Digital India

A road ahead

Edited by

Dr. Tazyn Rahman

Digital India – A road ahead

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Digital India – A road ahead

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Part – 1

Digital India

Part – 2

E – Services

Part – 3

E – Commerce

Part – 4

E – Marketing

Part – 5

E - Retailing

Part – 6

Digital Library

PREFACE

India is now one of the fastest growing economies in the world. *India* is progressing with a lightning speed. In this progress technology is playing a vital role and with the Digital India Project being introduced under the governance of Prime Minister Narendra Modi, India is all set to go Digital. Digital India is a campaign launched to achieve the ultimate goal of 'inclusion of everyone' and to ensure that Government services are made available to citizens electronically by improving online infrastructure and by increasing Internet connectivity or by making the country digitally empowered. This campaign will also act as a facilitator for Right to Information which is mandated by the constitution of India, as the same right includes facilities to be provided for the purpose of accessing information. The vision of Digital India program is inclusive growth in areas of electronic services, products, manufacturing and job opportunities etc. and it is centered on three key areas – Digital Infrastructure as a Utility to Every Citizen, Governance & Services on Demand and Digital Empowerment of Citizens.

Digital India- A road ahead is a compilation of 25 chapters which includes articles, research and conceptual papers contributed by various academicians and research scholars. The theme of the book is kept keeping in view the present scenario where India is entering a new phase of Digitization.

The book is devoted to examining some key dimensions of degititalization. It throws light on various aspect of digitalization like E- Services, E – Marketing, E – Retaling and Digital Library. This book tries to open up an enchanting window on how digitalization in various areas is being implemented and what are the challenges that are being faced while implementing the same. The chapters contributed for this book have been clubbed into 6 major sections:

Part – 1: Digital India

Part – 2: E – Services

Part – 3: E – Commerce

Part – 4: E – Marketing

Part – 5: E - Retailing

Part – 6: Digital Library

The purpose of this book is to bring forth the various aspects of digital India. We hope that this book will be helpful for students, researchers, corporate fraternity and all stakeholders of Digital India.

October, 2017 **Dr. Tazyn Rahman**
Ghaziabad

Acknowledgement

This compilation is an outcome of the efforts and hard work put in by the contributors, whose papers provide richness of content to this book. I convey our sincere thanks to all the authors who have contributed their papers.

Word fails to express my indebtedness for the cooperation and generous support of my spouse Mr Akhter Alam and my son Irfan Alam who lost my attention during the entire period of working on this book. In fact, they are my strength and the will power behind to work harder and harder.

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Last but not the least I bow my head to the Almighty who always gave me the strength to move on in life on the right path.

Dr. Tazyn Rahman

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CHALLENGES AND OPPORTUNITIES OF DIGITALIZATION INDIA

Y Prakash and Y Sagarika

ABSTRACT

Digital India initiative aims at reaching the unreached through broadband highway, universal access to mobile connectivity, public internet access programme. Digitalization of business and delivery of services leads to ease of access, transparency and reduction in transaction cost such as e-Governance, e-Kranti-Electronic delivery of services. The digitalization creates IT jobs for the skilled youth results in income level that contribute to economic growth. Infrastructure play a vital role for electronic manufacturing to target zero imports by 2020. Advancement in ICT technologies leads to greater benefits to the citizen engagement with government. The Government needs technological partners who can provide integrated facilities like cloud storagefor huge data, data analytics, integration of technologies with business enterprises and governmentare need of the hour. Digitalization provides efficient services in agriculture, education, and healthcare, Banking, Financial Service and Insurance.Introduction of ICT in Agriculture such as e-NAM, NeGP can input farmers on soil test, seeds, nutrients, pests, weather forecast, marketing of produce and to remove asymmetric information between buyers and sellers. The Opportunities in education provides quality and virtual education system to prevent dropouts, infrastructure development helps in installation and utilization of incubation centers for Research and Developmental activities. For example, RUSA like apps creates capable people and good citizen. Digitalization in Healthcare has greater advantage to the medical profession in research and development activities, track the patients'health records and telemedicine in rural areas allows the patients to access better healthcare, Government impetus such as incentivizing private players, digitalization in primary health centers creates awareness to access robust healthcare. ICT play a vital role in Banking, Financial Services and Insurance (BFSI). Apart from this broadband connectivity, penetration of smartphones at cheaper price are the need of the hour to make Digital India a success. Due to demonetization, there is huge increase in mobile apps such as BHIM app, wallets, usage of POS machine, banking applications for smooth banking transaction with less transaction cost. With advancement in mobile application, requirements of customer has created a threat to the theft of data due to cyberattack. This has to be address with a holistic policy on cybersecurity measures to protect the privacy of data. Integration of e-sign technologies can reduce the breach of data of costumers.

Keywords:Challenges of Digital India, Digital India, Opportunities of Digital India, e-governance, e-kranti.

INTRODUCTION

The National e-Governance Plan approved in 2006 has not ensured effective progress in electronics manufacturing and e-Governance in the country but has made a steady progress through Mission Mode projects and Core ICT Infrastructure[1]. In order to serve better to the citizens of the country the Government of India announced Digital India. The Digital India programme supports infrastructure and provides measures to ensure the citizens electronic services, manufacturing devices/products and job opportunities to empower them and create knowledge economy that promotes inclusive growth.

REVIEW OF LITERATURE

The author concluded that vision of digital India is a huge step to empower nation[2]. It is also said that implementation of nine pillars of the mission faced serious challenges in implementation Seema Dua (2017). The research highlights that increased digitalization reaped the gains in economies, societies and functioning of public sectors[3]. During 2011, Digitalization contributes to world economy an additional $193 bn. and 6million jobs worldwide. "Digitization creates jobs, with a 10 point increase in the digitization score leading to a 1.02 percent drop in the unemployment rate[4]". The new public governance approaches are required to be support a shift from citizen-centric approaches to citizen-driven approaches[5]. Improved service delivery and internal public sector efficiency should go hand-in-hand promotes economic growth, societal equality and good governance with greater transparency, integrity and citizen engagement, if not it results in economic and financial crisis.

RESEARCH METHODOLOGY

The data is secondary data collected from Journals, Magazine, Annual Reports, Recommendations of Councils, Web content of Government Organizations that relates to subject matter.

OBJECTIVE OF THE STUDY

1. To examine the concept of Digital India
2. To explore the various areas of Digitalization in India
3. To identify the opportunities in Digital India programme to tap the untapped opportunities.
4. To analysis the challenges that act as barriers to Digital India.
5. To describe the benefits of Digitalization in India that contributes to economic growth.

AIM OF DIGITAL INDIA

Digital India Programmes aims to support the thrust areas includes:

(1) **Broadband Highway:**It includes Broadband for All-Rural, Broadband for All-Urban, National Information Infrastructure (NII)[6].

(2) **Universal Access to Mobile Connectivity:** It focuses on network penetration and filling the gaps in connectivity in the country[7]. To provide access to the uncovered villages in a phased manner. There are about 55,619 villages in the country that does not have access to mobile connectivity.

(3) **Public Internet Access Programme:** The two sub components includes (Common Services Centres, Post Offices as multi-service centres) for delivery of government and business services[8].

(4) **e-Governance: Reforming Government Through Technology:** Government Process Re-engineering using IT to simplify and make the government processes more efficient is critical for transformation to make the delivery of government services more effective across various government domains and therefore needs to be implemented by all Ministries/ Departments[9].

The Guiding principles includes:(i) Form simplification and field reduction (ii) Online applications and tracking (iii) Online repositories (iv) Integration of services and platforms.

(5) **e-Kranti - Electronic Delivery of Services:** To Transform e-Governance and promote mobile Governance and Good Governance[10]. The Key Principle includes:

a) Transformation and not Translation

b) Integrated Services and not Individual Services

c) Government Process Reengineering to be mandatory in every MMP (Mission Mode projects)

d) ICT infrastructure on Demand

e) Cloud by Default

f) Mobile First

g) Fast Tracking Approvals

h) Mandating Standards and Protocols

i) Language Localization

j) National GIS (Geo-Spatial Information System)

k) Security and Electronic Data Preservation

(6) **Information for All:** Online Hosting of Information and documents to facilitate open and easy access to information for citizens.

(7) **Electronics Manufacturing:** To promote electronics manufacturing in the country with the target of **NET ZERO imports by 2020.**Inorder to attain NET Zero imports, the coordination is required at different levels[11]that includes:

- Taxation, incentives
- Economies of scale, eliminating cost disadvantages
- Focus on Mobiles, Set top boxes, Consumer & Medical Electronics, Smart Energy meters, Smart Cards, Micro-ATMs
- Incubators, Clusters
- Skill Development, Enhancing Ph.D.
- Government Procurement
- Safety Standards - Compulsory Registration, Support for Labs and MSMEs
- National Award, Marketing, Brand Building
- National Centers - Flexible Electronics, Security Forces
- R & D in Electronics

(8) IT for Jobs: It focuses on providing training to the youth in skills required for availing employment opportunities in the IT/ITES sector.

(9) Early Harvest Programmes[12]

The Early Harvest Programmes includes:

a) IT Platform for Messages

b) Government Greetings to be e-Greetings

c) Biometric attendance

d) Wi-Fi in All Universities

e) Secure Email within Government

f) Standardize Government Email Design

g) Public Wi-Fi hotspots

h) School Books to be eBooks

i) SMS based weather information, disaster alerts

j) National Portal for Lost & Found Children

DISCUSSION AND ANALYSIS

Indian telecom network is the second largest in the world after China[13].The country has 971.01 million telephone connections, including 944.01 million wirelesstelephone connections.Overall tele-density in the country is 77.59%.Urban tele-density is 147.75%, whereas rural tele-density is 46.14%.The share of wireless telephones in total telephones is 97.22%.The share of private sector in total telephones is 89.15%.Number of Broadband connections is 85.74 million.

The country has increased telephone connections[14]to 1036.57 million from 971.01 million, wireless telephone connections increased to 1011.05 million from 944.01 million. Tele-density in the country increased to 81.85% from 77.59%. The rural tele-density increased to 49.82% from 46.14%. The number of Broadband connections increased to 131.49 million from 85.74 million at the end of November 2015.

The country has increased telephone connections[15] to 1124.41 million from 1036.57 million, Wirelesstelephone connections increased to 1099.97 million from 1011.05 million. Tele-density in the country increased to 87.85% from 81.85%. The rural tele-density increased to 52.97% from 49.82%. The number of Broadband connections increased to 218.43 million from 131.49 million at the end of October 2016.

The change in telephone connections is 115.79%, Wireless telephone connection is 116.52% and broadband connections is 254.75% during 2014-15 to 2016-17. This percentage change in telecom indicators indicate that people are going forward to Digital India initiatives of Government of India.

Telecom Development Indicators

Sl. No.	Item		At the end of				
			March'14	March'15	March'16	December'15	November'16
1	Number of Telephones (In million)	Overall	933.02	996.13	1059.33	1036.57	1124.41
2		Wire line	28.50	26.59	25.22	25.52	24.44
3		Wireless	904.52	969.54	1034.11	1011.05	1099.97
4		Rural	377.78	416.08	447.77	434.23	465.20
5		Urban	555.23	580.05	611.56	602.34	659.22
6	Tele-density (Telephones per 100 persons)	Overall	75.23	79.36	83.40	81.85	87.85
7		Rural	44.01	48.04	51.26	49.82	52.97
8		Urban	145.46	149.04	154.18	152.57	164.13
9	%age share	Wireless	96.95	97.33	97.62	97.54	97.83
10		Public	12.87	10.07	10.26	10.12	10.42
11		Private	87.13	89.93	89.74	89.88	89.58
12	%age growth of Total Telephones – over previous year		3.90	6.76	6.34	6.75	8.47

Source: Government of India, Ministry of Communication and Information Technology, Department of Telecommunication, Annual Report 2016-17

The Table shows that percentage growth of total telephones over the years to 8.47 from 3.90 during March 2014 to November 2016.

"ERNET India has been focusing on addressing the ICT requirements of the highly deprived sections of the society like the rural and remote school children, farmers and the disabled[16]". The state-of-the art technologies promotes the Digital India success.

"As consumers evolve in parallel and demand wide-spread seamless connectivity, it is inevitable that the home will eventually become their major hubs of cohesion". One-third of all Indian respondents are early adopters of technology, potential for smart devices and services than any other country across Asia pacific that begins digital transformation at home. Business in India are optimistic with 41% ready to embrace the interoperability of services and applications[17]. There is an opportunities for the business to formulate unique strategies to improve services, brand value with affordable pricing competition.

"In a short span, Digital India has enabled the roll-out of many new projects and products, covering the entire spectrum of e-governance in the country[18]".

OPPORTUNITIES OF DIGITALIZATION

Rashtriya Ucchatat Shiksha Abiyan (RUSA) a unique and mobile app has launched Prakash Javadekar, Union HRD Minister in New Delhi that created 17 facilities in one go in 14 states to improve the quality of education to enable them create capable people and good citizens[19]. It enhances quality of education by improving smart classrooms, research lab infrastructure and other programmes to add value to the quality enhancement to students. The Ministry has increased the expenditure to the tune of Rs.2800cr and provided Rs.1300 in 2017-18 budget to create infrastructure in many universities, colleges and model colleges.

"There is a need for establishing POS Infrastructure and converting that into a profitable business case for merchants". Digitalization helps merchant-less and a presence-less banking[20]. eMudhra has been instrumental in setting up the e-sign technology as part of the Digital India programme. It has more than 100 large customers including banks and governments.

Sensors, mobile app, cloud service and intervention are the major components of a telemedicine solution in rural and semi-urban India to reduce the diagnostic costs, innovative device for Primary Health Centers[21].

Mobile technology will play a significant role in providing healthcare services, as per the report of PwC Indian growth in mHealth market will have revenue opportunity worth Rs.3000cr. and $23 bn. for the world by 2017[22]. PwC identifies factors for that lead to the growth of mHealth includes, Government should encourage the mHealth to improve access, affordability of healthcare and providing incentives to private service providers offering mHealth services. Regulators has to address the limitation and standardization in providing the mhealth services. Healthcare Industry along with Government support has to accept this

service in the medical profession. Finally, user adoption will drive the exponential growth and opportunity in the mHealth market that can happen backed by medical professionals, affordability and availability of content and devices.

According to Gartner, The IT spending on the Indian public sector, i.e., the central government, the state governments and local governments expected to reach $7.8 billion in 2017. The ERP, Supply chain management, CRM (Customer relationship management) and other applications tools expected to reach $1 billion in 2017 with a growth of 15.7per cent[23]. IT services includes business process outsourcing, consulting, hardware support, implementation and software support expected to reach $2 billion in 2017 with a growth of 14.6 percent.

Internet penetration in rural areas stood at 13 per cent at the end of December 2016.There are 55000 villages untapped by telecom industry Digital India aims to promote digital literacy, enhancing infrastructure and e-governance[24]. Increase in broadband penetration in rural areas leads to increase in income level, thus drive the GDP growth of India. The Telecom operators has to explore new business and service model to tap the untapped opportunities in the rural India to provide data access at lower price, device manufacture has to ensure that supply of handset at cheaper price.

There is a great impetus to the telecom operators due to growing need of voice to data. An In-building solution if offered can avoid loss of signal, power radiation should be high to macro sites to provide efficient services inside buildings as it accounts for 60-65 per cent of mobile usage[25]. The Telecom Operators has an investment opportunity of $2trillion in the next 30 years towards the Digital India and Smart Cities.

Telecom connectivity in rural areas empower nearly two-thirds of the population through Digital India and BharatNet that enhance rural service such as agricultural, education and healthcare sectors[26]. Digitalization empowers rural population in governance initiatives; generate new employment opportunities, e-banking, e learning.

The Government of India announced DigiGaon initiatives in the Union Budget 2017-18 aims to provide services using ICT applications in the fields of agriculture, digital payments, education, e-governance, Healthcare. The opportunities in the agriculture through e-agriculture with ICT intervention government introduced National e-Governance Plan (NeGP) to provide information on crops, farm machinery, nutrients, pests, seeds, soil health and weather to the farmers through CSCs, internet Kiosks and SMSs. electronic National Agriculture Market (e-NAM) has launched to remove information asymmetry between buyers and sellers[27]. So far, 13 States have joined e-NAM platform that provides information and services on commodity arrivals and prices, trade offers, material flows and brings transparency in auction process. This helps in tracking of actual demand and supply, reduces the transaction costs.

In 2014, a study conducted by Government revealed that nearly 60 percent of students in rural areas lacks reading skills and ability to solve simple mathematical problems at the age of 10. Nearly 50 percent of dropouts at the age of 14 to the existing above problems. Use of ICT solutions to provide virtual classroom in rural areas on soft skill courses on computer literacy and hardware software solutions[28]. A Massive Open Online Courses has planned to the students to pursue courses of their choice from any institution across the country.

CHALLENGES TO DIGITAL INDIA

The challenges to the Government enterprises in managing ICT includes network downtime, lack of qualified IT staff to oversee day-to-day IT operations, integration of multiple technologies, need for timely upgradation of systems and increasing cost of technologies[29]. One of the major challenge the government enterprises face is threat of information security.

