyst may be reused multiple times without losing significant activity.



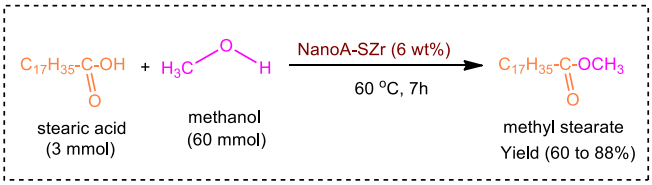
Scheme 24. Synthesis of N-substituted pyrrole derivatives by the condensation reaction of 2,5-hexandione with aromatic amine using sulfated zirconia as a nanocatalyst.

Ghafuri *et al.* [115] discovered that nanomagnetic sulfated zirconia (Fe_3O_4@ZrO_2/SO_4^{2-}) can be employed as a magnetic solid acid catalyst for the conversion of alcohols to their corresponding trimethylsilyl ethers using hexamethyldisilazane (HMDS) at ambient temperature and in a solvent-free environment (Scheme **25**). This process has a number of advantages, including a simple set-up method, quick reaction times, high product yields, and facile catalyst recovery and reusability.



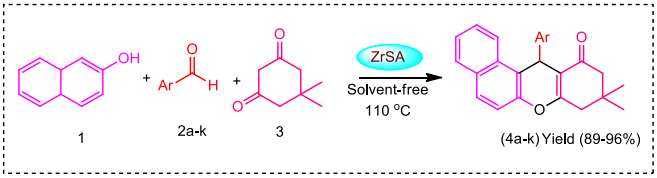
Scheme 25. Fe_3O_4@ZrO_2/SO_4^{2-} catalyzed silylation of alcohols using HMDS.

Saravanan *et al.* [116] used the sol-gel method to make a sulfated aerogel zirconia (A-SZr) solid acid catalyst, which was then supercritically dried in the n-propanol solvent (Scheme **26**). Under the same reaction conditions, the A-SZr catalyst showed higher activity than other heterogeneous acid catalysts such as ion-exchange resins, Nafion, and acid clay; it also showed similar activity with conventional Brönsted (H_2SO_4) and Lewis ($ZrOCl_2$) acids, emphasizing its potential to replace homogeneous acid catalysts.



Scheme 26. Esterification of stearic acid with methanol using Aerogel sulfated zirconia as a nanocatalyst.

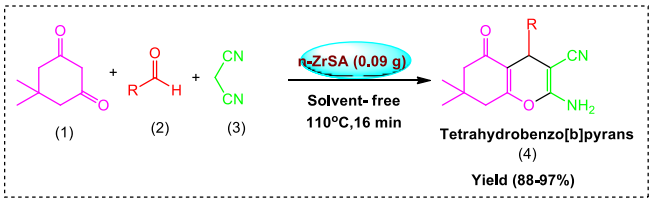
The catalytic effect of Zirconia Sulfuric Acid (ZrSA) nanoparticles, which are formed *via* the combination of ZrO_2 with chlorosulfonic acid, was examined in the production of tetrahydrobenzo[a]xanthene-11-ones by a one-pot three-component reaction of -naphthol, aromatic aldehydes, and dimedone by Nakhaei *et al.* [117] (Scheme **27**). Several reaction conditions were examined in the presence of ZrSA nanoparticles as catalysts. The findings revealed that ZrSA has a strong catalytic activity for the synthesis of tetrahydrobenzo[a]xanthene-11-ones, with high yields of the desired products. The catalyst was also recyclable, implying it could be reused at least three times without losing its catalytic activity. Overall, this innovative catalytic technique for the synthesis of tetrahydrobenzo[a]xanthene-11-ones avoids the use of hazardous organic solvents and offers rapid access to the required compounds under solvent-free conditions at 110°C following a simple workup procedure.



Scheme 27. ZrSA catalyzed synthesis of tetrahydrobenzo[*a*]xanthene-11-ones.

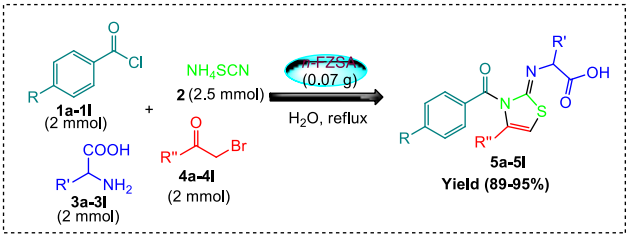
Nakhaei *et al.* [118] investigated the use of n-ZrSA to catalyze the synthesis of tetrahydrobenzo[b]pyrans from dimedone, aldehydes, and malononitrile in a one-pot, three-component reaction at 110°C under solvent-free conditions (Scheme **28**). The procedure was quick and high yielded, and the set-up was simple. After easy handling, the catalyst can be recycled and reused at least four times without losing its catalytic activity. The technique is also favorable in that it is a quick reaction in a solvent-free environment making it ecologically benign.

After the transformation was completed, the catalyst was filtered through a sintered glass Büchner funnel under heated temperatures. A small amount of hot ethanol was used to wash the catalyst. The combined filtrate was allowed to cool to room temperature before being used. Filtration was used to recover the precipitated solid, which was then recrystallized from ethanol to produce high quantities of tetrahydrobenzo[b]pyrans.



Scheme 28. ZrSA nanoparticles catalyzed synthesis of tetrahydrobenzo[*b*]pyrans.

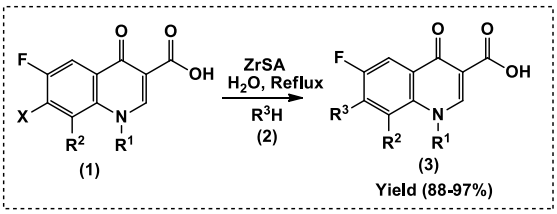
Nakhaei *et al.* [119] synthesized a Fe_3O_4 magnetic core with a zirconia shell containing sulfonic acid groups (Fe_3O_4@ZrO_2–SO_3H) that were employed as an efficient acidic catalyst in the synthesis of thiazole derivatives from acyl chloride, ammonium thiocyanate, amino acids, and alkyl bromides. In the production of thiazole derivatives, Fe_3O_4@ZrO_2–SO_3H showed strong catalytic activity (Scheme **29**). After refluxing and a simple workup procedure, this innovative catalytic approach for thiazole derivatives allowed rapid access to the target chemicals in high yields in aqueous media. The new process for synthesizing thiazole derivatives is a major advance above what is already available. The catalyst could be utilized at least four times without losing its effectiveness (96, 95, 94, 94%). An external magnet was used to extract the catalyst, which was then washed in hot ethanol (10 mL). The mixture was kept at room temperature after half of the solvent was evaporated. The precipitated solid was filtered out and recrystallized from ethanol to obtain the corresponding product.



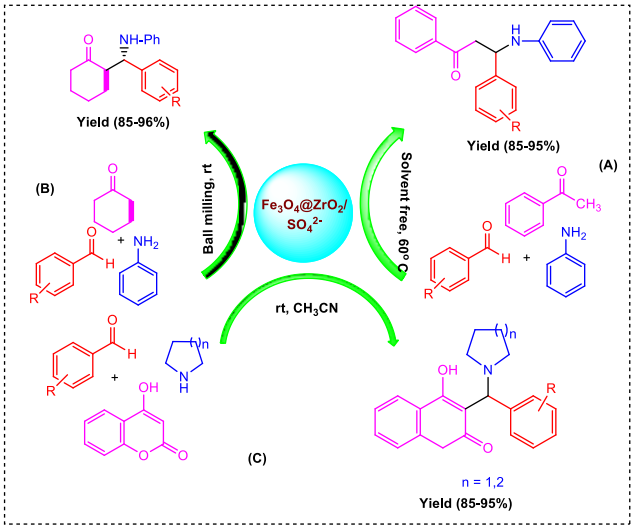
Scheme 29. Synthesis of thiazole derivatives in the presence of n-FZSA.

Nakhaei *et al.* [120] synthesized a variety of antibacterial fluoroquinolone compounds by amination of 7-halo-6-fluoroquinolone-3-carboxylic acids with a variety of piperazine derivatives and (4aR,7aR)-octahydro-1H-pyrrolo[3,4-b] pyridine in the presence of ordinary or magnetized water (Water treated with a magnetic field, often known as (magnetised water acting as green solvent) under reflux conditions (Scheme **30**). ZrSA has high catalytic activity in the formation of fluoroquinolone derivatives in two different types of water, according to the findings. On the other hand, the magnetized water functioned better. The catalyst was also recyclable, implying it could be reused at least three times without losing any catalytic activity. Overall, this innovative catalytic technique for synthesizing fluoroquinolone derivatives allows for rapid access to the necessary compounds in refluxing water after a simple workup procedure while avoiding hazardous organic solvents.

Ghafuri *et al.* [121] devised an efficient Mannich-type reaction technique for the production of β-amino carbonyl compounds and benzylamino coumarin derivatives in high yields (Scheme **31**). The research is divided into two parts. β - Amino carbonyl derivatives were produced in a solvent-free environment in the first section. At room temperature, benzylamino coumarin compounds were produced in the other part. Short reaction periods, low cost, easy workup, mild reaction conditions, excellent yields, ease of recovery and reusability of the catalyst with five runs without considerable loss of activity are all advantages of the current technique.

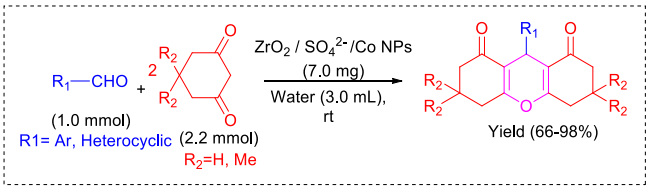


Scheme 30. Synthesis of fluoroquinolone derivatives in the presence of ZrSA under refluxing ordinary or magnetized water.



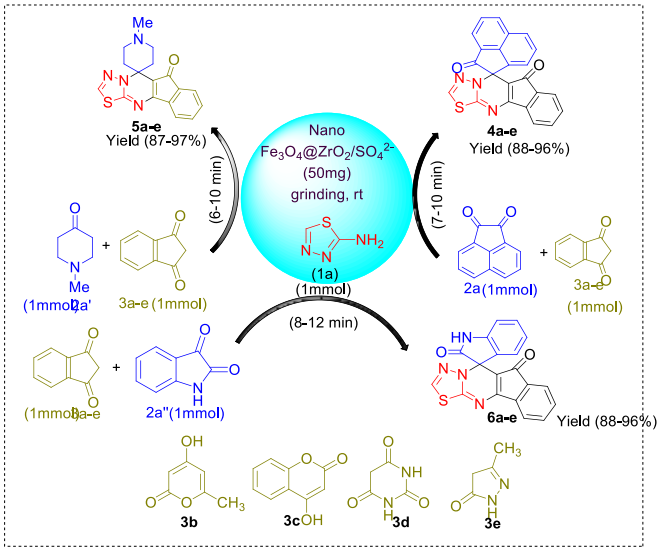
Scheme 31. Synthesis of β - amino carbonyl derivatives through Mannich reaction of various (**A**) aldehydes with aniline and acetophenone catalyzed, (**B**) aldehydes, anilines and cyclic ketones (**C**) aldehydes, amines and 4 hydroxycumarin catalyzed by $Fe_3O_4@ZrO_2/SO_4^{2-}$.

Nasseri and co-authors [122] prepared sulfated zirconia incorporated with cobalt (ZrO_2/SO_4^{2-}/Co) as a catalyst for the synthesis of 1,8-dioxo-octa-hydro xanthene derivatives using a one-pot multicomponent reaction under mild conditions (Scheme **32**). The catalyst consisted of both monoclinic and tetragonal phases with a mean size of 13 nm. The adopted methodology revealed a wide scope for the condensation of aldehydes bearing different functional groups with dimedone and/or 1,3-cyclohexadione in water at room temperature and gave good-to-high yields in short reaction times. The catalyst was recovered and efficiently reused several times (at least eight consecutive runs) without appreciable loss of its activity.



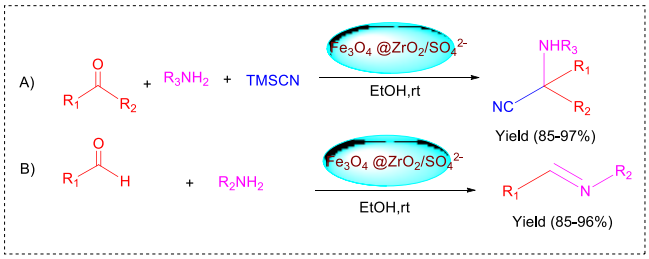
Scheme 32. Synthesis of 1,8-dioxo-octahydroxanthene catalyzed by ZrO_2/SO_4^{2-}/Co NPs.

Tailor *et al.* [123] described a multicomponent reaction of 2-amino-1,3,4-thiadiazole, isatin/N-methyl-4-piperidone/ 1,2-acenaphthylenedione and carbonyl compounds for the synthesis of spiroheterocycles spiroannulated with 1,3,4-thiadiazolo[3,2-a]pyrimidine (Scheme **33**). The reaction was carried out by solvent-free grinding at room temperature, and catalysed by magnetite-supported nanocrystalline sulfated zirconia ($Fe_3O_4@ZrO_2/SO_4^{2-}$), which is magnetically recoverable for further use. The cubic (magnetite) and tetragonal (SZ) phases were confirmed by XRD. The synthesis route was environmentally benign and gave excellent yields of products. The yields did not decrease appreciably when the recovered catalyst was used for five successive cycles (only 4% decrease was reported after the 5th cycle).



Scheme 33. Synthesis of spiroheterocycles spiroannulated with 1, 3, 4-thiadiazolo[3, 2-a]pyrimidine.

In 2015, Ghafuri *et al.* [124] prepared sulfated zirconia supported on magnetic nanoparticles and its catalytic activity was investigated in one-pot three-component green synthesis of α -aminonitriles using various aldehydes and ketones at room temperature in ethanol (Scheme **34**). This protocol has various advantages: simple work-up, short reaction time, high product yields and easy recovery and reusability of the catalyst up to five times without any considerable loss of catalytic activity. The TEM and SEM micrographs showed a homogeneous structure of $Fe_3O_4@ZrO_2/SO_4^{2-}$ with Fe_3O_4 core and average particle size of about 30 and 25 nm, respectively. The authors suggested a mechanism for the formation of α -aminonitriles (Fig. **5**). According to this mechanism, $Fe_3O_4@ZrO_2/SO_4^{2-}$ catalyzes the *in situ* formation of the imine intermediate by activating the oxygen atom of the carbonyl group. In the presence of the catalyst, the imine carbon is attacked by cyanide to give the product.



Scheme 34. The Strecker reaction of carbonyl compounds and amines with TMSCN catalyzed by Fe_3O_4 $@ZrO_2/SO_4^{2-}$(**A**), synthesis of imines by Fe_3O_4 $@ZrO_2/SO_4^{2-}$ (**B**).

In addition, Ghafuri *et al.* [125] also synthesized the magnetite-supported SZ (Fe_3O_4@ZrO_2/SO_4^{2-}) catalyst, which was used for the synthesis of α-aminonitriles derivatives in Kabachnik-Fields reaction (Scheme **35**). The catalyst gave good to excellent yields of the products and was successfully recovered and reused for 5 subsequent reactions without appreciable loss of its catalytic activity. The authors provided a proposed mechanism for the synthesis of α-aminophosphonate using the Fe_3O_4@ZrO_2/SO_4^{2-} catalyst (Fig. **6**). They suggested that the catalyst facilitates the formation of imine intermediate by activating the carbonyl group. Subsequently, the carbon of imine is attacked by phosphite leading to the formation of the desired product.

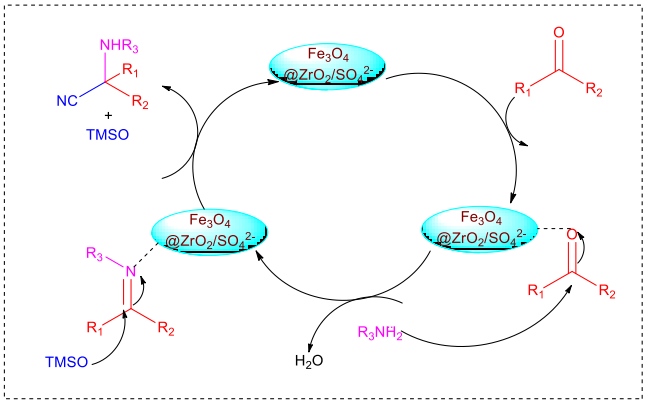
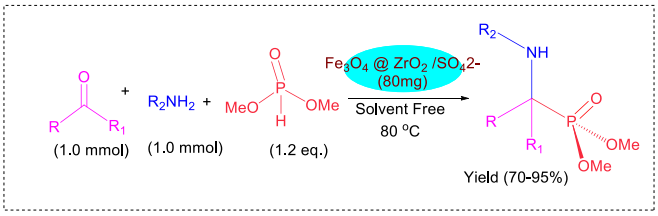


Fig 5. A plausible mechanism for the synthesis of α-aminonitriles catalyzed by Fe_3O_4@ZrO_2/SO_4^{2-}.



Scheme 35. Kabachnik-Fields reaction catalyzed by magnetite-supported sulfated zirconia (Fe_3O_4 @ZrO_2/SO_4^{2-}).

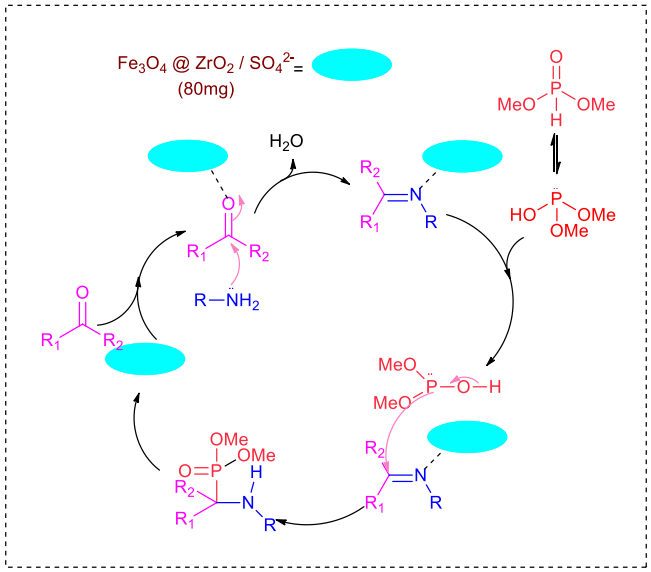
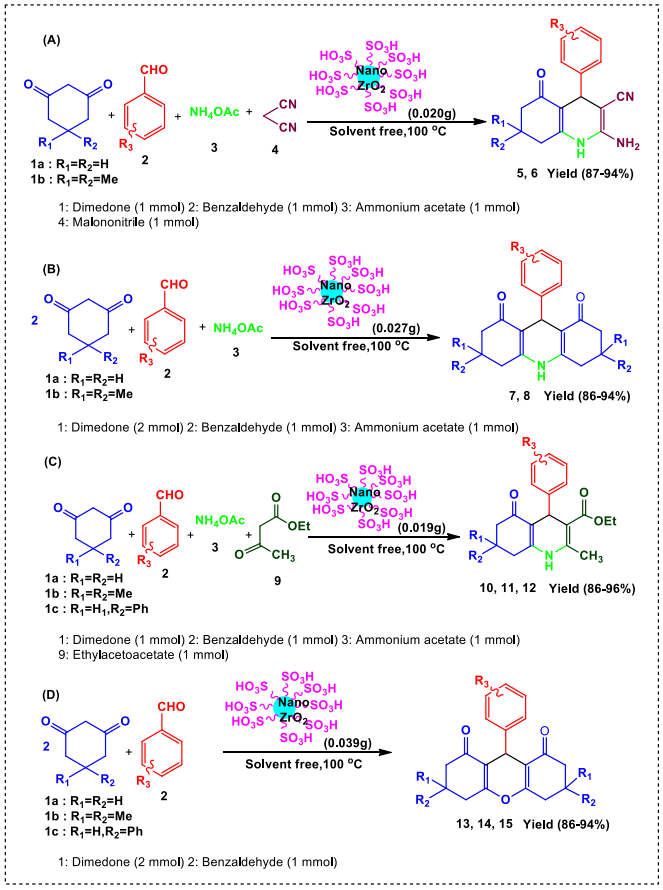


Fig (6). The proposed mechanism of the Kabachnik-Fields reaction in the presence of a Fe_3O_4@ZrO_2/SO_4^{2-} catalyst.

In 2016, Amoozadeh *et al.* [126] synthesized the heterogeneous acidic ZrO_2-SO_3H nanocatalyst (35-40 nm) for organic synthesis. The catalyst efficiently provided high yields of hexahydroquinoline, 1,8-dioxo-octahydroacridine, polyhydroquinoline, and 1,8-dioxo-octahydroxanthene derivatives (Scheme **36**). The reactions were carried out under solvent-free conditions at 100°C using the one-pot multicomponent protocol. The catalyst (ZrO_2-SO_3H) was recovered and reused for 5 successive reactions and showed only a slight decrease in the yield from 94% to 90% in a typical reaction.



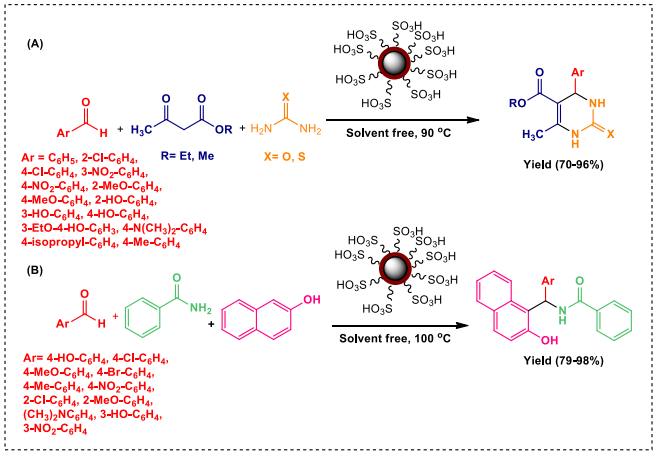
Scheme 36. Synthesis of (**A**) hexahydroquinolines, (**B**) 1,8-dioxo-decahydroacridines, (**C**) polyhydroquinolines, and (**D**) 1,8-dioxo-octahydroxanthenes using nano-ZrO_2-SO_3H catalyst.

More recently, the magnetically separablecore–shell Fe_3O_4@ZrO_2-SO_3H nanoparticle catalyst (n-FZSA) was introduced by Hosseini and Kolvari [127] as a novel heterogeneous solid acid catalyst. The catalytic activity of the prepared n-FZSA was evaluated in a one-pot multicomponent reaction for the synthesis of 3,4-dihydopyrimidin-2(1*H*)-ones (Scheme **37**). The reaction was carried out at 90°C under solvent-free conditions. The n-FZSA catalyst exhibited a high catalytic activity with a negligible decrease of the yield (from 96% to 95%) up to the 3rd successive reaction using the recovered catalyst and a higher decrease (from 96% to 86%) upon reusing the catalyst for 6 successive cycles.

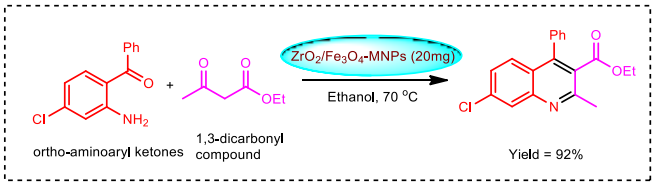
Hejazi *et al.* [128] employed ZrO_2/$Fe3O_4$-MNPs as a reusable heterogeneous catalyst to establish a convenient, suitable, and environmentally acceptable technique for synthesizing quinoline derivatives *via* a Friedländer reaction (Scheme **38**). Green reactions, simple and straightforward setup, excellent product yields, and short reaction times are all advantages of this technique. Furthermore, the catalyst could be retrieved and reused three times without losing its catalytic activity utilizing an external magnetic field.

5. SYNTHESIS USING NiO-ZrO2 NANOCATALYST

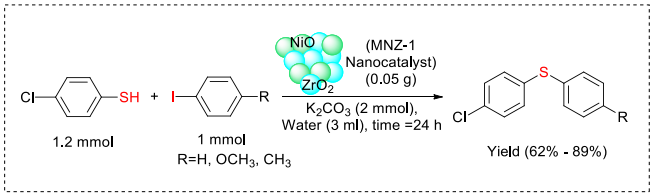
Pal and Bhaumik [129] reported the synthesis of mesoscopic self-assembled NiO–ZrO_2 nano-catalyst (MNZ-1) using a non-ionic surfactant *via* evaporation self-assembly and calcination at 773 K for 5-6 h. The MNZ-1 exhibited good catalytic activity for the C-S cross-coupling and synthesis of diaryl sulfides with moderately high yields from reactions of different iodoaryl compounds with 4-chlorothiophenol in an eco-friendly water medium (Scheme **39**). The product yield was improved significantly from 39% at room temperature to (62-89%) at 353 K. The authors reported significantly lower yields of products when the reactions were catalyzed by pure NiO or a physical mixture of pure NiO and ZrO_2, and concluded that the surface area and mesoporosity of the self-assembled MNZ-1 nanocatalyst is an important factor in obtaining the higher yields.



Scheme 37. n-FZSA-catalyzed one-pot synthesis of (**A**) 3,4-dihydropyrimidinones, and (**B**) 1-amidoalkyl-2-naphthols.



Scheme 38. ZrO_2/Fe_3O_4-MNPs catalyzed synthesis of ethyl 2-methyl-4-phenylquinoline-3-carboxylate.



Scheme 39. C-S cross-coupling reaction using NiO–ZrO_2 nanocrystals.

The authors suggested the plausible reaction mechanism illustrated in Fig. (**7**) for the C–S coupling. First, the 4-chlorothiophenol forms a red colour complex with the Ni atom of the catalyst (intermediate (I)); this was confirmed by the FT-IR spectrum of the thio-Ni complex which revealed the disappearance of the characteristic S-H stretching bond of the 4-chlorothiophenol near 2550–2600 cm^{-1}. The authors' suggestion that the thiol complexation is with the Ni rather than with the Zr ions was supported by the low activity of pure ZrO_2 in this reaction. Then K_2CO_3 (B) promotes the reaction of intermediate(I) with iodobenzene leading to the formation of a six-membered ring (II) *via* the oxidative addition of the iodo compound to intermediate (I). The electron-donating substituent facilitates the coordination of the metal to the π-bond of the aromatic ring providing higher conversion. Finally, intermediate (II) on reductive elimination *via* intermediate (III) gives the desired product.

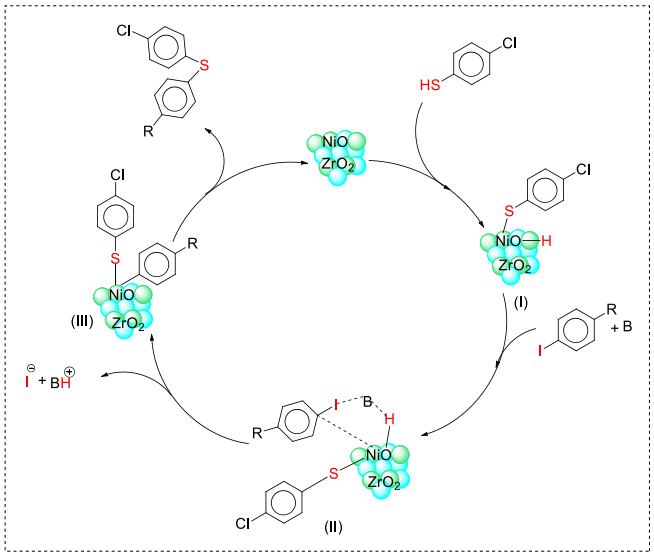
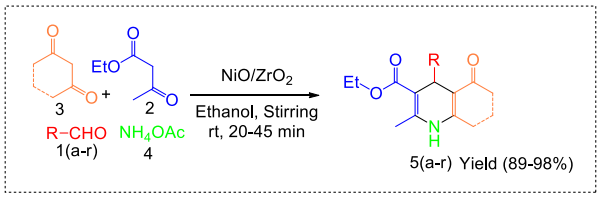


Fig. (7). Mechanism for the C–S coupling reaction.

Bhaskaruni *et al.* [130] used nickel oxide loaded on zirconia (NiO/ZrO_2) as an efficient catalyst to synthesize 18 unsymmetrical 1,4-dihydropyridine derivatives (Scheme **40**). With outstanding yields of 89-98% and a completion time of 20-45 minutes, the Lewis acidic character of the catalyst proved to be a good choice for the one-pot, four-component fusion reaction. According to mechanistic studies, enamine and imine functionality are two probable mechanisms for the production of 1,4-dihydropyridines with good selectivity. Two new compounds (**5a, 5c**) have their crystal structures described.

Up to six cycles of reusability were demonstrated with the catalyst. After each run, the catalyst was extracted from the reaction mixture, washed with ethanol, and dried at 120°C for 2 hours. This procedure is green and cost-effective due to the room-temperature reaction and use of ethanol as a solvent.

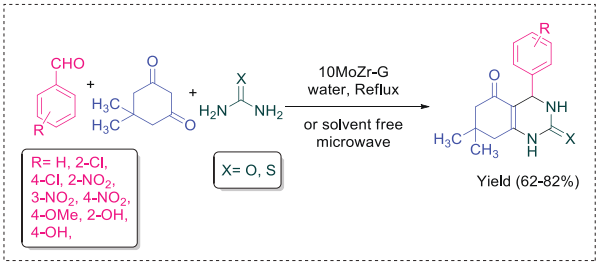


Scheme 40. synthesis of novel unsymmetrical 1,4-dihydropyridine derivatives.

6. SYNTHESIS USING OTHER METAL OXIDES/ZrO_2 NANOCOMPOSITES AND ZrO_2-SO_3H NANOCATALYST

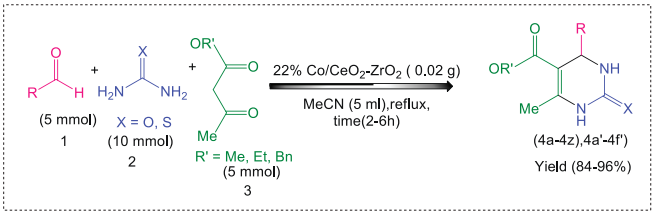
Samantaray and Mishra [131] prepared pure ZrO_2 and MoO_3-ZrO_2 nanocomposite (10MoZr-G) from MoO_3 (10 mol.%) and ZrO_2 oxides by solution combustion method using different glycine fuel contents. The 10MoZr-G nanocomposite was used to catalyze the synthesis of octahydroquinazolinones by multicomponent condensation of dimedone, urea and arylaldehydes in aqueous media under solvent-free conditions using microwave irradiation (Scheme **41**). The 10MoZr-G catalyst was reported to be more active than other composites prepared by using other fuel types such as urea and hexamethylene, giving a relatively high yield in a short time (180

s). The catalyst was recovered, washed with ethanol, and heat treated at 400°C for 1 h, and its catalytic activity was evaluated. The regenerated catalyst was reported to produce the target product without a significant decrease in the yield in three successive cycles.



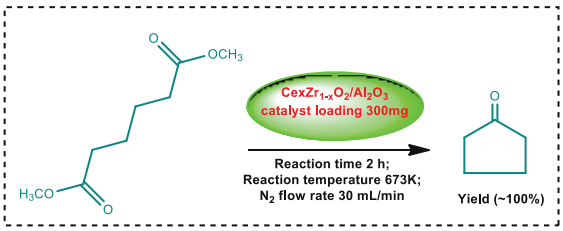
Scheme 41. One pot synthesis of octahydroquinazolinones using 10MoZr-G catalyst.

Biklarian *et al.* [132] created four unprecedented DHPMs 22% Co/CeO_2-ZrO_2 catalysed as a unique catalyst in refluxing acetonitrile using a simple modification of Biginelli's dihydropyrimidinone and thiones synthesis (Scheme **42**). This approach is complementary to existing methods because of its high product yields, gentle reaction conditions, and straightforward procedure. After calcination at 800-850°C, XRD patterns of nano spherical catalysts $Ce_{0.75}Zr_{0.25}O_2$ cubic structure with 32 nm crystallite size implies a 22% Co content. Furthermore, the catalyst may be easily recovered and reused (up to four times) without a significant decrease in activity, which is advantageous from a green chemical standpoint. The catalyst was filtered and rinsed with diethyl ether at the end of the process. A second or even third reaction could be performed on the recycled catalyst.



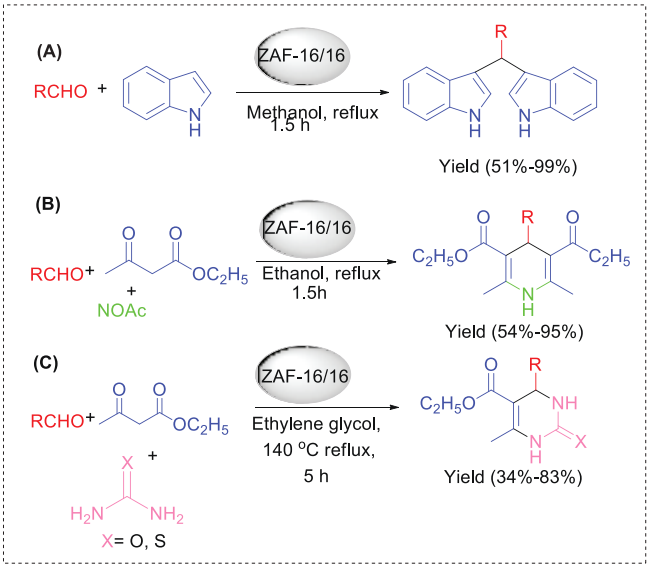
Scheme 42. Synthesis of 1,2,3,4-tetrahydro-2-pyrimidinones and thiones by using 22% Co/CeO_2-ZrO_2 nanocatalyst.

Sudarsanam *et al.* [133] create an innovative and simple method for synthesising cyclopentanone, a useful industrial component (Scheme **43**). As a result, $Ce_xZr_{1-x}O_2$ and $Ce_xZr_{1-x}O_2/M$ (M = SiO_2 and Al_2O_3) ceria–zirconia-based nano-oxide catalysts were developed and tested for the title reaction. C, CZ, CZ/A, and CZ/S samples had average crystallite sizes of 8.9, 4.7, 3.7, and 3.4 nm, respectively. The catalytic results showed that nano-oxides based on $Ce_xZr_{1-x}O_2$ are promising heterogeneous catalysts for cyclopentanone production. Because of its advantageous physicochemical features, the $Ce_xZr_{1-x}O_2/Al_2O_3$ catalyst achieved 100% conversion with 75% targeted cyclopentanone product selectivity.



Scheme 43. Synthesis of cyclopentanone from dimethyl adipate by using nanostructured ceria–zirconia solid solution catalysts.

Wang *et al.* [134] reported the synthesis of a number of ZrO_2–Al_2O_3–Fe_3O_4 (ZAF) nanocomposites with different zirconia and alumina molar ratios relative to magnetite (the molar ratio of which is taken as 1). The catalysts were structurally and chemically characterized in details using different techniques, and the esterification of acetic acid and n-butyl alcohol for the synthesis of n-butyl acetate as a model reaction examined their catalytic activity. The maximum conversion of 90% was obtained by using the catalyst ZAF-16/16 (ZrO_2:Al_2O_3:Fe_3O_4 molar ratios of 16:16:1). Subsequently, the optimal catalyst ZAF-16/16 was used for the synthesis of bis-indolylmethanes and other organic reactions shown in (Scheme **44**). The results of the study highlighted the importance of the proposed methodology for the synthesis of a variety of biologically active pharmacological heterocyclic compounds. The reactions gave moderate to good yields of the target compounds. On the other hand, the magnetic nanoparticles in the catalyst facilitate a simple magnetic recovery of the catalyst for subsequent reactions, which proceeded without obvious loss of the catalytic activity.



Scheme 44. ZAF-catalyzed reactions for (**A**) the synthesis of bis-indolylmethanes, (**B**) Hantzsch reaction, and (**C**) Biginelli reaction.

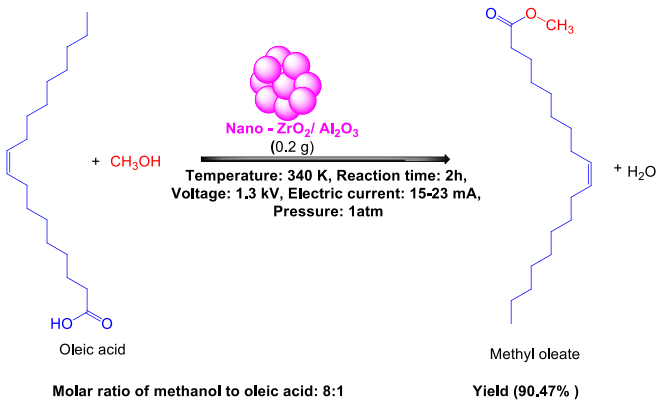
Mahdavi *et al.* [135] present the synthesis and catalytic activity of a ZrO_2/Al_2O_3 nano-catalyst that transforms oleic acid and methanol into fatty acid esters under high voltage circumstances in a low temperature and atmospheric pressure process (Scheme **45**). This protocol's key benefits are the use of a low-cost and reusable catalyst, high yields in a short period of time, and environmental friendliness.

In four runs, the reusability and recycling of nano-catalyst were also examined. The findings revealed that the nano-catalyst can be reused multiple times (up to 4 runs) without losing catalytic activity. The nano-catalyst was separated, washed, and dried at 80°C for the next reaction after each reaction.

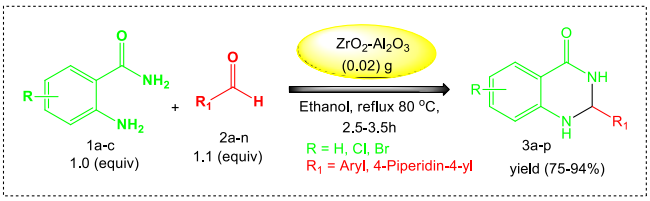
Narasimhamurthy *et al.* [136] describe the production of a nano acid catalyst ZrO_2-Al_2O_3 using urea as a fuel and the evaluation of its catalytic efficacy in the synthesis of a variety of novel substituted dihydroquinazolinones (Scheme **46**).

Under mild circumstances, the catalyst was shown to be a highly effective solid acid catalyst, with substantial catalytic activity in converting substituted 2-aminobenzamides to analogous 2, 3-dihydroquinazolin-4-(1H) –ones. The improved synthesis process is simple, quick, and efficient, and it has the potential to become one

of the most effective methods for obtaining pharmaceutically valuable dihydroquinazolines. Solid acid catalytic material was filtered from the reaction mixture, washed with ethanol, dried for 1 hour at 120°C, and calcined for 0.5 hours at 550°C. A reactivated solid acid catalyst was employed in the next reaction cycle to synthesize 2, 3-dihydroquinazolin-4(1H)-ones under comparable reaction conditions. The utilized solid acid catalyst was reactivated and reusability was tested four to five times.

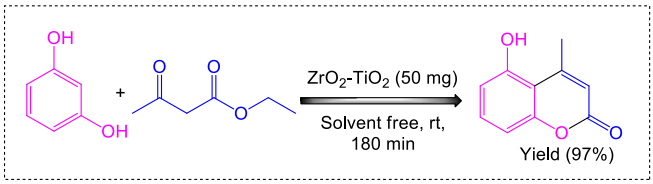


Scheme 45. Synthesis of fatty acid esters by using oleic acid and methanol by using Nano catalyst ZrO_2/Al_2O_3 under high voltage conditions.



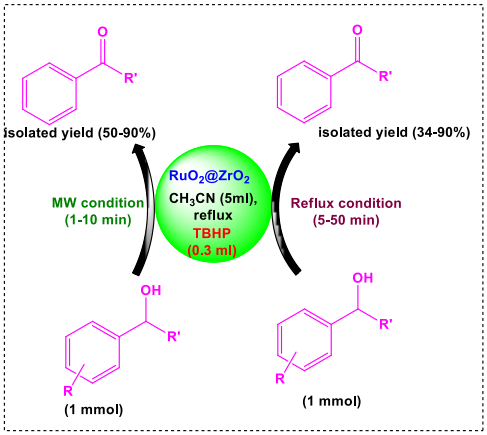
Scheme 46. Synthesis of 2,3-dihydroquinazolin-4 (1H) using ZrO_2-Al_2O_3 nano catalyst.

Khan *et al.* [137] describe the synthesis of coumarin in a solvent-free environment at room temperature utilising zirconia-based heterogeneous catalysts (ZrO_2-Al_2O_3, ZrO_2-ZnO, and ZrO_2/cellulose) (Scheme **47**). In comparison to ZrO_2-ZnO, ZrO_2-TiO_2 showed the best catalytic performance for this process. The rate of reaction in a solvent-free environment is 1.7 103 g mol1 min1 at ambient temperature. At 60°C, however, the rate of reaction in ethanol is 1.7 102, and in toluene is 5.6 103 g mol^{-1} min^{-1}. FESEM was used to analyse the morphology of ZrO_2-TiO_2, ZrO_2-ZnO, and ZrO_2/cellulose. The ZrO_2-TiO_2 was grown as particles, while the ZrO_2-ZnO was produced in the shape of a flower. ZrO_2-ZnO was mostly formed as nanoparticles with an average size of 25–30 nm clumped together to form a flower-shaped structure. ZrO_2 was developed as particles on the surface of cellulose in the case of ZrO_2/cellulose.



Scheme 47. Zirconia-based catalyst for the one-pot synthesis of coumarin through Pechmann reaction.

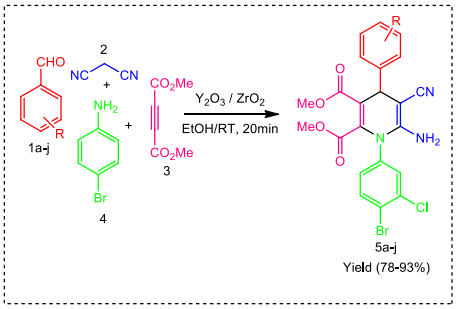
Shojaei *et al.* [138] used synthesized nanostructured RuO_2@ZrO_2 as a heterogeneous catalyst and microwave irradiation in acetonitrile to establish a simple and highly efficient process for the oxidation of benzylic alcohols to the corresponding aldehydes or ketones (Scheme **48**). Under mild circumstances, the catalyst has excellent activity and high conversion. After the reaction was completed, the catalyst was centrifuged and cleaned with deionized water and chloroform before being dried and reused in consecutive cycles. RuO_2@ZrO_2 4 wt% can be reused three times without considerable activity loss, according to the conversion results.



Scheme 48. Oxidation of Benzyl alcohol by using RuO_2@ZrO_2 core–shell nano particles under different conditions.

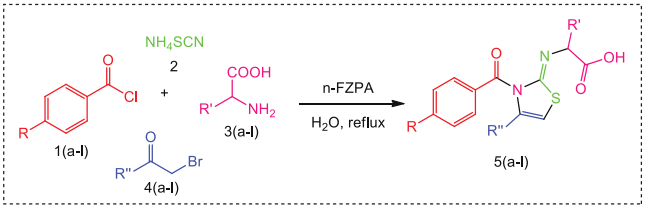
Shabalala *et al.* [139] present a very efficient approach for synthesizing 1,4-dihydropyridine compounds utilizing a 2.5% Y_2O_3/ZrO_2 heterogeneous catalyst in their study. In the green solvent ethanol, substituted aldehyde, malononitrile, 4-bromoaniline, and dimethylacetylenedicarboxylate are combined in a one-pot four-component synthesis (Scheme **49**). Easy set-up, green solvent, low reaction durations (less 20 minutes), energy efficient reaction conditions, no chromatographic separation procedures, and outstanding yields are all advantages of this unique methodology (88-95%).

The reaction mixture was simply filtered under vacuum, washed with ethyl acetate, and dried in a vacuum oven at 110°C for 3 hours after the reaction was completed. In the subsequent reactions, the flexibility of the recovered catalyst for reuse was examined, and no yttria leaching was observed. It can be reused for at least six runs in consecutive reactions without losing substantial yield.



Scheme 49. Synthesis of novel 1,4-dihydropyridine derivatives.

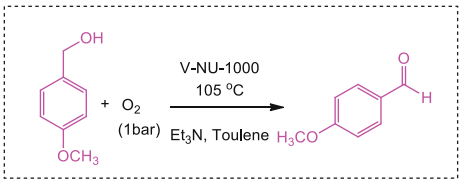
Nakhaei A. [140] developed a new method for synthesising thiazole compounds from acyl chloride, ammonium thiocyanate, amino acids, and alkyl bromides catalysed by nano-Fe_3O_4@ZrO_2-H_3PO_4 (n-FZPA) in high yields in a fast reaction time using conventional or magnetised water and a simple work-up procedure (Scheme **50**). Overall, the magnetised water performed better as a reaction solvent. The catalyst can be easily recycled by magnetic separation, and it can be reused up to four times without losing any catalytic activity. The catalyst is low-cost and easy to obtain, as well as stable and storable.



Scheme 50. Synthesis of thiazole derivatives in the presence of *n*-FZPA.

NU-1000 is a porous Zr-based metal-organic framework (Zr-MOF) that is an effacious catalyst support due to its distinct crystal structure, protonic grafting sites on its nodes, and thermal stability, which together help with catalytic reactive site studies. Cui *et al.* [141] created V-NU-1000, a vanadium oxide catalyst based on NU-1000 synthesised by solvothermal deposition in MOFs (SIM). The catalytic activity of V-NU-1000 is investigated using 4-methoxybenzyl alcohol oxidation in an O_2 atmosphere, and it is discovered that it has higher conversion and selectivity than vanadium oxide supported on high surface area zirconia (V-ZrO2) (Scheme **51**).

Recyclability and leaching studies show that the recollected V-NU-1000 retains equal catalytic ability to the fresh catalyst with no loss of metal loading. With a turn-over frequency (TOF) of 2.6 h-1 measured at a conversion level of 3.2 percent, V-NU-1000 exhibited a conversion of about 56 percent after 8 hours. As shown by GC-MS, this catalyst is highly selective (>99 percent) for the synthesis of 4-methoxy benzaldehyde without generating the over-oxidized product 4-methoxy benzoic acid.

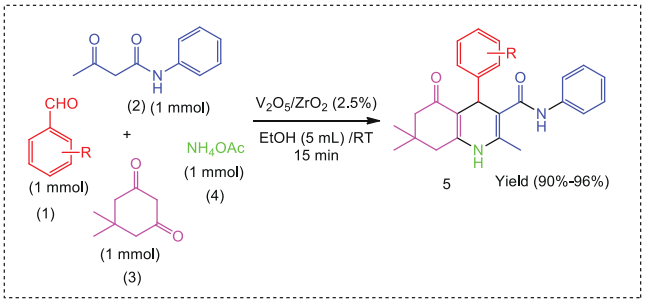


Scheme 51. Synthesis of 4-methoxybenzaldehyde by oxidation 4-methoxybenzylalcohol using V-NU-1000 as nanocatalyst.

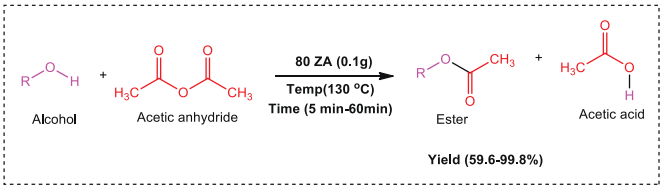
By cyclo-condensation of aromatic aldehydes, 5,5-dimethyl-1,3-cyclohexanedione, acetoacetanilide, and ammonium acetate, Bhaskaruni *et al.* [142] establish a viable technique for the one-pot, multicomponent synthesis of 1,4-dihydropyridine derivatives employing aromatic aldehydes, 5,5-dimethyl-1,3-cyclo Using ethanol as a solvent and V_2O_5/ZrO_2 as a heterogeneous catalyst, ten novel 1,4-dihydropyridines were synthesised at room temperature (reaction time: 20 min) (Scheme **52**). XRD, TEM, SEM, and BET were used to characterise the catalyst materials. Simple set-up, green solvent, short reaction times, mild reaction conditions, and good yields (90-96%) are the advantages of this unique approach. Without the use of chromatography, the reaction product can be easily isolated in pure form.

Heterogeneous catalysts have the advantage of being easily recyclable, making them a great choice, especially in terms of cost and environmental benefits. As a result, examination of the stability of catalyst recycling has been conducted. The catalyst was vacuum-separated from the reaction mixture after each run, washed with ethanol solvent, and dried for 4 hours at 120-130°C. The recycled catalyst showed no significant loss of catalytic activity even after five cycles, showing that there is no leaching or loss of vanadia throughout the process and that it is intact in the zirconia lattice.

Thimmaraju *et al.* [143] used the solution combustion method (SCM) to prepare solid acids such as Al_2O_3, ZrO_2, and ZrO_2–Al_2O_3 containing different ZrO_2 loadings (10–100 mol percent) and characterised them for total surface acidity and crystallinity using the NH_3-TPD/n-butylamine back titration method and powder X-ray diffraction (PXRD) technique respectively. With acetic anhydride (AA) as an acetylating agent, these solid acids were tested for their catalytic activity in the synthesis of new O-acetylated compounds from substituted phenols, pyridine alcohols, and aryl alcohols (Scheme **53**). The catalyst, molar ratio of the reactants, reaction temperature, and catalyst amount were all changed to improve the reaction conditions. In this investigation, all of the solid acids utilized had good catalytic activity in the process. ZrO_2–Al_2O_3 with 80 mol% ZrO_2 was shown to be very active in the acetylation reaction, yielding a high yield of acetylated products. Surface acidity, crystallinity, and catalytic activity of solid acids were found to have a triangular relationship. It was discovered that these solid acids may be reactivated and reused.



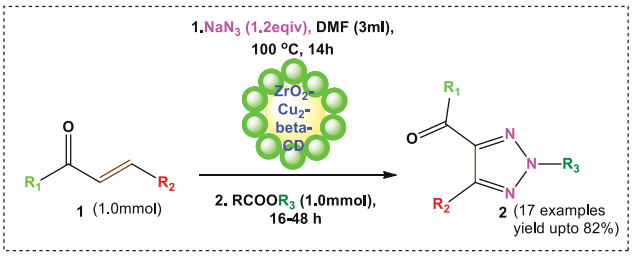
Scheme 52. Synthesis of 1,4-dihydropyridine moieties *via* V_2O_5/ZrO_2 as a heterogeneous catalyst.



Scheme 53. O-acetylation of different hydroxyl compounds with AA over ZrO_2–Al_2O_3 solid acid.

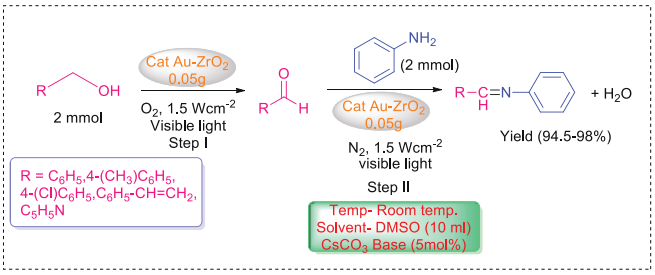
7. SYNTHESIS USING ZrO_2-SUPPORTED Cu(II)–β-CYCLODEXTRIN AND AU/ZrO_2 AS A CATALYST

Girish *et al.* [144] prepared ZrO_2 nanoparticle-supported Cu (II)-β-cyclodextrin complex to catalyze the synthesis of N-2-substituted-1,2,3-triazoles *via* azide-chalcone oxidative cycloaddition and post-triazole alkylation using a one-pot multi-component stepwise approach (Scheme **54**). The authors have introduced the N-2 alkylation of triazoles using different aryl-alkyl esters without any additives as a novel approach. The reported simple and atom-economical synthetic route exhibited regioselectivity and good yields (~81%). The recovered catalyst maintained its high catalytic activity for four consecutive reactions. The small decrease in the catalytic activity (81% to 77%) could be partially attributed to a small loss of the catalyst during the recovery process.



Scheme 54. N-2-substituted-1,2,3-triazole in the presence of ZrO_2-Cu_2-β-CD.

Motivated by the potential of Au/ZrO_2 NPs as an efficient photocatalyst for organic synthesis due to their limited to a small area surface Plasmon resonance (LSPR) effect, Zheng *et al.* [145] prepared Au/ZrO_2 nano-powders (average particle size of 5 nm) by a solution method for employment as a heterogeneous catalyst used in organic transformations. In this study reveals that the photosynthesis of imines from alcohols & aniline raised by aerobic oxidation of the alcohols by the nucleophilic addition of aniline (Scheme **55**). The reaction was carried out by using dimethyl sulphoxide (DMSO) as a solvent. The imines in reactions performed with 3 wt% Au/ZrO_2 and irradiation by visible light at room temperature were high (over 90%) compared to reactions performed without irradiation. The reaction outcome depended strongly on the intensity and wavelength of the light, and the catalyst was recovered and reused for at least five successive reactions. The results of the study indicated that the reaction of alcohols with aniline in the presence of Au/ZrO_2 as the photocatalyst can proceed under environmentally friendly conditions.



Scheme 55. Synthesis of Imine from alcohols and aniline by using Au/ZrO_2 as a photocatalyst.

The alcohol was initially oxidised to an aldehyde in the presence of Au/ZrO_2 under an O_2 environment and exposure to visible light, according to the authors' probable reaction mechanism (Fig. **8**). Alcohol is oxidised by the Au-NPs by the process of electron capture because of the strong electro negativity of gold. By promoting interband electronic transitions in Au NPs through the LSPR effect, visible light can catalyse the oxidation of organic molecules while also releasing energy.

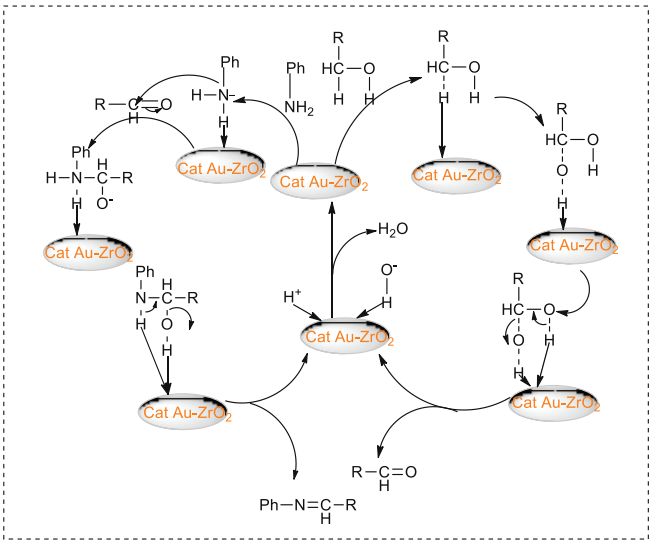


Fig. (8). Possible mechanism for the synthesis of imines from aniline and alcohols over Au/ZrO_2.

An oxygen atom can be inserted between the carbon-hydrogen bonds as a result of the Au nanoparticle pulling on the hydrogen atom bound to the carbon. As a result, a water molecule is taken out, and aldehyde is created. An atom of hydrogen is drawn off of the amine by the catalyst, which is a nucleophilic reagent with a single pair of electrons. The amine then attacks the carbonyl group, resulting in a nucleophilic addition process (the CQ-O bond was broken, and the hemiacetal amine intermediates were obtained). The imine was eventually created after removing a water molecule from the intermediates.

CONCLUSION

This article discusses current advancements in the synthesis of organic materials using zirconium compounds as green catalysts. The importance and benefits of zirconium compounds as catalysts or reagents in organic reactions were amply illustrated by the examples in this review appreciation of their high reactivity, distinctive selectivity and methods of recyclability. Even though these results are encouraging, much more work must yet be done in this field to investigate the potential uses of zirconium compounds fully.

LIST OF ABBREVIATIONS

ZrO_2	=	Zirconium Dioxide
SZ	=	Sulfated Zirconia
SZM	=	Sulfated Zirconia Over MCM-41
HMDS	=	Hexamethyldisilazane

CONSENT FOR PUBLICATION

Not applicable.

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CONFLICT OF INTEREST

Dr. Subhash Banerjee is the Executive Guest Editor of the journal COC.

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CONTEMPORARY ISSUES OF INDIAN AGRICULTURE SECTOR

❍ **Dr. Vinod Madhao Barde***

Abstract:

Agriculture is the Foundation of the Indian economy. There was a great importance to agriculture in 18th century. Even today also farming occupation is an important because 52% population of India are in agriculture sector as a profession. Out of total national income in India, ¼ income is from agriculture and allied sector. Agriculture was traditional and non-developed with low labour source and productivity. Farmers used to adopt old traditional method for cultivation of land. Use of chemical fertilizers was so limited. Agriculture was only cultivated for survival but not for income. During green revolution productivity has been raised in India. Due to new technology involvement in agriculture water and irrigation is most essential, which affects the uncertainty reflects concerning to the agriculture productivity. Its truth that in future also agriculture sector will play an important role in India. Currently many farmers migrated to urban areas for the searching job in industrial sector. Several farmers committed suicide the reason of crop production failure, increasing loan, water unviability. Farmers faced Emerging challenges like Rain-water uncertainty, climate changes, overburden of population, demand and supply of product, economic problem, lack of marketing knowledge, insufficient finance etc.In this research paper discuss the importance of emerging issues of Indian agriculture sector, and which scheme implemented for the farmers.

Keywords: Agriculture, farmers, challenges, scheme, income.

Introduction :

India is apredominantly agricultural nation. Agriculture is important to the Indian economy. Agriculture is a tool of economic production and medium of cultural development. Agriculture is a backbone of Indian economy. There was a great importance to agriculture in 18th century. Even today also farming occupation is an important because 52% people

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of India are in agriculture sector as a profession. Out of total national income in India, ¼ income is from agriculture. Its truth that in future also agriculture will play an important role in India.

During Indian independence, agriculture was traditional and non-developed with low labour source and productivity. Farmers used to adopt old traditional method for cultivation of land. Use of chemical fertilizers was so limited. Agriculture was only cultivated for survival but not for income. Commercialization of farming had been not propagated with limited utilization of money. Indian agriculture was totally dependent on nature. Around 54.21% agriculture was dependent on monsoon in the year 2015-16. Even today also nature plays an important role in farming sector.

Due to hybridization of seeds (except wheat) the dependency on nature has been increased drastically. During green revolution productivity has been raised in India. Due to new technology involvement in agriculture water and irrigation is most essential, which affects the uncertainty reflects concerning to the agriculture productivity. Agriculture development is high and steady in irrigation facility prone area. There is total uncertainty to non-irrigated and monsoon dependent agriculture land.

Objectives of the Study :

1. To understandthe Significance of the Agriculture sector.
2. To Research the issues facing the Agriculture sector.
3. To study the scheme for the farmers.

Research Methodology

The current study is based on secondary data that is primarilydescriptive. The information gathered from the ministry of Agriculture & Farmers Welfare's, Annual Report, the Reserve Bank of India Bulletin, the Indian Economic Association, Report, the NABARD Reports,articles, books, journals, websites and government publications.

Importance of Agriculture in Indian Economy :

An important part of the Indian economy is Agriculture. In 2021-22, 45.6% of the total work force in India will be employed in activities related to agriculture and associated sector, According to the government of India's "Annual Report of the Department of Agriculture & Farmers Welfare Ministry of Agriculture & Farmers Welfare",at current prices, agriculture's contribution tonational income (Gross Value Added) that year was 18.8%. In India, agriculture is expected to contribute 14.2% of exports and 18.8% of GDP in the years 2020-21. According the the government's 2018-19 report, out of the total geographical area, 139.3 million hectares were recorded as net deeded and 197.3 million hectares as gross cropped, with a cropping intensity of 141.6%. The net area sown is 42.4% of the total area.

Scheme for the farmers :

PM KISAN Program : It is program of the federal government to help land holding farmers with their financial needs. With this program, land holding farmers receive a direct benefit transfer of Rs. 6000 per year in financial benefit. In Accordance with the economic surveyfor 2022-23, the program covered approximately 11.3 crore farmers. This program

has aided farmers in making profitable investment in agriculture endeavors. In 2023 (Varsney& Joshi).

PMFBY : Pradhan MantriFasalBimaYojana, is the world's largest crop insurance programme. Every year, over 5.5 crore farmers engage in this programme. The programme guarantees that farmers will have less financial risk because they only have to pay 1.5% of the entire premium during the Rabi season and 2% during the Kharif season. Farmers paid a premium of Rs. 25,186 crore during the last six years of its implementation and received claims of rupees 1.2 lakh crore (as of 31 October 2022).

KISAN Credit (KCC) : In order to encourage farmers to buy agricultural inputs and services such as seeds, fertiliser, pesticides, etc. on credit, the Kisan credit card programme was created in 1998. According to the Indian Economic Survey, banks provided Kisan Credit Cards (KCC) to 3.89 crore eligible farmers as of December 30, 2022, with a KCC limit of $4,51,672 billion (Varsney & Joshi, 2023).

Mission for Integrated Development of Horticulture (MIDH) : The objectives of the Mission for integrated development of horticulture is to promote increasing the horticulture production area and farmers income. In This programme, which includes fruits, vegetables, plantation crops, spices, flowers, and root and tuber crops, was introduced in 2014-15. Economic survey statistics show that on a surface area of 28.0 million hectares, a record production of 342.3 million tonnes was attained. Twelve of the fifty-five horticultural clusters designated by the Indian central government have been chosen for the Cluster Development Program trial phase.

Challenges of Agriculture Sector : Since the green revaluation, there has been a significant change in the country's food situation. India experienced a severe food scarcity and widespread starvation, and millions of people's lives were saved by food imports. High Yielding Varieties of wheat and paddy were made available after the green devaluation, and irrigation was increased.Improved and High Yielding Varieties were also developed in many other crops. These changes effect on land quality, ecosystem, and environment. Therefore it is imperative to discuss challenges facing Indian agriculture.

Dependability of Rainfall : In the more than fifty percentage parts (over 56%) of the country, agriculture is mostly dependent on rainfall, specially the summer monsoon. Inappropriately, the behaviour of summer monsoon is highly unpredictable. Therefore, the variability of rainfall is high which affects the agricultural return unfavourably. Just 54.21 percent of the total planted area is irrigated, which gives farmers greater assurance about their agricultural revenues even when the monsoon fails, as it did in 2015-16, according to the Government of India Report.

Climate Changes : Currently the climate change is significant factor, those effecting on agriculture productivity. Increasing temperature along with increased occurrences of unsafe weather circumstances have made climate change a major hazard to Indian agriculture sector and productivity defeat.

Over burden of population :

Indian agriculture is characterised by a significant population burden. A total of 46% of the nation's population is either directly or indirectly reliant on agriculture.At present,

due to the CORONA pandemic heavy burden on agriculture. Per head availability of agriculture land has decreasing, but the rate of population increasing, hence dependability on agriculture of population is increased.

Economic Problems:Indian farmers are basically poor, it is not possible to buy agricultural machinery, use of new technology, improved seeds. Therefore, it is not possible to do new experiments in agriculture and to practice modern agriculture. Due to the high indebtedness of the farmers, after deducting the expenses from the income, the remaining amount does not meet even his primary needs, so the poor farmer is getting poorer.

Demand and Supply: If the farmers hark work is supported by nature, the farm yields huge income, at a time when supply is high, demand is low, and thus prices are low. Adequate godowns have not yet been created by the government in Indian to store the goods without selling them at falling prices when the cost of the increased production falls. In fact, it seems to be ignored at the government level. While promising to double the production of the country's farmers, there has been no substantial achievements in the last decade in terms of building basic facilities for it. As a result, due to the neglect of the storage of agriculture produce, crores of goods are seen to be worthless. In the five years from 2017 to 2022, more than 13 thousand tons of grain was wasted due to lack of necessary facilities in the government grain godown. This is evident from the figures of the Ministry of Food and Civil Supplies of the Central Government.

Traditional Method: A most of the Indian farmers are still farming with old traditional tools, are overall production is growing slowly. Lack of capital required to use modern technology and tools, lack of technical knowledge and lack of support from the administration level, while implementing the plans at the government level is causing Indian farmers to fail to use new technology. It affects the total production of the farmer and it is seen that the economic condition is getting weaker.

Lack of Marketing: Due to the large number of middlemen in the Indian market, the farmer does not sell the crop directly to the consumer. Whereas the middlemen buy the goods from the farmers and get the brokerage money. Bargaining power is low as farmers are unorganized and their organizational power is low. Due to the lack of market prices and related information, it is seen that Indian farmers are losing profit by selling their goods in market.

Conclusion :

The government's actions to increase crop and livestock productivity, guarantee certainty of return to farmers through price support, encourage crop diversification, improve market infrastructure by providing encouragement for the formation of farmer-producer societies, and promote investment in infrastructure facilities have all contributed to the sector's resilient performance over the past few years. Inadequate infrastructure, inadequate irrigation, and a lack of market expertise, particularly in rural regions, are the major issues that currently plague Indian agriculture.