Due to growth from voice to data, the telecom operators need to invest in an efficient mobile backhaul networks to ensure voice and data connectivity[30]. Fiber infrastructure in India is about 20 per cent sites compared to developed countries is a bottleneck in rendering quality data services.

Some of the Countries such as Malaysia, US, China and UK has considered significance of telecom services as a tool for driving socio-economic development[31]. In the similar lines, the Government of India has to

support the Telecom Infrastructure in rural areas through some incentives, regulatory policies and effective measures to bridge the digital divide between rural and urban areas.

m-Kisan portal provides information and advisories services on agricultural and allied sectors by central and state government organization to farmers through SMSs in preferred language[32]. In order to reach to all sections of farmers the need of the hour is to create awareness through local bodies to uneducated farmers.

Digital payment has increased after demonetization of high currency and measure taken by Government of India towards "less -cash" society[33]. Efforts of Government of India on BHIM (Bharat Interface for Money) app created much awareness on urban areas but a challenge is on low smartphone penetration, banking infrastructure and internet connectivity in rural areas.

The Banking, Financial Services and Insurance enterprises have major risk from cyberattack. Security is concern in a technology-based network of financial environment as it contains information about businesses and customer[34]. With the increase in online transaction, there is a threat to theft of consumer data. Increase in consumer expectations poses another challenge for effective implementation of core banking solutions in a transparency and responsive manner. Change in the customer requirements and technological advancement has led the banks to integrate technology at the enterprise level has become a challenge task.

National Cyber Security Policy in 2013 was the first broad policy on cybersecurity has developed with increase in incidents of cybersecurity breaches. Some of the Institutes has created awareness of cybersecurity infrastructure at their business environment such as RBI, SEBI, IRDA and Adhaar Act 2016 for the safety and security of Aadhaar numbers and other core biometric details. "Enterprises should move away from a simple "buy-and-deploy approach for cybersecurity and adopt solutions that address their specific industry security profile, business context, risk appetite and threat profile".

The challenges faced by healthcare providers include high cost of diagnostic equipment and lack of trained professionals to provide medical services.

CONCLUSION

Digital India initiatives of the Government of India has certain opportunities due to digitalization of e-governance services to the citizen maintains transparency, prevention of corruption, record maintenance at affordable cost with efficiency. There are good number of opportunities in terms of agriculture, Banking, Finance Insurance and services, healthcare. ICT integration of all these sectors with partner ensures the specific sectorial benefits of digitalization. Employment opportunities to the Youth in IT and ITES in customer relationship management, product development, enterprise resource planning, cloud computing storage services, mobile application development, and data analytics enhance the income level contributes to GDP of the country. There arises challenges with the opportunities includes broadband connectivity, device manufacturing, smartphone penetration, safeguard of application from cyberattack through a holistic framework on cybersecurity policy to dealt with theft of data of consumers, business entities. Government impetus to the private players in the field of mhealth, tele medicine, e-agriculture, infrastructure development can overcome the challenges to empower the citizen to acquire knowledge economy and engage with the government for effective consumer service. The Central Government, State Governments and Local Governmental bodies has to create awareness among citizens on the use of digitalization can results in achieving the aim of the Digital India i.e., empower citizen to knowledge economy and engage citizen-government in an efficient and effective manner with automation.

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A CRITICAL ANALYSIS OF THE ROLE OF IT IN MANAGING CORPORATE FRAUDS AND SCANDALS

Dr. Neetu Prakash

ABSTRACT

Corporate frauds or financial crimes or financial frauds can be classified as white-collar crimes, which represent the illegal acts that are characterized by deceit, concealment or violation of trust. The fraudulent exercises practiced by Enron, WorldCom and Martha Steward shook the world. Of these scandals, the Enron accounting scandal was the most infamous one.There were similar allegations against the WorldCom Company, whose CEO Bernard Ebbers hid an expenditure of $11 bn; later this led the company to bankruptcy. Frauds have occurred in almost every country in the world, in almost every sector, including banking, insurance, telecom, automobile industry, health, and the list is endless.The growing focus on cross-border expansion, high levels of growth with internal processes not keeping pace and large number of new employees joining the organization are making most companies vulnerable to greater fraud risk in recent times.The IT hackers and fraudsters can pose a significant threat of a financial crime.Cyber-crimes, economic crimes, ethical crimes, falsification of accounts by showing inflated profits, breach of fiduciary duty, breach of confidential information, non- disclosure of material facts etc. are causing enormous harm to the rights and interests or the society. Every such corporate fraud is a heinous crime against humanity, as it adversely affects and ruins the fortunes of large segments of innocent people. There are several adverse consequences of financial crimes.It can bring institutions down to closure and can cause employees loss of their livelihood and investors their life savings. In fact, the fraud is not as accounting problem rather it is a social phenomenon. If you strip economic crime of its multitudinous variations, these are three ways a victim can be unlawfully separated from money: by force, stealth or trickery. While the first two are on the wane, the third.All the financial crimes, scandals and others have led to an increased focus on the development of new initiatives in ethical behavior, regulatory frame work, IT security, etc.Centralized regulatory authority, vigilant cheek by the stock exchanges at the time of abnormal rise in prices, strict actions with heavy penalties, fixing the responsibilities of chartered account as well as auditors to furnish true and fair position of the company to investors, strictly ban on the insider trading etc. only then the stock market can respect the sentiments of innocent investors which in turn helpful in enhancing the confidence among the investors not only in India but all over the world towards the Indian stock market.

INTRODUCTION

Corporate frauds or financial crimes or financial frauds can be classified as white-collar crimes, which represent the illegal acts that are characterized by deceit, concealment or violation of trust. The fraudulent exercises practiced by Enron, WorldCom and Martha Steward shook the world. Of these scandals, the Enron accounting scandal was the most infamous one. Its CEO Kenneth Lay along with a few other employees deceived the accountants by making the company appear healthy, when in reality it was in serious financial trouble. There were similar allegations against the WorldCom Company, whose CEO Bernard Ebbers hid an expenditure of $11 bn; later this led the company to bankruptcy. Frauds have occurred in almost every country in the world, in almost every sector, including banking, insurance, telecom, automobile industry, health, and the list is endless. Banks as well as the companies are increasingly facing the threat of financial crimes or account of both internal and external factors. Internally, the fraudulent employees who often deal with the systems and security aspects and externally the IT hackers and fraudsters can pose a significant threat of a financial crime. There are several adverse consequences of financial crimes. According to an estimate, a financial fraud in case of credit card can cause the individual great inconvenience taking up to 300 hours to rebuild his credit history. It can bring institutions down to closure and can cause employees loss of their livelihood and investors their life savings. In fact, the fraud is not as accounting problem rather it is a social phenomenon. If you strip economic crime of its multitudinous variations, these are three ways a victim can be unlawfully separated from money: by force, stealth or trickery. While the first two are on the wane, the third is not. All the financial crimes, scandals and others have led to an increased focus on the development of new initiatives in ethical behavior, regulatory frame work, IT security, etc.

The aim of this paper is to examine the causes of fraud occurrence on the basis of surveys conducted by various detective agencies, and further its deterrence in the light of ethical accounting, regulatory frame work, proper internal control and audit assessment, etc.

CAUSES OF CORPORATE FRAUD OCCURRENCE BASED ON SURVEY REPORTS

(I) Pricewaterhouse Coopers Survey 2005

Pricewaterhouse Coopers's Economic Crime, in association with Germany's Martin-Luther University, conducted a global survey on 2005 on organizational fraud involving 3634 companies from 34 countries, including India. According to the findings of the 2005 survey, rising economic crime poses a growing threat to companies, with more than half companies in India being victims of one or other form of fraud during the past two years. The number of companies reporting fraud increased from 24% to 54% since 2003(approximately 125% increase). Regardless of size, no company or industry, regulated or unregulated, was immune from fraud.

(II) IBM Survey 2005

The IBM survey finding are based on a total of 3002 telephonic interviews with businesses in healthcare, financial, retail and manufacturing sectors from December 2005 to January 2006. The businesses are located in the US, the UK, China, India, Russia, Poland, Czech Republic, Germany, Spain, France Argentina, Brazil, Australia, Mexico, Japan and Canada. As per the survey report, Indian firms ranked loss of revenue (75% versus 72% of global business) as the highest cost associated with cyber crime, followed by loss of market capitalization (72% versus 47% of global business). The other costs for Indian companies include damage to brand and reputation (65%), loss of current customers (64%), loss of employee productivity (60%), loss of prospective customers (57%) and the cost of restoring service (53%). Further, according to the survey report cyber crime is now a bigger threat to Indian companies than physical crime. The Indian IT executives believe more strongly than their global peers that cyber crime is more costly to their organizations than physical crime. Around 67% local Chief Information Officers (CIOs) perceive cyber crime as more costly compared to a global benchmark of 50%.

(III) KPMG-India Fraud Survey 2006

A survey was conducted by KPMG (known as KPMG – India Fraud Survey 2006), which pointed out that the Telecom, Media and Software sectors have emerged as being most vulnerable to frauds in India followed by the financial sector (banking, insurance, mutual funds, asset management, non-banking finance companies and investment banks) where as the transportation, retail, consumer and food sectors are in the lower rung for fraud risk. The reasons for the occurrence of frauds in the corporate sector, as revealed by the survey presented in the following table.

Table 1 Reasons for the occurrence of frauds in the corporate sector

Areas	Reasons for being Threatened by Fraud (%)
Poor Internal controls	24
Lack of ethical values	20
Collusion between vendors and employees	19
Management override of control	14
Inadequate background checks on	6
Prospective employees and/or vendors	7
Dissatisfaction among employees	10

Source: www.aicpa.org.httl index06

(IV) Earnest and Young Global Survey 2006

The Ernst & Young Ninth Global Fraud Survey sampled about 600 companies across the American, Europe, African and Asian subcontinent and dwelt extensively on various aspects of fraud and internal controls that are in place to prevent frauds. The survey revealed that about 75% of the Multinational Corporations (MNCs) are victims of fraud that occurred in developed economies whereas only 32% were duped in emerging markets. Further, almost a quarter of the sample size confessed that they did not have proper anti-fraud measures when they want to invest as well deal in new markets.

(V) Ernst & Young Indian Survey 2006

According to the recent survey by Ernst & Young of Indian Corporate sector revealed that 42% of the Indian companies have responded that levels of fraud have increased acutely in the past two years. The main reasons for increasing number is large-scale recruitment combined with lack of internal audit control. The growing focus on cross-border expansion, high levels of growth with internal processes not keeping pace and large number of new employees joining the organization are making most companies vulnerable to greater fraud risk in recent times.

(VI) SAS Inc Survey 2006

According to a recent survey made by SAS Inc., the estimates of the cost of fraud to the UK economy were tremendously increased from $28 bn to $36 bn per annum. As said, some of the reasons behind the increase in fraud cases in organizations can be taken to be as follows:

a. Organizations believe that they recruit only honest staff.

b. They believe that customers and suppliers are also hones.

c. They believe that their staff reports to these fraud cases in time.

d. Some organizations even think that checking the accounts and final statements is the cheap work of auditors and, hence, they take no part in verifications.

e. Problems surround even the lawmakers who execute it. (Mike.P 2002)

In the era of globalization and liberalization, companies have been facing a completely different set of challenges – obsolescent technology, accelerated development in industry and business, risks and complexity of information and data management. With this changed scenario, the risks faced by organizations have also increased manifold and there arises the need to manage and mitigate these risks more effectively. The increased size and impact of financial reporting standards and the related loss of billions of dollars of shareholder value have rightly focused both public and regulatory attention in all aspects of financial reporting fraud and corporate governance. We have come to know from the previous text that cyber crimes, economic crimes, ethical crimes, falsification of accounts by showing inflated profits, breach of fiduciary duty, breach of confidential information, non- disclosure of material facts etc. are causing enormous harm to the rights and interests or the society. Every such corporate fraud is a heinous crime against humanity, as it adversely affects and ruins the fortunes of large segments of innocent people.

Now, the question arises how the frauds can be deducted. The simple answer is establishing and maintaining the antifraud culture in an organization that helps in preventing fraud forever. Ernst & Young's NinthGlobal Fraud Survey :on Fraud Risk in emerging markets indicated that anti-fraud policies that include the following elements would help in preventing fraud to a great extent.

1 Internal controls

2 Internal audit

3 Management reviews

4 Internal education of policy

5 Encouraging and protecting whistleblowers

6 Regular rotation of personnel

7 External audit

ROLE OF SEBI IN CORPORATE GOVERNANCE

Before SEBI was formed, breach of regulations was the norm and compliance an exception. To promote the investor's confidence, it was necessary to reverse the situation. As a result, a regulatory body was constituted in the name of SEBI on April 12, 1988 to ensure the investor's protection and growth in the securities market. SEBI has extended control over the 23 stock exchanges of the country and initiated several steps to make reform in the regulations of the capital market so that investor's may be protected against the fraud.

Infect, SEBI sent strong message to market participants that strict observance of regulations has been essential to meet the extending needs of capital market as well as protect the investor's against the frauds.

More over, the concept of corporate governance (initiated by the SEBI on the basis of recommendations of various committees such as Shri Kumar Mangalam Birla 2000, Naresh Chandra 2000 and Shri Naranyana Murthy 2003) hinges on complete transparency, integrity and accountability of management, which also includes the non-executive directors. The main aim of corporate governance to handle corporate frauds and scandals, and a System of making directors accountable to Shareholders for the effective management of the company and also with adequate concern for ethics and value.

ANALYSIS OF SCAMS SINCE 1991

The major objective for conducting this Study to evaluate the effectiveness of corporate governance against the major scams happened in India Since 1991.

I. Harshad Shantilal Mehta's Scam 1992

Harshad Shantilal Mehta was born in a Gujarati Jain family of modest means. Mehta first started working as a dispatch clerk in the New India Assurance Company. Over the years, he got interested in the stock markets and started investing heavily in the stock market. Mehta gradually rose to become a stockbroker on the Bombay Stock Exchange, who did very well for himself. The crucial mechanism through which the scam was affected was the Ready Forward(RF) Deal and Bank Receipt (BR). The deal is in essence a secured short-terms loan from one bank to another. The bank lends against government securities. The borrowing bank actually sells the securities to the lending bank and buys them back at the end of the period of the loan, typically at a slightly higher price. It was this RF deal that Harshad Mehta and his associates used with great success to channel money form the banking system. A typically ready forward deal involved two banks brought together by a broker in lieu of a commission. The broker handles neither the cash nor the securities, though that wasn't the case in the lead-up to the scam. In this settlement process, delivery of securities and payments were made through the broker. That's the seller handed over the securities to the broker, who passed them to the buyer while the buyer gave the cheque to the broker, who then made the payment to the seller. This the brokers could manage primarily because by now they had become market makers and had started trading on their account. To keep up a semblance of legality, they pretended to be the undertakers of the transactions on behalf of a bank.

Another instrument used in a big way was the bank receipt (BR). In a ready forward deal, securities were not moved back and forth in actuality. Instead, the borrower, i.e. the seller of securities, gave the buyer of the securities a BR. A BR confirms the sale of securities. It acts as receipts for the money received by the selling bank. It promises to deliver the securities to the buyer. It also states that in the mean time, the seller holds the securities in trust of the buyer. Having figured this out, Mehta needed banks, which could issue fake BRs. Two small and little known banks – the Bank of Karad (BOK) and the Metropolitan Co-operative Bank (MCB) came in forward for this purpose. Once the fake BRs were issued, they were passed to other banks and the banks in turn gave money to Mehta. This money was used to drive up the prices of stocks in the stock market. When time came to return the money, the shares were sold for a profit and the BR was retired. The money due to the bank was returned. The game went on as long as the stock prices going up and no one had a clue about Mehta's modus operandi. Once the scam was exposed, through, a lot of banks were left holding BRs which did not have any value and the banking system had been swindled of a whopping Rs. 4000 crores.

II. IPO Scam (2003-2007)

IPO scam took place in the market between 2003-2007, which was much more refined and organized in terms of operations. It involved manipulation of the primary market i.e. applying in the initial public offering(IPOs) by financiers and market players by using fictitious or benaami demat accounts.The scamsters led by Roopalben Panchal, Sugandh Estates, Purshottam Budhwani, Manojdev Seksaria and a few others, opened thousands of ficticitious/benami demat accounts with common last names such as Patel,Gandhi, Rathod, Pandya, Desai, Pathak, Bhatt, Trivedi, etc. The bank accounts were opened with Bharat Overseas Bank, HDFC Bank, Vijaya Bank, Indian Overseas Bank, Yes Bank and demat accounts are opened with Karvy Depository participant and Pratik Stock Vision Depository Participant. To open the benami/fictitious

accounts, the scamsters used photographs of thousands of people who have nothing to do with the scam. The scamsters reportedly lured these people by giving advertisements in some local dailies in Gujarat offering free passport size photographs to promote a studio. Thousands of people turned up to get themselves photographed and while they got two or three copies of their photographs at free of cost as promised. They also unknowingly provided the scamsters with their photographs to open the fictitious bank and demat accounts. Over a period of time, the scamsters built a library of over one-lakh photographs using the free photo scheme. After getting their photographs, these scamsters gave names of their choice to these people. As for furnishing addresses of these people on the bank and demat application forms, the scamsters provided addresses of premises owned/leased by others as show in Table 1 and 2.