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सत्राची फाउंडेशन, पटना

शोध, शिक्षा एवं प्रकाशन की समाजसेवी संस्था

यह संस्था -

- साहित्यिक सम्मान देती है।
- शोध पत्रिकाएँ प्रकाशित करती है।
- पुस्तकें प्रकाशित करती है।
- सेमिनार आयोजित करती है।
- राजभाषा/राष्ट्रभाषा सेवियों को प्रोत्साहित करती है।
- शोधकर्ताओं को स्तरीय शोध के लिए प्रोत्साहित करती है।
- नेट/जे.आर.एफ. के अभ्यर्थियों को निःशुल्क मार्गदर्शन देती है।
- हिन्दी साहित्य के शिक्षार्थियों को प्रतियोगी परीक्षाओं के लिए तैयार करती है।

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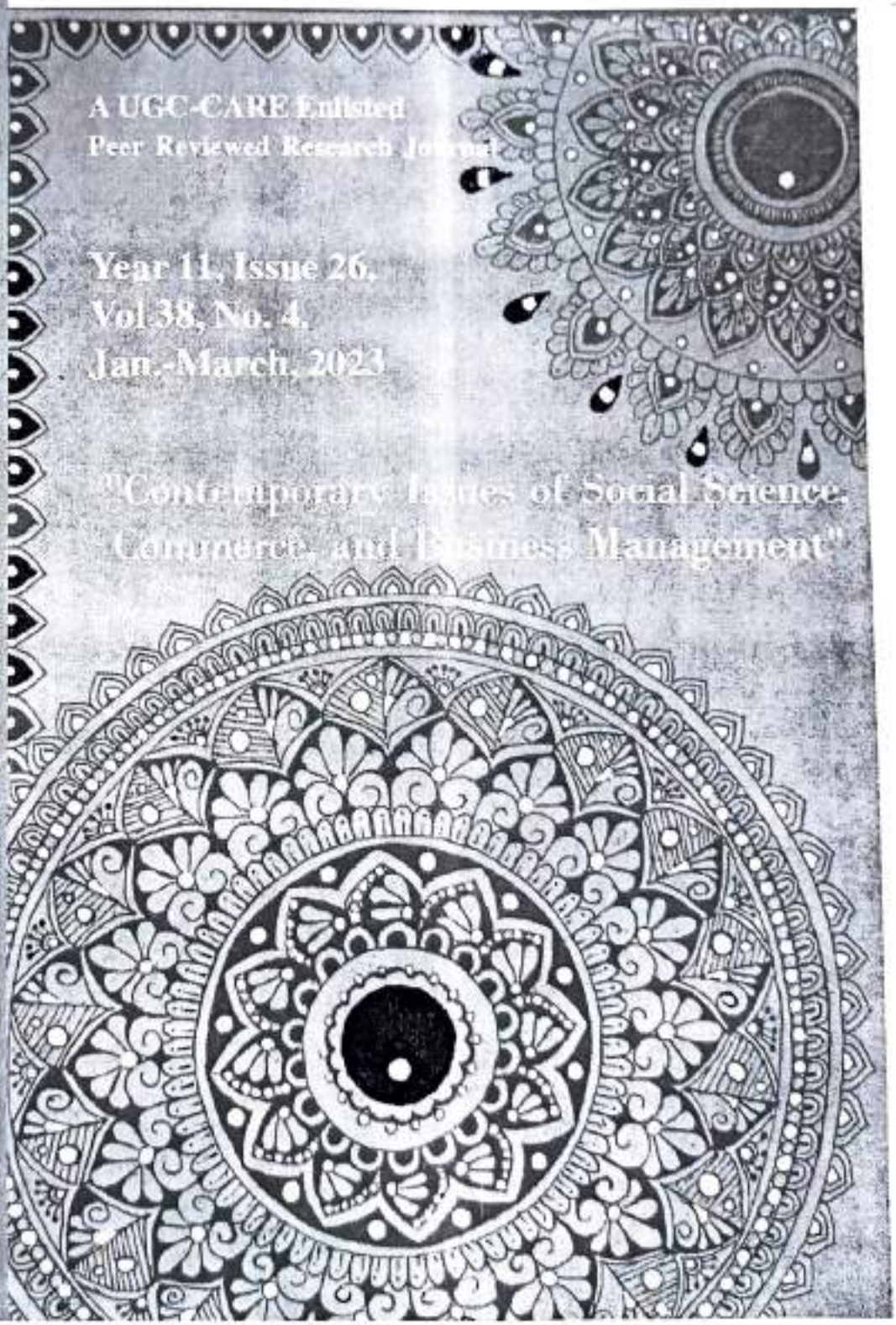

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"Contemporary Issues of Social Science, Commerce and Business Management"

Population Charactstics and it's Impact on Socio-Economic Development of Gadchiroli District : A Geographical Analysis

- Prof. (Dr.) Ganesh L. Dhote *
- Prof. (Dr.) Kishor Y. Thakare **

Abstract

Gadchiroli is the large district in the maharashtra state having 4.69% of the area of the state. Gadchiroli district is located in the some what eastern part of maharashtra. The west side in district wainganga river basin.its impact over the distribution of population as well as density of the population of the Gadchiroli district and East side of district cover on forest .therfour population on the region is low .Gadchiroli districts holds 1.87% of population to the state over 4.69% of its area among the 12 tehsil. Chamorchi teshil is the most population while korchi is the least population. Population live in rural area of 88.00% .The populationof sc and st in district shows trend the study 2011. The % of S.C. population 11.25%. while S.T. population 38.70%.In this census 2011 the percent of Scheduled cast population was 11.25% and Scheduled tribles population was 38.70%. Out of Scheduled cast population of the districts 41.76% lived in rural areas and 14.44% lived in urban area.Qualitative population accelerates the socio-economic condition of the reason. Topographical accessibility helps to the people for better development while inaccessibility stands as a obstacle.

Key Word: population distribution, Growth, Density, Economic structure, Socio-Econimic Development.

Introduction

The proposed study aims to highlight the major characteristics of population and the impact of its on socio-economic development with special reference to the geographical region of the Gadchiroli districts.The study of population never be viewed in isolation.Population and other physical environmental and geographical etc. factors are

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interrelated. population its self is an important aspect. Characteristics of population involves distribution of population, growth of population, standard of living, density and economic structure.

These Characteristics are useful to understand population personality of the region.The study is related to the distribution of population.

Physical factor involves the topographical features such as mountain, plateaus and plains. The distribution of population is concerned, mountains play favorable as well as unfavorable roles. Normaley pleteaus are suitable for human settlement while plain aceclerates the population growth. The Gadchiroli districts on which the study includes mountain ous and forest areas of east region.

Objectives of the study

The majour objectives of the present study is to make a comprehensive and impact of socio- economic development of Gadchiroli district.

Hypothesis

Population characteristics has impact on social and economic aspects of the region.

Data Base & Methodology

The data collected and used for the period various census book ,districts statical abstract,socio-economical review of Gadchiroli district etc.

Study Area

Gadchiroli is the large district in the maharashtra state having 4.69% of the area of the state .Gadchiroli district is located in the some what eastern part of maharashtra lying between 18°46' north to 20°50' north latitudes and 79°46' east to 80°55'east longitude. Geographical area of the district is 15433.10 sq.km. Which is 4.69 ? of the total area of the maharashtra. The population as per 2011 census is 10,72,942 out of which 9,54,909 is rural and 1,18033 is urban population. The area of the district is distributed among 12 sub divisions [Tahsil] .For the administrative purpose.

Physiography is one of the dominant paeameter of physical environmental, The district includes the gondwana land its three division,easted of shoots as Tipagadh & surjagadh range ,the middle land is slope and western part of wainganga river basin. Forest cover in the districts is 77% above.

The climate of the districts is mainly monsoon type. It,s is characterized with hot summers and dry winters.The winter season which last February. The average annual rainfall in the districts is 1150.00m.m. the average temperature of the district is 41° cg during summer season and winter season lowest temprature in December 11°cg. The drainage of Gadchiroli districts deals with three major river, the wainganga in the west,Indrawati river in east- south, and Godavari rivers in west-south. Minerals, especially of economic importance are avalible in the district.The forest covered in distrist 76% and surjegadh range in Iron minerals on Etapalli tahisil.

Impact of physiography on population characteristics of the District

Physiography or physical set of the Gadchiroli District is unique in nature. The district is a elevated tableland. It,s location to the wainganga river in west border.The physiography of the district.Indrawati river in the south border and east border surjagadh.The west side

in district wainganga river basin.its impact over the distribution of population as well as density of the population of the Gadchiroli district and East side of district cover on forest .therfour population on the region is low

Tahsil wise population [%] in Gadchiroli District -2011

TABAL-1

Sr. no	Name of the Tahsil	Population in [%]
1	Desaiganj	7.79
2	Armori	9.06
3	Kurkheda	8.02
4	Korchi	3.99
5	Dhanora	7.70
6	Gadchiroli	13.60
7	Chamorchi	16.69
8	Mulchera	4.27
9	Etapalli	7.63
10	Bhamragadh	3.38
11	Aheri	10.90
12	Sironcha	6.97
	District	100.00 %

Source:Gadchiroli district,census,report-2011

Korchi taluka bears 3.99%, Muiehera 4.22% ,Bhamragadh 3.38%, Dhanora 7.70%, Sironeha 6.97% Ettapallil 7.63%, These distributions are due to somewhat impact of the physiography of the region the region with river of waingang,pranhita,godavari,chimorchi, aheri shows 7.79% ,905%,13.60%,10.90% (2011) population growth .

The 2011 census record shows following distribution of density in the district. The region with low density below 100 consist korchi, Dhanora, Etapalli,bhamgradh are dominance in physiography, which shows,its impact over population density of the region. The region with high density are Desaiganj, Armori,Gadchiroli,Chimorchi are in the wainganga basins.

Cast wise Population

[Schedule Caste and Scheduled Tribles]

Districts census handbook [2011] contains data about schedule cast and scheduled tribes. This data is usefully for plan out their socio-ecoromic enlistment and both the planners

and administrator

S.C. and S.T. population in Gadchiroli district- 2011.

TABAL-1

Cast	Total	Rural	Urban
S.C.	11.25	10.67	15.98
S.T.	38.70	41.71	14.44

The population of s.c. and s.t. in district shows trend the study 2011. The % of S.C. population 11.25%. while S.T. population 38.70%.

Taluka	Total Population	S.C. Population	S.C. Populatin %	S.T. Population	S.T. Populatin %
Desaiganj	83,607	14138	16.91	7119	8.61
Armori	97,097	11368	11.71	23,120	23.81
Kurkheda	86,073	8963	10.41	46,826	54.40
Korchi	42,811	3442	8.04	31,333	73.19
Dhanora	82,698	3934	4.76	58,745	71.19
Gadchiroli	1,45,963	21,023	14.40	28,421	19.47
Chimorchi	1,79,120	16,135	9.01	32,623	18.21
Mulchera	45,787	2726	5.95	14,834	32.40
Etapalli	81,713	2893	3.54	66,597	81.50
Bhamragadh	36,325	1128	3.11	29,459	81.10
Aheri	1,16,992	16683	14.26	58,233	49.78
Sironcha	74,756	18,312	24.50	17,916	23.97
District	10,72,942	1,20,745	11.25	4,15,306	38.70

In Gadchiroli district S.C. Population was 1,20,745 [11.25%] in 2011. Sironcha taluka most S.C. population 24.50% and bhamragadh taluka lowest population 3.11%.

The Gadchiroli district S.T. Population was 4,15,306 [38.70 %] and S.T. population Etapalli taluka most S.T. population 81.50% and Desaiganj taluka lowest population 8.61%. The urban area most ratio in s.c. poipulation and rural area most ratio in s.t.population.

Scheduled Cast and Scheduled Tribe Occupational Characteristics:

People are engaged in different works as a economic activities.These activities are

closed in three categories as primary activities (Cultivators, Agricultural laboures, livetock, Forestry, Fishing, Hunting, Plantations, and mining etc.) Secondary activities (Manufacturing, processing, reprising in household etc.), and Other activities (Trade, Transport,Communication etc. The Gadchiroli district has population of these categories accelerate their socio-economic life.

Table-3

Tahsil	Population		hTotal workers		Main workers		Primary activities		Secondary activities		Other activities	
	S.C.	S.T.	S.C.	S.T.	S.C.	S.T.	S.C.	S.T.	S.C.	S.T.	S.C.	S.T.
Desaiganj	14138	7119	7127	3647	4310	2203	2675 71.98	685 52.65	161 3.73	47 2.13	1474 (34.19)	474 (21.48)
Armori	11368	23120	6389	12885	3867	8688	2914 75.28	7656 88.11	85 2.19	110 1.26	868 (22.44)	922 (10.61)
Kurkheda	8963	46826	5129	26894	2967	15472	2311 77.88	14053 91.02	42 1041	157 1.01	614 (20.69)	1262 (8.15)
Korchi	3442	31333	1985	18089	1140	10592	794 69.64	9842 92.92	39 3.42	86 0.81	307 (26.92)	664 (6.21)
Dhanora	3934	58745	2220	34326	1626	23104	1212 74.53	21581 84.99	47 2.89	226 0.98	367 (22.57)	1297 (5.61)
Gadchiroli	21023	28421	5226	14793	7101	9984	3557 50.08	6414 64.13	158 2.22	181 1.81	3386 (47.68)	3325 (33.30)
Chimorchi	16135	32623	8675	18708	5824	12305	4436 76.16	10405 88.66	58 0.99	82 0.66	1330 (22.83)	1218 (9.89)
Mulchera	2726	14834	1516	7870	719	4194	540 75.09	3754 89.50	08 1.11	35 0.83	171 (23.78)	405 (9.66)
Etapalli	2893	66597	1443	36995	1005	26930	602 59.89	24679 91.63	24 2.38	317 1.18	379 (37.71)	1934 (7.18)
Bhamragadh	1128	29459	658	17218	457	14279	278 60.83	13043 91.33	08 1.75	167 1.16	171 (37.41)	1069 (7.48)
Aheri	16683	58233	8065	29182	5695	19865	4026 70.66	16466 82.88	119 2.08	155 0.78	1550 (27.21)	3244 (16.33)
Sironcha	18312	17916	11818	10737	8568	7062	7867 91.81	6294 89.12	184 2.14	36 0.50	517 (6.03)	613 (8.68)
Total	120745	415306	64854	232344	43279	154681	31212 72.71	136655 88.35	933 2.15	1599 1.03	11134 (25.72)	16427 (10.62)

The Tables gives distribution of workers by three categories of economic activities in the district of 2011.The proportion of all these categories difference from tahsil to tahsil.The

closed in three categories as primary activities (Cultivators, Agricultural laboures, livetock, Forestry, Fishing, Hunting, Plantations, and mining etc.) Secondary activities (Manufacturing, processing, reprising in household etc.), and Other activities (Trade, Transport,Communication etc. The Gadchiroli district has population of these categories accelerate their socio-economic life.

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The Tables gives distribution of workers by three categories of economic activities in the district of 2011.The proportion of all these categories difference from tahsil to tahsil.The

schedule cast and scheduletribes of Primary activities is between 91.63% to 52.65% .The schedule cast Primary activities in highest is in Sironcha tahsil 91.81% and lowest Etapalli tahsil 59.89% . Secondary activities in district 2.15%.The height % is in Desaiganj 3.73% and lowest 0.99% is in Chamorchi tehsil. Other activities in district 25.72%. The highest in Etapalli 37.71% and lowest 6.03% is in Sironcha.

The scheduletribe of Primary activities is between 91.92% to 52.65% .The scheduletribePrimary activities in highest is in korchi tehsil 91.92% and lowest Desaiganj tahsil 52.65% . Secondary activities in district 1.03%.The height % is in Desaiganj 2.13% and lowest 0.50% is in Sironcha tahsil. Other activities in schedule tribe in district 10.62%. The highest inGadchiroli 33.30% and lowest 5.61 % is in Dhanora tahsil.

Conclusions

Gadchiroli districts holds 1.87% of population to the state over 4.69% of its area among the 12 tahsil.Chamorshi tahsil is the most population while korchi is the least population. Population live in rural area of 88.00% the district.The districts density 74 persons per km2 from 2011 the most density in desaiganj teshil 335persons per km2, and lowest density is in bhamradh tashil 28 persons per km 2.

The schedule cast &scheduletribesworkers in three different categories of economics activities in the district.The Primary activities in 91.81% and schedule tribe Primary in activities in 91.92%

Scheduled cast & Scheduledtribes are made available by the census.These statistics are use full for the planning of socio-economic development in the districts by the government .In this census 2011 the percent of Scheduled cast population was 11.25% and Scheduled tribes population was 38.70%. Out of Scheduled cast population of the districts 41.76% lived in rural areas and 14.44%lived in urban area.Qualitative population accelerates the socio-economic condition of the reasion.Topographical accessibility helps to the people for better development while inaccessibility stands as a obstacle.

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SERVICE SECTOR : A MEDICINE FOR STRONGEST INDIAN ECONOMY

○ Dr. Rita R. Raut*

Abstract :

The service sector has taken the lead in many places in India.Agriculture and industry sectors are developing at a large rate while services are being developed.Generally service work is transferred from one person to another in an invisible form.Services are also in intangible, invisible and visible form. The development of industry sector, agriculture sector, education sector, trade sector and various sectors mainly depends on service sector. The progress of other service organizations depends on the availability and readiness of the service.So, in the current situation the service areas are expanding day by day and continuously. It mainly pushed and boosted capital development, employment Generation, proper utilization of human resources, increase in technology, customer satisfaction, economic and industrial development etc. It also helps in day-to-day life cycle. In 2021-22 total expenditure on medical fare is only 2.1% of GDP as compare to Japan or other countries. The highly contribution of Travel and Tourism industry in India by 178 billion dollars to Indian GDP. The total contribution of service sector in Indian GDP is 60%.In India, the expansion of the service sector has given a major boost to job creation.It has helped a lot in solving the problem of unemployment in the country. Services are also expanding due to current globalization.

Keywords : Service, Indian Economy, Start Up, Digital Platforms, Employment

Introduction

Services are not visible like goods. Service is the main part of any humanity and with the help of service factor, we maintain connectivity in society. In the modern era, the importance of marketing has increased and the role of the service sector is important in it.Along with goods, the demand for services has increased.But services cannot be measured like goods. Some services are not visible like medical services, entertainment services, travelling services etc. Service Sector is played an important role in developing economy

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of India. Service sector is wide area. It includes various contents like trade, hotel, transport, storage, communication, financing, business services, personal services etc. There is need of service of schools, hospitals, administrative and accountings for development of Indian Economy. Increase in service sector of India is a unique example of traditional model of development of Indian Economy. But it providing less employment.

Agriculture and production department still contain high employment. Start-up concept provide many new employments with grateful services. It proposes digital platforms to societies which give new inspiration to young generation. Service sector increases its importance after Corona Period. It is third source of earning in Indian Economy. Service sector includes all contents which are taken by people using time and knowledge for improvement in productivity, uses, capacity, possibility, durable etc. The object of this study is to provide awareness about employment providing sector i.e., service sector which is giving positive approach in young generation.

Objectives of Study :

India has tremendous structures nearby creativity in ability development content. India Government has started the "Digital India" notion overall India. Within this concept, many peoples were coming under service factor and the purpose of India Government providing the digital platform is self - employment.

On this basis, in this study the purpose is taken according to the need of employment at present date. Some Objectives are here-

1. To provide awareness within society about service sector in India.
2. To maintain Sustainable Development through service area.
3. To provide knowledge about role of service sector in employment.
4. To study the startup features about service sector

Research Methodology :

In this study, some data is taken from secondary sources like books, newspapers, periodicals, articles, websites etc. some data is primary type was usual by online survey. As well as it primarily be contingent upon exploratory in countryside. The study is based on quantitative and qualitative methods.

Review of Literature :

The aspect of FDI i.e., foreign direct investment in India service sector(a study of post liberalization) are analyzed by most of the scholars and researchers that are Dr. Arjun Singh Sirari and Mr. Narendra Singh Bohra.2011 examined the role of FDI in service sector.

Indian Economy and service sector: When the importance of online increased during the Corona period, online services were increased according to the needs of households.When the importance of online increased during the Corona period, online services were increased according to the needs of households.And the benefit of this is the increase in the number of unicorns that offer large-scale online services.Out of which a large number of employments were generated.It shows that the demand for service sector is more.More than 6 lakh jobs created by unicorns in India. It includes Ola, Big Basket, Paytm and so on.

The economy is depending upon three criteria which are agriculture, industrial and

service.Out of these the third sector is very helpful for creating employment and to boo Indian economy by giving contribution in many fields like medical, tourism, leisure's a

In 2020-21, the gross value added at current price is 53.89% of total India's G Industry Sector contribute% as well as agriculture sector contributes 20.19% in GA gets highest range in country's Net National Product.As usual the agriculture sector mostly contributed sector in Indian Economy.

The following table shows the sector wise GAV in India and their shares.

Table No.1.1 GAV in Indian Economy (2020-21)

Sr.No.	Sectors	GAV Rupees in Crore.	Shares in %
1	Public Administration, Defense and other services	2,761,996	15.42
2	Financial Real Estate and prof. services	3,950,786	22.05
3	Trades, hotels, transport, communication and services related to broadcasting	2,941,477	16.42
Total GAV at basic prices		**9,654,259**	**53.89%**

Source : Ministry of Statistics and Programme Implementation 2020-21

From above table, there is 53.89% in shares of Indian Economy.Financial Real Est and prof. services contribute 22.05% in it. Agriculture sector contributes 20.19% in GA same as Industry Sector contributes 25.92% in GAV.

The contribution of service sector in Indian GDP is increased for continuously accordi to many peoples. Foreigners are taking interest in Indian Service Facilities because India has a big group of skilled worker, low charges and high education. Practically, it h quality which is liked by people in other country. So, on this basis, many other countr are started out sourcing in business services and in ITsector services.Due to this.servi facilities have been providing a boosting power to Indian Economy and the result is show in GDP growth.

FDI and Service Sector :

FDI increases job opportunities in country and help to create skill-based thing. It a boosts Indian export system and encourage to international organization for enterin domestic market. In March 2021, FDI in insurance sector is increases from 49% to 74 FDI helps in reforming economy of many countries and it is very essential factor for growi economic globalization. FDI means investing in a company in another country.RBI contr FDI under FEMA.FDI inflow of foreign currency into India leads to creation of la infrastructure in India, increase in productivity and in turn increase in employment. service sector accounts for the largest share of foreign investment inflows to India.In first half of 2021-22, foreign direct investment of USD 16.73 billion has flowed into services sector."The Economic Survey report shows a significant increase in foreign di investment in financial, business, outsourcing, research and development, coun technology testing and analysis and education sub-sectors.Currently ENCUBE announced a new R&D Center of Excellence at Palava.

Trade in Service Sector :

Services are the backbone of the global economy, accounting for more than two-thirds of global GDP and attracting three-quarters of FDI. Globally, new job creation takes place on a large scale.Service trade has become very important.First sea trade was seen only then insurance trade increased.Service is mainly seen in it. Now the importance of IT sector is increases day by day. Specially in communication technology, services are popular by peoples. It brings new service pattern in society. That's why some companies are economically developed. It includes legal, engineering, professional services, computer services, telecommunication etc. GATTS provides special rules for service market which help to determine the status of transaction whether it is residents or non-residents. Basically the "the mode of supply" is known for the service provide on the basis of transactions between supplier and customer at territorial place which contracts about the trade services. India has a lion's share in exporting services globally. In 2020, India has taken place in First Ten's list in service exporter. In 2020, services are covered at 4.1% contribution in commercial services as compared to 2019 which was 3.4%. The Net export growth rate in 2021-22 is 22.8%.

In the year 2021-22, the IT sector will provide 5 million jobs in India and account for 51% of services exports. IT sector provide more than 290 M&As by focusing digital platforms. Industry and digital revenue contribute five times more than service sector in Indian economy by various new skills in employees.

Start-Up and Digital platforms :

Currently, start-ups have taken over the services marketing.The start-up helped the youth to find employment.Many service professionals have gained a foothold in the market.Many service professionals have gained a foothold in the market.Among the various ecosystems in India, startups are becoming important.Among the various ecosystems in India, startups are becoming important.The services sector has captured the market share in the Indian economy.The services sector has captured the market share in the Indian economy. Service base business growing fastest in India because it contributes in GDP growth, employment, trade, and in investment also. There is also major contribution of E-Commerce in pie. By Morgan Stanley study says in 2020 that the business of E-Commerce market has been increases from $ 102 billion to $ 119 billion. Many start-ups in India having advantages because of service based businesses.There are some reasons for successful a start-up project like low capital cost, faster to launch, lower business risk, flexibility and adaptability etc. There is some successful service-based startups in India are Zomato, Practo, Rentomojo etc.Zomata is working for search a particular restaurant by online and provide choices for taking decision within 1 million options in 23 countries. This service is launched in 2008 by providing service to 3,31,200 restaurants in 19 countries.Practo is known for health tech company with more than 1 lakhs doctors and more than 20 million patients across the worlds. Rentomojo is providing online rental facility for furniture.

Service Sector and Sustainable Development :

Sustainable development is achieved by managing the natural processes of things. Business of services in it is certainly a pollution-free matter. Big factories have to be set up

for the production of goods and this leads to destruction of the structure of nature.Serv businesses can avoid these side effects. Service marketing plays its role after the goods a manufactured.Services include travel, hoteling, medical as well as religious and soc culture. It receives a large amount of foreign investment. Service sector is based on onli mode also. Hence it similar to digital economy. Service can reach everywhere by fro online to offline way.so, each and every person can get the benefits of any products at a place. ITU's contributed in 17 SDGs goals. It also taking place in service area. Servi Area provide a huge number of services which are paperless also. So, day by day th importance of service sector is increases though various platforms which are helpful growth in digital economy.

Conclusion

The service sector plays an important role in developing Indian Economy as well digital economy. It helpful in creating digital jobs, pollution free environment, increas FDI. It also helpful in maintaining sustainability. IT sector and Banking Sector are provide best services to peoples by many securing applications. Due to service sector, from urb to rural area all type of peoples can involve and make themselves economically stron One thing is it difficult in requirement of skill which are not properly gathered. Vision people need to be change for implementation of the sector.

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SERVICE SECTOR : A MEDICINE FOR STRONGEST INDIAN ECONOMY

○ Dr. Rita R. Raut*

Abstract :

The service sector has taken the lead in many places in India.Agriculture and industry sectors are developing at a large rate while services are being developed.Generally service work is transferred from one person to another in an invisible form.Services are also in intangible, invisible and visible form. The development of industry sector, agriculture sector, education sector, trade sector and various sectors mainly depends on service sector. The progress of other service organizations depends on the availability and readiness of the service.So, in the current situation the service areas are expanding day by day and continuously. It mainly pushed and boosted capital development, employment Generation, proper utilization of human resources, increase in technology, customer satisfaction, economic and industrial development etc. It also helps in day-to-day life cycle. In 2021-22, total expenditure on medical fare is only 2.1% of GDP as compare to Japan or other countries. The highly contribution of Travel and Tourism industry in India by 178 billion dollars to Indian GDP. The total contribution of service sector in Indian GDP is 60%.In India, the expansion of the service sector has given a major boost to job creation.It has helped a lot in solving the problem of unemployment in the country. Services are also expanding due to current globalization.

Keywords : Service, Indian Economy, Start Up, Digital Platforms, Employment

Introduction

Services are not visible like goods. Service is the main part of any humanity and with the help of service factor, we maintain connectivity in society. In the modern era, the importance of marketing has increased and the role of the service sector is important in it.Along with goods, the demand for services has increased.But services cannot be measured like goods. Some services are not visible like medical services, entertainment service, travelling services etc. Service Sector is played an important role in developing economy

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In this Issue...

Self-Help Groups in India an Effective Tool for Women Economic Empowerment and Poverty Eradication

Dr. Mahendra B. Wasker *

Abstract

People experiencing challenging conditions are found to be stronger when organized as a group and more empowered when given the chance to engage in an environment that is free, open, and non-threatening. Due to unequal access to governmental, social, and economic resources in India, which has led to high infant mortality rates, low nutritional standards, and low rates of female literacy, women are regarded as the "unsung heroines" of the country. In order to overcome these challenges, rural women needed to be grouped in order to develop their skills and increase their capacity for interaction, thought, inspiration, and action with a self-sufficient mindset. Government and non-governmental organizations (NGOs) have established self-help groups (SHGs) to inform women about their constitutional rights, dietary requirements, and political participation.

Keyword:- SHG members, women groups, women, self.

Introduction

People facing challenging circumstances are found to be stronger when organized collectively and more empowered when certain the chance to participate in unrestricted, open, and non-threatening environment, according to community groups. It is predicated on the idea that it is malleable.

Empowering women

In India, the term "women's empowerment" is popular. India as a nation is dedicated to promoting women. Even ignorant and undeserving men felt superior to women who did not earn them, despite the fact that women are viewed as "unsung heroines who work from dawn to dusk." Since then, the government has worked diligently to eradicate different biases.

In India, women play a variety of responsibilities both within the family and in society at large. Innovations that cater to women's practical requirements as well as their strategic

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mindsets are essential in response to these roles and responsibilities. To guarantee their success, enabling mechanisms must prevailing with innovations. This is the path to a change in society that will strengthen women.

Coming together

It was urgently necessary to group these rural women in order to showcase their skills. This group initially failed initiative because of low self-confidence, a dearth of capital to launch new businesses, and poor credit worthiness. Due to their unequal access to political, social, and economic means, women had suffered. Low female reading rates, high infant mortality rates, and subpar nutritional standards were the direct results of this. It was discovered that working with specific women did not result in any beneficial changes to their standard of living. In order to improve the women's capacity to communicate, think critically, motivate others, and act in a self-sufficient way, we thought it was essential to encourage the women to establish self-help groups.

Ways with self-help

The key to empowering women is educating them about their legal rights, health and nutrition, gender equity, and the legislative process. There was a real need for the groups to lead training classes so that they could acquire skills and boost their confidence. By organizing different skill-based, income-oriented training programmers in agricultural operations, significant efforts were made to instill entrepreneurial essence and information among the rural farm women. Members were encouraged to cut back on unnecessary expenses and save between 100 and 200 rupees each month, depositing the funds in a joint account run by the elected group leaders.

In all these mechanism about the empowerment of women, Government and NGOs are unanimously established Self Help Group (SHG) to strengthen the women. If the women becomes independent in financial aspect, she will independently start her business and build up her career. Keeping this in views, it is essential to understand what Self Help Group is and its functioning.

Self-Help Groups

Self-Help Groups are a small, volunteer group of underprivileged individuals, ideally from the same socioeconomic bracket. They become entrepreneurial thanks to the microcredit provided. It may consist of only males, only women, or even a mix of both. However, it has been observed that C.S.V groups perform better in all of the crucial SHGS Concepts of Self Helps Group ratio.

The concept of SHG was established by Mohd Yunus in Bangladesh. Later on, this conceptbrought an change in the social and financial fields. In India, during 1979-80, in the states like Karnataka and Andhra Pradesh, there were small saving groups of women and they convinced the importance of groups to them. Thus, they created the group norms and guidelines. In such way, self help groups turned out in this way. From dependency towards independency, and from interdependency towards interdependency, is the definition of Self Help Group. SHG is not any kind of scheme nor any project. But it is a group which

imparts progressive education to women. To bring sea change in the psychological, argumentative and financial condition of the members is the motive behind the establishment of these groups. To make its members financially independent is the thought behind the SHG. To bring about improvement in financial condition of the family through the saving, to think about the crisis in the society, to maintain amount for the business-all these can be possible with the help of SHG.

Self Help Groups is a collection of pastoral poor people who offered to form clubs in an effort to end poverty among their members. They make a commitment to save consistently and combine their funds into the Group Corpus, a collective fund. Members of the organization consent to using these common funds as well as any additional funds they might obtain through collective management. When forming groups, the following basic principles are taken into account:

A self-help club typically has between 10 and 20 members. However, this number may range from 5 to 20 in challenging parts like deserts, mounts, and areas with dispersed and sparse populations, as well as in cases of minimal irrigation and people with disabilities.

However, if necessary, up to 20% and, in exceptional circumstances, up to 30% of the individuals in a group may be drawn from families just above the poverty line who live continuously with BPL families and if they are acceptable to the BPL. Participants in the gathering. Multiple people from the same household cannot be included in the same group. An individual shouldn't belong to more than one group at a time. The managing and decision-making, which normally shouldn't be left entirely in the hands of APL families, must involve the BPL families actively. Additionally, members of the Self-Help Group who earn more than the federal poverty level are not allowed to serve as office holders (Group Leader, Assistant Group Leader).

In order to adhere to it, groups should create a code of conduct (a code of group leadership). Regular meetings that function democratically and allow for the open exchange of ideas and members' participation in the decision-making process should be held on a regular basis (either weekly or biweekly). Every meeting should be able to have an agenda that the group can use to make choices.

Members should consistently save money to develop their bodies. At routine group meetings, the group should be able to receive any required minimum savings amount from each participant. The Group's company funds are the savings that are thus gathered.

Loans to the member should be advanced using the group corpus that was identified. The organization should create financial management guidelines that cover the process for approving loans as well as the interest rates and repayment schedule.

All lending decisions should be made by the participants in the group meetings using a participatory decision-making method.

The group ought to be able to prioritize loan applications, establish repayment plans, determine the appropriate rate of interest for loans given, and carefully watch over the loanee's repayment of loan installments.

It is preferable for the Group to have a Group Account at a bank branch in the [illegible] region where Members can deposit any outstanding amounts after a payment has been made.

Simple basic records like a minute's book, attendance register, loan ledger, [illegible] ledger, cash book, bank passbook, and individual passbook should be kept by the organization. What do women's self-help groups do?

Facilitate members to participate is government schemes.

Encourage children, especially girls, to go to school.

Celebrate important days.

Attend Gram Sabha (village group) meetings

Assist in the health campaigns and veterinary camps

Develop unity and self-confidence among the group members

Form a platform where groups can interact to accumulate and share new knowledge andtechnics

Inculcate the habit of savings and initiate income-generating activities

Create a space for women's participation in socio-economic development

Social awareness

As the capacities and capabilities of the self-help group members grow, these communities feel for the first time able to address social issues to the pertinent government agencies. These issues include:

iThe need for safe drinking water, street lights, public sanitation and roads

iThe scrubbing of public spaces

iReceiving land patta (deeds) for houses

iFinding inexpensive lodgings or restrooms

Gaining strength

Rural women's lifestyles, attitudes, and approaches have undergone radical change as a result of the establishment of women's self-help organizations.

- They are management their own insurances. They take part in making decisions for the home.
- They have the ability to participate in societal issue decisions.
- They are able to assist other members of their community and are more responsible to their needs and those of their society.
- They can communicate with representatives of government agencies, NGOs, and banks to get their wants and rights met.
- In accumulation to generating income for themselves as a group, their strength and unity have opened up new opportunities for improvements in society.

- They have learned novel techniques in farming and other fields.
- The importance of a child's schooling is recognized especially girls. By giving their children more nutrient-rich food and the appropriate medications, women are protecting both their own and their children's health.
- The women are ambassadors for the development message, taking ownership throughout their complete family and community.

Suggestions & Recommendations

1. It necessary to try to encourage backward women in studies in SHG.
2. Government, social organizations, NGO's are needed to encourage the participation more and most women from all strata of society in SHG.
3. It is necessary to conduct a special drive for women to encourage them to save at least 10% of their earnings every month.
4. Innovative methods should be implemented while conducting the meetings of SHG during the peak period of agricultural work.
5. Member should be trained and informed about book keeping and accounting, time to time transactions and audit.
6. Government should issue consolidated grants every year for SHG.
7. Government should provide special grants to SHG for Emergency Conditions.
8. SHG should conduct straight literacy drive for the female women in the village. As such, Adult Literacy Classes should be conducted for the illiterate female members in the village.
9. There should be strict supervision on whether the members are utilizing the amount of loan for their genuine need. As such, there should be watch on the timely repayment of loan. In case of any fault, the repayment of the loan should be done in one stroke.
10. Special awards should be given to members and office bearers of SHG for their exemplary work in the field.
11. Women members should produce saleable goods. The product should be sold on the center established by District Rural development mechanism.

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V.S. Naipaul's Perspective on Contemporary India through 'India: A Million Mutinies Now'

❍ Dr. Rakesh Vishwanath Talmale*

Abstract

The research paper is an attempt to explore V.S. Naipaul's perspective on contemporary India which he had experienced in the decade 1980-1990. His travelogue 'India: A Million Mutinies Now' is the third book of his visit to India. It is a mirror of contemporary India having truthful picture of Indian social, religious and political scenario. He frankly but truthfully depicts the 'mutinies' of India like religious, regional, commercial and caste-based. In his travel he meets with number of people and places showing positive aspects in them. Despite Naxalite, Dalit, Dravidian, Khalisthaniterrorist movements, India is aspiring progress in various fields. V.S. Naipaul's is satisfied with the present Indian scenario than his experience in previous visit explored in two books.

Keywords: Contemporary, Colonial, Indian, Travelogue, Third world

VidiadharSurajprasad Naipaul is an elegant writer of West Indies. His father was migrated from India to West Indies. He was born and bought up at Trinidad. He is famous for his comic and autobiographical writings. In his 50 years of writing career, he wrote thirty books both fiction and non-fiction genre. He was born in 17th August 1932 in a Brahmin family. His father was an English language journalist who wrote short stories in the 'Trinidad Guardian'. His father encourage him for the writing career but before he could achieve success, his father passed away in 1953. He started writing with novel at the age of 18 but could not get a willing publisher. His debut work 'The Mystic Masseur' (1957) is about a bright youth's pursuit to become writer.

V.S. Naipaul's post-colonial writing created controversy in literary world. He was keen to explore the legacy of colonialism of the British Empire. The novels he wrote were based on the colonial as well as ex-colonial societies. The novels were

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marked with the problems of the colonized people and the impact of colonisation on them. His travelogues containing series of three books 'An Area of Darkness' (1964), 'India: A Wounded Civilization' (1977) and 'India: A Million Mutinies Now' (1990). Naipaul's attraction to homeland India urged him to write about contemporary scenario of India through these travelogues. These books contained impact of colonisation on India and recently emerged as third world. He skillfully transformed the travelogue into text, mainly post-colonial text. These text revealed passionate picture of contemporary India. The last travelogue 'India: A Million Mutinies Now' is fine picture of realistic India 1980 to 1990.

V.S. Naipaul's started literary career in 50's in Britain. He established himself as a novel writer, so he got a fellowship of Trinidad and Tobaco government. He returned to Caribbean exploring the novel and travelogue writing. It was the time when anti-colonial movements were reaching at its height. 'India: A Million Mutinies Now' conveys the post-colonial and home coming ideas of Naipaul. It is a recommendation of his love-hate relationship for India. He expresses his detachment with India mostly sensitive than negative. He expresses view on India as a leading Third World which differs from his last visits. He observes modernity and traditional aspects in homogeneous ways. These are the harmonious principals prevailed oneness rather than showing different aspects.

> India as a hybridized cultural formation where Hinduism and Parliamentary democracy, mantras and transistor, radios, bullock carts and nuclear power can co-exist perfectly. (Cronin, 1989, 113)

This travelogue explains various changes and developments found in India. Though, India's journey is in right direction, it is far away to reach level of developed country. Naipaul explores 'million mutinies' of India will help to flourish it like western countries. Naipaul conveys

> 'What the mutinies were also helping to define was the strength of the general intellectual life and wholeness and humanism of the values to which all Indians now feel they could appeal and – strange irony – the mutinies were not to be wished away. They were part of the beginning of a new way for many millions, and part of its restoration. (Naipaul, 150, 518)

Naipaul explores number of mutinies of India containing regional, religious, commercial, caste based etc. The movements like Naxalite, Dalits, Dravidian, Khalistani terrorists, South Indian are explosive one but not stumble block in the uniformity of India. Unlike this, Naipaul wondered to experience agricultural,

BabasahebAmbedkar the huge crowd emerged on road sides. He met with Shivsena leaders who were staunch follower of Hinduism and aggressively putting forward their ideology. Naipaul saw wretched condition of Muslim community. He visited to Mohammad Ali road highly populated with Muslim community. He met with Anwar, an educated young man. Anwar had great belief in Islam who thought that illiteracy in Muslims caused greatly in their progress. He says,

> It is inevitably that they will fight for Islam. It is contradictory roll. They will continue their criminal activities, but at the same time they will read the Koran, and do the namaaz, five times a day. The community does not admire these people, but the people are enchanted by the way the dons behave with the common muslims.
> (Naipaul, 1990, 43)

In this ways, Naipaul put focus on the dark side, chaos and the mutinies in India. The societies are separated on the basis of religion, caste, region and languages. On account of this, Indian people have the strong belief in powerful patriotic ideas which bind them in single thread of uniformity.

But, in the present scenario of 2023, India seems fanatical changeson social, political, religious and cultural fields. Due to lack of ruling visionary people, it seems that India is getting backward on number of fronts. Unlike V.S. Naipaul's views of powerful 'Third World', it emerges great anxiety in the scholarly world that India is making somewhat pessimistic regression in every walk of life.

To conclude it can be said that V.S. Naipaul observesin 'India: A Million Mutinies Now' the colonization and its positive picture on the multiple horizon of contemporary India. Despite mutinies, India seems strong unified, homogenous and bounded nation. He meets and observes people thinking about modernization and globalization. At last, we can say that Naipaul strongly feels that India is flourishing as a powerful and progressive third world.

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गोंदिया जिले की ग्रामीण अधिवासों का भौगोलिक अध्ययन-2011

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संक्षिप्ति :

प्रस्तुत अध्ययन का मुख्य उद्देश्य ग्रामीण वस्तियों के प्रकार और अध्ययन क्षेत्र को प्रभावित करने वाले कारक की पहचान करना है। ग्रामीण वस्ती के विस्तृत विश्लेषण के लिए, बर्नार्ड (1931) की संकेन्द्रण सुचकांक (Degree of Concentration) पद्धति का उपयोग करके गणना की गई है। वर्तमान अध्ययन मुख्य रूप से द्वितीयक डेटा पर आधारित है और इसे गोंदिया जिले की जनगणना पुस्तिका 2011 से एकत्रित किया गया है। इन गणना किए गए सूचकांक से पता चलता है की गोंदिया तहसिल में संकेन्द्रण सूचकांक मध्यम है। इसका मुख्य कारण यह है कि गोंदिया तहसिल के पश्चिम में पहाड़ी और पूरब एवं दक्षिण में जंगल व्याप्त भाग है। कृषकों ने अपने कृषि कार्यस्थल पर ही घर (निवास स्थान) बना लिए है। जहाँ कृषि कार्य हेतु सिंचाई की सुविधा है। अध्ययन क्षेत्र के पूरब, दक्षिण और पश्चिम दिशा में संकेन्द्रण सुचकांक मुख्य रूप से कम है। इसका मुख्य कारण यह है कि इस दिशा भाग में भी पहाड़ी, बीहड़ स्थलाकृति, जंगल व्याप्त क्षेत्र अधिक है। जहाँ सिंचाई की सुविधा है वहाँ कृषक कार्यस्थल में ही घर (निवास स्थान) बनाकर रहते है। इसी वजह से छोटी-छोटी बस्तियों का निर्माण हुआ है। यह बस्तिया मुख्यरूप से तिरोडा, गोरेगांव, आमगांव, सड़क/अर्जुनी, अर्जुनी/मोर. सालेकसा तथा देवरी तहसिल में पाई जाती है। इन तहसिलों में कम गुणवत्ता वाली भूमि और अन्य कारणों से भी यहाँ एकाकी/ प्रकीर्ण प्रकार की बस्तियाँ है।

बीज शब्द : ग्रामीण अधिवास, संकेन्द्रण सूचकांक, एकाकी अधिवास, अपखंडित या पुरवा युक्त अधिवास।

प्रस्तावना :

अधिवास मानव द्वारा निर्मित सांस्कृतिक भूदृश्यों में सर्वाधिक महत्वपूर्ण और स्पष्ट रचना होती है, जिसे वह अपने निवास के किए, काम के लिए, विभिन्न सामग्रियों के संग्रह के लिए या सामाजिक सांस्कृतिक एवं राजनीतिक क्रियाओं को सम्पन्न करने के लिए निर्मित करता है। भूगोल में, अधिवास अध्ययन का एक

❁ शोधकर्त्ता, यशवंतराव चव्हाण महाविद्यालय लाखांदूर (संशोधन केन्द्र)भूगोल विभाग प्रमुख रा.तु.म.नागपूर विश्वविद्यालय, नागपूरयशवंतराव चव्हाण महाविद्यालय लाखांदूर।

❁❁ मार्गदर्शक, यशवंतराव चव्हाण महाविद्यालय लाखांदूर (संशोधन केन्द्र) भूगोल विभाग प्रमुख रा.तु.म.नागपूर विश्वविद्यालय, नागपूरयशवंतराव चव्हाण महाविद्यालय लाखांदूर

महत्वपूर्ण स्थान है क्योंकि अधिवासों को मनुष्य और पर्यावरण के बीच संबधों की एक मौलीक अभिव्यक्ति के रूप में देखा जाता हे। (शर्मा 2015)। बस्तियों को जनसंख्या सघनता का बिंदू माना जाता है। निवास स्थान या अधिवास वह स्थान है जहाँ, लोगों ने अपना स्थायी निवास स्थापित किया। सामाजिक-आर्थिक विशेषताओं, व्यावसायिक संररचना, जीवन के तौर तरीके, जनसंख्या आकार के आधार पर मानव बस्तियों को दो प्रकारों में वर्गीकृत किया गया है। वे प्रकार ग्रामीण और शहरी इस प्रकार है। ग्रामीण बस्तियाँ वे बस्तियाँ है, जहाँ के लोग अधिकतर कृषि और कृषि संबधी गतिविधियों में लगे रहते हैं। जबकी शहरी बस्तियाँ वे बस्तियाँ है, जिनके निवासी गैर-कृषिगत गतिविधियों में लगे रहते हैं (आर.एल.सिंह 2002)। ग्रामीण और शहरी बस्तियों को उनके उप-प्रकारों में वर्गीकृत किया गया है। उसके लिए अनेक भूगोलवेत्ताओं और विद्वानों द्वारा विभिन्न विधियों का परिचय दिया जाता है। जो उनके प्रकारों को वर्गीकृत करती हैं। ओरोसेल (1920), बर्नार्ड (1931), पावलोव्स्की (1938), डेवोबेरी (1943), ट्रेवार्था (1946) मंडल (1972), हडसन (1976), गिलग (1996), और अन्य कई भूगोलवेत्ताओं ने ग्रामीण बस्तियों के प्रकारों की विभिन्न मानदंड और सांख्यिकीय तरीके के आधार पर व्याख्या की है। बस्तियों की सघनता बस्तियाँ निर्मित क्षेत्र के तहत कुछ क्षेत्र को इंगित करती है। (नंदी और मिस्त्री 2018), आर.एल.सिंह (1955), ने बस्तियों के मुख्य चार प्रकार बताये है जैसे-सधन बस्तियाँ (Compact Settlement) अर्ध-सधन बस्तियाँ (Semi compact) पुरवा युक्त बस्तियाँ (Semi Sprinkled) और प्रकीर्ण या एकाकी बस्तियाँ (Dispersed) सभी मानव बस्तियाँ एक दूसरे से भिन्न हैं और यह आसपास के वातावरण पर निर्भर करता है। इसलिए ग्रामीण बस्तियाँ मानव अधिवास सुविधाओं और पर्यावरण का पारंपारीक संबध दर्शाती है (सिंह 1961) भारत में बस्तियों का ढांचा केन्द्रीकृत से परिक्षिप्त या बड़े गावों के लिए टोला आकार में विविधतापूर्ण है (Dey & Bhaduri 2016)। सधन अधिवास अधिकतर अत्यधिक उत्पादक जलोढ़ मैदान में पाए जाते है, जबकि बिखरी हुई बस्तियाँ आम तौर पर अत्यधिक (चरम) जलवायु क्षेत्र, पहाड़ी इलाके, घने जंगल, घास के मैदान, खराब कृषि भूमि, व्यापक खेती के क्षेत्र और ऐसे क्षेत्र जहाँ यह आवश्यक है कि, किसान को गाँव के बजाय अपनी कृषि भूमि पर रहना चाहिए में पाई जाती है (मजीद हुसैन 2018)। ग्रामीण अधिवासों का प्रकार एवं प्रतिरूप पूर्णत: क्षेत्र की भौतिक और सामाजिक-आर्थिक स्थिती पर निर्भरकरता है। इसलिए पृथ्वी की सतह पर हर जगह बस्तियों को समान नही देखा जाता है।

साहित्य समीक्षा :

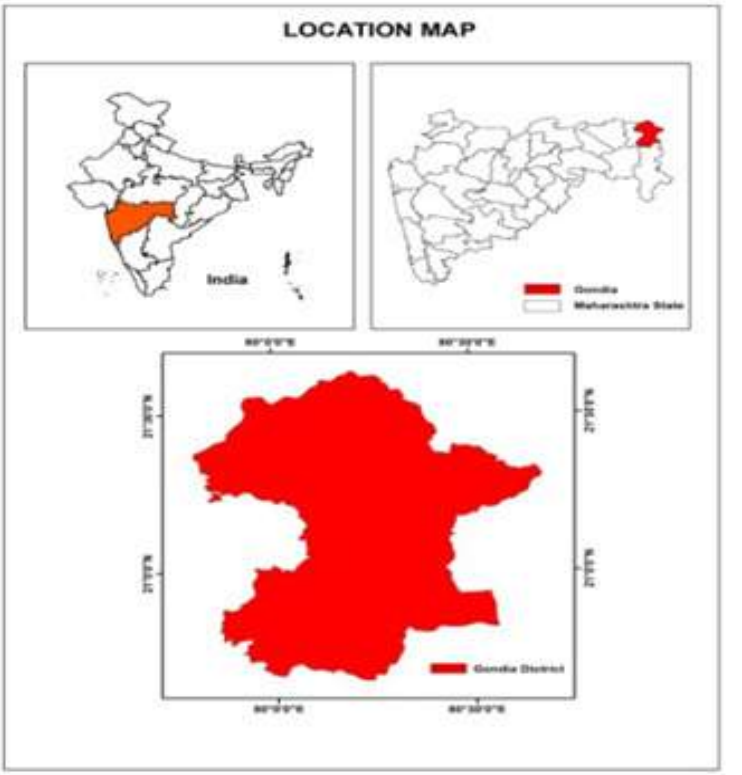
अधिवास भूगोल यह मानव भूगोल की एक मूलभुत ज्ञानशाखा है। आधुनिक अधिवास भूगोल का अध्ययन कई भूगोलवेत्ताओंने किया है। उसमें रिचथोफेन, विदाल-द-ब्लाश, डिमांजीयन, ब्रून्ज, फिंच, ट्रिवार्था, डॉक्सियाडिस, डिकिनसन, डॉ. आर.एल.सिंह, आर.वाय.सिह, जयराम यादव, ऐसे भूगोलवेत्ताओं का समावेश है। ब्लाश ने सघन एवं एकाकी अधिवासों की जानकारी दी है। 1909 मे ब्योपेट ने युक्रेन, 1910 में चोर्ले ने फ्रान्स, 1993 में रॉबर्ट ग्रैण्डमेन ने जर्मनी के ग्रामीण अधिवासोका विस्तृत अध्ययन किया है।

भारत में भौगोलिक अध्ययन की शुरुआत बहुत देरी से हुई। सर्वप्रथम स्पेट ने अपनी किताब 'भारतीय गांव' सी.डी.देशपांडे के सहयोग से लिखी। 1967 में आर.सिंह, एस.बोस, 1970 में एस.पी.सिंह, 1971 में टी.पी.पाटील इन्होंने अनेक ग्रामीण अधिवासों का अध्ययन किया। श्रीनिवास इनकी "India"s Village" यह किताब बहुत ही महत्वपूर्ण है। अयोध्याप्रसाद ने छोटा नागपुर, एस.आर. चौधरी ने खानदेश के ग्रामीण अधिवासों का विस्तृत अध्ययन किया है। इस प्रकार कई विद्वानों ने ग्रामीण अधिवासों का अध्ययन किया है।

अध्ययन क्षेत्र :

गोंदिया जिला महाराष्ट्र राज्य के विदर्भ प्रांत के पुरब में बसा है। 1 मई 1999 को भंडारा जिले का विभाजन हुआ और नवनिर्मित गोंदिया जिले की स्थापना हुई। गोंदिया जिले का अक्षांरीय विस्तार 20035'

उत्तर से 21045' उत्तर और देशांतरीय विस्तार 79045' पुरब से 80045' पूरब है। गोंदिया जिले में आठ तहसिल है। वे गोंदिया, गोरेगांव, तिरोडा आमगाव, सालेकसा, देवरी, सडक/अर्जुनी एवं अर्जुनी/मोरगांव इस प्रकार है। क्षेत्रफल की दृष्टि से देखा जाए तो देवरी सबसे बड़ा एवं आमगांव सबसे छोटा तहसिल है। गोंदिया जिले के पूरब दिशा में राजनांदगांव जिला (छ.ग), पश्चिम दिशा में भंडारा जिला, उत्तर दिशा में बालाघाट जिला (म.प्र.) एवं दक्षिण दिशा में गडचिरोली जिला (म.रा.) इनकी सिमांए स्पर्श करती है।



Map No. 1

जिले का कुल भौगोलिक क्षेत्रफल 5234 चौ. कि.मी (2021 चौ.मैल) है। यह राज्य के क्षेत्रफल का 1.70 प्रतिशत है महाराष्ट्र राज्य के 36 जिलो में क्षेत्रफल की दृष्टि से गोंदिया जिले का 29 वा स्थान है। 2011 की जनगणना के आकड़ों के अनुसार जिले की जनसंख्या 1322507 है। यह राज्य के कुल जन संख्या का 1.18 प्रतिशत है। जनसंख्या के बारे में सोचा जाए तो विश्व की 47.87 प्रतिशत (2011), भारत की 68.84 प्रतिशत (2011), महाराष्ट्र की 54.78 प्रतिशत (2011) और गोंदिया जिले की 88.05 प्रतिशत जनसंख्या ग्रामीण भाग में रहती है। जिले में जनसंख्या घनता एक चौ.कि.मी. में 253 (2011) है। जबकि महाराष्ट्र राज्य के 36 जिलों की जनसंख्या के दृष्टि से जिले का स्थान 29 वा है और घनता की दृष्टि से 24 वा स्थान है। जिले में सबसे अधिक घनता गोंदिया तहसिल में 422 प्रति चौ.कि.मी. है। जबकि सबसे कम घनता 97 प्रति चौ.कि.मी. देवरी तहसिल में है। जिले में लिंग अनुपात 999 है। यह अनुपात ग्रामीण भाग में 1001 और शहरी भाग में 988 है। जिले में देवरी एवं गोरेगांव तहसिल में सबसे अधिक 1014 लिंग

अनुपात है। जिले में 13.31 प्रतिशत अनुसूचित जाती और 16.20 अनुसूचित जनजाति (2011) जनसंख्या है। जिले में जंगल क्षेत्र, 2715.48 चौ.कि.मी. है। यह जिले के कुछ भौगोलिक क्षेत्रफल का 51.88 प्रतिशत है। अध्ययन क्षेत्र में 942 (2011) ग्रामीण बस्तियाँ है।

उद्देश्य :

वर्तमान अध्ययन का मुख्य उद्देश्य अध्ययन क्षेत्र को प्रभावित करणे वाले भौगोलिक एवं सांस्कृतिक इकाई के अनुसार ग्रामीण अधिवासों के प्रकार और उनकी पहचान करना है।

परिकल्पना :

गोंदिया जिले के ग्रामीण अधिवासों पर भौगोलिक एवं सांस्कृतीक इकाईयों का प्रभाव पड़ा है।

डेटाबेस एवं कार्यप्रणाली (Database and Methology):

वर्तमान अध्ययन मुख्य रूप से आंकडों के द्वितीयक स्त्रोत पर आधारीत है। द्वितीयक डेडा गोंदिया जिले का सामाजिक आर्थिक समालोचन (सार) 2011, गोंदिया जिले की जनगणना पुस्तिका 2011, और Website से लिया गया है। गोंदिया जिले के तहसिलों को ग्रामीण बस्ती के स्थानिक विश्लेषण के लिए एक इकाई के रूप में लिया गया है। संदर्भ प्रयोजन के लिए कुछ किताबों, शोध पत्रों, Website के लेखों का भी उपयोग किया गया है। विश्लेषित डेटा को कोरोप्लेथ मानचित्र के साथ विश्लेषित किया गया है। ग्रामीण अधिवास प्रकारों के मापन की मात्रात्मक विधि का उपयोग किया गया है। जिसमें ग्रामीण अधिवासों के संकेन्द्रण सूचकांक मापन हेतु बर्नार्ड (1931) द्वारा प्रस्तावित सूत्र का उपयोग किया गया है।

$$K = \frac{S \times M}{N^2}$$

Where,

K=Degree of Concentration

S= Area of the Tahsil

M= Total Number of House in the Tahsil

N = Number of Settlement Groups in the Tahsil

गोंदिया जिले मे ग्रामीण अधिवासों के प्रकार (Types of Rural Settlement in Gondia District):

ग्रामीण अधिवासों को उनकी स्थिति, आकारिकी (Morphology) समूहन तथा गृह-अन्तरण आदि के आधार पर विभिन्न वर्गों में विभक्त किया जाता है, अर्थात ये किसी बस्ती के भवनों के बीच रिक्त स्थानों के द्योतक होते हैं। अत: गृहों की दूरी व उनकी सघनता अधिवासों के प्रकारो में भेद का प्रमुख आधार माना जा सकता है। इस आधार से ग्रामीण बस्तीयों के चार प्रकार/भेद होते है।

1. एकाकी या प्रकीर्ण (Dispersed Settlement)

ऐसे अधिवासों में मकानो का बसाव बिखरा हुआ मिलता है। इस प्रकार की बस्तियां सामान्यत: खेतों के द्वारा एक-दूसरे से अलग होती है। इन मकानों के मध्य की भूमि पर कृषि कार्य भी होता है। बिखरी हुई बस्तियों को पृथक बस्तियों के रूप में भी जाना जाता है। छोटा आकार, जिसमें एक घर से लेकर घरों का एक छोटा समूह इस बस्ती की एक विशेषता है। गोंदिया जिले में इस प्रकार की बस्तियां ज्यादा तर तिरोडा, गोरेगांव, आमगांव, सालेकसा, सडक/अर्जुनी, अर्जुनी/मोर., देवरी तहसिलों में देखी जाती हैं। इस समूह की श्रेणी का संकेन्द्रण सुचकांक 1500 से नीचे है। इस प्रकार की बस्तियों के निर्माण एवं विकास के कारक निम्न हैं। जिसमें बिहड़ स्थलाकृति, खड़ी ढलान, कम भुजल स्तर और कम गुणवत्ता वाली मिट्टी आदि है।

ये बस्तियां आकार में छोटी तथा जंगल तथा पहाड़ी क्षेत्रों में बिखरी हुई है। बीहड़ स्थलाकृति (Rugged topography), पहाड़ी और जंगल क्षेत्र की वजह से कनेक्टीविटी कम है। खासकर जिले की पूरब दिशा और दक्षिण दिशा। पूरब दिशा में सालेकसा तहसिल है। जो पूर्णतः पहाड़ी जंगल से व्याप्त है। देवरी तहसिल जिले के दक्षिण दिशा में है। इस तहसिल में भी पहाड़ और जंगल हैं। इसी वजह से कनेक्टीविटी कम है। संपूर्ण गोंदिया जिले का विचार किया जाए तो यह जिला पिछड़ा आदिवासी जिला है, यहाँ की भूमि गुणवत्ता भी कम, भू-जल स्तर नीचे है, जिले में ऊपरी तहसिलों में से कुछ जैसे-आमगांव, सडक/अर्जुनी, अर्जुनी/मोर। सालेकसा इन तहसिलों में तालाबों द्वारा जल सिंचाई होने की वजह से खेती सिंचित है। इस क्षेत्र में घर एक दूसरे से बहुत दूर है। बस्तीयाँ छोटी एवं दूर है। अधिकांश हिस्सा आदिवासी है। इन बस्तियों में प्राथमिक व्यवसाय; जैसे, कृषि, पशुपालन, खोदकाम, वनउपज इकठ्ठा करना; जैसे- मोहफूल, आवला, हिरडा, बेहड़ा, शहद, चार ऐसे अन्य कई प्रकार की वनऔषधी और फलफूल इकठ्ठा करके गांव-गांव में जाकर बेचना जैसी आर्थिक गतिविधियोंका बोलबाला है। कृषक कृषि कार्यस्थल में घर बनाकर रहते है। इसलिए यहाँ एकाकी बस्तिया पाई जाती है।

TableNo-1 Gondia District : Types of Settlement 2011
(Based on Bernards Method of degree of concentration)

Sr. No.	Tahsil	Area (Sq.Km.)	No.of Village	Number of House hold	N	Index (K)	Type
1.	Tirora	607.24	123	33865	15129	1359	D
2	Goregaon	484.42	99	28046	9801	1386	D
3	Gondia	612.19	147	55373	21609	1569	SP
4	Amgaon	333.32	81	28404	6561	1443	D
5	Salekasa	450.88	91	20026	8281	1090	D
6	Sadak Arjuni	651.42	108	26543	11664	1482	D
7	Arjuni/Morgaon	988.21	159	34856	25281	1362	D
8	Deori	1040.23	134	24944	17956	1445	D

(Source –Computed by Researcher with help of census data 2011)

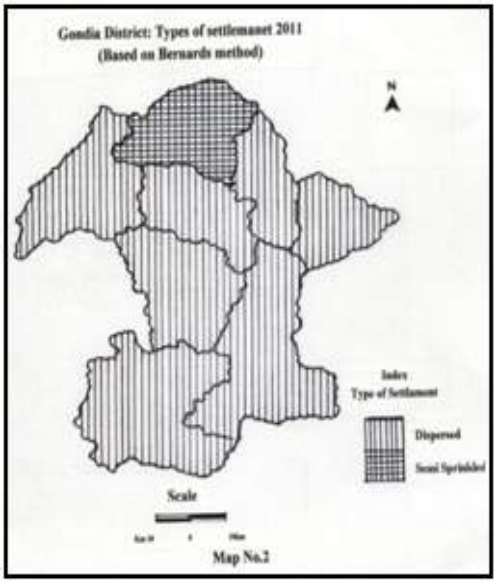
(Note–C-Compact, SC-Semi Compact, SP-Semi Sprinkled & D- Dispersed)

Table No. 2 Gondia District: Types of Settlement 2011
(Based on Bernards method of degree of concerntation)

Sr. No.	Types of Settlement	Range (Index)	Tahsil	Total No. of Settlement	Total Area (%)
1.	Compact (C)	Above 4500	—	—	—
2.	Semi Compact (SC)	3000-4500	—	—	—
3.	Semi Sprinkled (SP)	1500-3000	Gondia	147	11.85
4.	Dispersed (D)	Bellow 1500	Goregaon, Amgaon,Tirora,SalekasaDeori,Sadak/Arjuni,Arjuni/Mogaon	795	88.15

अपखंडित अधिवास :

जिस ग्रामीण अधिवास में गांव की सीमा के भीतर ही बसाव बिखरा हुआ मिलता है अर्थात गांव के घर एक-दूसरे से थोड़ी दूरी पर बने होते हैं अथवा छोटे-छोटे पुरवे या नगले थोड़ी-थोड़ी दूरी पर बसे होते हैं तथा कोई भी केन्द्रीय ग्राम नहीं होता उसे अपखंडित बसाव कहा जाता है। इस प्रकार के अधिवास को एकाकी अधिवास नहीं कहाँ जा सकता। क्योंकि अमेरीकन या यूरोपीय 'फार्मगृह' के समान विपरीत इन छोटी-छोटी बस्तियों मे एक ही परिवार का होना आवश्यक नहीं है। दूसरे इनमें सामाजिक संघठन, श्रम विभाजन एवं सामुदायिक भावना पाई जाती है। प्रो. सिंह ने ऐसी बस्तियों को पुरवो का अधिवास या अपखंडित (Fragmented) अधिवास कहा है। यह बस्तियां आकार में छोटी होती हैं एवं कृषि योग्य भूमि के निकट होती है। इन बस्तियों का संकेद्रण सूचकांक 1500 से 3000 होता है। मुख्य रूप से इस प्रकार की बस्ती का वितरण अध्ययन क्षेत्र के गोंदिया तहसिल में पाया जाता है। इस प्रकार की बस्तीयाँ गोंदिया शहर जो कि जिला मुख्यालय है के आसपास के क्षेत्र में पाई जाती है। बस्ती का यह प्रकार मुख्य रूप से गोंदिया तहसिल के कृषि योग्य भूमि के पास पाया जाता है। गोंदिया तहसिल में मुख्य रूप से राईस मिल ज्यादा होने की वजह से भी इस प्रकार की बस्तीया यहाँ पाई जाती है। संपूर्ण गोंदिया जिला कृषि प्रदान है। और यहाँ धान/चावल का उत्पादन अधिक मात्रा में होने की वजह से राईस मिल उद्योग को बढावा मिलने की वजह से भी यह बस्तिया यहाँ पाई जाती हैं। कृषक कृषी कार्यस्थल में ही घर (निवास स्थान) बनाकर रहते है। और इनकी छोटी-छोटी बस्तिया होती है। गोंदिया तहसिल में जिला मुख्यालय होने की वजह से अन्य व्यवसाय भी यहाँ थोड़ी-थोड़ी मात्रा में पनम (फलफुल) रहे है। इन बस्तियों की प्रमुख विशेषत: यह है कि इनमें गरीबों के घर अधिक मात्रा में पाये जाते हैं और पूरे क्षेत्र में फैले है। तथा सड़को की गुणवत्ता कम है एवं कनेक्टीविटी भी कम है।