Table - 2

Surnames that have been used in Fictitious Applications			
Surnames	**No. Of Times Used**	**Surnames**	**No. Of Times Used**
Barot	1,000	Rathi	999
Bhatt	977	Rathod	987
Desai	1,000	Trivedi	995
Gandhi	991	Vala	999
Pandya	1,000	Vania	976
Pathak	975	Verma	1,000
Patel	976	Zaia	996
Ranka	936	**Total**	**14,807**

Source:http//capital market scams,94,index/link

Table - 3

No. Of Demat Accounts opened with KarvyDepository having Identical Addresses			
Date	**No. Of Accounts**	**Date**	**No. Of Accounts**
20/06/03	125	18/02/04	58
27/06/03	196	16/08/04	2729
06/11/03	575	17/08/04	195
16/12/03	517	18/08/04	59
17/12/03	753	19/07/05	1001
05/01/04	1088	20/07/05	1525
06/01/04	1135	21/07/05	758
16/02/04	1543		

Source:http//capital market scams,94,index/link

III. Dinesh Dalmia's Scam 2001

Dinesh Dalmia was the managing director of DSQ Software Limited when the Central Bureau of Investigation arrested him for his involvement in a stocks scam of Rs. 595 crore (Rs. 5.95 billion).Dalima's group included DSQ Holdings Ltd, Hulda Properties and Trades Ltd and Power Holding and Trading Pvt. Ltd. Dalmia resorted to illegal ways to make money through the partly paid shares of DSQ Software Ltd, in the name of New Vision Investment Ltd, UK, and unallotted shares in the name of Dinesh Dalmia Technology Trust.

SEBI'S FINDINGS REGARDING INVOLVEMENT OF PROMOTERS/ASSOCIATED ENTITIES OF THE COMPANY IN THE SCAM ARE AS FOLLOWS.

1. Unauthorized allotment of one crore shares was made by the company in October/December 2000 out of which 60 lakh shares were allotted to Dinesh Dalmia Technology Trust and 40 lakh shares to Dr. Suryanil GhoshTrustee Software Corporation. These shares were allotted without any resolution passed by the company and without receipt of any funds and also without following any procedure under the Company

Law. These shares were finally transferred to entities connected with promoters i.e DSQ Holding Ltd, DSQ Industries Ltd,Holda Trades and properties Ltd. andwere sold to various brokers. The entities with promoters were indulging in circular traders and fictitious trades with a view to create an artificial market in the scrip.

2. SEBI also revealed that on 30.12.99, the company made a preferential allotment of 1 crore shares of DSQ Software to FII's, OCB's etc.and two entities of Ketan Parekh e.g. Classic Credit Ltd. and Saimangal Investrade Ltd. were allotted 9 lakh shares each@ Rs. 275 per share The preferential allotment was made at a discount of almost 67% to prevailing market price of the share. Classic Credit Ltd. sold all the 9 lakh shares allotted to it within 4 months of allotment. The net benefit accrued to Classic Credit Ltd. as a result of sales of 9 lakh shares is approximately to the tune of Rs. 144.5 cr. Out of 9 lakh shares allotted to Saimangal Investrade5,45,000 shares were bought back by DSQHoldings Ltd at market rate (a promoter group) company in off-market transactions.
3. Finding also show on that further 42, 50,000 shares of DSQ Biotechwere given by DSQ group/associated entities to Ketan Parekh. The market value of these shares is approximately Rs. 74.35 cr. Thus, funds to the tune of approximately Rs. 75 cr. Of DSQ Biotech and shares worth Rs. 400 crores have been given by DSQ group earlier to Ketan Parekh entities approximately who is also indulge in unfair practices to increase the prices of the shares of DSQ ltd. Thus ,the funds to the tune of Rs 475 crores have been manipulated by the promoters.
4. Investigation clearly revealed that there was an abnormal spurt in prices and volume of DSQ Software. The prices of Scrip rose from Rs. 250 to 2631 during October 1999 to March 2000 and fell to Re 58 in June 2001 as shown in following chart.

Table – 4 Share Price of DSQ Software Ltd. During 2000-2001

Date	Share Price
20.03.2000	2631
28.11.2000	412.90
31.01.01	362.75
28.02.01	264.00
31.03.2001	129.85
28.04.2001	92.55
28.05.2001	81.10
30.06.01	54.00

Source: Complied from various sources

IV. Ketan Parekh's Scam 2002

Ketan Parekh (KP) was a chartered accountant by profession and used to manage a family business. He was known as the "Bombay Bull" and had connections with movies stars, politicians and even leading international entrepreneurs like Australian media tycoon Kerry Packer, who partnered Ketan Parekh in KPV ventures, a $250 million venture capital fund that invested in new economy companies. Over the years, KP builts a network of companies, mainly in Mumbai, involved in stock market operations. Ketan also formed a network of brokers from smaller exchanges like the Allahabad Stock Exchange and the Calcutta Stock Exchange. Ketan also used benami or share purchase in the name of poor people living in the slum towns of Mumbai. Ketan's rise to fame occurred at the same time as the worldwide dot-com boom (1999-2000) and he relied primarily on the shares of ten companies for his dealings (known famously as the K-10 scrips). Further, Ketan had large borrowings from Global Trust Bank amounted to Rs. 250 crores and 1,000 crores from the Madhavpura Mercantile Co-operative Bank despite the fact was that RBI regulation which clearly ruled that the maximum a broker could have got a loan of Rs. 15 crores only.

Thus, Ketan modus operandi was clearly to ramp up shares of select firms such as Global Trust bank, Zee Telefilms, HFCL, Lupin Laboratories, Aftek Infosys and Padmini Polymer. Ketan's endgame, now with the prices of select shares constantly going up thanks largely to this rigging, innocent investors who bought such shares thinking the market as genuine, were at loss. Soon after discovery of this scam, the prices of these

stocks came down to the fraction of the values at which they were bought. The Global Trust bank and the Madhavpura Cooperative went bust because the money they had lent to Ketan had sunk with his K-10 stocks.

SATYAM SCAM 2008-09

The recent scam of satyam, which is also known as India's largest ever-corporate fraud of Rs 9600 crores has shocked everyone. The details of the frauds are given as below.

Table 5- Facts about Satyam Scam

S. No.	Particular / Area	Amount involved
1.	Operating Margin	Rs. 649 crores (24 per cent of the revenue but actually it was Rs. 61 crores only 3 per cent of the revenue). As a result, the inflated profits over the years will keep up, and ultimately stock prices will up.
2.	Understated liabilities	Certain liabilities and contingencies that amounted to Rs. 1,230 crores are not recorded and warranty costs are omitted.
3.	Showing cash where none was generated and, therefore, it did not exist.	Amounted to Rs. 5,300 crores. In fact, the speculation which the promoters were doing in order to acquire equity of two companies of real estate of their own sons.
4.	Sensex	Sensex slipped by 7.3 per cent to 9587 whereas BSE reality index crashed by 17 per cent to 1965. As a result, Rs. 94,000 crores of investor's wealth was lost.
5.	Fake Invoices and Forget Documents	The investigation agency revealed that 7000 take invoices and forget documents were used to manipulate Rs. 4500 crores.
6.	Fake Fixed Deposit Receipt.	To the tune of Rs. 3300 crores.
7.	Manipulated Bank Guarantee.	Promoters manipulated bank guarantee to show balance in bank accounts as Rs. 1800 crores.
8.	Share Prices	Share Prices fell from Rs. 237.50 in December 2008 to Rs. 21.60 in January 2009.

Source: Complied from various sources

Table – 6 Share Prices of the Satyam (December 2008 to January 2009)

Dates	Share Price (in Rs.)
8/12/08	239.70
14/12/08	225.55
25/12/08	212.10
31/12/08	168.42
01/01/09	118.10
06/01/09	178.95
010/01/09	39.25
15/01/09	22.30
20/01/09	21.60

This fraud clearly shows that the auditions internal as well as external have been known requesting the scam. Internal auditors can be hand in glove with the management but what happened to the external auditors as to why they did not suspect something wrong. In this the case the external auditors were PEC or Price Water House Coppers that means PWC knew about the fraud all along or they did not do proper auditing. In fact they were paid much than what other Indian IT companies paid their auditors.

2 G SPECTRUM FRAUD 2010

It is a classic example of collusion between politicians , industrialists and media with high powered brokers which fraud of Rs 1.76 lakh crores.

COMMON WEALTH GAMES 2010

A common proverb is true in case of Common Wealth Games 2010 i.e. A fish rots from head down when the head is putrid, the body politic cannot be healthy .In Common Wealth Games 2010, 90 % of infrastructure cost were looted and Rs 900 crore bills were sanctioned for just Rs 85 crore of actual spending.

TABLE- 7 COMMON WEALTH GAMES SCAM 2010 CWG COST CAMPARISON

2002	UK	2100	CRORES
2006	RUSSIA	5000	CRORES
2010	INDIA	60000	CRORES
2014	UK	22000	CRORES

SPEAK ASIA SCAM 2011

The amount involved in this scam was **Rs. 2000 cr**. Under this scam,**24 lakh** investors are asked to fill survey and guarantee provided that there money will be four times after one year. After exposing the scam, company did not return even a singlepenny to their investors

COAL INDIA SCAM 2012

CAG findings regarding coal India scam showed following facts:

- **194 coal blocks** allocated without competitive bids during 2004-2009
- **loss 1.86 lakh crores**
- **PM Mammohan Singh** held the portfolio between 2006-07

SARDHA CHIT FUND SCAM 2013

The major highlights of **Sardha Chit** Fund scam as follows:

1 Amount involved Rs 2060-2400 cr.

2 Investors are promised for high return.

3 1000 journalists became job less.

4 10 Saradha entities became wind up.

5 Only 1000 depositors compensated and 100000 will be compensated in Oct 2014amount involved Rs 2060-2400 cr.

6 Investors are promised for high return

OVERALL POSITION OF INDIA

The following text presents the overall picture of India regarding corruption index and money blocked in swiss banks.

Table 8 Unaccounted Black Money in Swiss Banks Swiss Banking Association Report 2012

COUNTRY	AMOUT DEPOSITED IN SWISS BANKS
INDIA	1456 BN $
RUSSIA	470 BN $
UK	390 BN $
UKRAINE	100 BN $
CHINA	96 BN $
700 INDIANS HAVE ACCOUNT IN HSBC GENEVA BRANCH	

Table 9 CORRUPTION INDEX

India Corruption Index Indicators	**3.3**
Scale 0-10 **10highlyclean** **0 Highly Corrupt**	

These two tables clearly show that India is now witnessing not mere corruption, but national plunder.

CONCLUDING REMARKS

From the above analysis it is clear that in spite of SEBI and norms of corporate governance the scams have happened in India, which affect the interest and confidence of small investors. These scams show that the regulatory bodies have not worked effectively. There are various loopholes in the financial market, which lead to these types of scams. Some of the major loopholes are.

1. Circular trading is common in the market, which leads to manipulate the share prices by artificial increase or decrease in the share prices. It is one of the main causes of the scam in stock market. Like in case of in Dinesh Dalmia which indulge in the circular trading.
2. No proper regulation of ICWA was followed by the auditors, which lead to major scam. As in case of Satyam, the PWC (Price Water House Coopers) did not properly auditing the Satyam Company, which led to the major scam.
3. DPs (Depository Participants) not following strict norms for opening the accounts of the investors, which leads to major scam, like IPO's scam.
4. Inadequate implementation of the disclosure norms.
5. Turning a blind eye by the regulatory authorities towards the bullish market.
6. Failure of the money Laundering Act
7. Uses of IT initiatives for unethical purpose

If these short coming are avoided with the help of centralized regulatory authority, vigilant cheek by the stock exchanges at the time of abnormal rise in prices, strict actions with heavy penalties, fixing the responsibilities of chartered account as well as auditors to furnish true and fair position of the company to investors, strictly ban on the insider trading etc. only then the stock market can respect the sentiments of innocent investors which in turn helpful in enhancing the confidence among the investors not only in India but all over the world towards the Indian stock market.

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BIG DATA ANALYSIS: A CHALLENGABLE TASK

Bornali Dutta

ABSTRACT

Nowadays, big data has been attracting increasing attention from academia, industry and government. We are currently living in the big data era. The word big data is used to describe humongous volumes of data that cannot be processed effectively with the traditional application that exist. The processing of big data begins with the raw data that isn't aggregated and is most often impossible to store in the memory of a single computer. This paper discusses the sources of big data, current consideration of big data and its challenges in analysis. The big data problem could be analyzed from the perspective of computational intelligence and meta-heuristic global optimization. With Big data technologies, we will hopefully be able to provide most relevant and most accurate social sensing feedback to better understand our society at real time.

Key Words: Big data, Data mining, EC algorithms, HACE theorem.

INTRODUCTION

Data is everywhere. In fact, the amount of digital data that exist is growing at a rapid rate, doubling every two years, and changing the way we live[7]. We are currently living in the big data era. The large data volume does not solely classify this as the big data era, because there have always been data volumes larger than our ability to effectively work with the data have existed. What sets the current time apart as the big data era is that companies, governments, and nonprofit organizations have experienced a shift in behavior. In this era, they want to start using all the data that it is possible for them to collect, for a current or future unknown purpose, to improve their business. It is widely believed, along with significant support through research and case studies, that organization that use data to make decisions over time in fact do make better decisions, which leads to a stronger, more viable business[4]. With the velocity at which data is created increasing at such a rapid rate, companies have responded by keeping every piece of data they could possibly capture and valuing the future potential of that data higher than they had in the past.

An article by Forbes states that data is growing faster than ever before and by the year 2020, about 1.7 megabytes of new information will be created every second for every human being on the planet [7].

The word big data is used to describe humongous volumes of data that cannot be processed effectively with the traditional application that exist. The processing of big data begins with the raw data that isn't aggregated and is most often impossible to store in the memory of a single computer.

The definition of Big data, given by Gartner is, "Big data is high-volume , and high velocity and /or high-variety information assists that demand cost-effective, innovative forms of information processing that enable enhanced insight, decision making and process automation.''[7]

The term 'Big Data' appeared for first time in 1998 in a Silicon Graphics (SGI) slide deck by John Mashey with the title of "Big Data and the Next Wave of InfraStress"[6]. Big Data mining was very relevant from the beginning, as the first book mentioning 'Big Data' is a data mining book that appeared also in 1998 by Weiss and Indrukya [6]. However, the first academic paper with the words 'Big Data' in the title appeared a bit later in 2000 in a paper by Diebold[6] .The origin of the term 'Big Data' is due to the fact that we are creating a huge amount of data every day. Usama Fayyad in his invited talk at the KDD Big Mine Workshop presented amazing data numbers about internet usage, among them the following: each day Google has more than 1 billion queries per day, Twitter has more than 250 million tweets per day, Face book has more than 800 million updates per day, and YouTube has more than 4 billion views per day [6]. The data produced nowadays is estimated in the order of zettabytes, and it is growing around 40% every year new large source of data is going to be generated from mobile devices and big companies as Google, Apple, Face book, and Yahoo are starting to look carefully to this data to find useful patterns to improve user experience [6].

Currently, data science or big data analytics is a popular topic in computer science and statistics. It concerns with a wide variety of data processing tasks, such as data collection, data management, data analysis, data visualization, and real-world applications. The data science is a fusion of computer science and statistics.

The statistics is the study of the collection, analysis, interpretation, presentation, and organization of data. From the perspective of statistics research, the data science has the same objectives as the statistics, except that the data science emphasizes more on volume, and the variety of data. The data science is more like a synonym of big data research. From the perspective of statistics, there are two aims in data analyses–

PREDICTION: To predict the response/output of future input variables; – **Inference:** To deduce the association among response variables and input variables. From the perspective of computer science research, the data science is more practical. The phrase "data mining" is often used to indicate the data science tasks. The process of converting raw data into useful information, termed as knowledge discovery in databases.

HACE theorem [6] suggests that the key characteristics of the Big Data are-

(i) **Huge with heterogeneous and diverse data sources**
One of the fundamental characteristics of the Big Data is the huge volume of data represented by heterogeneous and diverse dimensionalities. This huge volume of data comes from various sites like Twitter, MySpace, Orkut and LinkedIn etc.

(ii) **Decentralized control**
Autonomous data sources with distributed and decentralized controls are a main characteristic of Big Data applications. Being autonomous, each data source is able to generate and collect information without involving (or relying on) any centralized control. This is similar to the World Wide Web (WWW) setting where each web server provides a certain amount of information and each server is able to fully function without necessarily relying on other servers.

(iii) **Complex data and knowledge associations**
Multistructure, multisource data is complex data, Examples of complex data types are bills of materials, word processing documents, maps, time-series, images and video. Such combined characteristics suggest that Big Data require a "big mind" to consolidate data for maximum values.

TYPES OF BIG DATA AND SOURCES

There are two types of big data: **structured and unstructured [6].**

Structured data are numbers and words that can be easily categorized and analyzed. These data are generated by things like network sensors embedded in electronic devices, smart phones, and global positioning system (GPS) devices. Structured data also include things like sales figures, account balances, and transaction data.

Unstructured data include more complex information, such as customer reviews from commercial websites, photos and other multimedia, and comments on social networking sites. These data cannot easily be separated into categories or analyzed numerically.

"Unstructured big data is the things that humans are saying," says big data consulting firm vice president Tony Jewitt of Plano, Texas. "It uses natural language."Analysis of unstructured data relies on keywords, which allow users to filter the data based on searchable terms. The explosive growth of the Internet in recent years means that the variety and amount of big data continue to grow. Much of that growth comes from unstructured data.

CURRENT CONSIDERATIONS OF BIG DATA

The concept gained momentum in the early 2000s when industry analyst Doug Laney articulated the now – mainstream definition of big data as the 3 Vs [6]:

Volume: The amount of data. Perhaps the characteristic most associated with big data, volume refers to the mass quantities of data that organizations are trying to harness to improve decision-making across the enterprise. Data volumes continue to increase at an unprecedented rate.

Variety: Different types of data and data sources. Variety is about managing the complexity of multiple data types, including structured, semi-structured and unstructured data. Organizations need to integrate and analyze data from a complex array of both traditional and non-traditional information sources, from within and outside the enterprise. With the explosion of sensors, smart devices and social collaboration

technologies, data is being generated in countless forms, including: text, web data, tweets, audio, video, log files and more.

Velocity: Data in motion. The speed at which data is created, processed and analyzed continues to accelerate.

Nowadays there are two more V's

Variability: There are changes in the structure of the data and how users want to interpret that data.

Value: Business value that gives organization a compelling advantage, due to the ability of making decisions based in answering questions that were previously considered beyond reach.

DATA MINING FOR BIG DATA

Generally, data mining (sometimes called data or knowledge discovery) is the process of analyzing data from different perspectives and summarizing it into useful information. Data mining as a term used for the specific classes of six activities or tasks as follows:

(i) **Classification:** Classification is a process of generalizing the data according to different instances. Several major kinds of classification algorithms in data mining are Decision tree, k-nearest neighbor classifier, Naive Bayes, Apriori and AdaBoost[6]. Classification consists of examining the features of a newly presented object and assigning to it a predefined class. The classification task is characterized by the well-defined classes, and a training set consisting of reclassified examples.

(ii) **Estimation:** Estimation deals with continuously valued outcomes. Given some input data, we use estimation to come up with a value for some unknown continuous variables such as income, height or credit card balance.

(iii) **Prediction:** It's a statement about the way things will happen in the future, often but not always based on experience or knowledge. P*rediction* may be a statement in which some outcome is expected.

(iv) **Association rules:** An association rule is a rule which implies certain association relationships among a set of objects (such as "occur together" or "one implies the other") in a database.

(v) **Clustering:** Clustering can be considered the most important *unsupervised learning* problem; so, as every other problem of this kind, it deals with finding a *structure* in a collection of unlabeled data.

(vi) **Description:**

We cannot say data mining as "big data'' and big data as "data mining''. There are some differences between these two and they are shown below.

Table 4.1: Differences between Big data and Data mining

Data Mining	Big Data
Data mining is the old big data.	Big data is everything in the world now.
Data size is smaller	Data size is Larger
All data mining tasks are not big data	All big data tasks are data mining

CHALLENGES IN BIG DATA ANALYSIS

Big data has been one of the current and future research problems. In the year 2014, Gartner listed "Top ten Strategic Technologies trends for 2013'' and "Top ten critical Technology Trends for the next five years '' and big data is listed in both two. Challenges in big data are very large. On one hand big data had many opportunities and on the other hand it is facing lot of challenges too. When handling big data challenges occur in the following areas.

(i) **Heterogeneity and incompleteness:** When human consume information, a great deal of heterogeneity is comfortably tolerated. In fact, the nuance and richness of natural language can provide valuable depth. However, machine analysis algorithms expect homogeneous data, and cannot understand nuance. In consequence, data must be carefully structured as a first step in (or prior to) data analysis. Even after data cleaning and error correction, some incompleteness and some errors in data are likely to remain.

This incompleteness and these errors must be managed during data analysis. Doing this correctly is a challenge. Recent work on managing data suggests one way to make progress.

(ii) **Scale:** Of course, the first thing anyone thinks of with big data is its size. After all, the word big is there in name. Managing large and rapidly increasing volumes of data has been a challenging issue for many decades. In past, this challenge was mitigated processors getting faster, following Moore's law, to provide us with the resources needed to cope with increasing volumes of data. But there is a fundamental shift underway now. Data volume is scaling faster than compute resources and CPU speeds are static.

(iii) **Timeliness:** The larger the data set to be processed, the longer it will take to analyze. The design of a system that effectively deals with size is likely also to result in a system that can process a given size of data set faster. Given a large data set, it is often necessary to find elements in it that meet a specified criterion. In the course of data analysis, this sort of search is likely to occur repeatedly. Scanning the entire data set to find suitable elements is obviously impractical.

(iv) **Privacy**: The privacy of data is another huge concern, and one that increases in the context of big data. There is a great public fear regarding the inappropriate use of personal data, particularly through linking of data from multiple sources. Managing privacy is effectively both a technical and sociological problem, which must be addressed jointly from both perspectives to realize the promise of big data.

(v) **Human collaboration:** In spite of the tremendous advances made in computational analysis, there remain many patterns that humans can easily detect but computer algorithms have a hard time finding. Indeed, CAPTCHAs exploit precisely this fact to tell human web users apart from computer programs. In today's complex world, it often takes multiple experts from different domains to really understand what is going on. A big data analysis system must support input from multiple human experts, and shared exploration of results. These multiple experts may be separated in space and time when it is too expensive to assemble an entire team together in one room. The data system has to accept this distributed expert input and support their collaboration.

FUTURE DIRECTIONS FOR BIG DATA ANALYSIS

The future direction is combining the strengths of EC algorithms and big data analytics to design new algorithms on the optimization or data analytics.

The big data analytics problem not only occurs in Internet data mining, but also in complex engineering or design problems [1]. The big data problem could be analyzed from the perspective of computational intelligence and meta-heuristic global optimization [9]. A real-world application could be modeled as a multi-objective, dynamic, large scale optimization problem. It is recognized that the evolutionary computation (EC) algorithms are good ways to handle this kind of problems. Based on the utilization of EC algorithms, the real-world system will be more efficient and effective [2, 3].

A population of individuals in EC algorithms is utilized to evolve the optimized functions or goals by cooperative and competitive interaction among individuals[5]. S. Cheng et al. Massive information exists during the search process, such as the distribution of individuals and the fitness of each solution. To improve the search efficiency or to recognize the search state, the data generated in the optimization process should be analyzed. The following list gives some directions on the combination of big data analytics and evolutionary computation: 1. High-dimensional and many-objective evolutionary optimization; 2. Big data driven optimization of complex engineering systems; 3. Integrative analytics of diverse, structured and unstructured data; 4. Extracting new understanding from real-time, distributed, diverse and large-scale data resources; 5. Big data visualization and visual data analytics; 6. Scalable, incremental learning and understanding of big data; 7. Scalable learning techniques for big data; 8. Big data driven optimization of complex systems; 9. Human-computer interaction and collaboration in big data; 10. Big data and cloud computing; 11. Cross-connections of big data analysis and hardware; 12. GPU-based EC algorithms; 13. Big data techniques for business intelligence, finance, healthcare, bioinformatics, intelligent transportation, smart city, smart sensor networks, cyber security and other critical application areas; 14. Map Reduce implementations combined with evolutionary computation algorithms approaches.

CONCLUSION

The bigger the data, the more resource intensive it is to work with, the better the value of the information must be to make the trade off a wise business decision. While there is simply no underlying principle stating that the size of data is positively correlated with its value, the size of a data set is positively correlated with its cost to maintain. The value of using big data is defined by how valuable the information gleaned from its process is compared to the time and resources it took to process that information. Now that we are in the big data era, our challenge is not getting data but getting the right data and using computers to augment our domain knowledge and identify patterns that we did not see or could not find previously. With Big data technologies, we will hopefully be able to provide most relevant and most accurate social sensing feedback to better understand our society at real time.

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BIG DATA AND DATA MINING

Anil Babu Mikkilineni and Sirisha Adamala

ABSTRACT

This paper addresses the various approaches, techniques and different research areas in the field of data mining and big data technologies. Data mining is the extraction of projecting information from large data sets, whereas big data is a term that is used to describe data that is high volume, velocity, and variety; requires new technologies and techniques to capture, store, and analyze it; and is used to enhance decision making, provide insight and discovery, and support and optimize processes. This type of huge amount of data's is available in the form of tera- to peta-bytes which has drastically changed in the areas of science and engineering. To analyze, manage and make a decision of such type of huge amount of data we need techniques called the data mining which will transforming in many fields. This paper imparts more number of applications of the data mining and also focuses scope of the data mining which will helpful in the further research.

Keywords: Artificial Neural Network, Big Data, Data Mining, Digital India, Gigabyte

INTRODUCTION

Government of India has taken initiative to digitize India by enabling Internet access available to over two lakh villages by 2019, promoting e-governance, e-banking and similar others to lead India into a knowledge society. It will generate 18 lakh jobs. Prime Minister Narendra Modi's Digital India programme is like a major initiative for rural India that suffers from lack of connectivity. 'Digital India' is a central programme equips India to face the challenge of upgrading to a knowledge-based society. This is a vast initiative on using technology to create a participative, transparent and responsive government. The 3 major targets of the programme are:

1. To extend high-speed internet, mobile phone and bank account enabling participation in digital & financial services.
2. The programme aims to take digital literacy to the next level, and will focus on encouraging citizens to slowly move to cashless monetary transactions.
3. It aims at seamless integration across departments/ jurisdictions, and ensuring availability of facilities in real time from online and mobile platforms The vision of Digital India is keyed on three *key areas:*
   a) Digital Infrastructure as a Utility to Every Citizen
   b) Governance & Services on Demand
   c) Digital Empowerment of Citizens Six of nine Pillars of Digital India:
      1. Broadband Highways
      2. Universal Access to Phones
      3. Public Internet Access Programme
      4. e-Governance – Reforming government through Technology
      5. e-Kranti – Electronic delivery of services
      6. Early Harvest Programmes The government has launched some initiatives in line with these objectives
         - Digital Locker System aims to minimize the usage and sharing of e-documents online.
         - The mobile app for My Gov would bring many features to users on a mobile phone.
         - Swachh Bharat App to be utilized by the citizens and administrators for achieving the goals of Swachh Bharat Mission.
         - eSign framework which would allow citizens to digitally sign a document online using Aadhar authentication.

- Online Registration System (ORS) has been introduced to provides important services such as online payments ,registration etc.,
- National Scholarships Portal is a one stop solution for end to end scholarship process.
- Digitize India Platform (DIP) would facilitate efficient delivery of services to the citizens.
- Bharat Net, a high-speed world's largest rural broadband connectivity project using optical fibre aims to connect almost all villages of a country.

Big data is the term for data sets so large and complicated that it becomes difficult to process using traditional data management tools or processing applications. This paper reveals recent progress on big data, big data networking and relevant topics. According to Chun and Lee (2014) the size of digital data in 2011 is roughly 1.8 Zettabytes (1.8 trillion gigabytes). That is, supporting networking infrastructure has to manage 50 times more information by year 2020. Specifically, considerations of efficiency, economics and privacy should be carefully planned while including new big data building blocks into existing data and networking infrastructure (Schlosser et al. 2012). In addition to big data challenges induced by traditional data generation, consumption, and analytics at a much larger scale, newly emerged characteristics of big data has shown important trends on mobility of data, faster data access and consumption, as well as ecosystem capabilities (Zafarani et al. 2014). Distinct applications in the cloud have put demanding requirements for acquisition, transportation and analytics of structured and unstructured data. In this paper, we pay close attention to recent progresses made on big data and big data networking. We divide relevant efforts into representative categories while maintaining our own independent understandings. To be specific, topics covered in this paper include: recent progress on classic big data networking technologies, e.g., Hadoop and MapReduce, big data technologies in could computing, big data benchmarking projects, and mobile big data networking.

This chapter discusses the impact of big data in the public sphere on public service provision and new opportunities for public service organization and structure that may transform the role of governments in societies. The utilization of Information and Communication Technology (ICT) to improve public sector services has started with the whole e-government discussion. Transforming government services using ICTs has been a complex and costly task, often associated with the automation of public services and business systems integration. While e-government projects focused on operational efficiency, initiatives such as Open Government efforts sought to foster public service transparency, civic participation, and inter-departmental collaboration. This could be achieved by sharing public sector infrastructure, seamless information sharing with other agencies, bundling core competencies to improve service delivery and engaging external entities, such as universities and businesses (Executive Office of the President of USA 2014). While these changes definitely seek to effect efficiencies, they are also qualitative in nature, changing fundamentally the nature of the relationship between governments and citizens. Big data initiatives come to underpin their progress. Since 2012, both EU and the US are seeking ways, though legislative and policy changes, to remove obstacles in the use of big data which promise greater effectiveness with lower costs in the public sector (Nagy-Rothengass, 2013). Civic participation via social media, for example, can also reduce the cost of public service delivery. Crowdsourcing information on potholes, for example, can cut down on inspection costs.Bigdataalsopromiseclockworkprovisionofpublicservice.Intelligentassets, such as intelligent traffic lights can notify a central asset management system about their state of maintenance ahead of time and larking issues in their working condition, so repair work can be streamlined without disruption of service (Thomas, 2013). Before we go on to elaborate on the role of big data in civil life, it is important to understand some underlying shifts in the role of Governments and its relationship citizens.

CHARACTERISTICS OF BIG DATA

In addition to the exponential growth of data the changing user behaviour and globalization is also responsible for directing Big Data. Thus, many organizations are seeking for analyzing such models to enhance their functioning. The typical characteristics of the big data are:

Volume: The quantity of data generated as Big Data ranges from Terabytes to Exabytes and Zettabytes of data. The volume has been increasing exponentially: up to 2.5 Exabyte of data is already generated and stored every day. This is expected to double by the end of 2015.

Velocity: Big data is growing rapidly, generating a bizarre of quantities needed to be stored, transmitted, and processed quickly. It refers to the speed of generation of data or how fast the data is generated and processed to meet the demands and the challenges which lie ahead in the path of growth and development.

Variety: This refers to the inconsistency which can be shown by the data at times. In Big data, the variety and heterogeneity of data sources and storage has increased, fuelled by the use of cloud, web & online computing (Adamala, 2017).

Veracity: Big Data Veracity refers to the biases, noise and abnormality in data. Accuracy of analysis depends on the veracity of the source data. In comparison to Big Data's volume and velocity, veracity is the most challenging characteristic in data analysis.

All in all, although the definition of big data contains different concerns and technologies, but there is a consensus point, big data refers not only too large amounts of data, but also including a large amount of data processing techniques. "4V" characteristics show a large number of data. Volume, velocity and variety are aim to realize the value of big data. Data collection, storage, analyze, is prepare for dig out the value of data. Big data emphasizes complexity in data analysis, and it pays more attention to data processing efficiency and the data value.

DEVELOPMENT TREND

From an economic development perspective, many large companies focus on big data seriously. IDC's report claimed that global data will increase by 50 times over the next decade, as shown in Fig. 1. Oracle President, Mark Hurd, said that now it's the era of big data explosion, and data grew at an alarming rate. At present, the amount of data around the world is million trillion. Data increase 8 times from 2005 to 2011. In 2020, the expected amount of data could reach 35 million trillion. The development trend of big data published in "2012 Hadoop and Big Data Technology Conference" showed the top three topics are: data resources, big data privacy issues and integration of big data and cloud computing. The magazine editor of Wired, Chris, has asserted that the data have made the traditional scientific method obsolete. Although this statement is a bit extreme, but big data indeed has changed our lives, our way of thinking. Big Data is widely used. Now many large companies use big data to streamline processes and create efficiencies, such as Microsoft, Apple, Oracle, Amazon, Google, FaceBook and Twitter. They are experienced in dealing with big data sets (Microsoft, 2014).

HADOOP AND MAPREDUCE

In the related technologies, more representative one is Hadoop, which is represented by non-relational data analysis techniques. By the virtue of processing for non-structural, massively parallel processing, easy using and other advantages, Hadoop becomes a mainstream technology. MapReduce is a model proposed for parallel processing and generating big data by Google in 2004 (IQ Analytics, 2014), which is a linear, scalable programming model. Hadoop is an open source realization of MapReduce. With its open source and easy using, Hadoop has become the first choice for big data processing. It not only creates targeted marketing applications, make full use of transaction data, but also improve accuracy and timeliness of fraud detection. Many Internet companies, including Facebook, Google, eBay and Yahoo, have developed a large scale applications based on Hadoop. MapReduce and Hadoop can significantly improve the efficiency of big data processing.