अर्ध-सघन अधिवास :

अर्ध-सघन अधिवास में प्रकीर्ण एवं सघन अधिवासों के बीच की अवस्था से सम्बन्धित विशेषताओं का विकास होता है। जो समाजोन्मुखी तथा समाज विमुखी शक्तीयों की अन्योन्य क्रिया का प्रतिफल माना जाता है। ऐसी बस्तियों में आवास बहुत सघन रूप से जुड़े नहीं होते और एक साथ गुंथे हुए होते हैं। यह एक सामान्य बात है (Mandal & Roy 2020) । ऐसी बस्तियों की विशेषता यह है कि छोटी लेकीन सघन होती है। इस अधिवास के मूल केन्द्र (Nucles) पर बसे प्रमुख अधिवास के अतिरिक्त गांव की सीमा के भीतर कुछ-कुछ दूरी पर एक या अनेक पूरवे (Hemlets) बसे होते हैं। इन अधिवासों का संकेन्द्रण सुचकांक/एकाग्रता मान 3000 से 4500 तक होता है। गोंदिया जिले में किसी भी तहसिल में यह प्रकार देखने को नहीं मिलता। क्योंकि यहाँ बड़े कृषक नहीं और बड़ी मात्रा में व्यापारी कृषि नहीं की जाती।

सघन या पुंजीत अधिवास : ऐसी बस्तीयों में मकान एक दुसरे के पास बनाये जाते है। इनका विकास नदी

घाटियों तथा उपजाऊ मैदोनों में होता है। यहाँ रहने वाले लोगों का व्यवसाय समान होता है। तथा यह समुदाय समूह बनाकर रहते हैं। इस गुच्छित (Clustered) प्रकार की बस्तियों में ग्रामीण घरों के संहत (Dense) खण्ड पाये जाते हैं। इन बस्तियों में सामान्य क्षेत्र स्पष्ट रूप से निकटवर्ती खेतों, घरों (बाड़ो) तथा चरागाहों से अलग होता है। इस प्रकार की बस्तियां अत्यंत उपजाऊ जलोढ मैदानी (Alluvial Plain) क्षेत्रों में पाई जाती है। सघन अधिवास स्थायी कृषि उत्पाद भूमि और अनुकुल जलवायु परिस्थितियों का उत्पाद है (Patil, 2019)। अध्ययन क्षेत्र में इस प्रकार की भौगोलिक परिस्थिति उपलब्ध नहीं होने की वजह से ग्रामीण अधिवास का यह प्रकार देखने नही मिलता।

परिणाम

बर्नार्ड (1931) विधि द्वारा सरल सुत्र का उपयोग करके संकेन्द्रण सूचकांक की गणना की गई है। आर. एल.सिंह ने ग्रामीण अधिवासों के 1) एकाकी 2) अपखंडीत 3) अर्ध-सघन 4) सघन या पूंजीत यह चार प्रकार बताये हैं। उनमें से बर्नार्ड के संकेन्द्रण सूचकांक के अनुसार गोंदिया जिले में 1) एकांकी 2) अपखंडीत ये दो ही प्रकार दिखाई देते है। अध्ययन क्षेत्र का संकेन्द्रण सुचकांक तालीका संख्या 2 और अधिवासों के प्रकार मानचित्र संख्या 2 में दर्शाये गए हैं। यही मुख्य परिणाम अध्ययन क्षेत्र में दिखाई देते है।

सुझाव (Suggestion):

अध्ययन क्षेत्र ग्रामीण और कृषि प्रधान होने के बावजूद भी कुछ सुविधाओं के अभाव में विकास दिखाई नहीं देता। अध्ययन क्षेत्र की ग्रामीण क्षेत्र और कृषि क्षेत्र का विकास होना जरूरी है। तभी यहाँ की कृषकों की आर्थिक समस्या दूर होगी। पक्की सड़कें हर ग्रामीण बस्ती एवं कृषि कार्यस्थल तक बनना जरूरी है। कृषि आधारित व्यवसाय को शुरू करना जरूरी है; जैसे, अध्ययन क्षेत्र की मुख्य फसल चावल है। यहाँ राईस मिल इन्डस्ट्रीज है, चावल से व्यावसायिक दृष्टि से अन्य उत्पाद बनाने का उद्योग निर्माण होना जरूरी है। पहाड़ी क्षेत्रों का विकास होना जरूरी है। जंगलों में आवश्यक फल एवं औषधि वृक्ष लगाना चाहिये। जिन ग्रामीण बस्तियों में जल सिंचाई की सुविधा नहीं है वहाँ के कृषकों को आर्थिक सहायता देना चाहिए ताकि वह अपने कृषि कार्यस्थल में कुआँ एवं बोरवेल का खोदकाम कर, जल स्रोत निर्माण कर सके। सरकार की जो कई अलग-अलग सुविधाएँ है उनकी जानकारी आज भी ग्रामीण अधिवासों तक नही पहुची है। जब कि वह जानकारी पहुँचना जरूरी है। इसकी जवाबदारी सरकार ने बस्तियों के प्रतिष्ठित, सामाजिक व्यक्तियों को देनी चाहिए और उन व्यक्तियों ने वह पूरी जानकारी ग्रामीण जनता तक पहुँचाना चाहिए। ऐसी सुविधाओं का उपयोग करने पर, गोंदिया जिले में अर्द्धसघन और सघन अधिवासों के यह दो प्रकार दिखाई नही देते वे अधिवासों के प्रकार ऊपर दिये गये सुझाव से शायद भविष्य में दिखाई दे सकते है।

निष्कर्ष :

शोध कार्य का समग्र विश्लेषण इंगित करता है कि अध्ययन क्षेत्र की बस्तियों के विकास में भौगोलिक एवं सास्कृतिक इकाई का प्रभाव दिखता है। भौगोलिक एवं सांस्कृतिक इकाईयों के प्रभाव से अध्ययन क्षेत्र में अधिवासों के एकाकी और अपखंडित यह केवल दो ही प्रकार है। अध्ययन क्षेत्र के गोंदिया तहसिल में अपखंडित अधिवास और तिरोडा, आमगाव, गोरेगाव, अर्जुनी/मोर., सड़क अर्जुनी, देवरी एवं सालेकसा इन तहसिलों में एकाकी अधिवास है।

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(केन्द्रीयविश्वविद्यालयः)
नवदेहली-16

22	ANALYSIS ON KABADDI AND KHO-KHO PLAYERS MENTAL HEALTH AND SELF CONFIDENCE	Kaldeep R. Gond	Asst. Professor Department of Physical Education and Sports Sardar Patel Mahavidyalaya, Dist. Chandrapur, (M.S)			130
23	ROLE OF SPORTS TOURISM PROMOTING REGIONAL DEVELOPMENT	Dr. Lenadeo B. Nagalwade	Associate Professor Department of Physical Education Sarvodaya Mahavidyalay Sindewahi Dist. Chandrapur 441222			139
24	SPORTS AND EMPLOYMENT: OPPORTUNITIESAN D GROWTH IN CAREER	Prof. Dr. Vinod Marotrao Bali	Yashwantrao Chawhan Arts, Commerce & Science College Lakhandur Dist-Bhandara 441803			135
25	Racial Discrimination In The Novels of Harper Lee and E.M. Forster	Mr. Ganesh P.Surjuse	HOD Dept. of English Chintamani Mahavidyalaya, Ghugus	Dr. Priyadarshi V.Meshram	Asst. Professor Janta Mahavidyalaya, Chandrapur	142
26	A Correlational Study and Gender Differences among College Students in terms of their Social Media Addiction, Loneliness, Indecisiveness, and Boredom	Johnson M*	*PhD Research Scholar;	Dr. Lawrence SoosaiNathan PhD**	*Research Guide	148
27	PSYCHOLOGICAL AND PHYSIOLOGICAL CHARACTERISTICS OF SOCCER PLAYERS	Dr. Naresh Bhoyar	Assiocate Professor Shri Saibaba Lok Prabodhan Arts College, Wadner, Dist.Wardha			160
28	CONTRIBUTION OF YOGA IN PRESENT ERA: MENTAL HEALTH AND FITNESS	Mr. Sunil Kumar	Assistant Professor in Physical Education LNT College of Education Panipat (Haryana)			167
29	PSYCHOLOGICAL PREPARATION IN SPORTS	Dr. Sunil S. Bhotmange	Department of Physical Education Arts Commerce & Science College Koradi			175
30	Development Of Rural Leadership In local Self-Government	Prof. Vitthal Sadashiv Choudhari	Deptt. Of Political Science, Chintamani College, Pombhurna, Chandrapur	Dr. N. R. Chimurkar	Deptt. Of Political Science, Sardar Patel College, Chandrapur	181

शोध प्रभा
Shodha Prabha (UGC CARE Journal) Shri Lal Bahadur Shastri Rashriya Sanskrit Vidyapeetha

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SPORTS AND EMPLOYMENT: OPPORTUNITIESAND GROWTH IN CAREER

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Abstract

Employment is the continuous employment of the country's current workforce in economic activity. Employment, working and employment indicate employment. Employment is an important concept for both the labor market and the economy in general. Sports the executives is an interdisciplinary field, drawing on parts of advertising, law, money and management. A particular graduate degree assists understudies with creating fundamental abilities in business organization, financial matters, account, law, brain research and showcasing – all with a particular spotlight on the games area. It is vital satisfactory (preparing) of representatives in sport (sports organization) to stay up with the improvement of data advances and how to take full advantage of the advancement that we permit new advances. With the coming and improvement of data innovation in our nation at home and abroad are progressively the inquiry is skill sports organization (sports the executives) to satisfactorily and appropriately do their positions and how to save time and assets of their association. The vast majority of the games association tolerating the advancement of new innovation learning, create and receive new techniques (data and correspondence innovation) that will assist them with improving their items and benefits and carry them nearer to their clients.

Introduction

An overview of sports associations in the early 21st century involves the use of methods and methodologies that are evident in most business, government and philanthropic organizations today. Game executives participate in necessary arrangements, oversee large numbers of paid and voluntary employees, manage billions of dollars in broadcast contracts

deal with state aid from major competitors that in some cases require multiple normal compensations, and work deep inside. coordinates global organizations of global gambling federations, public gaming associations, government agencies, media companies, sponsors and local associations. Students seeking a career as a gaming administrator must gain an understanding of the unique highlights of the game and its joint ventures, the operating environment of sports federations and the various gaming associations that operate in the public, philanthropic and professional spheres. of the gaming industry. The rest of the episode is given to discussing those priorities and covers the exceptional parts of the board. The game is used by a large number of people all over the planet, played or watched by the majority of the entire population, and has grown from a novice to a huge industry at the world or expert level. The development and professionalism of the game has led to changes in the use, creation and management of games and associations at all levels of the game.

Sports and Employment

Employment is the continuous employment of the country's current workforce in economic activity. Employment, working and employment indicate employment (Kamacı, 2016). Employment is an important concept for both the labor market and the economy in general. Employment has two main purposes: an economic purpose and a social purpose. The financial goal is to organize and increase production. To achieve financial goals, it is necessary to succeed in social goals. In this regard, the social goals of employment are to find work for all who want work, increase productivity, ensure labor peace and harmonize the demand and supply of work (Murat, 2007). Youth employment is very important for sustainable economic and social structure and social well-being. In this sense, countries mainly design regulations that enable young people to participate in the labor market, take steps to create a relationship between education and employment, and often develop active employment policies to ensure youth employment (Kılıç and Bülbül, 2012). There is no linear relationship between youth unemployment and the level of economic development. The fact that unemployment affects the young population of continental European countries most clearly shows that such a relationship does not exist between youth unemployment and the level of development of the country. However, there are differences in the causes of youth unemployment. Although the cause of youth unemployment in developed countries is mainly related to population distribution and development, in developing countries the main reasons are insufficient educational level and

corresponding, as they work in cooperative energy, not avoided. No craftsmanship by science, or science with creation, the portion of workmanship. Human asset the executives in sport is another hypothetical, logical and realistic methodology, which from one perspective, alludes to the administration of competitors by mentors, group of specialists and sports researchers, then again, the productive and viable administration of the whole game association by control in sport, sports supervisors, promoting administrators and sports volunteers. The executives of sports includes the investigation of confused and demonstrated information on how a games association accomplishes its objectives, obtaining, dispersing and the utilization of restricted human, material, data and monetary wellsprings of its prosperity. Sports Management as the workmanship and art observational, unstructured experience of skilled administrators of individual competitors, groups and clubs arose with the presence of the principal pro athletics association. The presence of a methodical, logical organized information on sports the board is associated with the development of professionalization of game and its standards assurance - administration market economy, and the rise of the executives science, first in the benefit area, corporate business, and afterward, and it's spreading to the area of non-benefit public and private area. Understudies keen on both business and sports can track down their optimal program with Sports Management. This degree can open up a wide range of open positions inside the games business. It can situate understudies to become specialists, group promoting chiefs, athletic division directors, mentors, wellness focus administrators, group supervisors and the sky is the limit from there.

Understudies can likewise work at various levels, from nearby games and lower levels to territorial and public game affiliations, giving a lot of development freedoms to those intrigued. A Sports Management degree can likewise help graduates discover positions at amusement focuses, recreational areas, and other related associations. It's moreover customary for understudies to be enthusiastic about the benefits and weaknesses of Sports Management at whatever point they have graduated and are looking for a wonderful calling. Advantages to this degree.

Occupation Flexibility

As we referred to above, there are various occupation choices for Sports Management. On the off chance that you are keen on local area authority and public diversion the executives for neighborhood parks, Sports Management can help you. On the off chance that you need to fill in

as a specialist for players or a PR administrator for a group or game in emergency, this degree is phenomenal arrangement. In the event that you have your eyes set in turning into a group executive or chief, a Sports Management degree is a vital advance in arriving. The program upholds so various profession ways that it's a solid match for a wide range of interests.

Travel and Experience

Sports Management can be entertaining. In the event that you like travel, investigating new areas, and visiting new urban communities, a Sports Management profession could be an incredible decision for you. Numerous vocations in the games business include going all throughout the planet for different occasions and occupation duties. It very well may be a little glimpse of heaven for understudies who need a functioning way of life that remunerates their hunger for new experiences. Goodness, and in the event that you're not actually the voyaging sort, there are still a lot of chances for overseeing sports settings and different places that include altogether less travel.

You Can Give Back to Your Community

Rewarding your local area is simple with a Sports Management degree. This program gives the abilities you need to a wide range of volunteer exercises or philanthropic endeavors to energize actual wellness, make beginner groups, and substantially more. There are a couple of things, nonetheless, you should remember while seeking after this kind of degree. To begin with, in contrast to certain ventures, it can require critical exertion to arrive at center and more elevated level administration positions. Understudies ought not anticipate getting an administration position in the games business just after graduation (even those with MBAs). Second, pay can shift significantly for Sports Management occupations relying upon the position, so it tends to be hard to rely on a specific compensation. A few positions may have unpredictable hours or are occasional dependent on the kind of game. It isn't for everybody, except it very well may be exactly the thing you're searching for.

Career opportunities In Sports Management

A Sports Management certificate shows understudies abilities and ideas identified with Management, Finance, Marketing, and Law identified with the games business. Sports Management classes will assist you with figuring out how to outline the business side of a games association with the utilization of the most recent patterns and advancements. You'll build up an expansive arrangement of abilities, yet the absolute most significant are basic

reasoning, critical thinking, correspondence, and thoughtfulness regarding subtleties. These will prove to be useful in any circumstance. Regardless of whether you're arranging a sponsorship contract for a nearby occasion or a multimillion-dollar bargain for a player or group you address, the capacities you create during a Sports Management degree are fundamental.

Conclusion

It is vital satisfactory (preparing) of representatives in sport (sports organization) to stay up with the improvement of data advances and how to take full advantage of the advancement that we permit new advances. With the coming and improvement of data innovation in our nation at home and abroad are progressively the inquiry is skill sports organization (sports the executives) to satisfactorily and appropriately do their positions and how to save time and assets of their association. The vast majority of the games association tolerating the advancement of new innovation learning, create and receive new techniques (data and correspondence innovation) that will assist them with improving their items and benefits and carry them nearer to their clients. To accomplish the greatest in the game, it is important to make, adjust, arrange, and consistently to execute anongoing and last readiness of world class competitors, and alongside that, work on finding themost reasonable authoritative structures, techniques and substance of work in getting ready eliteathletes for the most elevated level agent donning accomplishments. Contemporary expressions association in the present powerful climate described by continuous changes andnumerous contenders can not make due without the executives.

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This is to certify that Mr./Mrs./Ms./Prof./Dr. Vinod Marotrao Bali of Yashwantrao Chawhan Arts, Commerce and Sci. college Lakhandur has actively participated in two days ICSSR sponsored International Conference on "Importance of Sports, Physical Education & Sports Science" organized by Chintamani Mahavidyalaya, Ghugus on 2 and 3 February, 2023.

He/ She has presented a research paper entitled Sports And Employment: Opportunities And Growth In Career.

We appreciate your valuable participation.

Dr. C. S. Kumbhare	**Dr. Ravi S. Dharpawar**	**Asst. Prof. Ganesh P. Surjuse**
Principal & Convener	IQAC Co-ordinator	Co-Convener
Chintamani Mahavidyalaya, Ghugus	Chintamani Mahavidyalaya, Ghugus	Chintamani Mahavidyalaya, Ghugus

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Studies on Zooplankton Composition and α-Diversity Indices at Thanegaon Reservoir, Maharashtra, India

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Abstract: Present study was undertaken to investigate the zooplankton diversity of Thanegaon reservoir located in Arvi tehsil of Wardha district in the Indian state of Maharashtra. Samples were collected on the monthly basis for six months during January 2020 to June 2020. In this reservoir we have studied the four major groups of zooplankton: Rotifera, Copepoda, Cladocera and Ostracoda. Rotifera was found to be the dominant group during the entire study period. The study revealed a total 34 species of zooplanktons during the entire study period, of which 19 species belong to Rotifera, 8 belong to Cladocera, 5 belong to Copepoda and 2 belong to Ostracoda. Statistical analysis of data was done by using α- diversity indices. Shanon-Wiener index 4.50 to 4.72, Simpson index 0.034 to 0.043 indicated the diverse nature of the zooplankton community. Margalef richness index 5.86 to 6.23 and Menhinick index 2.40 to 2.92 indicated the good species richness. Equitability index was in the range from 0.92 to 0.95 showing much evenness of species during the study. Relative biovolume % of zooplankton and composition in terms of density was also calculated. It showed the maximum number of species during the months of January, March and June.

Keywords: Thanegaon reservoir, Zooplankton, Rotifera, α-Diversity indices, Shannon-Wiener index, Simpson index

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Introduction

Thanegaon reservoir (Wardha district, Maharashtra, India) is a freshwater natural lake which is filled to its maximum capacity throughout the year. Thus, this reservoir serves as a source of domestic and agricultural water for nearby areas. Thus, it becomes necessary to keep the quality of water good for these purposes. Study of zooplankton composition is very important due to their role in the food web by linking the producers with consumers in the Lake Ecosystem and prediction of primary productivity and aquatic pollution (Nimbalkar *et al*., 2013; Ghosh and Biswas, 2015). Many species of the zooplanktons are sensitive to pollution and thus act as a

Fig.1: Google map image of Thanegaon Reservoir.

bioindicator to monitor the quality of water (Ferdous and Muktadir, 2009; Sivalingam *et al*., 2013). Zooplankton community constitutes the faunal composition of water bodies which are sensitive to water quality parameters and aquatic pollution (Schindler,1987; Jose and Senthil Kumar, 2015). Thus the aim of the present investigation was to study the zooplankton composition and structure, density, dominance and abundance along with α- diversity indices in the Thanegaon reservoir.

Materials and Methods

Thanegaon reservoir (Fig. 1) is a freshwater natural lake situated at 21° 08' 48" N Latitude and 78° 28' 41" E Longitude at the elevation of 484 Mts. near Sirsi and Kharas Khanda, approximately 10 kilometers away from Karanja (Ghadge) in Wardha district, Maharashtra, India. Collection of sample was done on monthly basis for 6 months from January 2020 to June, 2020 around 7.00 to 7.30 a.m. from selected site by filtering 50 liters of the lake water by using a standard 55 µm pore size bolting nylon plankton net. All specimens collected were preserved in 4% formalin soon after collection. Identification of the specimens was performed according to Kolisko (1974); Koste (1978); Ward and Whipple (1959); Mizuno (1964); Mizuno and Takahashi (1991), Battish (1992) and Dhanapathi (2003). Six indices were used to estimate biodiversity and species richness. Species diversity index was calculated based on Simpson (1949) and Shannon-Weiner (1949); richness index was adopted by Margalef (1951) and Menhinick (1964) and equitability Index by Magurran (1988). Dominance index or Simpson's index of diversity was calculated using formula 1-Simpson index. The percentage relative abundance and density of the specimens was estimated by direct count.

Statistical Analysis:

Statistical analysis was carried out using Statistical Package for Social Sciences (SPSS 10.0). Graphs were drawn using Microsoft Excel Software.

Results and Discussion

Zooplankton diversity and α-diversity indices play key roles in evaluating the trophic status of lakes and suitability of water for domestic purposes and irrigation. In the present study, zooplankton diversity belonging to Rotifera, Cladocera, Copepoda and Osracoda have been undertaken. In the present study 19 species of Rotifera including 6 families and 9 genera, 8 species of Cladocera including 5 families and 8 genera, 5 species of Copepoda including 3 families and 5 genera and 2 species belonging to Ostracoda were noted. Overall 34 species of zooplankton were recorded (Table 1). The most abundant taxonomic group recorded during the study was the rotifer. Pereira *et al*. (2002) noted the rotifers as a most abundant group. Main abundant species of rotifer observed by them were *Keratella quadrata, K. cochlearis,*

Table 1: Zooplankton species identified in Thanegaon reservoir

Phylum: Rotifera			
S. No.	Class and Order	Family	Genus and Species
1.	Class: Monogonata Order : Ploima	Brachionidae	*Brachionus quadridentatus Var. Entzi*
2.			*Brachionus falcatus*
3.			*Brachionus forficula*
4.			*Brachionus diversicornis*
5.			*Brachionus calyciflorus Var.Hymani*
6.			*Brachionus platulus*
7.			*Brachionus bidentata*
8.			*Brachionus rubens*
9.			*Brachionus ureceolaris*
10.			*Keratella vulga*
11.			*Keratella tropica* (Apstein)
12.			*Platyias species*
13.		Colurellidae	*Colurella adriatica*
14.		Lecanidae	*Lecane arculata*
15.			*Monostyla bulla*
16.		Asplanchnidae	*Asplanchna intermedia*
17.		Gastropodidae	*Ascomorpha species*
18.	Class: Monogonata Order: Flosculariaceae	Filinidae	*Filinia longiseta*
19.			*Filinia apoloensis*
Phylum: Arthopoda			
20.	Subphylum: Crustacea Class:Branchiopoda Order:Cladocera	Sididae	*Diaphanasoma*
21.		Moinidae	*Moinodaphnia* (Herrik, 1887)
22.			*Moina macrura*
23.		Daphnidae	*Daphnia longispina*
24.			*Cereodaphnia reticulata*
25.		Bosminidae	*Bosmina longirostris*
26.		Chydoridae	*Chydorus sphaericus*
27.			*Alona rectangula*
28.	Class: Hexanauplia Subclass: Copepoda Order:Cyclopoida	Cyclopidae	*Mesocyclops species*
29.			*Cyclops viridis*
30.	Subclass: Copepoda Order:Calanoida	Diaptomidae	*Skistodiaptomus*
31.			*Diaptomus*
32.	Class: Hexanauplia Subclass: Copepoda	Canthocamptidae	*Nauplius*
33.	Subclass: Ostracoda Order: Podocopida	Cypridae	*Cypretta frontanalis*
34.			*Cypridopsis helvetica*

Polyarthra vulgaris, Filinia terminalis and Hexarthra mira. Picapedra *et al*. (2020) have identified a total of 115 taxa of zooplanktons. Rotifers were the richest group. However, the copepods were the most abundant. They have reported the inter-annual changes in zooplankton species composition from large daphinids and calanoid copepods to small cladocerans (e.g. bosminids) and generalist rotifers. Zooplankton were present in the following order of dominance; Cladocera > Rotifera > Copepoda > Ostracoda. The zooplankton community structure showed a mixed composition of mesotrophic to eutrophic species. Among the zooplanktons, the population of cladocera was rich in density and poor in species diversity. Rotifers are the dominant in the eutrophic lakes which are indicators of eutrophication and *Brachionus* species are indicators of eutrophic conditions (Aboul-Ezz *et al*., 1996; Baloch and Soomro, 2004; Ceirans,

2007). *Moina macrura*, *Bosmina longirostris*, *Chydorus sphaericus*, *Alona rectangula* were the dominant cladocerans in the Thanegaon reservoir. Abundance of the rotifer species like *Brachionus*, *Lecane*, *Filinia* and *Keratella* indicates the mesotrophic and semi polluted water and enrichment of nutrients in the reservoir.

Khan *et al*. (2016) have noted a total of 22 species of zooplanktons where rotifers were dominant and were represented by 15 species whereas cladocera and copepoda were represented by three species each and Ostracoda was represented by one species. 15 species of rotifers noted by them were *Asplanchna priodonta*, *Brachionus bidentata*, *Brachionus calyciflorus*, *Brachionus falcatus*, *Brachionus urceolaris*, *Cephalodella gibba*, *Habrotrocha bidens*, *Keratella tropica*, *Lecane luna*, *Monostyla bulla*, *Mytilina ventralis*, *Mytilini acanthophora*, *Platyias quadricornis*, *Rotifer tardus*, and *Filinia longiseta*. Cladocera was represented by *Ceriodaphnia cornuta, Chydorus sphaericus, Moina brachiata* and among Copepoda, *Heliodiaptomus viduus, Mesocyclops leuckarti, Tropocyclops prasinus* were noted by them and Ostrocoda was represented by *Hemicypris fossiculata*. They noted the seasonal variation in zooplanktons and found maximum number of species during summer and the minimum number of species in rainy season. Density was also recorded high during the summer as compared to rainy season. Zooplankton density and relative biovolume is represented in the Figure 2 and 3, respectively. Relative biovolume, density and composition of the zooplankton community is strongly dependent on the season. Relative biovolume of cladocerans was maximum during winter season in the month of January (46.38%) while it was minimum at the end of the summer season in the month of June (40%). Maximum number of zooplankton (Org/lit) was recorded during the winter in the month of January was 166 whereas minimum number of zooplankton 105 was noted in the month of June.

Shukla *et al*. (2012) noted the zooplankton population (Org/L) during different seasons and found maximum number of zooplankton as 285±18.68/lit during pre-mansoon whereas minimum number recorded was 215±27.33/lit during mansoon season. The observed Cladocerans species by them were *Bosmina longirostris, Cerioaphnia, Cypris, Daphnia, Moina* and *Macrothris*. Among the copepods they noted *Diaptomus, Helidiaptomus, Macrocyclops, Nauplius* and *Vidumus*. Rotifers noted by them were *Slanchna, Brachionus, Distimus, Filinia, Keratella, Nothoica and Flurcularia*. Among protozons they reported *Amoeba, Acrella, Centroysis* and *Paramecium*. Dagne *et al*. (2008) have noted the extremely high variation in abundance of zooplanktons which was ranging from 2 to 1000+ individuals per litre and correlated abundance of crustaceans with the increased phytoplankton production at the onset of rainy season. Rotifer biovolume was observed maximum in the month of January (28.91%) and it was found to be minimum in the month of May (22.42%) in summer season. Copepods showed their maximum biovolume in the month of February (23.56%). However, rapid decline in their biovolume was observed in the month of March (15.97%). Ostracods showed their maximum biovolume at the end of the summer in the month of June (9.52%) and minimum at the end of winter season in the month of March (5.55%) (Fig. 3). Annalakshmi and Amsath (2012) have recorded 45 species of zooplanktons in the Cauvery. They observed rotifera species as dominant (34.97%); followed by Cladocera (29.92%), Copepoda (18.27%), Protozoa (12.2%) and Ostracoda (8.72%), however, Dorak *et al*. (2014) have noted the Copepoda as a most abundant taxa (53%), followed by Cladocera (33%), and Rotifera (14%).

Values for α-biodiversity indices that are Simpson index, Dominance index, Shannon-wiener index, Menhinick index, Margalef richness index and Equitability index are represented in the Table 2. Simpson index was found as low as 0.034 during June and was maximum during 0.043 in summer in the month of April while Dominance index was high as 0.96 revealed the rich diversity of species in this reservoir. Shannon-Wiener index

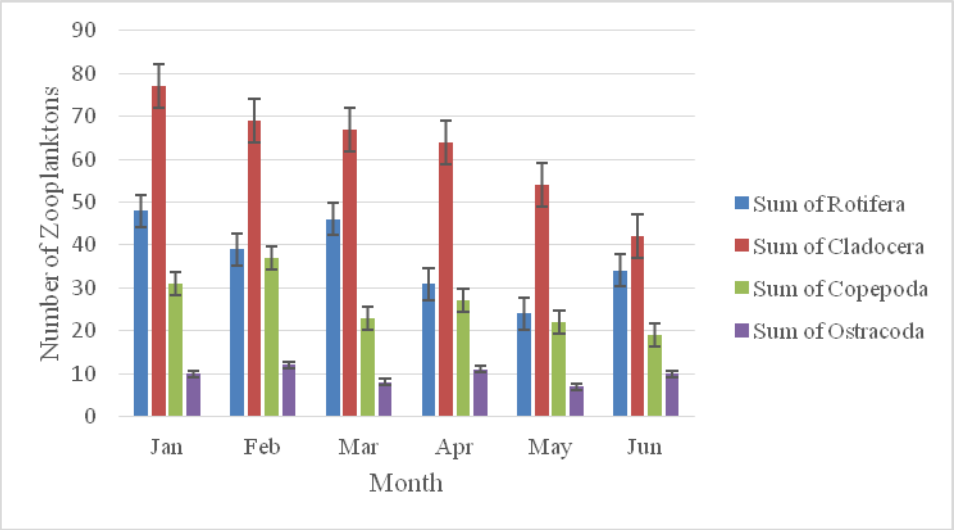

Fig. 2: Composition of zooplanktons in terms of density (Organisms lit^{-1}).

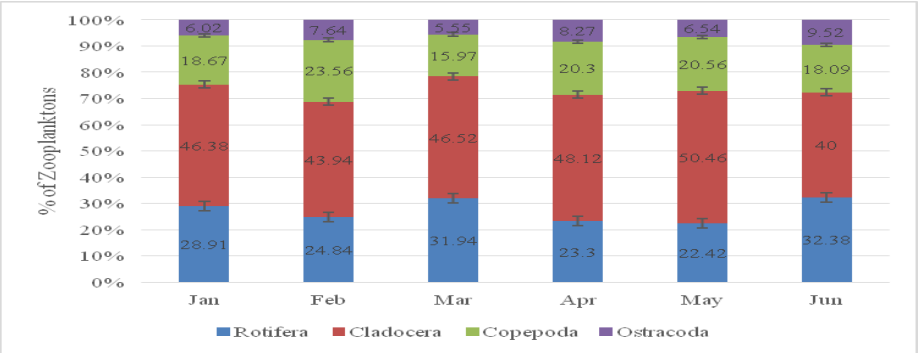

Fig. 3: Relative Biovolume (%) of Zooplanktons.