BIG DATA ACQUISITION ENGINE

In addition to the requirements of efficiency and speed, big data collection also requires security. A general data acquisition engine which combines rule engine and finite state automaton together, helps to verify the security and correctness of the big data acquisition flow (Papadopoulos et al. 2017). When adding a new collection node, the rule engine will automatically make the whole system more flexible and scalable. At the same time, it ensures the state transition, and improves safety and clear logic. Big data acquisition, integrated with JESS rule engine, not only can control the state transitions and match, but also to monitor the unusual status and location errors. Rules engine can clearly show the errors and details which are matching wrong, ensure the safety and accuracy of the data acquisition.

ENCRYPTION- SECURING BIG DATA

With such massive amounts of data being generated, ensuring that the data doesn‘t fall at risk is quintessential. Such data left unsecured may put organizations or the general human race at risk. Sans the correct security solutions and encryption techniques, Big Data can imply big problems. The characteristics which make Big Data valuable to the market also make it valuable to various anti-social elements like cyber criminals. The number of encryption techniques available is aplenty. However, they mostly tackle one specific aspect and this is what makes it challenging. To make it easier to understand, one could consider a certain transparent encryption technique that are provided by a certain database vendor. They might be applicable to a particular database nut may not be suitable for implementation in a big data platform. There are a few organizations that offer encryption technology implementable on big data. However, most of the times they can only ensure security of specific big data nodes and does not protect the original data that is fed into the big data platform. With such incompatible approaches in securing Big Data, IT industry has to make do with fragmented key and policy management, which increases administrative effort and makes it almost impossible to apply them consistently. Though several large organizations are taking their own initiatives to protect the data that they are generated, a mass awareness of the implications of unsecured data need to be initiated and smaller organizations need to step up to ensure that the world is a safe place for the data to reside

Theoretical Challenges facing Big Data One of the key set of challenges (Chalh et al., 2015) faced in today‘s tight market is the need to find and analyze the required data at the least speed possible. However with exponentially growing amount of data, speed becomes a major issue as analyzing such sheer volumes of data in detail to find out required output becomes more and more tedious. It is not only the quantity of data but also discovering the data according to the appropriateness of the project which is a Herculean task. Elimination of out-of-context data is an essential objective. Even if in-context data retrieved at a high speed is achieved, the quality of data may be compromised if it is not accurate or timely. As a result of this, appropriate results of the project may not be published.

Three key areas of security threats (Al Nuaimi et al., 2015) have been identified in the implementation of BigData using software such as Hadoop- Breach of privacy by unauthorized release of data, manipulation of data in the database and denial of information. In particular, in Hadoop the following areas of threat have been recognized.

- Unauthorized access of an HDFS client via RPC or via HTTP protocols.
- Manipulation of data in a file at a DataNode through pipeline-streaming data-transfer protocol.
- Adding/deleting/changing priority of a job in a queue.
- Unauthorized access of intermediate data of Map job via its task trackers HTTP shuffle protocol.
- An executing task may use the host operating system interfaces to access other tasks, access local data which include intermediate Map output or the local storage of the DataNode that runs on the same physical node.
- Masquerading as Hadoop service component.
- Submitting a workflow to Oozie as another user.

Real time security or compliance monitoring is also a challenge that is faced by Big Data analysts. Due to the copious amounts of data involved, the number of alarms triggered by the security devices is so large that several of these alarms tend to be overlooked as humans cannot cope with the shear amount.

The above challenges that are faced by Big Data needs to be addressed and solutions of these problems need to be determined so that industries can start implementing big data analytics in their business strategies.

DATA MINING

Data mining is an interactive process within which progress is defined by discovery through either automatic or manual methods. Businesses can learn from their transaction data more about the behaviour of their customers and therefore can improve their business by exploiting this knowledge science can obtain from

observational data (e.g. satellite data) new insights on research questions. Web usage information can be analyzed and exploited to optimize information access. Thus data mining generates novel, unsuspected interpretations of data. The main idea of data mining falls under two categories: Predictive data mining creates the model of the system from the given data. Descriptive data mining generates significant data sets from the existing data. The aim of these above ideas is achieved by the following data mining techniques.

1. Characterization is used to generalize, summarize and possibly different data characteristics.
2. Classification Data is a process in which the given data is classified in to different classes according to a classification model.
3. Regression process is similar to classification the major difference is that the object to be predicted is continuous rather than discrete.
4. In Association process the association between the objects is found. It discovers the association between various data bases and the association between the attributes of single database.
5. Clustering involves grouping of data into several new classes such that it describes the data. It breaks large data set into smaller groups to make the designing and implementation process to be simple. The task of clustering is to maximize the similarity between the objects of classes and to reduce the similarity between the classes.
6. Change Detection method identifies the significant changes in the data from the previously measured values.
7. Deviation Detection focuses on the major deviations between the actual values of the objects and its expected values. This method finds out the deviation according to the time as well the deviation among different subsets of data.
8. Link Analysis traces the connections between the objects to develop models based on the patterns in the relationships by applying graph theory techniques.
9. Sequential Pattern Mining method involves the discovery of the frequently occurring patterns in the data.

DATA MINING LIFE CYCLE

The life cycle of a data mining project consists of six phases. The sequence of the phases is not rigid. Moving back and forth between different phases is always required. It depends on the outcome of each phase. The main phases are:

Business Understanding This phase focuses on understanding the project objectives and requirements from a business perspective, then converting this knowledge into a data mining problem definition and a preliminary plan designed to achieve the objectives.

Data Understanding It starts with an initial data collection, to get familiar with the data, to identify data quality problems, to discover first insights into the data or to detect interesting subsets to form hypotheses for hidden information.

Data Preparation In this stage, it collects all the different data sets and constructs the varieties of the activities basing on the initial raw data.

Modeling In this phase, various modeling techniques are selected and applied and their parameters are calibrated to optimal values.

Evaluation In this stage the model is thoroughly evaluated and reviewed. The steps executed to construct the model to be certain it properly achieves the business objectives. At the end of this phase, a decision on the use of the data mining results should be reached.

Deployment The purpose of the model is to increase knowledge of the data, the knowledge gained will need to be organized and presented in a way that the customer can use it. The deployment phase can be as simple as generating a report or as complex as implementing a repeatable data mining process across the enterprise.

VISUALIZING DATA MINING MODEL

The main objective of data visualization is the overall idea about the data mining model .In data mining most of the times we are retrieving the data from the repositories which are in the hidden form. This is the difficult task for a user. So this visualization of the data mining model helps us to provide utmost levels of understanding and trust. Because the user does not know beforehand what the data mining process has discovered, it is a much bigger leap to take the output of the system and translate it into an actionable solution to a business problem. The data mining models are of two types: Predictive and Descriptive.

The predictive model makes prediction about unknown data values by using the known values. Ex. Classification, Regression, Time series analysis, Prediction etc. The descriptive model identifies the patterns or relationships in data and explores the properties of the data examined. Ex. Clustering, Summarization, Association rule, Sequence discovery etc. Many of the data mining applications are aimed to predict the future state of the data. Prediction is the process of analyzing the current and past states of the attribute and prediction of its future state. Classification is a technique of mapping the target data to the predefined groups or classes, this is a supervise learning because the classes are predefined before the examination of the target data. The regression involves the learning of function that map data item to real valued prediction variable. In the time series analysis the value of an attribute is examined as it varies over time. In time series analysis is used for many statistical techniques which will analyze the time-series data such as auto regression methods etc. It is sometimes used in the two type of modelling (1) ARIMA (II) long-memory time-series modelling.

The term clustering means analyzes the different data objects without consulting a known class levels. It is also referred to as unsupervised learning or segmentation. It is the partitioning or segmentation of the data in to groups or clusters. The clusters are defined by studying the behaviour of the data by the domain experts. The term segmentation is used in very specific context; it is a process of partitioning of database into disjoint grouping of similar tuples. Summarization is the technique of presenting the summarize information from the data. The association rule finds the association between the different attributes. Association rule mining is a two-step process: Finding all frequent item sets, Generating strong association rules from the frequent item sets. Sequence discovery is a process of finding the sequence patterns in data. This sequence can be used to understand the trend.

A. Data collection from smart objects of IoT when we conduct our data collection from smart objects of IoT, the special needs of smart objects should be taken into account. For example, if we want to collect data from distributed sensor networks, energy-efficiency, scalability and fault-tolerance should be considered. A series of strategies, e.g., data aggregation, can be adopted. Thus, the amount of transmission data is reduced, and the utilization of energy of sensor nodes is promoted. In order to reconcile the goals and conflicts in the process of sensor network data mining, Ghosh (2007) proposed a general probabilistic framework under the constraints of computational/memory/power limitations.

B. Data abstraction, compression, index, aggregation and multi-dimensional query The Internet of Things will produce a massive data of smart objects. Therefore, it is necessary to consider how to manage data of IoT effectively and how to implement online analytical query and processing conveniently (James, 2009; Gonzalez et al., 2006). Data of smart objects has its own characteristics:
   a. In the environment of IoT, devices such as RFID and sensors will produce massive data streams.
   b. Data of smart objects is likely to inaccurate, and usually is time-related or location-related.
   c. Data of smart objects tends to have its own implicit semantics. So it is necessary to recognize the implicit semantics of data. The characteristics of IoT data put forward new demands for data management and data mining. The key issues are includes:
      - Identification and addressing of smart objects: In IoT, the number of entities of smart objects will be billions. In order to query or interact with smart objects, it is necessary to realize smart objects' identification and addressing effectively.
      - Data abstraction and compression. Effective methods should be developed for filtering redundant data.

- Data archive, index, scalability and access control for IoT data.
- Data warehouse and its query language for multidimensional analysis.
- Interoperability and semantic intelligibility for heterogeneous data of IoT.
- Time-series level and event level data aggregation.
- Privacy and protection problem in data management of IoT.

C. Event filtering, aggregation and detection Event filtering and complex event processing are used to process simple events in data. The whole process includes the following steps. At first, data are aggregated according to events. The primitive events are filtered, and valuable events are obtained. And then, these simple atomic events are integrated into complex events. Thus we can detect the corresponding business logic by detecting complex events. For example, Ku et al. (2008) proposed a new complex event-mining network for monitoring RFID-enable application, and defined the fundamental concepts for the event management of supply chain, which uses RFID technology.

D. Centralized data processing and mining Vs. Distributed data processing and mining in different situations, centralized or distributed data processing and mining models can be adopted flexibility. Let's take distributed sensor network as an example. Under the constraints of nodes' computational/memory/power limitations, the strategy of sending all data to sink nodes does not optimize the use of energy-costly transmissions. In fact, in most cases we do not need all raw data, but are interested in some values of parameters (Zhuxi et al., 2009; Masciari, 2007).

E. The next generation of Internet has many potential direction of development: IPV6 technology, ubiquitous networks, trusted network, semantic web, Grid (Semantic Grid, Data Grid and Knowledge Grid), service-oriented applications, optical transmission and cloud computing etc.

APPLICATIONS

The arrival of big data change many applications, including business, traditional manufacturing, biomedical field and other applications. Big data brings opportunities to the enterprises. Previously untapped data resources can be stored and processed. The new data collection techniques and advanced data mining tools provide an unprecedented opportunity. This paper analyzed from business applications, manufacturing, biomedical industries and other industries.

Business Applications Business studies show that timely and effective use of data-driven knowledge is a competitive advantage. Combined with cloud computing, using LDA to extract themes can provide usefulness for unstructured data, can help companies to export the competitive advantage.

Manufacturing as a traditional industry, manufacturing is also under attack due to the advent of the big data. Big data may push the next revolution in manufacturing-forecast manufacturing. In order to become more competitive, manufacturers need to accept emerging technologies, such as advanced analysis and physical network, to improve their efficiency and productivity based on a systematic approach. Big data can help reduce defects and control costs during automated production.

Biomedical Industry Big Data is changing the biomedical industry with bringing benefits for human being. Big Data analysis can be applied to echocardiography, angiography, and magnetic resonance imaging or computed tomography to form cardiac imaging. Big data imaging may also provide new insights about the disease, treatment and interventions.

Data Mining Application Various field adapted data mining technologies because of fast access of data and valuable information from a large amount of data. Data mining application area includes marketing, telecommunication, fraud detection, finance, and education sector, medical and so on. Some of the main applications listed below:

Education Sector: We are applying data mining in education sector then new emerging field called "Education Data Mining". Using these term enhances the performance of student, drop out student, student

behaviour, which subject selected in the course. Use student's data to analyze their learning behaviour to predict the results.

Banking and Finance: Data mining has been used extensively in the banking and financial markets. In the banking field, data mining is used to predict credit card fraud, to estimate risk, to analyze the trend and profitability.

Market Basket Analysis: These methodologies based on shopping database. The ultimate goal of market basket analysis is finding the products that customers frequently purchase together.

Earthquake Prediction: Predict the earthquake from the satellite maps. Earthquake is the sudden movement of the Earth's crust caused by the abrupt release of stress accumulated along a geologic fault in the interior.

Bioinformatics: Bioinformatics generated a large amount of biological data. The importance of this new field of inquiry will grow as we continue to generate and integrate large quantities of genomic, proteomic, and other data.

Telecommunication: The telecommunications field implement data mining technology because of telecommunication industry have the large amounts of data and have a very large customer, and rapidly changing and highly competitive environment.

Agriculture: Data mining than emerging in agriculture field for crop yield analysis a with respect to four parameters namely year, rainfall, production and area of sowing. Yield prediction is a very important agricultural problem that remains to be solved based on the available data. The yield prediction problem can be solved by employing Data Mining techniques such as K Means, K nearest neighbor (KNN), Artificial Neural Network and support vector machine (SVM).

Cloud Computing: Data Mining techniques are used in cloud computing. The implementation of data mining techniques through Cloud computing will allow the users to retrieve meaningful information from virtually integrated data warehouse that reduces the costs of infrastructure and storage. Cloud computing uses the Internet services that rely on clouds of servers to handle tasks. The data mining technique in Cloud Computing to perform efficient, reliable and secure services for their users.

CONCLUSIONS

The goal of Big Data analytics for security is to obtain actionable intelligence in real time. Although Big Data analytics have significant promise, there are a number of challenges that must be overcome to realize its true potential. The rise of social networks gives very strong effects to the set of techniques developed for mining graphs and social networks. Social networks are rooted in many sources of data and at many different scales. Data Mining provides proficient way to execute and make use of database. In this paper we have briefly reviewed the various data mining techniques which are used for social network analysis and its applications.

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DIGITAL – PANCHAYAT IN RURAL INDIA

Dr. Pallavi S Kusugal, Dr. Narayan Datta Arundhekar and Gurusiddayya M Sarur

ABSTRACT

Digital Panchayat is a function and dynamic digital platform and working station designed and created for each and every Panchayat in India, powered by Internet. The objective is to facilitate and improve Panchayat functioning on day-to-day basis, through two way flow of information and content. The goal is to realise various development objectives at grassroots level. Digital Panchayat is a national initiative of Digital Empowerment Foundation and National Internet Exchange of India. As per the World Bank, "e-Government refers to use by government agencies of information technologies (such as Wide Area Networks, the Internet and mobile computing) that have the ability to transform relations with citizens, businesses and other arms of government." Government of India(GoI), with an intention to transform the governance landscape by ensuring participation of citizens in policy making and providing ease of access to information to the citizens, introduced the National e-Governance Plan(NeGP) in 2006. The vision of the NeGP was to "make all Government services accessible to the common man in his locality, through common service delivery outlets and ensure efficiency, transparency & reliability of such services at affordable costs to realise the basic needs of the common man." E-Panchayat is one of the Mission Mode Projects (MMP), currently being implemented with a vision to empower and transform rural India. Present paper aims to describe e-panchayat and Government initiatives towards E-Panchayat.

Key-Words: Development, Rural, e-Panchayat, Technology, Digital, e-Governanace

INTRODUCTION

The information and communication Technologies play an important role in rural development. So e-panchayat is a need of present scenario. This system is web-based and n-tiered and functions like an Application Service provider enabling Panchayat level digital services for all stakeholders. The stakeholders are citizens, elected representatives, Gram-Panchayat officials, the government and the knowledge workers. It is a fact that the developed 50 countries have taken the full advantage of information Communication Technologies. In the year 2002 the Government declared a comprehensive program to accelerate e-governance at all levels of the government to improve efficiency, transparency and accountability for Government-Citizen interface. Maharashtra state is the sixth best e-Governance state in India.

Over the past decades, India's ability to create, select, adapt, use and profit from knowledge has become increasingly to its sustainable economic growth and improvement of living standard. The growing role of information and Communication Technology (ICT) tools has strengthened the human intellectual capacity and the formation of modern lifestyles.

Country like India, where 70% of the population lives in village and rural parts of the country, it becomes more necessary to utilize such tools for their social, economic, administrative and governance regeneration. Recognizing the e-Governance, the Government of India (GoI) has introduced various administrative reforms and initiated many interventions under policy level and at institutional level. However, the government has been able to connect urban-centric regions of the country, but still this left with a major national-gap as far as using ICT for the nation building is concerned. Effective and viable usage of ICT tools at panchayaat, which represents the first level of government interaction for over 60% of the Indian populace, is largely missing.

As per official figures, there are approximately 2,50,000 Panchayats in India mapped by the National Informatics Centre and Ministry of Panchayati Raj on the ministry website under the project called e-Panchayat. However, it is difficult to find any information about single Panchayat. With this background, the National Internet Exchange of India (NIXI) and the Digital Empowerment Foundation (DEF) initiated and rolled forward the concept of 'Digital Panchayat(DP)' programme across the nation. Digital Panchayat means – a web-based dynamic digital interface created for each and every Panchayat in India, giving information about particular panchayat in a two-way flow of current. The objectives is to faciliatate and improve Panchayat functioning on day-to-day basis, through two-way flow of information and content. The

digital platform aims to bring out the local voices by empowering the local communities to showcase and share local social, cultural and economic practices, stories and challenges. Moreover, the web-platform would act as a repository of local content for national and global audience and vice versa with a bottom-up content thrust. Additionally, the portal would act as a multipurpose information and communication platform to showcase local content, culture, best practices, advocate local issues, e-Commerce to the Panchayat villages. Digital Panchayat is a platform for panchayat representatives to connect with rest of the world.

PANCHAYAT RAJ SYSTEM IN INDIA

In 1993, India has established one of the largest system of Panchayat Raj of the world through the 73rd constitutional amendment. Panchayat Raj Institutions (PRIs) in rural areas signity Inida's experiment with direct democracy at the grassroots level. It has adopted a decentralized strategy based on the principles of subsidiary with a more active and area-based approach to rural development. Panchayat Raj has been given a wide range of powers and duties related to rural development. The main focus of the Panchayat Raj is that the people in the village should undertake the responsibilities of governing themselves. In the present scheme of Panchayat Raj, the villagers have been held responsible for all round improvement in the village life, including education, sanitation, medical relief curative and preventive, lighting, housing, maternity and child welfare along with the administration of civil, criminal and revenue justice. It was thought this system would be powerful means for self-preservation in the arena of social life.

CHANGING NATURE OF PANCHAYAT RAJ

After a more than a decade and half, there is a growing realization that the system of Panchayati Raj needs to be re-energized and strengthened **to** address persistent development challenges more effectively and also to be responsive to emerging problems such as climate change, water scarcity, natural disasters etc. Globalization and the information revolution have changed the nature of local polity through increasing competition and awareness among the villagers. The technology that is most transformative in today's society is information and Communication Technology (ICT). Information and Communication Technology does not impact physical objects directly; instead; it moves and processes information. U.S. is global leader in e-governance.

BACKGROUND OF DIGITAL-PANCHAYAT

The National e-Governance Plan has identified Panchayats as one of the Mission Mode Projects(MMP), since Panchayats provide a large number of basic services for millions of citizens living in India's rural areas. Introduction of e-Governance shall help improve the delivery of services and good governance.

The seventh Round Table Conference of State Ministers of Panchayat Raj, organized by the Ministry of Panchayat Raj(MoPR) held at Jaipur in December 2004 recommended taking e-Governance in Panchayat Raj Institutions(e-PRI) as mission mode through NIC and other solution providers. The MMP has been designed to overcome the challenges being faced in the villages such as lack of reliable communication infrastructure, delay in providing services to the citizen's mobilization for implementing schemes at the GP level, lack of 132 monitoring mechanism for the schemes.

As a first step towards formulating the project, the Ministry of Panchayati Raj constituted an Expert Group in June, 2007 under the Chairmanship of Dr. B.K. Gairola, Director General, NIC, Government of India. The Expert Group was entrusted with the task of assessing the IT Programmes of Ministry of Panchayati Raj and recommending cost effective solutions along with the cost implications. Adopting a consultative approach, the Committee interacted with the States/UTs to assess the existing status of computerization up to the Gram Panchayat level, including the initiatives undertaken by the State Governments. In order to understand the ground realities, the Committee conducted field visits to some of the Gram Panchayats in the selected rural areas where some IT initiatives had been undertaken. Inputs from eminent experts in the public and private sector were also taken into account as part of the consultative process. In essence, it was found that while some computerization efforts had already been made at Panchayat level by States like Gujarat, West Bengal, Karnataka, Kerala, Andhra Pradesh and Goa, these attempts were limited as they were driven by short term goals and were unable to completely transform Panchayats due to lack of a holistic perspective. It was felt that a more comprehensive approach was required to make a cognizable impact on the functioning of the

Panchayats for the benefit of the citizens. These recommendations formed the basis for the conceptualization of e-Panchayat MMP.

OBJECTIVES OF DIGITAL-PANCHAYAT MISSION MODE PROJECT

If the Panchayat are to perform efficiently and effectively all the mandated tasks, which are increasing day-to-day, extensive use of Information and Communication Technology (ICT) is needed. Moreover, there is a strong need to build a 'digital inclusive society' where large sections of rural population are able to benefit from new technologies; can access and share information and services freely and can participate in the development process more effectively. The Panchayats being at the interface of rural citizens and governance structure are an effective vehicle to induce mass ICT culture at the grass-roots level. It is with this broad vision that MoPR formulated a scheme for ICT enablement of all the Panchayats in the country on a Mission Mode approach. The e-Panchayat Mission Mode Project (MMP) is intended to address all the aspects of Panchayats' functioning from internal core functions such as Decentralized Planning, Budgeting, Accounting, Implementation and monitoring etc. to service delivery like issue of certificates, licenses etc. Hence the key objectives of e-Panchayat Mission Mode Project are to use ICT for :

1. Automation of internal workflow processes of Panchayats.
2. Improving delivery of services to citizens.
3. Capacity building of Panchayat Representatives and Official.
4. Social Audit.
5. Transparency, Accountability, Efficiency and RTI compliance of Panchayats.
6. Improving governance of local self-government. The Panchayats being the basic unit for planning and implementation of a large number of scheme service, this MMP would also go a long way in improving public service delivery through PRIs with better outcomes.

PROBLEMS AND PROSPECTS OF DIGITAL-PANCHAYAT

Establishment of the e-Panchayat in every village across the country is an elaborate process. ICT intervention should not be understood in isolation. ICTs function is a socio-cultural, political and economic milieu. Their efficacy is contigent on the various forces and realities that coalesce to shape the environment into which they are introduced. To equip every Panchayat with a computer and to provide it with Internet connectivity would not be an easy task, if we look at the current prerequisities for ICT enables system of governance in rural areas. A workable system of e-Panchayats warrants financial resources, computer applications, skilled human resource and political will.

The primary technological factor that can impede the reach of e-Panchayats are the lack of infrastructure and trained human resources. Despite India being called they Information Technolgy capital of the world, its computer and internet penetration (at 2.7 per cent and 4.9 per cent, respectively) are among the lowest in the world. (The financial Express, Connectivity, Penetration keep IT away from Rural India, May 7, 2009). Teledensity in rural areas is around 14 per cent. (Ministry of Finance, Government of India, Economic survey 2008-09, p.246) Slow progress in rolling out common services centres would dealy process of e-Panchayats. 1,00,000 common services center were to be opened up in rural areas by March 2009, but only 50,008 have been rolled out until now. Some states, namely Bihar,Jharkhand, Gujarat, Sikkim and Hayrana have already operationalized more than 75 percent of common services centers while others such as Rajasthan, Andhra Pardesh, Jammu and Kashmir and Uttrakhand lag for behind in the process.

KEY CHALLENGES IN DIGITAL-PANCHAYAT

The key challenges being challenges for implementation of computerization in Panchayat include.

1. The issue of electricity comes first – more than half of the rural households are still not connected with electricity.
2. Most Gram (village) Panchayat representatives and villagers are not computer-literature; even a simple computer application would be difficult to handle for them.
3. Content creation in local language is another challenge. English is still an alien language in rural areas.

4. High Capacity Building - No back end support at all levels of PRI/PR Departments for operationalising computerization of services 136
5. No centralized decision support system (MIS) for monitoring the schemes and taking informed decisions
6. Genuine problems of infrastructure and other prerequisites for e-Panchayats in rural India.
7. Application of ICT is a political issue because it has potential to transform the socio-political dynamics of national and local polity.

PROCESS OF DIGITAL-GOVERNANCE

The process of e-governance has already been started. The Government of India has decided to open one lakh common centres across the country under National e-Government services accessible to the common man in his locality, and ensure efficiency, transparency and reliability of such services at effordable costs to realise the basic needs of the common man. Now the Government of India has initiated the process access to computers with broadband connectivity. All Panchayat at all levels need to be equipped with computing hardware and connectivity over the next few years. The approach would be to first use the Kiosks being set up under the NeGP's Common Services Centres initiative. For the remaining Panchayats, it is proposed to engage independent service providers who would be selected on the basis of a bidding process. It has been also planned to equip all Panchayats with necessary software and skills to handle e-Governance for better delivery of services to citizens. The other major component of e-Panchayats would be that of capacity building of functionaries of Panchayat Raj Institutions. The infrastructure that is proposed to the created through e-PRI would be utilized for training of elected representatives about their responsibilities and for giving them functional knowledge of the schemes that are implemented through the Panchayats or their statutory committees.

ACTION TAKEN BY INDIAN GOVERNMENT

Governments at both the central and state levels have the vision and strategies to bridge the digital divide and provide supporting infrastructure in rural areas to enhance the capacity of Panchayats. Under the Bharat Nirman Programme, the Government of India has emphasized connectivity and other basic facilities. The Ministry of Power has introduced a scheme that aims at providing electricity in all villages and habitations within four years, thereby providing access to electricity to all rural households.(Ministry of Power, Government of India, Bharat Nirman-Electrification) it has been also proposed to achieve a rural teledensity of 25 per cent by means of 200 millions rural connections by the end of the Eleventh Five Year Plan. The Eleventh Five Year Plan has also targeted providing broadband connectivity for all secondary and higher secondary schools, all public health care centers and Gram Panchayats.

CONCLUSION

Lastly, we conclude that e-Panchayat are the need of the hour as people in rural areas are still deprived of basic facilities for a decent life. Common wisdom says that poverty and deprivation exist not only due to lack of resources but also persist because of inefficient and malfunctioning institutions. In the emerging knowledge society and information revolution, Panchayats should not be left in isolation. They should be provided with adequate technological resources in order to be able to play a meaningful role in the course of development.

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DIGITAL INDIA AND ROLE OF MEDIA

Dr. Ramesh Kumar Rawat

ABSTRACT

India's Prime Minister Shri Narendra Modi's thinking of making Digital India and we very much appreciated it, but this thought can be made more effective with the help of the media. Here's why we are talking about the media, the main reason behind this is what the idea of Digital India is? How Digital India can be built? How and where is a need for digitization? What are the advantages of digitalisation? What will be the common people's participation in creating Digital India? Simultaneously, how will social empowerment from Digital India be done? All this comes under Digital India. Also, how the media can participate in this. Media is also responsible for the publication of news on its working, requirement, and suggestion from experts and impacts after digitization of various departments of the Central and State Government. The media has been play a positive role in realizing the dream of Modi ji, in this research paper we mentioned about the rple of media in digitalization with the help of various beat and coverage of various state and central government departments.

Key words: Digitization, Media, Journalists, Society, Empowerment

DIGITAL INDIA AN INTRODUCTION

From Digital India, we mean that the complete happiness in India with the facilities of various domain with its information, consumptions of received information by stakeholders, through all digital methods or methodologies. To say, if someone deposits their children's fees, then they should be deposited electronically only. Bank transfers money digitally, If household goods or any other necessary things is purchased from the market, then it can be bought from the electronic process. In government and non-governmental organizations, the employees recorded their presence through biometrics. That is to say that all the work should be digitized. Payment of telephone, water, electricity bills, transfer of money in PPF accounts, transfer of salary and withdrawal as per requirement elecctronicly, all of which should be done in the same manner. It may be that the results of digitization are not appealing in the present, but it is likely to have good results in the future.

OBJECTIVES OF RESEARCH

The purpose of research on “Digital India and Role of Media” is to study the role of media in digitization.

RESEARCH METHODOLOGY

In this research paper, the process of conceptual research has been used.

LITERATURE REVIEW

Digital India and Role of Media is not a new topic for us; but only a few books have been published on the same; also, many articles on related topics have been published in various Hindi and English newspapers and magazines from time to time, but this research paper is in a new aspect in itself.

THE HYPOTHESIS

Role of Media In digitalizatin is positve and more news, Article need to publish and more awarnes programme prepare and broadcast in electronic media and media play an positive role in digitilization of Inndia.

HOW TO DO AWARENESS FOR DIGITALIZATION?

For the awareness of the digitalisation, the government should follow the folowing things:

1. Government should provide the deep information on digitalization to all government employees and also provide training to them.
2. After this, all government employees should organize seminars, conference, training programs, workshops etc. for its awareness in general public as per the guidelines of their respective departments. They also make a mechanisms for providing information door-to-door for the same. It is mandatory for all

of them to have proper monitoring of all these activities and submit report to higher authority and media with honestly.

3. From time to time, senior officials of the various government and nongovernment organizations offices, representatives of the high officials, public representatives, punch, surpanch, pradhan, MLA and ministers meet and collect information, also discuss about its effects and implementation and necessary steps taken by them in future for the success of the degitilization campaigian.
4. It is not a one-day, one-month's work. Therefore it should run for months or years. For this, there should be a cell in every governmrnt and nongovernment departments that can make this work brilliantly.
5. There should also be a feedback mechanism. Through which it can be ascertained how many people are able to understand the process of digitalisation, how many are being used and what kind of benefits and advantage taking by them. As long as this mechanism is not there, it will not be able to know about its usefulness.

DIGITAL INDIA AND ROLE OF MEDIA

Media can play an important role in the creation and 100% implement of Digital India. For this, the media must work in the following ways.

1. The government's digital policies should provide information to the public through news and advertisements in print and electronic media.
2. To make the concept of Digital India a success, the steps taken by the government have to be passed on to the masses by the use of media. If seminars, conferences, workshops, spoiled dramas, etc., are done/conducted/or in future plan by the government machinery/departments then they have to be published and brocasted in media. They can conduct the press conferences for the same.
3. The government officers are work in properly or not for create awarness about government's digitization policies among the masses, will also be print and broadcast in media. So that they act furiously and contribute to realizing the dream of digitization.
4. The information about the digitalization understood or not by the common people is also published and broadcast by media. So competent authority of government and nongovernment organizations can take necessaru steps for the same.
5. There is a main role of literacy. So literate or illiterate people are ready or not ready to received information about the same should be published and broadcast in media with the reasons. So their problems can be short out and make ready to them for receive inforamtion and its utilizations.
6. The government feedback mechanism is fully functioning or not, and they are working or not woring on feedback; so that kind of the information should print and broadcast by the media.
7. For the digitization, government money and government manpower is not being misused shoud be come in media.
8. All types of information can be published through media professonials according to received information in form of news, articles, feature, column, special article, interview etc. and also broadcasted in electronic media in form of news, special programs or bulletin, discussion programs, Expert Interview etc..
9. Other types of news can be published and broadcast even after the published and broadcast the content mentioned in above mentioned point 8 after the interaction with the readers in form of feedback story.

MEDIA COVERAGE OF THE WORK DONE BY VARIOUS DEPARTMENTS FOR DIGITALIZATION

Media coverage of various departments of central government.

1. **Incometax Department:** According to the guidelines given under the Central Board of Direct Taxes and Finance Departmeent how much work concludes for digital India working under the Digital India Departmet in the same? The number and types of Awareness camps installed on various places in various towns and how many people numbers increased for online tax return file. This can be highlighted the number of

taxpayers increase with the increase of the tex income of the government and trasparancy is maintain or not between government and taxpayer. Media professionals can get these information from incometax/consern departments and publish with the version of incomtext commissioner or other competent authority. Media professionals also conduct the interview for electronic media with tax payers, industrilist, financial experts and eleborate the significance of digitization and put eminent dignatries suggestions in front of the government through the interview.

2. **Passport, Visas and Immigrations**: The passport, visa and immigrations department, working under the Ministry of External Affairs, if the process of renewal of new passports, accelerated passports, old passports, has been simplified through digitization process and it has benefitted the passport holders than this information should be publish by media. If time seems to be short to get new passport through degiliation process than information should be publish on the feedback basis of the stakeholder. The media professionals can published these information in the newspapers and magazines and help to related department for the betterment. If the process of making a passport is simplified after digitization, the number of passport holders has increased and the people who make fake passports are punished, then it is a huge/big achievement of the government after digitization which should also be published by media professionals. Secondly those people willing to go in another country after obtaining a passport and the process of obtaining visas and emigration is simplification after digitization than this kind of story should highlighted by media professionals through the interview/version with/of stakeholders. Apart from this, employees working in these departments media professional can discuss with them about maintenance of electronic documents keep by them in computer or any other electronic gudgets.

3. **Insurance:** After adopting the digitalization process and under the financial services enhancing transparency among the companies and steakholders for health insurance, life insurance, and other types of insurance than information should publish by the media professionals. If the stakeholders can get entire information as per needs basis then this type of news shoulld be publish. After digatilazation if crime linked with insurance prevent than such news should be published and broadcast in the media.

4. **Banking Services:** How the speed of transaction increased after digitization in banking services and how much persantage of it's increased in on-line transactions. This type news publish in media by the media professionals.

5. In addition, information related to National Citizen Database can be published under the Home Affairs and Registrar General of India.