Table 2: Zooplankton community structure and α- biodiversity indices of Thanegaon reservoir

Month	Simpson Index	Dominance Index	Shanon-Wiener Index	Menhinick index	Margalef Richness Index	Equitability Index
Jan	0.037	0.96	4.71	2.4	5.86	0.95
Feb	0.039	0.96	4.66	2.74	5.93	0.94
Mar	0.036	0.96	4.72	2.58	6.03	0.95
Apr	0.04	0.95	4.6	2.68	6.13	0.92
May	0.043	0.95	4.5	2.8	5.99	0.92
Jun	0.034	0.96	4.69	2.92	6.23	0.95

values were in the range of 4.50 to 4.72, Menhinick indexes were in the range of 2.40 to 2.92 and Margalef richness index values were in the range of 5.86 to 6.23 confirms the mesotrophic status of this reservoir. The equitability index was in the range of 0.92 to 0.95 and the distribution of zooplankton species during the study was even and follows the Lorenz graph. No major fluctuation was found in the equitability index during the entire study period.

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In this Issue...

Historical Significance of Shankarpat in Bhandara District

- Prof. (Dr.) Bharat VithobaNakhate *
- Prof. (Dr.) Ganesh Laxman Dhote **

Abstract

Through Shankarpata, rural life, their livestock, farm labour, agriculture-based supplementary businesses in the village are sustained. In the 21st century, the means of entertainment have changed, rural life has been destroyed and cities have blossomed, problems of urbanization have arisen. RashtrasantTukdojiMaharaj says, "No business in the world can stop unemployment, unemployment. Agriculture is the only occupation in which maximum number of people are given employment. The power to convince the unemployed and give them work is only in agriculture/agribusiness." While doing agriculture business in Bhandara district, Shankarpat is played as entertainment and entertainment. Farmers and rural people are brought together and agricultural culture is cultivated. Communal harmony, social unity, cultural heritage are preserved. Thus, rural culture gets a revival.

Key Words: Agribusiness, Sankarpat, entertainment, folk festivals, customs, culture, social unity.

Introduction:

"Man's life begins with celebration and ends with celebration."

India, which is full of diversity, has different rivers, mountains, land surrounded by sea on three sides, there is no other country in the world that has such diversity. From Kashmir to Kanyakumari and Andaman and from Gujarat to Bengal, each region has a different language, religion, dress, food, festivals and culture. All the provinces have preserved their culture. All these have created a profoundly rich Indian culture.

Agriculture and animal husbandry are two major occupations in India. Starting from the Harappan civilization. Excavations have yielded physical means of entertainment in the Harappan culture. Humans have sung, played music and danced on occasions of joy as entertainment. It is from this that the need and necessity of various means of entertainment

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has arisen.

Folk culture, ethos, sports, various arts and entertainment in India changed over time. Marathi people are celebratory. Padwa, GaneshaChaturthi, Dussehra, Diwali, Eid, Natal Asha along with various festivals also get to see various sports. In the Vidarbha region of Maharashtra, in fact, during the harvest season, one can see dandar, mandai, wrestling riots, animal fights, bullock cart rides i.e. Shankarapat, drama, tamasha, chaos and other means of entertainment and folk festival.

The tradition of Shankarapats is ancient in Bhandara district. E.g. Rural farmers pay attention to animal husbandry along with farming and use animals for entertainment through these Sankarpats such as Masal Cha Pat, PachgaonPalependhari Pat, Pimpalgaon (Road) Pat etc. Chariot races in Aryan period, animal fights in Harappan culture, cock fights, bull races were popular in rural areas and even today in the 21st century in the age of internet in Bhandara district, second day Shankarpat is held to celebrate Sanam during the harvest season.

Objective

The main objective of this study is to study Shankarpata in Bhandara district and explain its historical importance.

Apart from this there are other objectives

- Entertainment is an important human need.
- Many devices are used for entertainment.
- Entertainment gives rise to various addictions.

Importance of study :

These Shankarpats have social, cultural, economic, political and historical importance. Shankarapatas are also used as a means of preserving folk culture. Traditional history, folk songs, folk culture are preserved through dramas, dandars, gondhall, tamasha, qawwali, kustidangal. Therefore, it is necessary to study the real picture of rural life by understanding their historical significance. Agricultural labourers, rural professionals, artists, women etc. participate. Also, their participation in maintaining rural and agricultural culture is very valuable.

Importance of Shankarpatas

"Another one got the idea. He made the pair cool all around.
A second pair of bulls was planted. to run
Attracted public attention. It was fun.
Later Shankar pata started. Village by village.
It would have been better to have some purpose in it. Bullocks are fed by Devoni.
The competition increased the strength of the bulls. For agriculture. ..
But it also has side effects. Keep up the good work.
Bull driving season. It comes next. .
Agricultural work remained. Shankarpat's venture.
People do Kasab Karma. Nanapari.. (Gram Gita)

Social Significance

Human is a social animal. Along with food, clothing, shelter, entertainment is also a

human need. Social unity in rural life, burning of social customs and socialization process etc. were maintained through Shankarapata. For hundreds of years, the culture is being preserved by filling the Shankarpat every year. Shankarapata has a lot to contribute in family life and marriage institution. Shankarapat is an important means of marriage, marriage and marriage in rural areas through watching and hospitality. On this occasion, important tasks such as seeing girls, choosing boys and coming together of two families become successful due to Shankarpatra.

Economic Importance

Entertainment and entertainment are not as important as Shankar pata, but entertainment is done through night plays, tamasha, chaos, qawwali etc. The expenditure on this is in lakhs. Also in Shankarpata money is poured on gambling, sattapatti, zendi-mundi, hod etc. Race is important in Shankarapat. Apart from that, there is a turnover of lakhs of rupees, many kinds of rewards and prizes. Shankarapat is not complete without racing.

Markets, toys, observing the sky, getting innovative products. Business is done as a means of rural employment. Many rich farmers have become deshodhadi due to the hobby of Shankarpata, due to this financial turnover, politics, social causes and family system in the rural areas have also had bad effects.

Historical Significance

In the 21st century (the age of LPG and internet) where agricultural systems are being destroyed by sez; Bullocks, cows, goats, horses, buffaloes are decreasing. Humans have started eating these animals. Mechanized agriculture has come. But even in this case Shankarapat is filled on the occasion of a special festival. The contribution of rural culture is important in maintaining this tradition. The agrarian culture that changed during the British era and lost its form in the 21st century. Protecting agriculture, preserving agricultural culture means protecting the country. Rural culture is disappearing in the process of urbanization. Villages dried up, cities swelled and no one was ready to do farm work.

Increasing Addiction

Addictions like drugs, alcohol, gambling, smoking, etc. for entertainment are initially done as entertainment, then after getting used to it, it becomes a physical and mental need. The last person becomes addicted to addictions and becomes a home for various diseases. The remedies of doctors, physicians, hakims do not work. Getting used to any good or bad habit is addiction, now the whole world is concentrated in mobile due to internet, today mobile addiction has become a global problem. Many problems are arising affecting childhood, family life, social sphere, rural life, sports, etc.

Communal Significance

Shankarpats are held for celebration and entertainment, in which people of different castes, religions, sects and parties in the rural areas forget all differences and enjoy it together, thus creating an atmosphere of unity in rural life through art, entertainment, sports. Shankarpat, animal fights, folk art, drama. , Tamasha, Gondhals, Dandaretc occasions create communal harmony.

Conclusion

Due to the global pendamic corona, the people of India started to understand the

importance of their villages, agriculture, the passivity of urban life was proved.

RashtrasantTukdojiMaharaj while preaching through bhajans says that,-

"Let's go to the small village, don't stay in the city,
Not food, but MarsheelUpashi.
All the land is like gold, but no one has Rabena.
He got up and became a servant, greedy for money.
Who will do the work of agriculture? Speak up brother Majsi..."
Oh, the empty wheel spins
Isn't the shrine of your village?
A poor person living in a village, fasting,
Food-SatraLavitosiKashi.....
..... who serves the poor village
He is honored with fame. (RashtrasantTukdojiMaharaj)

Tukdoji Maharaj has emphasized the importance of rural life through the above hymns. The Maharashtra government had banned Shankarpats by law in the interim, but in 2021-22 the ban on Shankarpats was lifted once again and approved. From this, the government has realized the necessity of Shankarpata.

Thus, the social, cultural, religious, economic and political importance of Shankarpata as animal husbandry, agriculture, rural life and entertainment needs to be preserved even today.

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Acquisition of natural remanence in the basaltic later ites of Deccan volcanic province (India): Implications to palaeomagnetic studies in laterites

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Acquisition of natural remanence in the basaltic laterites of Deccan volcanic province (India): Implications to palaeomagnetic studies in laterites

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ABSTRACT

Lateritization in the Deccan basalt province (India) represents a large spectrum of chemical weathering with up to 99% of CIA values and the complete ferri- to antiferromagnetic transformations. We combined rock magnetic, palaeomagnetic, XRD, and XRF analyses to investigate the mineralogical transformations and its relationship to the acquisition of natural remanent magnetization (NRM) by sampling a 25 m thick Deccan lateritic profile from the West Coast of India. Significant amount of amorphous hematite (*ha*), crystalline hematite (*hc*), goethite and their Al- substituted forms were detected along with gibbsite and kaolinite. The domain size association of 'SP + SD and 'SP + SD + MD' in the ferri- as well as antiferromagnetic forms; and combination of *ha* and *hc* yield strong NRMs amongst these laterites. Low field demagnetization (< 5mT) allows removal of ha_{NRM}; and the secondary components due to ferrimagnetic oxides can be removed at < 25 mT. Thereafter, the hc_{NRM} continued to decay up to > 150 mT. Palaeomagnetic tests (Koenigsberger ratio, MDF, intensity decay and Zijderveld diagrams) indicate stable Characteristic remanent magnetizations (ChRM) due to *hc*; and the Al-substitutions does not affect the ChRM stability, depicting these laterites as excellent palaeomagnetic recorders. The stable ChRMs due to Chemical/Crystallization RMs due to '*hc*' also benchmarks the degree of maturity within the process of lateritization.

1. Introduction

Laterites are the manifestations of deep, prolonged, and intensive chemical weathering that occurred on differing host lithologies (Widdowson and Cox, 1996; Bourman and Ollier, 2002; Wimpenny et al., 2007, Ollier and Sheth, 2008, Babechuk et al., 2014, Ghosh et al., 2015). Selective diminution of alkali, alkaline earth elements, and silica from parent rock through the process of lateritization results in gradual enrichment of the iron and aluminium oxides and hydroxides along with some residual clays (Widdowson and Gunnell, 1999; Borger and Widdowson, 2001; Widdowson, 2007).

Widespread occurrence of laterites is observed in tropical regions particularly during the Cenozoic period (Bardossy, 1981; Gunnell, 2003). Laterites from the Indian subcontinent particularly preserve a variety of processes from different ages and host rocks (Meshram and Randive, 2011; Caner et al., 2011). Some of the pioneering and fundamental information on laterites is also derived from the Indian west coast occurrences (Buchanan, 1807) and were studied using physical, geochemical (Widdowson and Cox, 1996; Kısakürek et al., 2004; Babechuk et al., 2014, 2015; Suhr et al., 2018) and mineral magnetic perspective (Liu et al., 2019; Singh et al., 2020).

The prolonged process of lateritization permits sufficient time for NRM acquisition depicting them as good magnetostratigraphic recorders. However, there is ambiguity in understanding the acquisition in terms of the lateritization process. A single lateritic profile can be perceived through different superimposing processes dominated by solution and precipitation activities (Widdowson, 2007; Babechuk et al., 2014, Suhr et al., 2018). Palaeomagnetic studies in lateritic profiles therefore demand detailed mineralogical assessment in context to NRM acquisition. The renewed interest in basaltic laterites as possible analogues of Martian weathering processes (Hynek et al., 2002; Thomas et al., 2005; Greenberger et al., 2012), CO_2 sequestration during basaltic

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weathering (Seifritz, 1990; Schuiling and Krijgsman, 2006; Gislason and Oelkers, 2014) further demand detailed studies from ideal basaltic laterites, such as the Deccan traps. Iron oxides being the chief constituent of laterites, magnetic mineralogy and spectroscopy makes some of the most suitable approaches for such investigations.

The basalts are enriched with ferrimagnets and hence provide a complete spectrum of transformation to antiferromagnetic oxides during through the process of lateritization. The complex nature of lateritization allows many repeated and superimposed reaction series of partial to complete oxidation, hydroxylation, dissolution, and precipitation leading to the processes such as maghematization, ferry-hydroxylation, Al-substitution, crystallization, and recrystallization. Several residual, crystalline, and amorphous minerals are produced during lateritization compelling the use of multiple spectroscopic and magnetic approaches to analyse the laterites. On the other hand, it enriches our understanding on NRM acquisition by chemical/crystallization remanent magnetizations (CRMs). This study is aimed at finding the efficacy of NRM in terms of palaeomagnetic signatures from the laterites.

The mineral/rock magnetism is a well-established approach for identification of different phases of iron oxides enabling their semi-quantitative estimates (Thompson and Oldfield, 1986, pp. 21–38; Evans and Heller, 2003, pp. 50-78; Liu et al., 2012). Intensive work has been made to delineate and differentiate dominant phases of ferrimagnetic mineralogy (i.e. magnetite, maghemite, and greigite) from the antiferromagnetic minerals. Further the studies are available to provide distinction within the antiferromagnetic phases (e.g., Dekkers and Rochette, 1992; France and Oldfield, 2000; Sangode and Bloemendal 2004; Roberts et al., 2020; Jiang et al., 2022). The antiferromagnetic minerals can carry stable remanence over a longer period makes them suitable for palaeomagnetic studies (Dunlop and Özdemir, 1997, pp. 16–42; Roberts et al., 2020). Previously, Schmidt et al. (1983) made palaeomagnetic attempts on Indian laterites and found considerable scatter in data which he then inferred mixing of normal and reverse magnetization demanding detailed mineralogical studies. Substitution of cations (e.g., Al) and amorphous to crystalline transformations within antiferromagnetic complexes (Cornell and Schwertmann, 2003, pp. 39-57; Liu et al., 2007; Hu et al., 2016) is a crucial factor in the determination of magnetic properties akin to the standard and theoretical values. Laterites being highly enriched with antiferromagnetic oxides/hydroxides such as hematite, goethite, ferrihydrites and lepidocrocite (Kısakürek et al., 2004; Meshram and Randive, 2011; Babechuk et al., 2014, 2015; Suhr et al., 2018; Singh et al., 2020) provide an opportunity to study the complex processes and their implications on NRM. Here we characterized the lateritic magnetic minerals, their concentration and domain sizes to understand its implications on NRM acquisition.

2. Study area

The Indian subcontinental drift from the southern to northern hemisphere continued until its collision with Asia to form the Himalayas (Klootwijk and Pierce, 1979; Courtillot et al., 1988). During this transect voluminous lavas were erupted at ~ 65 Ma ago around the Cretaceous-Tertiary (K-T or K-Pg) boundary, occupying an area of 500,000 km^2, thus creating the Deccan traps (Klootwijk and Pierce, 1979) as large igneous province. This formed the substrate for the lateritization typically under the tropical humid conditions over suitable geomorphological surfaces. The studied laterites are formed over the Poladpur Formation of Deccan traps. The thickness of lava flows belonging to the Poladpur Formation varies from 3 to several 10′s of meters spread over wide distances (Duraiswami et al., 2014). The studied laterites occur on the Konkan plain are known as low-level laterites (Widdowson and Cox, 1996) and are depicted in the Fig. 1a. Schimdt et al. (1983) divided Indian laterites into late Cretaceous-early Tertiary laterites and mid-to-late Tertiary laterites.

3. Materials and methods

Large oriented block samples (greater than30 cm^3) of laterites were collected at 5 m intervals from the freshly excavated laterites near the Chiplun area covering an entire profile of 25 m. Sample 1 and sample 7 are from the top and bottom of the profile, respectively. Samples of the fresh host basalt were obtained at the base of the profile for mineralogic and palaeomagnetic reference. All the samples were cored into standard specimen sizes keeping the orientations in-tact and the sets of palaeomagnetic and rock magnetic studies were prepared. For instance, specimens of sample number 1 are labelled 1.1, 1.2, 1.3, etc. for palaeomagnetic measurements, and 1A, 1B, 1C for rock magnetic measurements.

3.1. Rock magnetic measurements

Magnetic susceptibility was measured using Bartington MS2B susceptibility meter operated dual frequency (χ_{lf} at 0.465 and χ_{hf} at 4.65 kHz). The χ_{fd} and χ_{fd} % were calculated using ($\chi_{lf} - \chi_{hf}$) and [($\chi_{lf} - \chi_{hf}$)/χ_{lf}] × 100, respectively. Anhysteretic remanent magnetization (ARM) was induced by a peak AC field of 200 mT superimposed over 0.1 mT DC bias field using Magnon alternating field demagnetizer (Germany). The values for susceptibility of ARM (χ_{ARM}) were calculated by normalization of ARM with DC bias field. Isothermal remanent magnetization (IRM) was imparted using ASC-IM-10–30 (USA) impulse magnetizer. The field was induced at incremental steps from 25 to 2200 mT and backfields from −10 to −1000 mT. The magnetizations were measured using Molspin (Minispin) magnetometer (Sensitivity: 3 × 10^{-5} A/m), whereas the palaeomagnetic remanence was measured using the JR-6A spinner magnetometer (AGICO, Czech) (Sensitivity: 2.4 × 10^{-6} A/m). The maximum field available in the laboratory (i.e., 2200 mT) was considered as saturation field to calculate the SIRM (Evans and Heller, 2003, pp. 50-78). The values of susceptibilities and remanent magnetizations throughout the calculations were mass normalized. Table 1 (Supplementary file) summarizes the parameters used for estimation of different parameters and Table 2 (Supplementary file) accounts the mean values of the studied parameters. Backfield data were used to calculate the coercivity of remanence (B_{CR}). Rock magnetic and palaeomagnetic analyses were carried out at the Palaeomagnetic laboratories of Department of Geology, Savitribai Phule Pune University (SPPU) and the CSIR- National Geophysical Research Institute (NGRI), Hyderabad.

3.2. Hysteresis loops and thermomagnetic measurements

Set of samples were analysed for thermomagnetic, XRF and XRD studies using standard methods. Hysteresis loops and thermomagnetic curves were generated on advanced variable field translation balance (AVFTB) (Sensitivity- 5 × 10^{-5} Am^2/kg, Temperature window- 0 to 800 °C) at CSIR- NGRI. The hysteresis loop parameters were analyzed using software 'rockmaganalyzer' (https://earthref.org/RockMagAnalyzer/).

3.3. X-ray fluorescence (XRF)

A set of powdered samples (six samples of laterite and two samples of basalt) were used for XRF analyses to calculate the weathering indices. The analyses were made on ED-XRF SPECTRO XEPOS III unit at SPPU following the sample preparation procedure described in Kisakurek et al (2004). USGS standards AGV-1, BHVO-1, VL-1 and VL-2 were used as standards for calibration (LaBrecque and Schorin, 1987). The geochemical indices were calculated using spreadsheet provided by Babechuk et al (2014). Chemical index of alteration (CIA) and Mafic index of alteration (MIA)(oxidation) were measured using moles of oxides

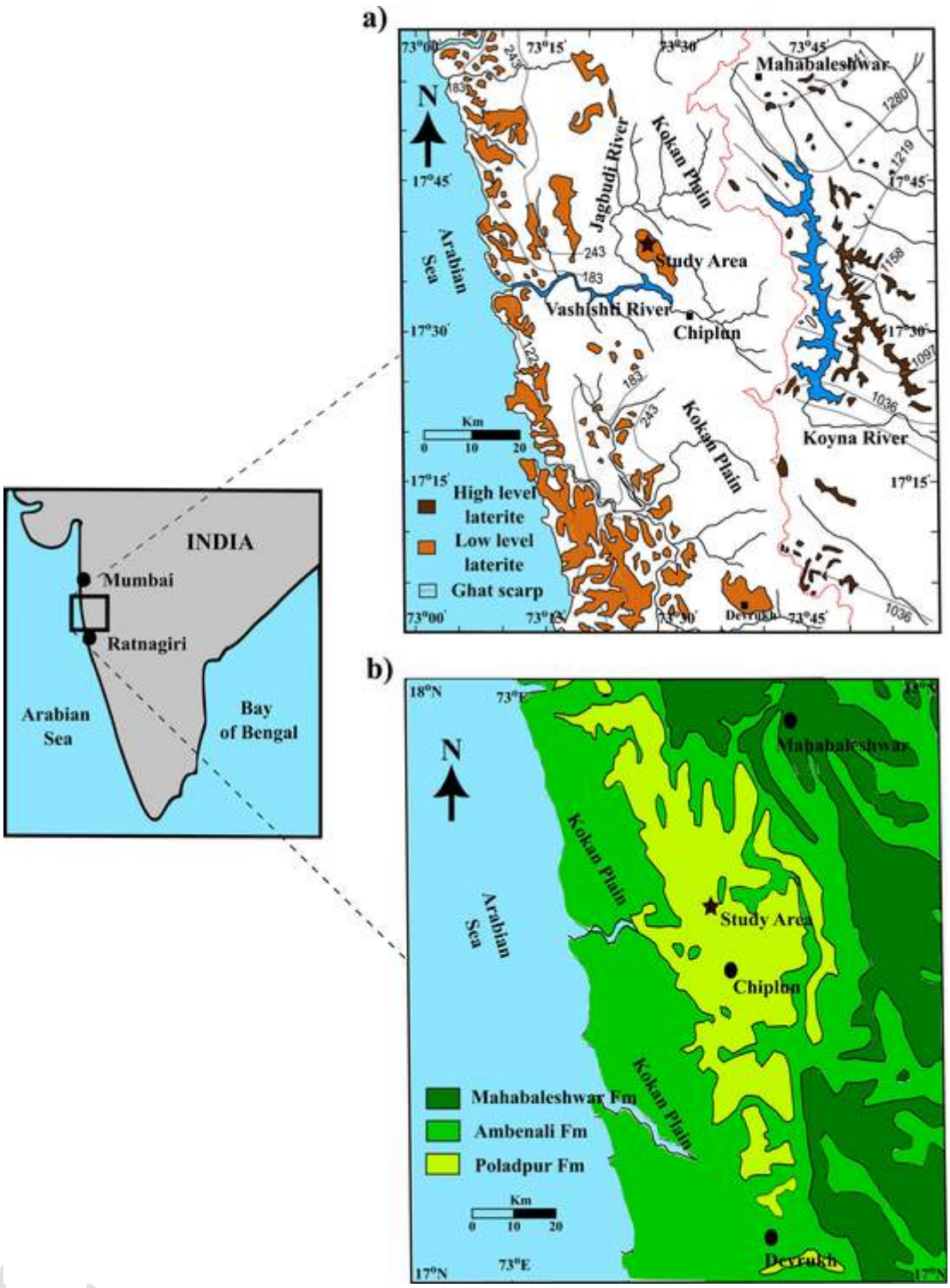

Fig. 1. Location map of the study area. a) High level (dark brown) and low level (orange) laterites separated by the Western Ghats escarpment (dashed red line). Black dot lines represent the elevation contours in meters. Inland water bodies are marked in blue colour. The study area (near Chiplun) is indicated by a black star. b) Geological map of the study area after Widdowson and Cox (1996). The Deccan trap stratigraphy is shown by shades of green colour. The studied laterites are developed on basalts belonging to Poladpur Formation of Deccan volcanic province (modified after Widdowson and Cox (1996)).

in their formulae, while oxide wt % were used in the case of the index of lateritization (IOL) with formulae given below.

$$CIA = [Al_2O_3/(Al_2O_3 + CaO + Na_2O + K_2O)] \times 100.$$

$$MIA = [(Al_2O_3 + Fe_2O_{3(T)})/(Al_2O_3 + Fe_2O_{3(T)} + MgO + CaO + Na_2O + K_2O)] \times 100.$$

$$IOL = [(Al_2O_3 + Fe_2O_{3(T)})/(SiO_2 + Al_2O_3 + Fe_2O_{3(T)})] \times 100.$$

3.4. X-ray diffraction (XRD)

RIGAKU XRD Model ULTIMA IV was used to generate the XRD spectra for bulk powder samples from each unit at SPPU. The 2θ scan range

was set at 10 to 80° with a step interval of 0.02θ and speed of 4 per second. Samples were measured in Cu-Kα mode applying a voltage of 45 keV and the intensity of 40 mA. Phase identification and refinement were accomplished using Match software (https://www.crystalimpact.com/match/) having options for library data search to enable the mineral identifications in the bulk samples.

4. Results and discussion

4.1. Rock magnetism

The magnetic susceptibility (χ_{lf}) variation within the profile (Fig. 2a and Table 2) shows values from 31 to 105 × 10^{-8} m^3/kg in *Zone I*, 2 to 40 x10^{-8} m^3/kg in *Zone II,* and 77 to 84 x10^{-8} m^3/kg in *Zone III* from top to bottom. The overall range of values for *Zone I* and *III* are substantially higher than that for *Zone II* depicting possible ferrimagnetic influence for the former compared to antiferromagnetic nature of mineralogy in *Zone II*. The χ_{fd}% (approximate concentration of SP grains) is higher in *Zone II* relative to *Zone I and III* (Fig. 2b). The *Zone II* values range from 0.4 to 5.5%, whereas the average values for χ_{fd}% in *Zone I and III* are 0.5 and 0.8%. Lateritization process favours a large-scale transformation within magnetic mineralogy by dissolution and precipitation in an oxidative regime of Eh-pH conditions. The χ_{fd} % represents the effect of viscosity at room temperature for the superparamagnetic (SP) domain fraction with diameters less than 3–50 nm. The behaviour of SP grains is largely dependent on temperature and the time span of observation (O'Reilly, 1984, pp. 58-97). The χ_{fd}% enrichment amongst *Zone II* samples suggests its formation possibly by intense dissolution-solution-precipitation activity during lateritization. The ferrimagnetic SP may arise by the dissolution of larger ferrimagnetic grains or simply by maghemitization. Whereas, *Zone II* is marked by the highest coercivities (B_{CR}) and hard isothermal remanent magnetizations (HIRM) (described below) suggest the possible antiferromagnetic nature of the SP fraction. The intense antiferromagnetic transformations in laterites lead to the formation and precipitation of ferrihydrite and limonitic complexes in their amorphous states and nanoforms to produce the SP.

The χ_{ARM} is generally related to the concentration of stable single domain (SSD) ferrimagnetic grains (Maher, 1988; Egli and Lowrie, 2002). As seen in Fig. 2c, the χ_{ARM} is strikingly lower in *Zone II* compared to *Zone I and III,* with Zone *III* representing higher concentration of SSD grains of ferrimagnetic nature. The Saturation Isothermal Remanent Magnetization (SIRM) collectively depends upon the coercivity of magnetic mineral phases (Thompson and Oldfield, 1986, pp. 21-38). Magnetically hard minerals (high coercivity and low remanence) resist the applied field while soft minerals (low coercivity and high remanence) align easily along external fields. The SIRM in *Zone I* (max: 0.84 Am^2/kg) and *III* (max: 0.46 Am^2/kg) show exceptionally higher values than *Zone II* (Fig. 2d). SIRM values for *Zone I* and *Zone III* thus indicate a dominant contribution from ferrimagnetic minerals e.g. magnetite/titanomagnetite and maghemite; while *Zone II* indicates majority of antiferromagnetic complexes (hematite, goethite, and their substitutes). The SIRM values for *Zone I* are much higher than *Zone III* depicting significant ferrimagnetic contribution from magnetite-maghemite phases.

The S-ratio depict relative abundance of soft versus hard magnetic minerals (King and Channell, 1991). Theoretically, the values close to '1' correlate well with soft ferrimagnetic minerals like magnetite and prevailing lower values correspond to magnetically hard minerals such as hematite and goethite. In the present scenario, *Zone I* and *III* show the S ratios close to 0.9 implying dominant ferrimagnetic mineralogy (Fig. 2e). The maximum and minimum values are observed in *Zone II* and are within the range from 0.67 to 0.02 suggesting minor contribution of ferrimagnetic minerals in overall antiferromagnetic assemblage

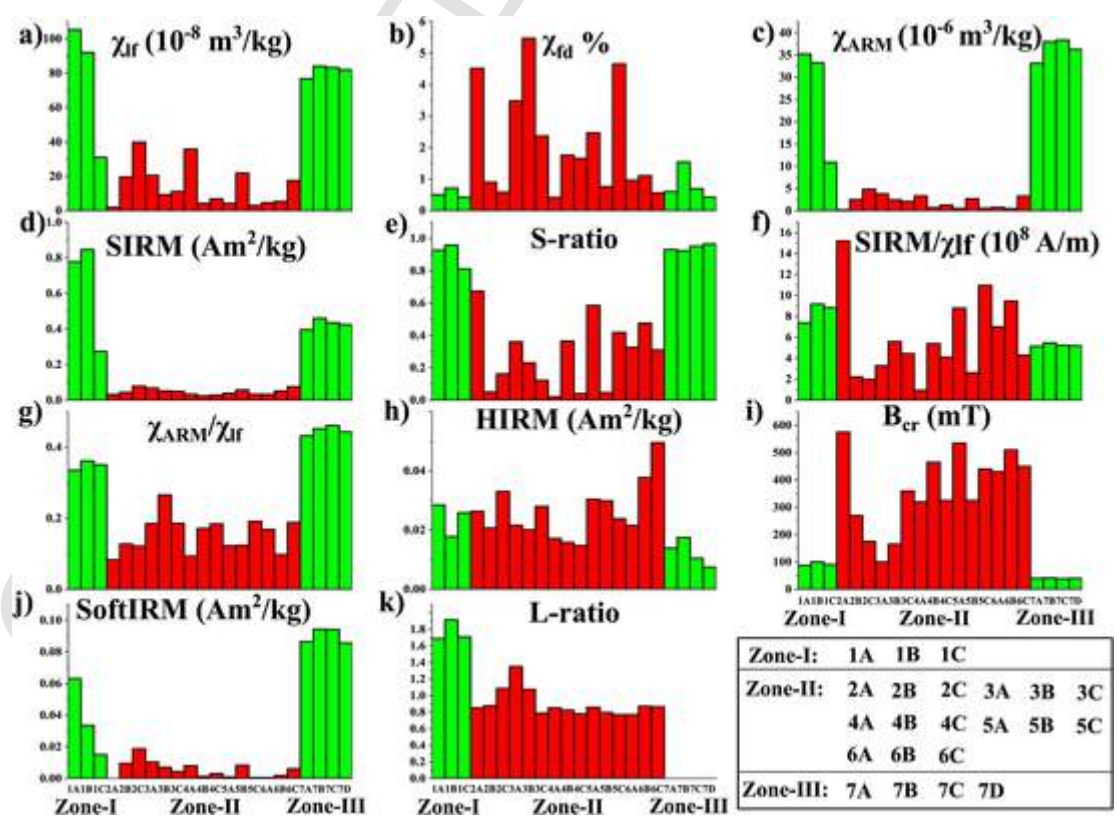

Fig. 2. Bar plots of different environmental magnetic parameters against the specimens of their respective samples. Green-coloured bars represent Sample 1 (specimens 1A, 1B, 1C) of laterite and Sample 7 (specimens 7A, 7B, 7C, 7D) of basalt, while Sample 2–6 of the typical laterites are shown in red bars. Index on the lower right side of the diagram represents zones and their corresponding specimens. The parameters employed in this study are a) χlf (10^{-8} m^3/kg), b) χfd %, c) χARM (10^{-6} m^3/kg), d) SIRM (Am^2/kg), e) S-ratio, f) SIRM/χ (10^8 A/m), g) χARM/χlf, h) HIRM (Am^2/kg), i) B_{cr} (mT), j) Soft IRM (Am^2/kg), k) L-ratio.

(Fig. 2e). However, the use of S-ratio for relative contribution is statistically non-linear and the interpretation is based on their non-unique nature (Heslop, 2009).

The SIRM/χ_{lf} ratio broadly delineates the changes in domain-size; and in the present case, it is sensitive to changes in the magnetic mineral phases along with a possible contribution from paramagnetic minerals (predominantly the clay minerals). In *Zone II*, the combination of SIRM/χ_{lf} and χ_{ARM}/χ_{lf} depict bimodal distribution due to smaller and larger SD grains (Fig. 2f, 2g). The higher values of χ_{ARM}/χ_{lf}, a grain size indicator depict relative enrichment of SD particles and its lower values show a bias towards SP or Multidomain (MD) particles (Liu et al., 2012).