6. Under the Revenue and Central Board of Excise Custom, the detail about degitalization of Custom Duty under Central Excise Department can be published. The information related reforms, the accounting details and improvements in it, and if the people who save custom duties wrongly, are punished, then its news can be published.

7. After the digitization of pension and pensioners Welfare Department, the information regarding getting the pension at the right time and the names of those who have been fraudulently picked up in the name of the beneficiaries have been removed and it is benefiting the government of revenue and taking the bogus penalties. If there is a ban then news related to it can be broadcast and published by the media or it should be.

MEDIA COVERAGE OF THE WORKS BEING DONE UNDER DIGITIZATION IN VARIOUS DEPARTMENTS UNDER THE STATE GOVERNMENT

1. Land related disputes can be settled on behalf of digitizing the land records information in rural areas and wrongful acquisition of land can also be levied. At the same time, due to digitization of the land, once the entire information is on-line, the land related disputes can be substantially dealt with. Media professionals can be publish news related the same. Also, if the land related records are being deliberately digitized on official/governmrnt official basis then news related to it can be published.

2. Information on the purchase and registration of land/prperty easily available for the public through online/digitalization process. Digitization is also help to get information of the title of the property, if title of the property found more than one purchuser name than it will caught easily in fraud and media can easily

publish and broadcast news for the same. Also, the title of the property's conflicts has decreased, so this information can be sent to the readers by the media professionals in form of news.

3. It is a matter of great happiness the information related to agriculture and new innovation in the field of agriculture is being digitized. On the other hand, if the information of digitalitization in agriculture is not share with farmers or they are not able to take advantage of it's due to lack of education or technology, than media should publish and broadcast such kind of information. If farmers are gettinng average or below average information for same domain through digitalization then media should publish the information.

4. Nagarpalika, Gram Panchayatand other govermnent governing body provide the information through digitalization to public as per their requirement at the right time than related news can be published. It is also a major task for media professionals to give information about persantage of the awareness of degitalizaton among the public. If public/villegers/citizen is able or not able to take/get full advantage of various central and state government schemes through the digitization it is also news for media. Media professionals also write disclosure reports and articles related to its entire accounting. In this type of publication, the media can emphasize the need of reforms by the government in-depth with the ground reality.

5. How much numbers FIR lodged in the Police Department or how many people have lodged their complaints in different cases through the digitization process and how much eagerness has increased in the public for filing an e-FIR or how many e-information related to any case was raised. The news related to this is going to be published.

6. With this, news related to digitization of road transport, commercial texas can be publish and broadcast by the media professionals.

7. Employment registration through digitization in employment office and how many persons are getting employment, how unemployed and how many people are being given/receiving unemployment allowance can be published in media. Due to digitization, how much improvement has been made in the working system and employment registration awarness in the public? News related to can be published and broadcast in media.

8. Whether the benefits of government schemes are easily accessible to the public through digitization of rural, women and child development departments should be published. Through the digitization if government schemes spread among the stakeholders and they are taking or not taking advantage of these departmental schemes at the right time than these information should be published by media.

9. The information and facilities provided to the general public through digitization by the School Education, Health, Food and Public Distribution and Family Welfare Departments should be published by media. Media also publish the information about the facilities and food distribution by related departments to non-government schools, government and non-government hospitals.For encouraging to the person who are working well, positive news should published. In other hand educton department distributiong books freely to the students in schools or not, admission in the prescribed quota for poor students are given or not in private schools. Whether the information regarding fee related information, distribution of nutrition in the private schools available in the form of dizitalization form. So it is necessary to publish the news in a proper manner about all these.

MEDIA COVERAGE OF THE WORKS BEING DONE UNDER DIGITAL LABELING AT VARIOUS OTHER DEPARTMENTS AT THE STATE AND CENTRAL LEVEL

1. How effective the process of digitization has been implemented in the courts? How many preserved cases have been digitized or their information is available? And how many pertaining cases are pending? In addition, digital information can be disseminated and circulated. Also, how much has been done to digitize the functioning of the different types of courts, or in the form of suggestions as well as information from higher judiciary, the news can be published with authenticity.

2. In the field of higher education, UGC, MCI, BCI, AICTE and NACC and many other same type of organization provide the information through digitalization process about their grading, recognition, and fake educational institutions and these type of information publishing by media and in near future they can

publish same type of informmattion. Those editors are working in Media Houses should publish appropriate interviews of various officials working for digitization in different departments of the Central and State Government. They can also publish interview of public representatives (panch, sarpanch, MLA, MP) for the same.For this, the editor, chief reporter can get the information, compilation the information and can publication by giving appropriate directions to the correspondent working on various beats.

BENEFITS/ADVANTAGE OF DIGITAL BEHAVIOR

1. The biggest advantage of a digital behaiviour is that all the information will be in white/true; whose account will also be with the government and also with the steakholder.

2. This will be the full benefit of the tax going to the Government and the turnover of the receiving tax by the government will increase. Also, those who steal the tax will also be punished.

3. The exact information of the tax be received at the right time and the government will have details of every single consumer or tax payer in digital format. Once the correct amount of tax is found annually, the government can prepare the correct plan for the country development from the income gain by them from the taxpayer.

4. Through this, the government and non-government companies/organization will be able to get accurate information about the production and consumption of their products on time so that they can increase and decrease their production as per market requirement.

5. Due to the adoption of digital process and increasing availability of connectivity of Aadhar card, PAN card, voter ID card, passport, mobile number etc., it can be properly prevented by the criminals being misused by them.

6. With the availability of on-line information of all vehicles, it will help to prevent its theft and other kind of criminal activity.

7. With the online information of all the houses, shops, plots etc., it can be done to find out how many plots and houses are required to make the government. So that the house can be made available to the needy and curtailing the trend of collection.

8. The collection of black money will be stopped and the money will be given more in the watchdog and the flow will also increase.

9. Money in from the digital system will remain more in the banks and the public tendency to keep the note less in pockit, than government will be print note very less. It will also help in curb the circulation of forged notes.

10. Increasing the government's earnings from the digital arrangement and also increases the possibilities of the development; also new opportunities for employment are expected to be opened in the future, even though this opportunity is currently reduced.

DISADVANTAGES OF DIGITAL SUBSCRIBERS

1. The biggest disadvantage of this is that if the government has data that is in the digital form, if hacked by cyber criminals and they can destroyed it, then the government will face challenge to received it.

2. The common man will be habitual to follow digital behaiviour and sometimes the Internet service stops, then they can face various challenges to deal in the transaction of money, purchase and patronage in form of electronically. As if the curfew seems in any area and there is no cash in hand, it is not necessary that it is possible to withdraw money from the bank in the loosening of a few hours. Curfew also appears suddenly, its information is not received by the common people two to four days in advance. So these kind of the problems are Disadvantage for the digital suscribers.

RECOMMENDATIONS

1. The government should collect and store all kinds of information in hard copy along with digital information, and file it. So if there is a problem due to technology in the digital storage in the future, this problem can be solved by the use of hard copy.

2. The attendance of all government and non-government institutions, accounts of employees, sales transactions, self-worth expenses, purchases etc., should be completed by the digital process itself and all these information should be published and broadcast by media in form of print and electronically.

3. Media Houses should publish prominently positive and negative news related to digitization of various ministries of the Central and State Government as well as their department and related cconsern.

4. In the Media Houses, editors should separately make arrangements for collection and writing news on digitalization. They also make same arrangeent for writing and publishing of the various type of the stories on degitilization in newspapers, magazines and broadcast the same on various news channels. A beat can be constructed separately for this and also, a reporter's duty can be set aside for the same. At the same time, an editorial committee can be created which should be fully monitored on these digitized news and take cautious in their publication. Newspapers and magazines will also create an editorial team on their level for written and published articles related to the progress of digitalizan on time to time. In electronic media a media professional's team also need to buildup for prepare radio and TV channels programs on the development of degitaalization.

5. For media professionals, there should be conduct seminars, workshops, field visits, etc., by the government and media organizations. So media professionals properly write news reports on digitization and cover in print and electronnic media properly. So that the journalist could collect the news in a big way with the ground and submit under guideline of senior editorial authority.

CONCLUSION

Finally, this research paper concludes that the dream of the government of India/Modi ji for the Digitalization of India can be done more thoroughly with the help of the media and it can be further accelerated. For this, provide necessary information, resources, training to the journalists and government officers. Media houses and government also fully monitor to them.

About Contributor

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He visited Bhutan, Nepal and major cities of the India for the academic purpose. His 45 articles and 10 research papers published in newspapers and research journals. He organized and participated in 85 seminars and workshops. He made five documentary films and completed three research projects. Many students completed the research projects under his guidance. He received Utkarast Samman from PRSI, President Award from MUJ, Press and Publicity Award form Jagat Guru Dashik ji Maharaj, Ayodhya.

A QUICK REVIEW ON BENEFITS OF DIGITALIZATION IN HIGHER EDUCATION SYSTEM

Hemen Dutta

ABSTRACT

This article presents a quick review on several beneficial aspects that Higher Education System in India can enjoy from digitalization. We also review several shortfalls and security threats associated with digitalization. This article is primarily prepared for non-experts and expected to be beneficial for common readers in understanding various issues associated with the digitalization of an educational system.

Keywords: Digitalization; Higher Education System.

1. A BRIEF INTRODUCTION

The digital India movement can immensely benefit higher educational institutions. In fact, focus on several aspects of higher education including specific regional needs can be addressed through digitalization of the higher education system. Although higher educational institutions in India have focused on this movement, collective and timely efforts are required for solving several common problems faced by these institutions. Thus, the concept of digitalization can be accelerated further in the higher education system through individual, institutional and collective efforts.

2. INFRASTRUCTURE, KNOWLEDGE, INFORMATION AND EVENTS SHARING

Infrastructure is one such important issue as many institutions have no access to the required quality and quantity of infrastructure. If we can digitally connect similar higher educational institutions, then infrastructures can be shared among the institutions for common purposes. Certain essential infrastructural requirements can also be set up in a central location in view of regional or specific needs and may be shared digitally. The same model can be used for knowledge sharing as well as for the quick dissemination of timely information and instruction at different levels of the higher education system. This will reduce misinterpretation of information and enhance reliability in several processes of the higher education system. Furthermore, the central and state Governments of India seem to be interested in taking up more initiatives to connect the higher educational institutions through its different policy-implementing agencies. All stakeholders should actively participate in such initiatives, as well in the ongoing activities. This will result in the successful implementation of such initiatives, and the stakeholders can reap huge benefits from these initiatives.

Digitalization in higher educational institutions will enable fast and accurate dissemination of information and help avoid overlapping efforts. This will, in turn, help in saving money and time and bring competitiveness among institutions by enabling them to learn each other in a better way. This will also help the higher educational institutions to take future challenges collectively and induce more useful and efficient work culture and mechanism in such institutions.

There are several scopes of involvement in events like webinar and access to and development of online contents by people associated with higher education at the institutional or individual level. With greater involvement in such activities and platforms, one can not only gain new knowledge and information, but also let others know about their own capacity and needs. This can also help in attracting collaborations in mutually beneficial areas.

3. DATA AND CONTENTS CREATION, STORING AND SHARING

Through digitalization, a high amount of data can be efficiently stored and shared at a low cost in lesser time and a significantly lesser space. This will help in keeping our planet greener and cleaner by reducing the use of papers and other infrastructural requirements. Through mirroring, the same digitized content can be made available at different locations at a faster speed. We can also reduce the loss of contents by storing them in digitized form on different systems at different locations so that the same contents can be recovered from a system in the case some of the systems are destroyed.

Several digitized contents can be accessed with limited technical knowledge or with the help of experts. But there is a need to focus on creating more new digital courses or add new lessons in an existing digital course

along with practical training to take the maximum benefit from the concept of digitalization in higher education. There are also several free digital data worldwide that can be used for educational and research purposes by students, teachers, and researchers. They should make it a habit to use such reliable sources.

4. SOME MUCH NEEDED EFFORTS

Many experts associated with higher education seem to be less attached to online platforms and are, thus, unaware of the peers and proper audiences. Through online platforms, one can fulfill several expectations with fewer efforts and can come closer and connect with like-minded entities at a faster speed and lesser time. Thus, greater participation in digital initiatives may bring one's due recognition on time.

Several higher educational institutions in India have adopted the online process in several activities of their daily life, and in fact, such processes are moving ahead at a faster speed. So there is a need to know the pro and cons of such processes, and the participating entities must have the required technical knowledge. In such a situation, there must be massive training programs and awareness campaigns within the higher education system to implement and take the benefits of digitalization. Although dealing with computer systems is becoming easier day by day with the addition of new features that include security measures, there are many within the higher education system who lack sufficient knowledge in handling a computer system. A digitized content should be user-friendly and have enough security features. This will attract greater participation in such initiatives, as many people are reluctant to access an online system due to the fear of mishandling and security concerns. There are several rural and semi-urban higher learning institutions, where the quality of internet service is poor and have limited power supply facility. In order to access high volume data and proper visualization of digitized contents, quality internet service is a must.

5. CONCLUSION

All the issues mentioned above have relevance in the Indian context. In the higher education scenario of a specific region, one may pay particular attention to the creation and usage of digitized contents according to their own needs and problems so that the same can be shared regularly and effectively. There should also be efforts in upgrading the existing facilities, and the stakeholders should have a greater, collective and timely participation in the digitization efforts. In the same time, we should also increase our participation in digital initiatives at the national and international levels. Thus, for the better performance of the higher education system, the concept of digitalization should be appropriately used at different stages of the education system according to needs, and the security threats associated with access, storage and transmission of digital data should be better handled. Finally, we refer to ([1], [2]) for updated information on Digital India Programme and New Education Policy of the Government of India.

REFERENCES

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About Contributor

Dr. Hemen Dutta is Senior Assistant Professor of Mathematics at Gauhati University, India. He has to his credit three books and over fifty research papers so far. He is also the author of several articles of common interest including newspaper articles.

E-HRM : A CATALYST FOR CHANGE TO NEW DIGITAL ORGANISATION

Dr. Nagaraju Battu and S. Kahmeera

ABSTRACT

The web based technology facilitates a portal which gives accesses to the HR managers and employees to look, acquire and change information which is necessary for managing the human resource of the organization. The information system has a major influence on the working pattern in the organizations. This paper concentrates on the private banks which are sophisticated with the web based technology. The present study discusses about the opinion on awareness and relationship of e-HRM of bank employees related to their education. The study confined to only HDFC and ICICI Banks of Guntur city. The sample size of the respondents of the study is 156. The study includes five aspects of e-HRM (e-recruitment & selection, e-training & development, e-learning, e-performance management and e-compensation). For research purpose, Graduates and B.Tech. background respondents were selected. The statistical tools used are one-way Anova and Correlation Coefficient. The one-way Anova revealed that the e-recruitment & selection and e-compensation variables are ($F_{(1, 155)}$= .331, p= .566 > 0.05) and ($F_{(1, 155)}$= .320, p= .572 > 0.05), respondents are aware of e-HRM practices and there is highest correlation between e-recruitment & selection and education (r = .840, n= 156, p=0.000 < 0.05). The paper results that there is differentiation in the opinions of Graduates and B.Tech. respondents. As the B.Tech. respondents are aware of information and communication technology, they have the positive opinion on the awareness of e-HRM. Generally, incorporating the e-HRM practices evidently gain maximum benefit to the organizations. Management should compulsorily inculcate the application tools relevant to the organization and facilitate the awareness, training programmes, workshops and seminars to the employees who are digitally unaware of using electronic HRM tools.

Key Words: Web Based Technology, Information System, Communication Technology, Incorporating and HRM Tools.

INTRODUCTION

In an organization, human resource management involves procuring, developing, compensating, maintaining and integrating the energetic and talented workforce to accomplish the organization's mission and objectives. It is a strategic process which leads towards success by adopting challenges of global business environment. In the present scenario to meet the challenges of both individual and organisation, there is a shift from traditional HRM to e-HRM by incorporating all the information and communication technology into the daily activities of organisation.

E-HRM is an electronic human resource management refers to integration of all human resource systems and activities using web-based technology and application of advanced hardware and software to support the organizational process, activities, procedures, etc. The organization can conduct analyse, communicate with clients, make quick decisions and access relevant information within seconds on computer. By implementing e-HRM, organizations can achieve efficiency, automatic information management, information sharing, self-support system for employees, cost reduction and time management.

To face market success globally in the current days, every organization must develop a global business strategy. Technology virtue HR departments enable the organization to cover all aspects of personnel like hiring process, interviews, job descriptions, education and training, career development, payroll, employee's personal pages and corporate organization. It decreases paperwork and allows easy and quick access to stored and retrieve data wherever it is required. Digitalization practice in the organizations is becoming very effective now-a-days in both public and private sectors of banks. Every practice that is carrying out by the organization is electronically linked up.

CONCEPTUAL STUDY

Banking sector has undergone drastic improvements and changes in the last few years. Digitalization has created the banking sector into a new business models with areas of improvement, developed concepts from

monetary banking services to internet banking services. The new applications to the banking sector need the employees to be aware of the changing work settings. In this era of digitalization, the banks have to manage change in all aspects as to resist and foster their prevalence for long-lasting. Accepting digitalization is a key to gain market advantage and making daily operations easier, cheaper and faster. Digital banking benefits in terms of increasing in productivity and profitability.