The HIRM and Soft IRM ratios are primarily inferred for discrimination of bulk concentration of ferrimagnetic and antiferromagnetic mineralogy (Robinson, 1986; Thompson and Oldfield, 1986, pp. 21-38). Overall, the high HIRM in *Zone II* indicated the predominance of antiferromagnetic minerals relative to *Zone III* (Fig. 2h). The Soft IRM values in *Zone II* are 17 times lower than *Zone III* suggesting the relative abundance of hematite and/or goethite like mineral phases (Fig. 2j). The coercivity of remanence (B_{cr}) is a complex parameter that depends upon mineralogy, domain states, and crystal structures (Dunlop and Özdemir, 1997, pp. 133–140). The substitution of Al or Ti in the structures of magnetic minerals however causes drastic changes in the magnetic properties (Liu et al., 2007; Liu et al., 2012). This may result in an increase or decrease in the values of saturation magnetization, coercivity, and Neel/Curie temperatures (Liu et al., 2007). The B_{cr} values are higher in *Zone II* (max- 575) than *Zone I* and *Zone III* (Fig. 2i). Nonetheless, B_{cr} in *Zone I* is twice as higher as *Zone III*. Low S-ratio, high χlf, and SIRM along with high B_{cr} values thus indicate the existence of both antiferromagnetic and ferrimagnetic minerals in *Zone I*. Liu et al. (2007) suggested constancy of L-ratio to reflect the absolute changes in the concentration of hematite or goethite,. For conventional use of S-ratio and HIRM, therefore we estimated the L-ratio. The values were uniform in *Zone I* and *II*, attesting the fair usage of S-ratio and HIRM (Fig. 2k).

Finally, the inferences from routine mineral magnetic analysis are summarized below.

1) The topmost *Zone I* is dominated by an equitable proportion of soft and hard magnetic minerals with a significant concentration of SD grains. The surficial ferrimagnetic inputs can be attributed to secondary/detrital processes as described in Singh et al (2020).

2) The intermediate *Zone II* represents a predominant antiferromagnetic zone with minor ferrimagnetic contribution and the predominance of SP fraction. This zone mainly represents the intense lateritization with almost complete transformation of ferrimagnetic oxides along with possible addition of antiferromagnetic complexes along with other minerals by dissolution and precipitation during intense chemical weathering enriching the antiferromagnetic oxides.

3) The lowermost *Zone III* represents a dominant ferrimagnetic mixture of SD and MD grains along with low antiferromagnetic contributions.

4.2. Modelling of the isothermal remanent magnetization (IRM) spectra

When the samples are dominated by mixed magnetic mineralogy, detailed analysis of IRM curves can provide differentiation of admixtures (France and Oldfield, 2000; Liu et al., 2012). The values of acquired magnetization are plotted on the y-axis and corresponding field values on the x-axis. Fig. 3 thus depict that *Zone II* specimens are typical of antiferromagnetic nature (Dekkers and Linssen, 1989). The antiferromagnetic mineral hematite usually saturates in the fields up to 2–5 T,

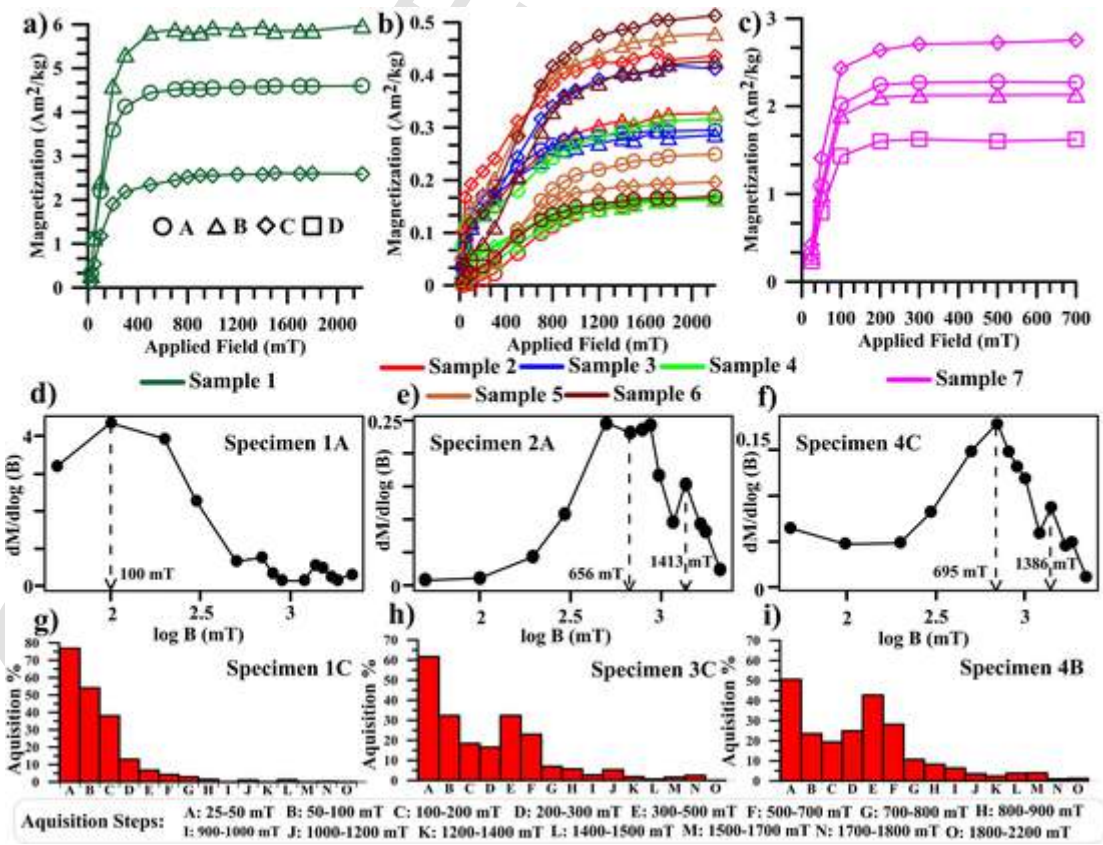

Fig. 3. The first row shows IRM acquisition (magnetization against applied field) for a sample from *Zone I*, *Zone II*, and *Zone III* in sequence. The second-row plots the coercivity spectra [d(M)/d(log B)] vs log B mT for specimens from *Zone I* (d), and *Zone II* (e, f). The dashed lines represent the mean coercivity values of the components. In the third row, we have plotted the RPM (relative percentage of magnetization acquisition) for specimens belonging to *Zone I* (g) and *Zone II* (h, i). Letters A to O on the x-axis represents the intervals of applied field in mT. Acquisition steps are shown at the bottom of the figure.

but the presence of goethite can increase the field of saturation up to ~ 6–9 T or even higher (Dekkers, 1988; Rochette et al., 2005; Liu et al., 2012). The saturation magnetization, coercivity, and Curie/Neel temperatures also depend upon the amount of substitution and degree of crystallinity (Cornell and Schwertmann, 2003, pp. 111-136; Liu et al., 2007). Thus the IRM curves for *Zone II* specimens can be subdivided into three parts depending upon the maximum magnetization induced (Fig. 3b). This proposes the variations in the mineralogy and domain size perhaps as a result of crystalline to amorphous varieties and their substitutions within the hematite dominant mineralogy along with some proportion of goethite. *Zone I* specimens show the highest enhancement compared to *Zone III*. However, *Zone III* specimens exhibit higher values of magnetization as it is dominated by ferrimagnetic minerals. This indicates a significant ferricretization in *Zone I*, while *Zone II* is dominated by lateritization.

The discrete IRM spectra are further useful for modelling the components of acquisition based upon the coercivity characters (e.g. Kruiver et al., 2001; Heslop et al., 2002; Maxbauer et al., 2016). These methods are generally applied when magnetic minerals are originated from different sources. The requirements for these methods are monotony in the data which will be achieved by increasing the IRM acquisition steps along with less magnetic interaction. As the applied field increments were less in this study, and also the magnetic minerals are grown from only one source (i.e. unimodal chemical origin), we used a plot of [d(M)/d(log B)] against log B (Fig. 3d, 3e, 3f) to identify mean coercivity components prior to applying further statistical procedures (e.g. smoothing, component fitting) (Tauxe et al., 1996; Maxbauer et al., 2016). The minerals that were not identified/detected by the values of coercivity from back-field application (possibly because of their lower concentration) can be separated using this plot. The plot for specimens 2A and 4C represents two coercivity components (Fig. 3e and 3f). For specimen 2A, the mean coercivity for components 1 and 2 are 656 mT and 1413 mT, respectively (Fig. 3e). Assigning the components for specific minerals depends on the source variation (eventually which will affect the magnetic signal) (Kruiver et al., 2001; Heslop et al., 2002; Maxbauer et al., 2016).

The lateritic mineralogy being antiferromagnetic (AFM) dominant, the coercivity analysis and the rate of change of IRM acquisition (RPM) appears to have been governed by the variation within the AFM phases. IRM being an indirect method, in this lateritic composition, we anticipate these different phases as a result of substitution (e.g. Aluminium-) and the grain size variations within the range of crystalline to amorphous oxides. We further examined this mineralogy using more advanced approaches in rock magnetism and the spectroscopy (i.e., XRD). In the present case, we assign the lower values of coercivity to hematite and higher values to goethite. The significant presence of goethite apart from hematite has been confirmed using x-ray diffraction analysis (presented later). The assigned value (656 mT) of coercivity is still higher than that expected for hematite (Peters and Dekkers, 2003). As stated above, the Al-substitution increases the values of coercivity for hematite and it decreases for goethite (Roberts et al., 2006; Liu et al., 2007). Similar two components were identified for specimen 4C. However, as shown in Fig. 3f, the curve initiates with elevation (x-axis) as opposed to specimen 2A. This initial enhancement implies the influence of a small/soft ferrimagnetic (FM) component which can be attested from the rate of acquisition (RPM) plots (Fig. 3i). Furthermore, specimen 1A is dominated by only one component (i.e., FM) having a mean coercivity of 100 mT, that is in agreement with the values obtained from backfield data (Fig. 3d).

The RPM for specimen 1C shows substantial acquisition up to 500 mT, depicting magnetite-maghemite-like ferrimagnetic phases (Fig. 3g). For specimen 3C, the percentage acquisition shows two trends, one up to 300 mT and the other from 300 mT upwards (Fig. 3h). Similar results were obtained for specimen 4B. This anticipates the presence of maghemite-like phases within *Zone II*. Furthermore, it also justifies the initial peak exhibited by specimen 2A as mentioned above. We considered the possibility of maghemite (/titanomaghemites) within FM mineralogy due to the commonly occurring process of maghemitisation during weathering of magnetite/titanomagnetites sourced from the parent Deccan basalts. In a nutshell, these results indicate that *Zone II* is dominantly hematitic (Al substituted?) along with variable contributions from goethite and maghemite; and maghemite (or magnetite) is the major phase in *Zone I*.

4.3. Hysteresis and thermomagnetic analysis

The hysteresis curve data are plotted for representative specimens of laterite and parent rock basalt (Fig. 4). The changes in magnetization with applied fields are measured using hysteresis loops (Thompson and Oldfield, 1986, pp. 21-38). The height, width, squareness, and steepness of the hysteresis loops are the consequence of magnetic concentration, stability, ease of magnetization, and grain interactions respectively (Maher and Thompson, 1999, pp. 29-31). Also, there is a significant impact of magnetic domain size on hysteresis curves (Dunlop and Özdemir, 1997). The laterites (Sample 2–6) typically showed wasp-waisted loops, except for Sample 1 (Fig. 4). Tauxe et al. (1996) demon-

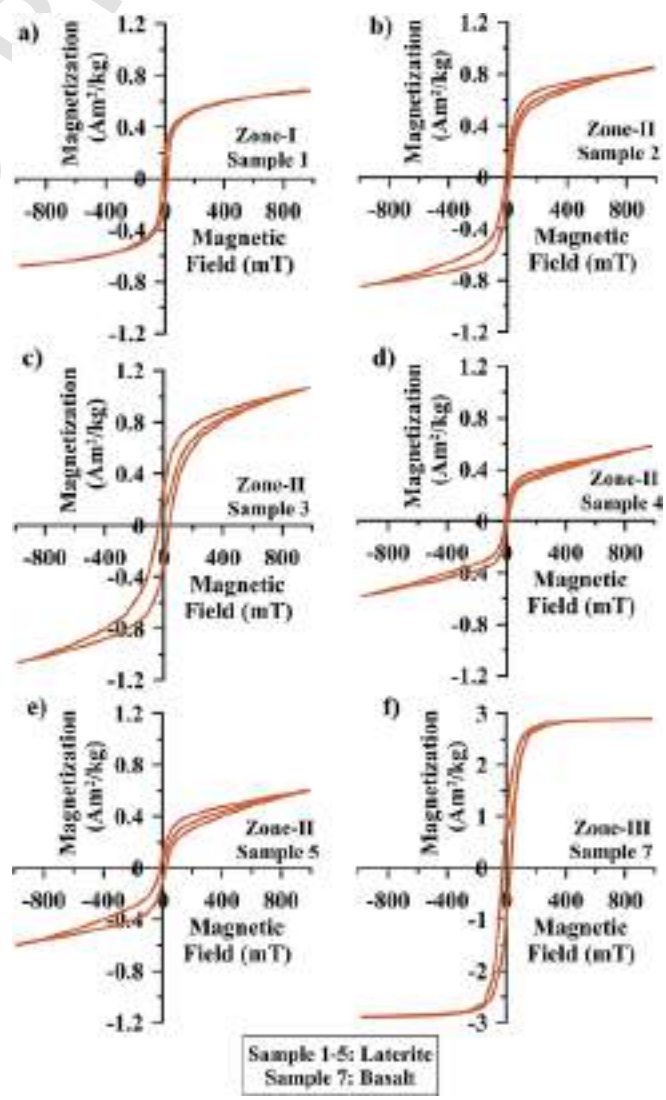

Fig. 4. Hysteresis curves for samples representing all three zones (*Zone-I, II and III*) from the studied profile. The figure shows wasp-waisted curves for laterite samples (b-e). The hysteresis curve of Sample 1 (laterite) showed similarity with the Sample 7 (basalt) (a, f).

strated that the mixtures of SP and SD grains with a size range of greater than 8 nm of SP can produce wasp-waisted curves. Also, a threshold size of 15–20 nm of SP grains along with some SD grains would create an exact shape, which is exhibited in the present scenario. There is a remarkable difference between the loops from *Zone I* (Sample 1), *Zone II* (Sample 2–6) and *Zone III* (Sample 7) as expected (Fig. 4). The hysteresis loop for Sample 1 closes at lower coercivity indicating dominant ferrimagnetic mineralogy (Fig. 4a). Lower values of coercivity can be observed in Sample 7 (basalt) compared to lateritic samples indicating SD to MD magnetite grain size population in basalt (Fig. 4f; Tauxe, 2002, pp. 35-75; Liu et al., 2012).

The graph of reduced saturation remanence (M_{rs}/M_s) against reduced coercivity (B_{cr}/B_c) so called 'Day Plot' has been pervasively used in many studies to discriminate the grain size variations (Day et al., 1977). Here, we used the Day-Dunlop plot as modification of the Day plot (Dunlop, 2002) shown in Fig. 5. Dunlop (2002) calculated theoretical as well as actual mixing lines for magnetite domains, with modified limits of reduced ratios in the Day plot. As seen in Fig. 5, majority of the samples of laterites fall within the range of 15 and 20 nm SP-SD mixing lines with one sample falling in 10–15 nm SP-SD mixing line. This suggests varying proportion of SP and SD grains in the lateritic samples. Furthermore, it supports the illustration given for hysteresis curves. The crystallinity of hematite determines the SD threshold size (Dekkers and Linssen, 1989).

The thermomagnetic curves (Fig. 6, discussed below) indicated that the hematites are Al- substituted. The exact delineation of critical SD size of hematite is limited by substitution (Dekkers and Linssen, 1989). However, the critical SD size for hematite could possibly be elevated to 100 μm (Kletetschka, 2002). Basalt sample is exactly falling on the mixing line of SD-MD having 15 % of MD mixtures in SD grains of magnetite (Ti). The explanation of hysteresis loops and Day-Dunlop plot suggests that the lateritic mineralogy is dominated by SP (10–20 nm) and SD AFMs. The SP fraction appears to be abundantly the amorphous hematite apart from other poorly crystalline antiferromagnetic fractions.

The identification of magnetic minerals using their respective Curie/Neel temperature has been widely used, although magnetic enhancement and diminution effects during heating/cooling often mask

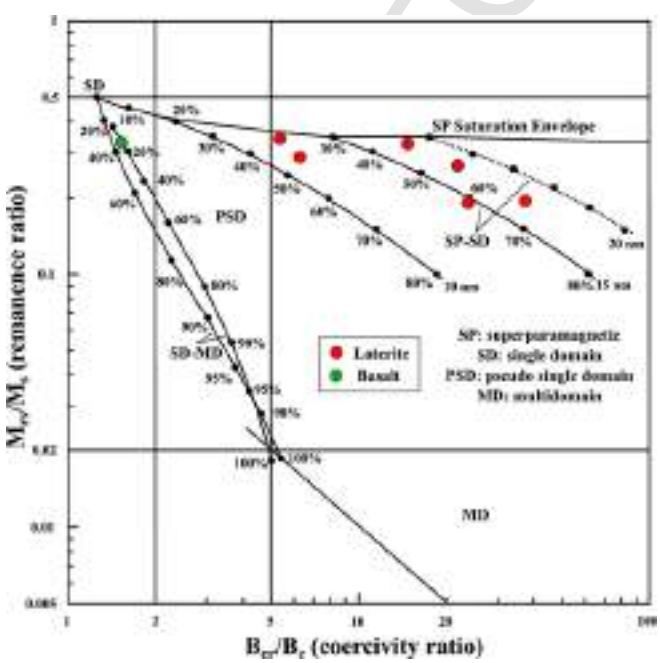

Fig. 5. Day-Dunlop plot (Day et al., 1977; Dunlop, 2002). Domain state mixing lines are adopted from Dunlop (2002). Red circles indicate laterite samples (Sample 1–6) while green circle indicate basalt sample (Sample 7).

the recognition (Liu et al., 2004; Torrent et al., 2006; Zhang et al., 2010). Fig. 6 illustrates the heating and cooling cycles (marked by red and blue arrows) for laterite and basalt analysed using AVFTB. Sample 1 showed dramatic change in magnetization during heating (300–500 °C) and a large rise during cooling, in contrast to the other laterites (Fig. 6a). The final decline in magnetization around 580 °C indicates the existence of magnetite (Fig. 6a). All the remaining laterite samples show a similar pattern by sudden decrease in magnetization at 300–500 °C during heating (Fig. 6b, 6c, 6d, 6e). Removal or conversion of mineral phase with higher magnetization to that with lower one possibly explains this behaviour. During the cooling cycle, we observed a significant loss of magnetization (50–80 %) concerning initial magnetization. Liu et al. (2005) observed similar changes in thermomagnetic curves for loess samples attributing such changes to conversion (inversion) of maghemite to hematite during heating in the same temperature range as observed here. They further suggested that this behaviour could also be used as an index for the presence of SP particles. The inversion temperature have been reported from 250 °C to ≥ 750 °C depending upon grain size, degree of oxidation, and incorporation of impurity to the crystal structure (Dunlop and Özdemir, 1997) and the Neel temperature of hematite is 657 °C (Dunlop and Özdemir, 1997, p. 51). However as seen in Fig. 6, the heating curve drops around 640 °C depicting the lowering of Neel temperatures due to substitution. The Al-substitution could be the most common reason for lowering of the Neel temperature of hematite (Dunlop and Özdemir, 1997, pp. 69–74; Liu et al., 2007). The diamagnetic bias of Al substitution decreases the crystallinity of hematite eventually affecting its Neel temperature and coercivity (Cornell and Schwertmann, 2003, pp. 39-57; Liu et al., 2007).

Identification of goethite in the present case is demanding as Al-substitution, excess water and crystallinity could reduce its Neel temperature to room temperature (Dekkers, 1990; Liu et al., 2012). Also, dehydration of natural and synthetic goethite occurs at considerably lower temperatures, at less than 270 °C (Lewis and Schwertmann, 1979). Dekkers (1990) reported dehydration of goethite at the temperature range from 260 to 360 °C. The basalt sample has shown a gentle decrease in magnetization up to 300 °C, thereafter a small drop was observed in a temperature range of 300–400 °C (Fig. 6f). Jiang et al. (2015) suggested magnetic enhancement in synthetic samples due to iron content from clay minerals and subsequent production of magnetite. There is a possibility of titanomagnetite to be exsolved into Ti-rich and Ti-poor magnetite phases at elevated temperatures (Dunlop and Özdemir, 1997, pp. 61–66), fairly enhancing the magnetization while cooling.

4.4. X-ray fluorescence analysis

The intensity and magnitude of alterations in the magnetic mineralogy of basalt could be traced using various alteration indices (Nesbitt and Young, 1984; Nesbitt and Wilson, 1992; Fedo et al., 1995; Babechuk et al., 2014). The CIA values primarily track dissolution of feldspar and higher values promote the removal of labile elements (Ca, Na and K) (Babechuk et al., 2014). CIA greater than 99% indicates complete removal of mobile elements and retention of Aluminium (Fig. 7a) (Table 3, Supplementary file). CIA values for basalt are less than 33% which are well within the basaltic weathering range (Fig. 7a). In SAF triangular diagram, all laterite samples fall in moderately to strongly lateritised fields, suggesting the deep nature of weathering in a complete profile (Fig. 7b). In the laterites from Gujarat, Meshram & Randive (2011) reported similar strong lateritization from the SAF diagrams. The IOL is a prime index of lateritization whose values in these laterites are significantly higher (greater than 70%) (Fig. 7b). Basaltic sample at the base fall in kaolinitised field in SAF diagram (this could represent the initiation of lateritization process in *Zone III*) (Fig. 7b). The basalt IOL values are consistent with values obtained by Babechuk et al. (2014). Lastly, the MIA (oxidation) represents the retention of Fe^{3+} and

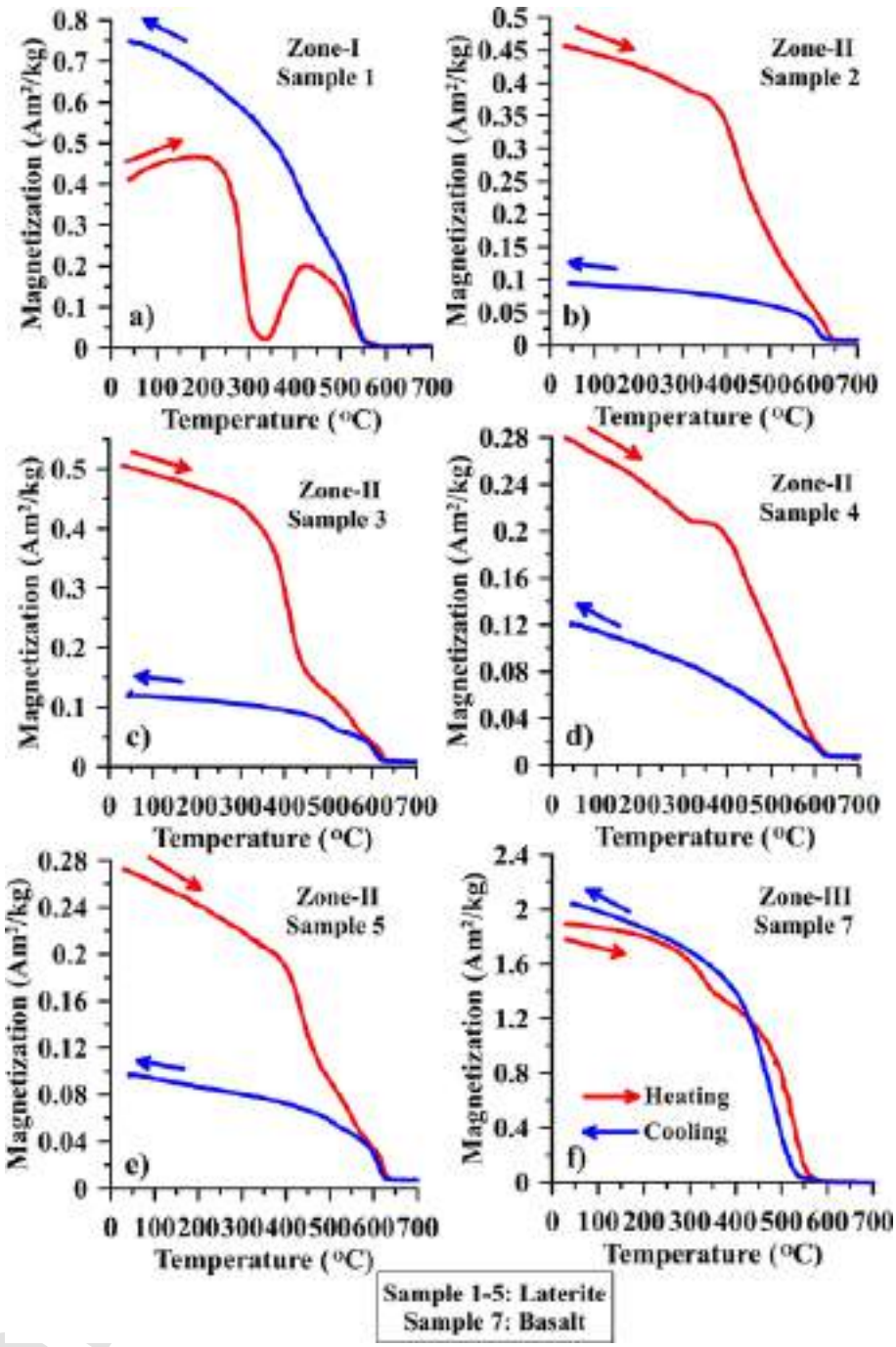

Fig. 6. Thermomagnetic curves for laterites (Sample 1–5) and basalt (Sample 7). Distinct patterns of heating are observed for samples from *Zone I* (a), *Zone II* (b-e) and *Zone III* (f). Laterite samples showed large differences in the magnetization after heating and cooling cycles (irreversible behaviour). Reversible curves were produced for basaltic sample (Sample 7). Red and blue arrows indicate heating and cooling curves.

aluminium over other oxides eventually noting the vital characteristics of laterite formation. As seen in Fig. 7c, all the laterite samples fall on the Fe_2O_3-Al_2O_3 line indicating their enrichment and maturity.

Above mentioned alteration diagrams clearly indicate absolute maturation of the laterite profile and completion of the lateritization process. The conversion of magnetic minerals from basaltic lithology has experienced laterite weathering to the fullest possible extent. This strengthens our inference of detrital ferrimagnetic input in the highest horizons of laterites contributing to ferrimagnetism in an AFM dominant process of lateritization.

4.5. X-ray diffraction analysis

The XRD analyses have been extensively practiced both quantitatively and qualitatively to study geological formations. We used *Match*-3 software to analyse and refine the XRD data (https://www.crystalimpact.com/match/). This software utilizes extensive data library search to identify the mineral phases in the sample. We found background noise in the data similar to Suhr et al. (2018) which was later assigned to the widespread occurrence of ferrihydrite and amorphous phases of hematite. Iron and aluminium oxides and hydroxides along with clay minerals were observed throughout the laterite profile. Majority of the iron oxide and hydroxide peaks occur at 30^0 (2θ) on-

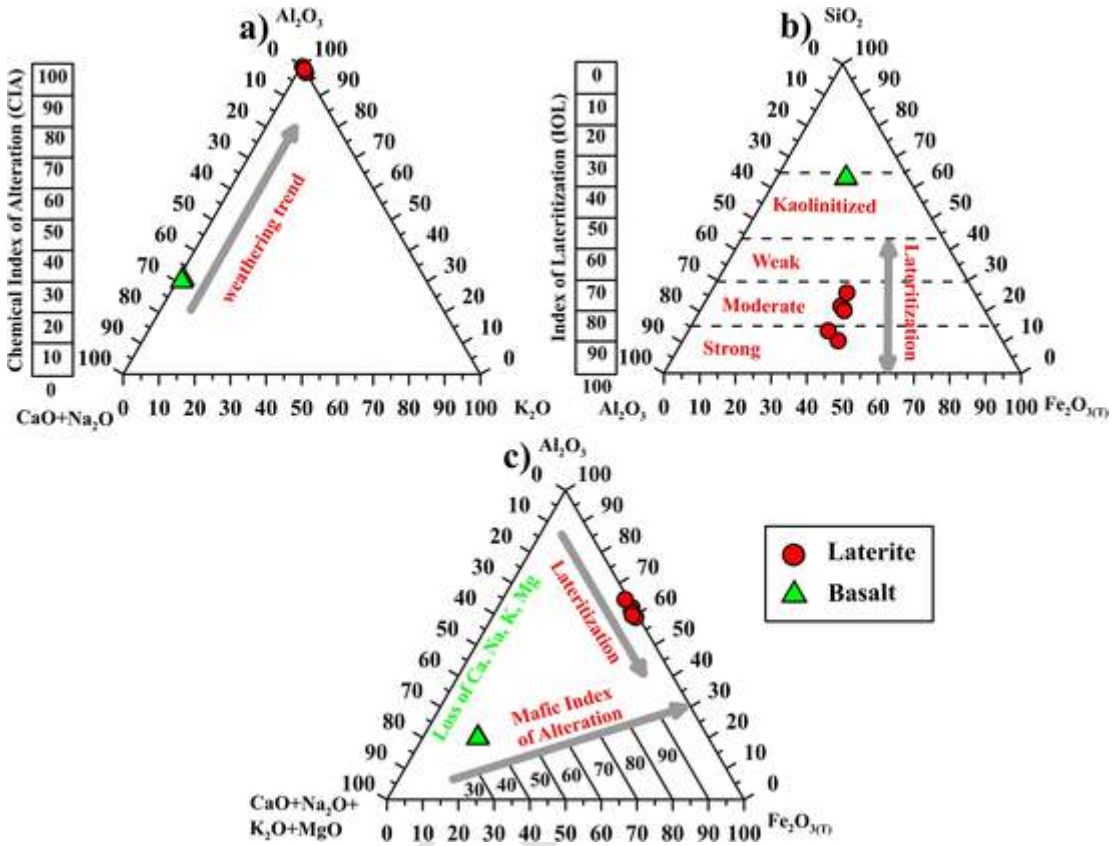

Fig. 7. Ternary diagrams indicating changes in various oxides along with weathering indices. Laterites are marked by red circles while basalt samples are shown by green triangles. The first diagram (a) is A-CN-K ternary plot along with the chemical index of alteration (CIA) (Nesbitt and Young, 1984; Nesbitt and Wilson, 1992; Fedo et al., 1995). The second diagram (b) is S-A-F ternary plot after Schellmann (1986) indicating the degree of lateritization. A-L-F ternary plot (c) indicating losses of mafic against alkali oxides (Babechuk et al., 2014).

wards. Identification of maghemite and magnetite is challenging as their maximum peaks coincide. However, magnetite does not exhibit a peak at lower values of 2θ (2 5 ^{0}). Stoichiometric hematite produced characteristic peaks in the XRD spectra (Fig. 8). Furthermore, the Al-hematite peaks (d-values: 2.2076, 1.4552) are identified using software's library and the XRD spectra of Al-hematite in Roberts et al. (2006). The higher Al-substitution in hematite moves 2 thetas to higher values (Roberts et al., 2006). Furthermore, hematite and goethite peaks were checked and confirmed using XRD data of France and Oldfield (2000). XRD spectra of samples representing all the three zones are shown in Fig. 8. The minerals identified are gibbsite, Al-hematite, maghemite, goethite, hematite, ferrihydrite, and kaolinite (Fig. 8). Similar minerals were observed by Singh et al. (2020) while studying the laterites from the nearby Patan (Satara, Maharashtra) area of Deccan province. The XRD for basalt samples detected characteristic minerals of the rock (plagioclase, pyroxene, olivine, and minor quartz) (Fig. 8c). Initiation of the process of lateritization due to weathering of parent rock (formation of saprolite) could affect the primary mineral assemblage resulting in the formation of secondary clay minerals. Minor magnetic enhancement during thermomagnetic (high temperature) treatments is probably due to the conversion of these minerals into new magnetic mineral phases (e.g., magnetite; Jiang et al., 2015) (Fig. 6f).

The exact quantification of minerals by XRD spectra depends on crystal structure of the mineral phase present, their substitution, defects, polytypes, and also peak collisions (Zhou et al., 2018). Substitution and varying crystallinity are possible in laterites evident from their behaviour during thermomagnetic analysis. In this regard, laterite from *Zone I* and *Zone II* show similar mineralogy in XRD spectra but for their relative quantification, we rely on characteristic rock magnetic parameters because of earlier discussed factors.

The laterite mineralogy being complex, the results produce several uncertainties in XRD spectra. A dedicated study focussing on the mineralogical aspects of laterites using advanced microscopy (scanning electron microscopy) is required for the identification of the full spectrum of minerals (magnetic and non-magnetic). Therefore, maintaining the focus upon the main objectives of rock magnetism and palaeomagnetism, further spectroscopic analysis on mineral separates were restricted and the overall information based on XRD and rock magnetism endorsed the presence of at least two varieties of hematite (crystalline and amorphous), the goethite (with substitutions); maghemite, and possible products of partial maghemitization of magnetites. Rock magnetism also suggested a mixture of SD + SP + MD and SD + SP under dominant antiferromagnetic mineralogy. Thermomagnetic data confirmed the existence of goethite, maghemite, and magnetite. XRD showed kaolinite as a dominant clay mineral along with goethite, hematite, and gibbsite and their substitutional varieties.

4.6. NRM acquisition

Above mineralogical studies infer that these laterites are enriched with both amorphous and crystalline antiferromagnetic oxides as the possible agents of NRM in the form of chemical/crystallization remanent magnetization (CRM). Amongst the two, crystalline hematites are the best possible candidates for stable and characteristic remanent magnetization (ChRM). On these premises, we conducted the palaeomagnetic analysis using alternating field demagnetization on the set of representative sister samples and are described below.

We relied upon the alternating field demagnetization, as thermal demagnetization was highly susceptible to laboratory heating-induced changes due to the abundance of amorphous and poorly crystalline iron

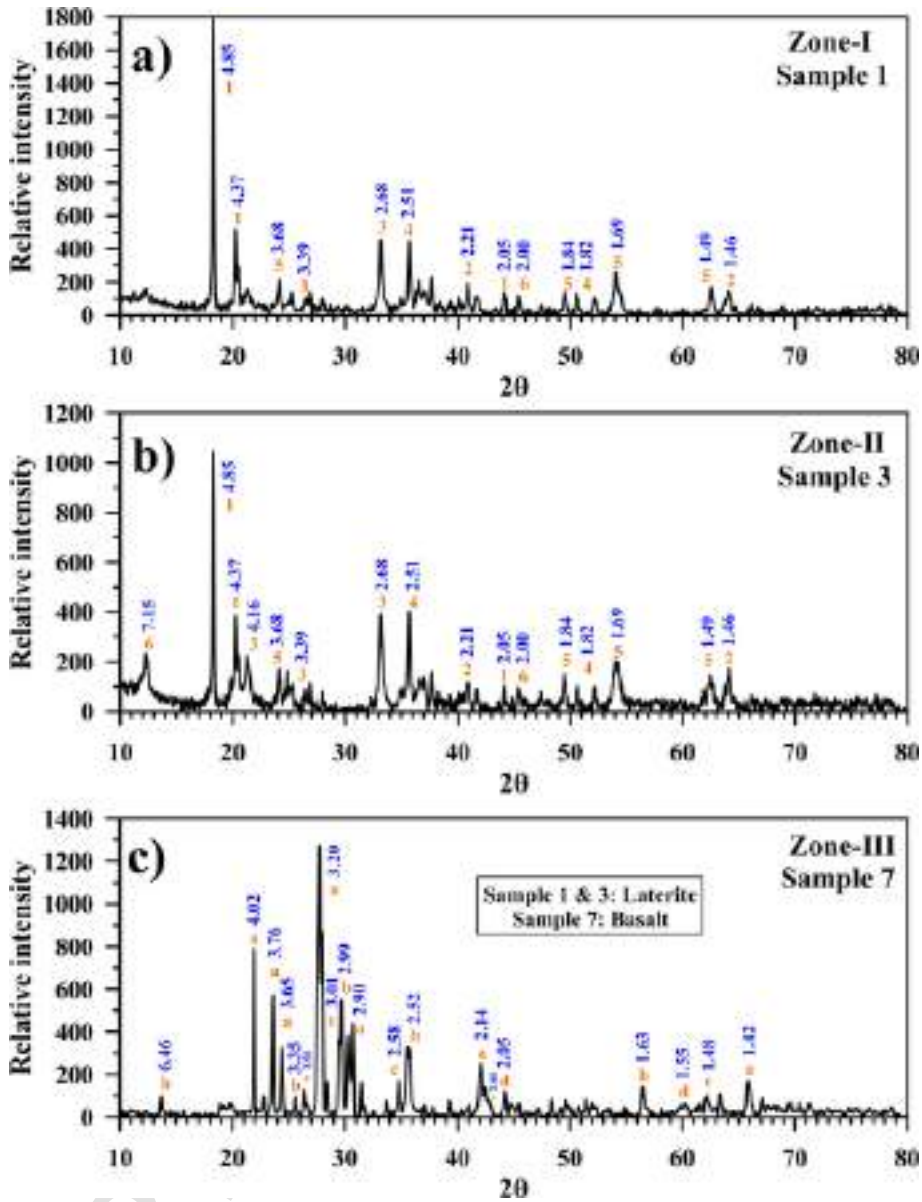

Fig. 8. XRD diffraction patterns of samples representing all three zones. a) Sample 1 (Zone-I) b) Sample 3 (Zone-II) c) Sample 7 (Zone-III). The characteristic minerals identified are marked by numbers for laterite (sample 3) and small letters for basalt (sample 7). The d-values for the identified peaks are shown in blue coloured text. 1-Gibbsite, 2-Al-hematite, 3-Goethite, 4-Maghemite, 5-Hematite, 6-Kaolinite, a-Plagioclase, b-Pyroxene, c-Olivine, d-Quartz, e-Magnetite.

oxide/hydroxide complexes (limonitic – ferrihydrites) and the presence of goethites resulting in strong secondary magnetization. The AF (alternating field) demagnetization on the other hand yielded convincing intensity decay as well as vector migration paths. The progressive demagnetization was carried up to the fields of 150 mT and showed stable components of remanence (Fig. 9).

We found sudden increase in magnetization at 5 mT (Fig. 9e) due to the removal of antiparallel or high angle viscous component, increasing the intensity for the resultant component. This followed a steady decay even at higher fields depicting single stable component in the NE direction. Alternating fields up to 150 mT removed large, low stability components parallel/subparallel to the NRM directed towards NE with an inclination of ~ 10^0. For majority of the samples, we found a trend in intensity decay partitioned into 0–25 mT and 60–150 mT. All the secondary components were removed by 25 mT depicting the ferrimagnetic components, further, there is a 90% loss of intensity by 150 mT (Fig. 9e).

The equal-area projection for the demagnetization spectra for specimen 2.1 shows a well-clustered nature with stable declination (D) and inclination (I) values. It shows the D/I values of 10^0 and 46^0, respectively (Fig. 9a). Specimen 2.5 showed a sudden increase in intensity at the demagnetizing field of 5 mT, similar to the previous sample (Fig. 9f). Afterwards, there is complete decay or removal of remanent magnetization linearly from 5 to 25 mT. The equal-area projection shows good clustering of data with constant inclination and declination. Similar results were obtained for specimens 2.8 and 2.10. Specimens 3.1 and 3.5 showed a scattering of data in equal-area projection, although there is smooth decay in the fields of 0–25 mT and then 60–150 mT (not shown). These specimens show unimodal ChRM components without any secondary magnetization. Specimen 3.8 show stepwise decay of intensity of magnetization (Fig. 9g). Specimen 4.5 showed overlapping components with scattering in equal-area projection (Fig. 9d, 9 h).

Further, in order to test the stability of NRM, we have calculated the Koenisberger ratio (Q-ratio) (Koenigsberger, 1938) using the equation Q = NRM (A/m) / [χ (SI) × H (A/m)], where χ indicates the magnetic

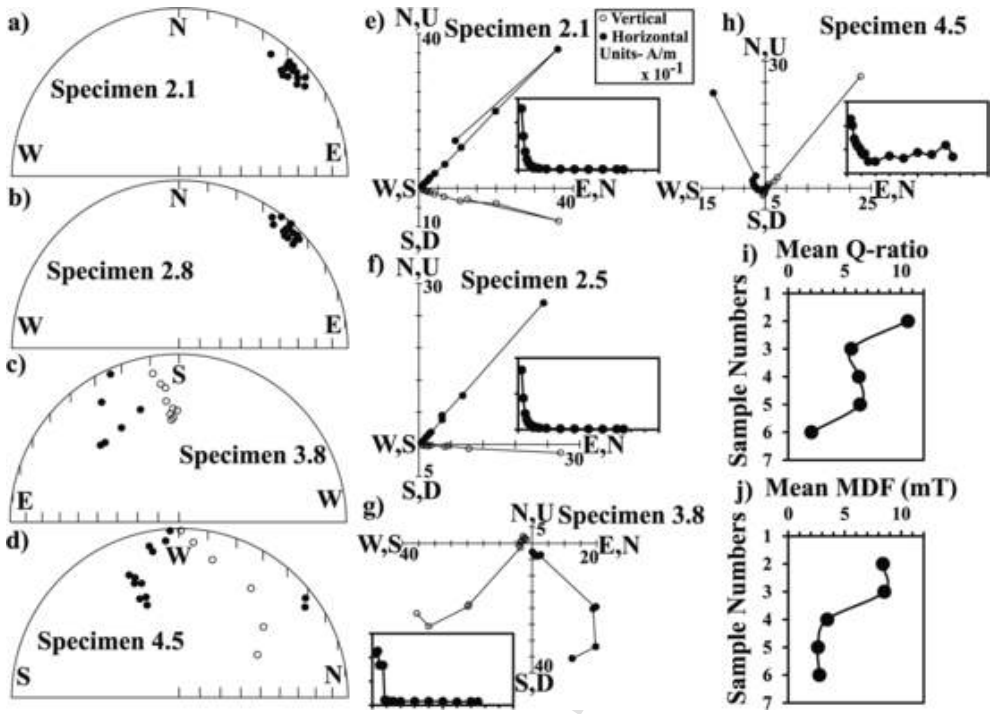

Fig. 9. The equal area projection of vector migration (a, d, c, d) and the Zijderveld diagrams (e, f, g, h; Zijderveld, 1967) for representative laterite specimens. The nature of magnetic intensity decay curve for respective specimens is shown in the inset graphs. Variation in the Koenisberger ratio (Q-ratio) (i) indicating an upward increase along with the profile. The graph between sample numbers and median destructive field of NRM indicates an upward increase in MDF along with the laterite profile (j).

susceptibility and H represents the local geomagnetic field (Table 4, Supplementary file). The Q-ratio for present samples was calculated taking local geomagnetic field value of 34.18 A/m referred from International Geomagnetic Reference Field (12th Generation) values. The values Q greater than 1 indicate remanent magnetization dominates over induced magnetization (Clark, 1997; Dunlop and Özdemir, 1997, pp. 238–239) and the contribution of remanence properties is major to the total magnetization of the rock. Fig. 9i shows an upward rise in the Q-ratio along the laterite profile suggesting that the rock possesses stable carriers that can hold stable remanence.

The median destructive field (MDF) of NRM is the magnetic field required to eliminate half the remanent saturation magnetization (Dankers, 1981; Brachfeld and Banerjee, 2000). This parameter measures remanence stability by targeting the carriers of natural and induced remanences (Brachfeld and Banerjee, 2000). It is calculated by AF demagnetizing the sample through steps until we get the one-half value of the original NRM (Table 5, Supplementary file). MDF of studied samples increases upward in profile suggesting more stable remanence carriers (Fig. 9j). Generally, lower values of MDF of NRM suggest magnetite-titanomagnetite mineral phases while higher values suggest hematite-goethite minerals phases (Dankers, 1981).

The primary remanent magnetization (ChRM) in the studied samples was thus obtained after removal of the viscous components (at less than 5 mT), while the secondary remanence due to ferrimagnetic components are removed by 25 mT (Fig. 9). This indicates that the stable CRM in laterites is attributed to a sufficiently long duration of the process of lateritization surpassing the time of lock-in remanence. The amorphous AFMs appear to have little or no influence in disturbing or overprinting the NRM and can be demagnetized at low field values of 5 mT. The study, therefore, indicated: a) suitability of laterites to acquire stable NRMs and b) Crystalline hematite as benchmark mineral to record the NRM within the complex process of lateritization.

5. Basaltic weathering and natural remanent magnetization

Basalts are some of the most susceptible substrates to chemical weathering under a large spectrum of Eh-pH and temperature conditions. The basaltic weathering is an effective process of CO_2 sequestration (Gislason and Oelkers, 2014), while it is considered a possible analogy to the Martian weathering conditions (Greenberger et al., 2012) due to the existence of both basalt and hematite over the planet. Another very important aspect of the basalts and their weathering products is its enrichment with ferrimagnetic minerals which can have unique pathways of conversions to maghemite and hematite. Lateritization permits sufficient reaction time and porosity for fluid migrations to convert these ferrimagnetic sources into antiferromagnetic, apart from the conversion of several other Fe oxides bearing silicates to such end product. Geologically laterites contribute to significant information on the paleogeographic status of a continent. The longitudinally drifting continent like India further preserve an important record of paleolatitudes to be determined from palaeomagnetic and magnetostratigraphic approaches.

Our studies have broadly inferred the total transformation of the parent basalts into antiferromagnetic during lateritization; and ferrimagnetism if any present is because of the lateral/surficial inputs during the process of lateritization. The abundance of feldspars in these basalts is also a possible reason for the early advancement of lateritization. The feldspar weathering has created labile elements besides their larger grain size providing effective porosity for the migration of solution. Early weathering of feldspar is also the source of ionic Al- to be readily available for substitution with ferrihydrites and hence hematites and goethite. The abundance of solution due to precipitatious and humid conditions near the coast further accelerated the formation of limonites and goethite; which later permitted the formation of amorphous hematites by release of hydroxyl ions. Further maturity formed the crystalline hematites as the stable and advanced stage of lateritization reached. Once formed, the crystalline hematite (hc) remained stable preserving the NRMs. The process of formation of crystalline

hematites (hc) from the amorphous hematites (ha) strengthened the CRM with sufficient time for lock-in, although a possibility of superimposition of CRMs cannot be ruled out. Our palaeomagnetic results could not trace such superimposition and almost a unimodal *hc* component was detected in these samples. However, a strong secondary component is observed due to ferrimagnetism (removed at 25 mT) which was accommodated as surficial input as discussed above.

This type of remanence acquired during the conversion of one mineral phase to another predominantly lead to growth-CRM (Haigh, 1958; Stokking and Tauxe, 1990) and can be strongly represented by primary remanence in palaeomagnetic studies (Walker et al., 1981). Hematites can be crystallized through various pathways, directly from the hydrolysis of ferric iron salts (Schwertmann and Cornell, 2000, pp. 121-134) or indirectly via the ferrihydrite → hematite reaction (Schwertmann and Cornell, 2000, pp. 121-134), later being common during the initial process of lateritization anticipating the strong CRM.

The CRM is acquired below their Curie/Neel points during the conversion of one mineral phase to another (Dekkers and Linssen, 1989; Jiang et al., 2015). CRM can be simple crystal growth (growth-CRM) or the alteration of parent magnetic minerals (alteration-CRM) (Haigh, 1958; Stokking and Tauxe, 1990). In laterites, there are several possibilities for the unstable/transitional nature of the components. Such components can arise from; i) partial transformations of detrital magnetite to maghemite, ii) partial transformation of amorphous to crystalline hematites, iii) re-lateritization of the re-deposited or precipitated laterites, iv) post formation deformation within laterite zones imparting porosity, or v) groundwater-related activity in the porous laterite. The crystalline hematites are developed only during matured stage of lateritization, and they tend to remain stably prevented from the secondary magnetization, although the deformation may cause physical scattering of directions. Alternatively, the CRM in these laterites arises from crystallization remanent magnetization (sensu stricto). Our study depicted the middle zone to be more mature and abundant with SD hematites, whereas the upper zone is influenced by surficial ferruginous/lateritic inputs. The CRMs therefore can be used reliably for the magnetostratigraphic approach in the Deccan laterites, when the surficial inputs, deformation, and other disturbances are restricted. The present approach of palaeomagnetism combined with mineral magnetism can be developed to understand the otherwise complex nature of timing in the lateritic processes. Determination of the timing of degree of lateritization at various stages is therefore helpful in studying various applications including CO_2 sequestration and Martian weathering analogy.

6. Conclusions

The Deccan Laterites represent peak basaltic weathering conditions by complete ferri- to antiferromagnetic transformations and further mobilizations within antiferromagnetic oxides. The combination of rock magnetism, XRD spectroscopy, palaeomagnetism, and XRF analysis provide an ideal approach to characterize the mineralogical influence over natural remanence. This integrated study inferred a set of minerals depicting partial to complete maghemitization, total hematization, goethite formation, ferrihydrite complexes, and their Al-substituted varieties in addition to gibbsite and kaolinite. The abundance of amorphous- (ha) and crystalline hematite (hc) varieties interests the palaeomagnetic studies to investigate the nature of NRMs, while the ferrimagnets are represented as secondary components. A range of domain sizes occurs with mixtures of SP + SD and SP + SD + MD, and SD remains common to most of the profile. The secondary/viscous NRM due to *ha* is removed at 5 mT and the secondary component due to ferrimagnets (magnetite or maghemites) removed at 25 mT. The *hc* component continues to decay linearly up to 150 mT depicting unicomponent behaviour after 25 mT. The palaeomagnetic tests (Koenisberger ratio, MDF, intensity decay, and Zijderveld diagrams) indicated stable directions (ChRMs) due to *hc*; and the Al-substitution does not affect the stability of ChRM. The lock-in CRM from *hc* also benchmarks the maturity of the profile in terms of mineralogical advancement during lateritization. These laterites are thus ideal for palaeomagnetic studies and intricacies and scattered directions may arise from other secondary processes during lateritization such as internal deformation and solution/precipitation activities through secondary porosity. The ferrimagnetic abundance in basaltic laterites permits a large amount of crystalline hematite which once formed remain stable favouring reliable ChRM directions due to CRM.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Acknowledgments

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.catena.2023.107154.

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Studies on cholesterol level in wild caught females of the Embollonurid Bat, *Taphozous kachhensis* (Dobson) in relation with reproductive cycle

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Abstract
Bats play a key role as pollinators and significantly contribute in controlling insects but very scanty information is available on their basic physiology. The aim of the present investigation was to estimate the significant differences in level of cholesterol in female *Taphozous kachhensis* during various stages of the reproductive cycle. Estimation of cholesterol level was done for twelve months representing all stages of the reproductive cycle. During lactation, quiescence, recrudescence and oestrous mean cholesterol level was found to be 149 ± 2.55 mg/dL, 154 ± 2.76 mg/dL, 155 ± 3.21 mg/dL and 158 ± 3.13 mg/dL respectively. During early pregnancy and mid pregnancy mean cholesterol level was found to be 164.91 ± 1.27 mg/dL and 161.08 ± 3.02 mg/dL respectively. Significant decrease in mean cholesterol level was noted during advanced pregnancy when compared with early and mid pregnancy. Mean cholesterol level was observed in the range of 137-173 mg/dL during the entire reproductive cycle in females. Present investigation revealed the significant differences in the level of cholesterol during the reproductive cycle and thus providing the information regarding basal physiological measurement of bats.

Keywords: bat, *Taphozous kachhensis*, chiroptera, cholesterol

Introduction

Order chiroptera is the second most diverse, abundant group of mammals, which is represented by more than 1421 species grouped in 21 families (Simmons and Cirranello, 2020) [12]. Study of the ecological and physiological characteristics of bats as representative of the numerous and thriving order chiroptera is important. The relatively high life expectancy of some species of bats is of great interest. Information of many unknown aspects of the basic biology and physiology of bats is scanty. Bats are of immense importance to human beings for medical research and public health. However baseline values of hematological profiles of many of the species of the bats are not studied. Physiological changes during the reproductive cycle of the bats is related with the changes in the hematological profile of these bats. The present study revealed useful information on basal values of cholesterol level during various stages of the reproductive cycle for research and conservation of this species.

Material and methods

The present study was conducted on females of the Embollonurid bat, *Taphozous kachhensis*. Identification of the animal was done using standard monograph (Bates and Harrison, 1997) [1]. A mist net of the mesh size (10mm) was used to capture the bats. These were collected from from Ambai Nimbi, 45 kilometers from Bramhapuri (M.S.). After capturing the bats, female bats were separated and were brought to the laboratory. These were weighed on the electronic weighing balance and anesthetized with ether. Blood samples were collected from subclavian and pectoral veins without hurting the animal. Blood samples were collected and was centrifuged to separate the serum. After recovery from the anesthesia, all specimens were released in their natural habitat. Auto analyser was used for quantitative estimation of the serum cholesterol.

CHOD/PAP method was used for the estimation of serum cholesterol. Cholesterol esterase hydrolyses esterified cholesterol to free cholesterol. Hydrogen peroxide is formed from free cholesterol due to oxidation which then reacts in the presence of peroxidase enzyme with 4-aminoantipyrine and phenol which result in quinoneimine red dye complex. The intensity of the dye is directly proportional to the concentration of cholesterol present in the serum.

$$\text{Cholesterol esters} + H_2O \xrightarrow{\text{Cholesterol Esterase}} \text{Cholesterol} + \text{Fatty acids}$$

$$\text{Cholesterol} + O_2 \xrightarrow{\text{Cholesterol Oxidase}} \text{Cholestenone} + H_2O_2$$

$$H_2O_2 + 4\ \text{Aminoantipyrine} + \text{Phenol} \xrightarrow{\text{Peroxidase}} \text{Red Quinoneimine dye} + H_2O$$

This kit has
Cholesterol reagent (L1) and Cholesterol standard 200 mg/dL (S)

Protocol for test

Sample: (0.01ml serum + Cholesterol reagent (L1) 1.0 ml

Standard: (0.01ml standard + Cholesterol reagent (L1) 1.0 ml

Blank: (0.01ml Distilled water + Cholesterol reagent (L1) 1.0 ml
Mix well and incubate the solution at 37 °C for 5 min. or at room temperature for 15 minutes. Measure the absorbance of the Standard and test sample against the blank within 60 min at 505 nm.

Calculations

Cholesterol in mg/dL = Absorbance of test / Absorbance of Sample X 200

Statistical analysis

Raw data was analyzed to give mean, standard error and significance using Statistical Package for Social Sciences (SPSS 10.0). All graphs in this study were drawn using Microsoft Excel Software.

Results

Mean cholesterol level observed during different stages of reproductive cycle in female *Taphozous kachhensis* and the P-value corresponding to F-statistic value of one way ANOVA (P = 0.0007) is presented in table 1 and 2 respectively. Histograph showing cholesterol level in female *Taphozous kachhensis* during reproductive cycle is presented in figure 1.

Table 1: One-way ANOVA with post- hoc Tukey HSD showing comparison of cholesterol (mg/dL) in female *Taphozous kachhensis* during reproductive cycle.

Reproductive status	No. of Bats	Cholesterol Range in (mg/dL)	Mean ± S.E	Variance	Standard Deviation
Lactation	18	137 – 170	149.00 ± 2.55[a]	117.52	10.84
Quiescence	12	140 – 170	154.00 ± 2.76[a]	91.63	9.57
Recrudescent	06	145 – 165	155.00 ± 3.21[a]	62.00	7.87
Oestrous	06	148 – 168	158.00 ± 3.13[a]	58.80	7.66
Early Pregnancy	12	158 – 170	164.91 ± 1.27[ab]	19.53	4.42
Mid Pregnancy	12	145 – 173	161.08 ± 3.02[ab]	109.53	10.46
Advanced Pregnancy	06	145 – 165	155.00 ± 3.02[a]	54.80	7.40
Pooled Total	72		156.25 ± 1.21	106.04	10.29

Table 2: One-way ANOVA of seven independent groups showing P-value corresponding to F- statistic.

Source	sum of squares SS	degrees of freedom	mean square MS	F statistic	p-value
Treatment	2,225.6667	6	370.9444	4.5460	0.0007
Error	5,303.8333	65	81.5974		
Total	7,529.5000	71			

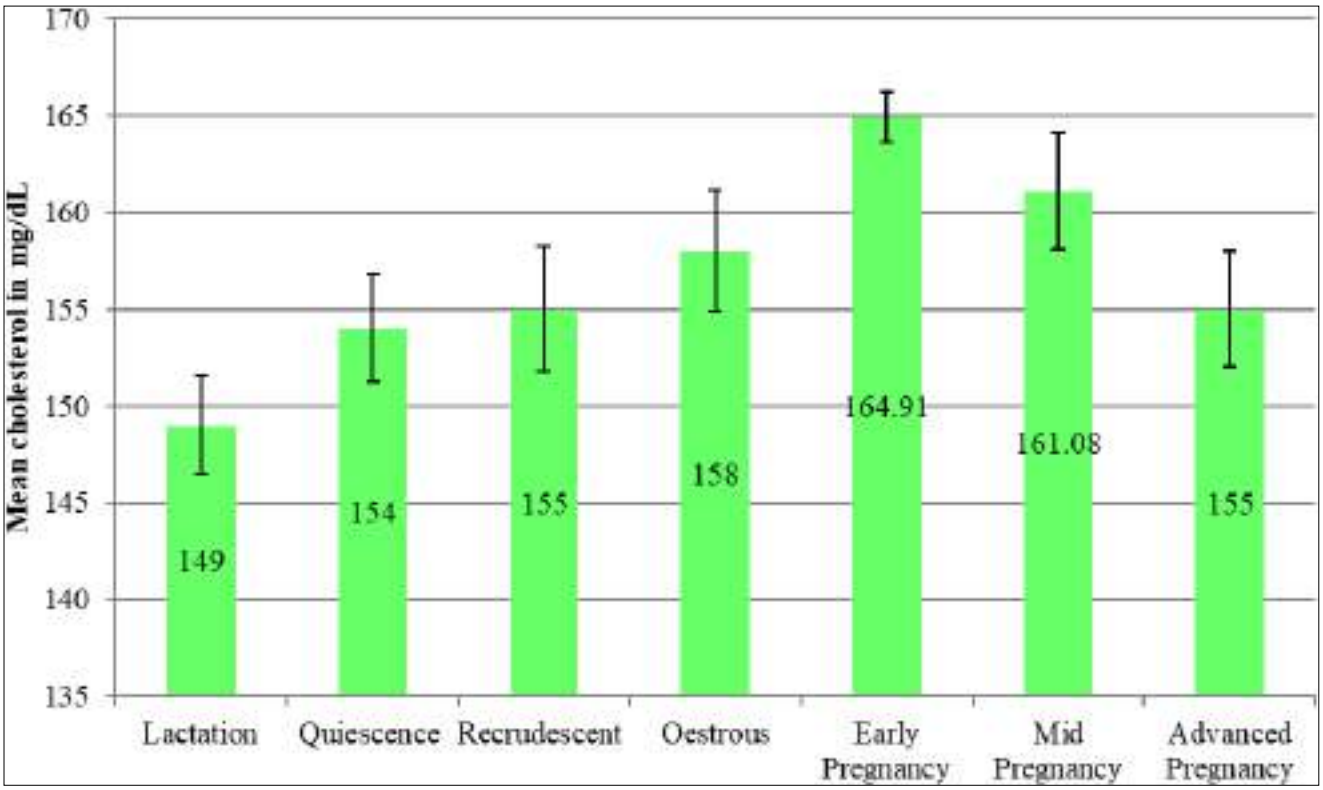

Fig 1: Mean cholesterol in female *Taphozous kachhensis* during reproductive cycle

During lactation, quiescence, recrudescence and oestrous mean cholesterol level was found to be 149 ± 2.55 mg/dL, 154 ± 2.76 mg/dL, 155 ± 3.21 mg/dL and 158 ± 3.13 mg/dL respectively. No significant differences were observed in mean cholesterol level during lactation, quiescence, recrudescence and oestrous stages. Significant increase in mean cholesterol level was noted during early pregnancy and mid pregnancy. During early pregnancy and mid pregnancy mean cholesterol level was found to be 164.91 ± 1.27 mg/dL and 161.08 ± 3.02 mg/dL respectively. Significant decrease in mean cholesterol was observed during advanced pregnancy when compared with early pregnancy and mid pregnancy. Pooled total mean cholesterol level during all stages of reproductive cycle in females was found to be 156.25 ± 1.21 mg/dL. During the entire reproductive cycle in females, mean cholesterol level was observed in the range of 137 – 173 mg/dL.

Discussion

Cholesterol is a lipid which is widely distributed in various types of animal tissues. It is synthesized in the liver and is a normal component of bile and principal constituent of gallstones. Cholesterol acts as a precursor for the synthesis of various steroid hormones like adrenal corticoids and sex steroid in mammals. Total level of cholesterol is related to liver function. Increased level of cholesterol is generally found in pathological conditions like hypothyroidism, nephrosis, coronary artery disease, hyperlipoproteinemias, diabetes mellitus and many liver disorders. Low level of cholesterol occurs during malnutrition, acute infections, haemolytic jaundice, pernicious anemia and hyperthyroidism. In humans normal level of total cholesterol is between 152 to 240 mg/dL. Ageing is associated with an increase in serum total cholesterol. In the present investigation pooled mean total cholesterol in females of *Taphozous kachhensis* found to be 156.25 ± 1.21 mg/dL. In females of *Taphozous kachhensis* no significant variation in total cholesterol were observed during lactation, quiescence, recrudescence, oestrous and advanced pregnancy. Significant elevated level of total cholesterol was noted during early pregnancy and mid pregnancy is associated with higher anabolic activity of the liver for the synthesis of sex steroids like 17-β oestradiol and progesterone. Higher levels of these hormones are required for the maintenance of pregnancy. McMichael et al. (2015) [7] had noted the total cholesterol in wild black flying foxes, *Pteropus alecto* and reported significant differences in the level of cholesterol in females at $P < 0.001$ level. They had noted the plasma total cholesterol females of *Pteropus alecto* was 17.40 mg/dL. Selig et al. (2016) [11] observed mean cholesterol level 23.5 mg/dL in straw colored fruit bats (*Eidolon helvum*). Low level of total cholesterol in pteropodid bats as compared to insectivorous bat are likely due to a low-protein diet, as cholesterol is obtained either by diet or by synthesis within liver (Widmaier et al., 1996; Heard and Whittier, 1997) [13, 4]. Moretti et al. (2021) [8] had observed very low value of triglycerides in healthy captive Egyptian fruit bat *Rousettus agyptiacus*. Esher et al. (1973) [3] had noted 87% decrease in liver cholesterol during torpid condition in *Myotis lucifugus*. Widmaier et al. (1996) [13 had noted the high fasting plasma cholesterol level (215 ± 8 mg/dL) in insectivorous Mexican free tailed bat, *Tadarida brasiliensis mexicana* during late pregnancy and lactation. They had correlated extra ordinary high levels of cholesterol with consumption of double the amount of insect diet which is high in fat.

Normal level of total cholesterol in captive *Pteropus hypomelanus* was 12 ± 4 mg/dL. Such low levels of total cholesterol was related to primary frugivorous habit associated with consumption of fruit (Widmaier et al., 1996; Heard and Whittier, 1997) [13, 4]

Heard and Whittier (1997) [4] had observed the plasma cholesterol level in *Pteropus vampyrus*, *Pteropus rodricensis* and *Pteropus hypomelanus* was 30 ± 14, 33 ± 40 and 17 ± 10 mg/dL respectively. They had observed the cholesterol level in *Pteropus rodricensis* was in the range of 2 to 152 mg/dL. McLaughlin et al. (2007) [6] has found cholesterol level 46.4 ± 0.7 mg/dL in wild caught flying fox, *Pteropus giganteus*. Highest range level cholesterol of *Pteropus rodricensis* shows similarity with our study. Sarmin et al. (2020) noted the cholesterol level in juvenile buckes of *Ettawa* crossbred goats in the range of 68-162 mg/dL. The high cholesterol level in this study was comparable to our finding.

Korine et al. (1999) [5] had observed the seasonal variations in the cholesterol level in fruit eating bat, *Rousettus aegyptiacus*. They have noted the total cholesterol level during winter, spring, summer and autumn were 1.00 ± 0.02, 1.00 ± 0.00, 9.17 ± 2.63 and 2.00 ± 1.41 mg/dL respectively and suggested cholesterol as a function of diet (Carroll and Kurowska, 1995; Widmaier et al., 1996; Heard and Whittier, 1997) [2, 13, 4].

Otis et al. (2011) [9] had studied the cholesterol and lipoprotein dynamics in hibernating squirrels and found similar concentrations of cholesterol during spring and summer. Cholesterol transported by lipoprotein particles in circulation. Excess cholesterol is excreted from the body in the form of bile acid by fecal excretion. They had observed a high level of cholesterol in plasma during hibernation was due to thirteen fold lower expression of cholesterol alpha-hydroxylase enzyme. Low concentration of cholesterol during winter is related to efficient use of lipoprotein in mammals essential for their survival.

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