Information technology has made transformation in the delivery of human resource services from traditional HRM to e-HRM in the organizations. Human resource manager should be proactive and reactive in response to changing business environment by riveting bank employees to embrace customer-centric approaches across multiple platforms. The e-HRM practices include e-recruitment & selection, e-training & development, e-learning, e-performance management and e-compensation. The human resources has to make use of Human Resource Information Systems, Web-Based HR Applications, Computer-Based HR Applications, HR Intranet Applications, HR Portal Applications, Interactive Voice Response, Employee Self Service, Manager Self Service, HR Extranet Applications, HR Functional Application, Integrated HRM Suite Applications etc.

Banking sector has been delivering its services at multinational levels. It plays a significant role in the growth of a sound economy. Digitalizing every activity is inevitable to render smooth services to the customers. The banks which have promoted business and human resource management strategies in the field of hiring, training, placement, productivity, reward, job security, promotion, performance measuring etc. shows impact in their banking performance. Electronic HRM practices facilitate an improved HR services.

E-RECRUITMENT & SELECTION

E-recruitment and e-selection is a process of finding the prospective candidates, assessing, interviewing and hiring personnel as per the job requirement. It is an online recruitment and selection using sophisticated web-based application. The candidates are selected through electronic interaction among employer and potential candidates called e-interview through vocal or video-based. E-selection is considered only when there is a set of collected data from applicants which requires screening-oriented for company's web site. It is an easy way of posting the vacancies with the job description and the job specification on the job portals and searching for the suitable resumes posted on the site. It is a process of creating compete online recruitment and selection in the company's own website. Some of the websites/portals are empxtrack, indiamart, FITC, Info Edge India Ltd, Monster Worldwide Inc, The Times Group, HT Media, Careerjet.com, Freshersworld, etc.

E-TRAINING & DEVELOPMENT

The e-training and developmental programmes are provided to the employees using intranet /internet. To face the today's competitive job environment, organizations are constantly striving to provide training and development opportunities to enhance employee's skills and knowledge. It helps to create a platform where employees can perform and extract the best out of their work environment. It is an online environment includes videos, demonstrations, speeches, text documents and other materials that are useful instruction methods. This method is more economical in both time and money. E-training and development and e-learning go by hand-in-hand programmes. Some of the websites/portals are TrainingToday, Bridge, CommLab India, G-Club Blog, ITYStudio, eLearning Industry, ICICI Bank The Learning Matrix, Imarticus, etc.

E-LEARNING

In the present era education has taken the support of ICT and offers suitable ways to help develop the education, knowledge and skills through e-learning. E-learning is through web-based training, delivering of just-in-time information and guidance from experts related to their specializations. E-learning provides the best means of training programmes conducted by the organisations to the employees to acquire important skills while sitting in a board room or by having seminars, conferences, workshops etc. Some of the websites/portals are Outshine Solutions, eLearning Industry, Elucidat, CommLab India, SkillDom, HDFCCoC, ICICI Bank The Learning Matrix, etc.

E-PERFORMANCE MANAGEMENT

E-Performance Management is a web-based tool that has been designed to measure the performance of employees. It is the planning, implementation and application of information technology in managing performance managing system. It facilitates the organization to link to the balanced scorecard elements giving the organization an overall view of performance with drill down capability to departments, sub departments and individuals. It is an evaluation of employee's performance standards, behavioral checklist, ranking and forced distribution. The fundamental process carried out in the organisation is plan-do-check model, supervisor-initiated process, employee input into the process, summary performance rating, merit increases, rewards, etc. These processes help the management to input variety of HR systems and programme to accomplish organizational and individual objectives. It is an annual cycle with quarterly feedback encouragement. Some of the tools/software packages are Frontier Software, Sage Payroll, RUN powered by ADP, BambooHR, Namely, PERFORMview, G2 Crowd Grid, reviewsnap, Fairsall, Kronos Workforce Ready, Cezanne OnDemand, etc.

E-COMPENSATION

E-Compensation is a software packages that are purchased or developed by organisations and can accessible through intranet or internet. Employees can able to access through browsers at anywhere and any point of time. This a simple and familiar system that can be worked online to manage workflow, salary scales, merit matrices, bonus metric profiles etc. It is reliable and accurate software packages where employees get rewarded based on their actual performance ratings. Shifting from traditional compensation to electronic compensation, organizations can access information easily round-the-clock without any special knowledge or IT infrastructure, cost effective, supports in decision making, saves time and effort etc. Some of the tools/software packages are Halogen Compensation, Oracle, PeopleSoft HCM, Mercer WIN, CompXpert, ExpressTCS, ActionHRM, Talentsoft, Glocent, CuroComp, UltiPro, etc.

REVIEW OF LITERATURE

Mohammad Ali Kohansal et al. (2016). The purpose of their research is to study the effect of e-HRM acceptance on value creation in Shuttle employees of Human Resource Department, headquarter in Tehran . The sample size of respondents in the study was 136. To analyze the research hypotheses, partial least squares were used. The results viewed that e-HRM has positive and significant effect on value creation (R_2 0.754) that is acceptance of value creation. It is worth mentioning that just e-HRM acceptance does not result in operational cost reduction. For fulfilling the results, the researcher needs managerial decisions which will cause the desired results and affect them.

Aysar Mohammad Khashman et al. (2015). Their paper aimed to find the impact of e-hrm practices on operational performance of the Jordanian telecommunications sectors represented by the three companies of Cellular Communications (Zain, Orange and Umniah). The dimensions of the study are cost, time, flexibility and quality of service. The sample size is 178 respondents both men and women of supervisory positions chosen by using stratified random sampling method. Descriptive and analytical statistics were used for analysis. The study resulted that there is a positive statistically significant impact to dimensions of e-HRM practices (e-recruitment, e-selection, e-training, e-performance appraisal, e-communications and e-compensation) on the dimensions of operational performance (cost, time, flexibility and quality of service.)

Bhagawan Chandra Sinha et al. (2014). Their study was done to identify the types of tools using by the private and public manufacturing, mining and service organisations. It also explored the differences in the usage pattern of e-HRM instruments and application of tools. The selected organizations are National Thermal Power Corporation, Coal India Ltd., State Bank of India, Life Corporation of India, Moser Baer India Ltd., Tata Motors, ICICI Bank Ltd. and HCL. The e-HRM tools were IVR, HRIA, SS, HREA, HRPA, HRFA & ISA. The sample size taken for the study was 405 respondents. The statistical tools used were t-test, paired sample t test, and one way ANNOVA. The study revealed that application of e-HRM tools were not fully utilized in the select organizations and Coal India Ltd. is laggard in application of e-HRM tools.

NEED FOR THE STUDY

Banking sector is a fundamental aspect to the Indian economy. The success of banking sector lies on the human resources that how efficiently render their services to the public. In today's world, India is

transforming to digitalization and to a knowledge driven economy, the dynamic organizations are furnished with various types of tools and applications which facilitates the delivery of HR services faster and easier. As the banks are considered the most prestigious service sectors, information and communication technology is gaining importance to facilitate door step services by incorporating technology. So, e-HRM has emerged to and gaining importance to express its advantages. Hence, there is a need to study that the human resources are acquainted with technological knowledge to take a step ahead in gaining competitive advantages.

OBJECTIVES

1. To find the opinion on awareness of employees on e-HRM related to their education of select companies
2. To know the relationship between e-HRM and education of employees of select companies
3. To offer suggestions for better digitalization of select companies

HYPOTHESES

1. H_0 : There is no statistically significant difference in the mean opinion on awareness of e-HRM variables with relate to education of the respondents
2. H_1 : There is statistically significant difference in the mean opinion on awareness of e-HRM variables with relate to education of the respondents
3. H_0 : There is no statistically significant relationship between e-HRM variables and education of the respondents
4. H_2 : There is statistically significant relationship between e-HRM variables and education of the respondents

METHODOLOGY

Data collection

For the study, both primary and secondary data has been collected. The study has been conducted in the Private Banks i.e. HDFC and ICICI in Guntur city. From each bank, five branches have been selected. The sampling method used to collect the data was simple random sampling method. The sample size of the respondents of the study is 156. The questionnaire includes questions on the five aspects of e-HRM (e-recruitment & selection, e-training & development, e-learning, e-performance management and e-compensation). The demographic factor education is taken as independent variable. For the study, Graduates and B.Tech. background respondents were selected. The statistical tools used were one-way Anova and Correlation Coefficient.

DATA ANALYSIS

Table -1 One-Way ANOVA for e-HRM and Education of the respondents

e-HRM Variables		Sum of Squares	df	Mean Square	F	Sig.
e-recruitment & selection	Between Groups	.548	1	.548	.331	.566
	Within Groups	255.221	154	1.657		
	Total	255.769	155			
e-training & development	Between Groups	28.645	1	28.645	20.634	.000
	Within Groups	213.791	154	1.388		
	Total	242.436	155			
e-performance management	Between Groups	165.000	1	165.000	314.025	.000
	Within Groups	80.917	154	.525		
	Total	245.917	155			

e-learning	Between Groups	139.757	1	139.757	209.609	.000
	Within Groups	102.679	154	.667		
	Total	242.436	155			
e-compensation.	Between Groups	.510	1	.510	.320	.572
	Within Groups	245.406	154	1.594		
	Total	245.917	155			

The table-1 One-Way ANOVA Test for e-HRM and Education of the respondents reveal:
In case of e-recruitment & selection and e- compensation, the null hypothesis (H_0) is not rejected. Hence, there is no statistically significant difference in the mean opinion on awareness of e-HRM variables with relate to education of the respondents ($F_{(1, 155)}$= .331, p= .566 > 0.05) and ($F_{(1, 155)}$= .320, p= .572 > 0.05). In case of e-training & development, e-performance management and e-learning, the null hypothesis (H_0) is rejected. Hence, there is statistically significant difference in the mean opinion on awareness of e-HRM variables with relate to education of the respondents ($F_{(1, 155)}$= 20.634, p= .000 < 0.05) and ($F_{(1, 155)}$= 314.025, p= .000 < 0.05) and ($F_{(1, 155)}$= 209.609, p= .000 < 0.05) respectively.

Table -2 Correlation Coefficient for e-HRM and Education of the respondents

e- HRM Variables		**e-recruit-ment & selection**	**e-training & development**	**e-performance management**	**e-learn-ing**	**e-compensa-tion.**	**Educa-tion**
e-recruitment & selection	Pearson Correlation	1	.931**	.921**	.897**	.957**	.840**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	156	156	156	156	156	156
e-training & development	Pearson Correlation	.931**	1	.967**	.925**	.912**	.805**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	156	156	156	156	156	156
e-learning	Pearson Correlation	.897**	.925**	.934**	1	.882**	.759**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	156	156	156	156	156	156
e-performance management	Pearson Correlation	.921**	.967**	1	.934**	.899**	.819**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	156	156	156	156	156	156
e-compensation.	Pearson Correlation	.957**	.912**	.899**	.882**	1	.805**

	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	156	156	156	156	156	156
Education	Pearson Correlation	.840**	.805**	.819**	.759**	.805**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	156	156	156	156	156	156

The table-2 Correlation Coefficient for e-HRM and Education of the respondents reveal:

There is a strong and positive correlation between the e-HRM variables and education of respondents. The null hypothesis (H_0) is rejected. Hence, there is statistically significant relationship between e-HRM variables and education of the respondents ($r = .840$, $n= 156$, $p=0.000 < 0.05$), ($r = .805$, $n= 156$, $p=0.000 < 0.05$), ($r = .819$, $n= 156$, $p=0.000 < 0.05$), ($r = .759$, $n= 156$, $p=0.000 < 0.05$) and ($r = .805$, $n= 156$, $p=0.000 < 0.05$).

RESULTS & DISCUSSION

The major findings of the study views that the respondents are not fully aware of e-HRM related to their education levels. There is differentiation in the opinions of Graduates and B.Tech. respondents. As the B.Tech. respondents are aware of information and communication technology, they have the positive opinion on the awareness of e-HRM. The respondents with graduation qualification are not fully aware of all the practices of e-HRM. The respondents are aware of how the electronic recruitment and selection and compensation take place through company's official website or hiring the online recruitment websites and also enable it to gather, store, analyze, and distribute the compensation data or information. As there is difference in their education, the respondents of B.Tech. background are more aware than the respondents of graduate in relate to e-training & development, e-performance management and e-learning.

There is a strong and positive relationship between e-HRM variables with the level of education. As the respondent's educational levels increase, the awareness on web-based application also develops and thereby utility and effectiveness of e-HRM practices increases. While discussing on the open ended questions with the respondents, they expressed that the banks are practicing the electronic HRM and these practices now becoming very effective in the day to day services. The banks are implementing e-attendance, e-leave, e-absenteeism, e-communication etc. The study shows regarding the opinion on awareness of e-HRM practices with the level of their education is moderate. By putting technology into practices, the employees can give their best to their organization. The study contributes to basic technology understanding of factors of e-HRM.

CONCLUSION & RECOMMENDATIONS

E-HRM has made remarkable pace in the organizations by application of very basic tools to enhance the performance by reducing cost, time, employee motivation and engagement, speedy pace of learning, quick decision making, enhanced quality of workforce and several other gaining outcomes. The employees should have clarity of e-HRM goals, intention to use, perception of usefulness, user satisfaction, ease of use, support from the organization and facilitating conditions. Organizations should give awareness on web-based applications that are implemented by them, so that the employees get aware of all the activities carried out related to them.

Generally, incorporating the e-HRM practices evidently gain maximum benefit to the organizations. Management should compulsorily inculcate the applications relevant to the organization and facilitate the awareness, training programmes, workshops and seminars to the employees who are digitally unaware of using electronic HRM tools. These handfuls of training programmes improve the organizational efficiency and employee's productivity and thereby enhance employee engagement and commitment. Practicing e-

HRM foregrounds team work, empowerment, learning and autonomy. The study was evident that there are increasing practices of e-HRM in banking sector.

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OPINION OF PEOPLE REGARDING E-BANKING FACILITIES IN TINSUKIA TOWN

Nehal Chhalani

ABSTRACT

The nearly universal connectivity which the Internet offers has made IT an invaluable business tool. These developments have created a new type of economy, which may be called the 'digital economy'. This fast emerging economy is bringing with it rapidly changing technologies, increasing knowledge intensity in all areas of business and creating virtual supply chains and new forms of businesses and service delivery channels such as e-banking .

E-banking generally mean using banking services through electronic media.

In this paper an attempt has been made to study the opinion of the people of Tinsukia town about e-banking and to suggest measure to make e-banking more safe, secure and popular

Keywords : e-banking, digital economy, technology.

INTRODUCTION

Information technology has led to development in almost all the sectors or areas of the country. There is no area which has remain unaffected by the technological advancement. Be it corporate sector, hotels, hospitals, travel and tourism, marketing and even banking, everywhere we can see the impact of technology .

Earlier there was traditional system of banking but the technological development has led to a shift in this field from traditional to modern system of banking which we say as e-banking.

In this paper an attempt has been made to find out the what the people of Tinsukia town feel about e-banking.

OBJECTIVE

1. To know the views of the customers about e-banking in Tinsukia town.
2. To know the satisfaction level of the customers about e-banking in Tinsukia town.

METHODOLOGY

The area of research study is Tinsukia town. The study is based on both primary and secondary data. The primary data has been collected from the customers using e-banking facilities in Tinsukia town on random sampling basis with the help of structured questionnaire and personal interview.

The secondary data has been collected mainly from Internet, The primary and secondary data collected has further been analysed and inferences has been drawn with the help of various tables, and finally conclusion is drawn.

REVIEW OF LITERATURE

Sharma Himani (2011) in her research paper "Banker's Perspective on E-Banking" has revealed that customers generally use e-Banking services on persuasion of bankers. User-ship is mostly concentrated on professionals, business class and males belonging to middle age. The bankers are convinced that e-banking helps in improving the relationship between bankers and customers and that it will bring patent improvement in the overall performance of banks. So far as promotional avenues are concerned, print media is at the top.[(1)]

Mishra, (2005) in his paper "Internet Banking in India Part-I"explained the advantages and the security concerns about internet banking. According to him, improved customer access, offering of more services, increased customer loyalty, attracting new customers are the primary drivers of internet banking. But in a survey conducted by the online banking association, member institutions rated security as the most important concern of online banking.[(2)]

Nyangosi et al.,(2009)in his research on "The evolution of e-banking: a study of Indian and Kenyan technology awareness"on has collected customers' opinions regarding the importance of e-Banking and the adoption levels of different e-banking technologies in India and Kenya. The study highlighted the trends of

e-banking indicators in both countries. The overall result indicates that customers in both countries havedeveloped a positive attitude and they give much importance to the emergence of e-banking.[3] Mookerji,(1998) in his research paper "Internet Banking Still in Evolutionary Stage" explored that internet banking is fast becoming popular in India. Nevertheless, it is still in its evolutionary stage. They expect that a large sophisticated and highly competitive internet banking market will develop in future.[4]

Hasan,(2002) in his study on "Do Internet Activities Add Value? The Italian Bank Experience" has found that online home banking has came out as a significant strategy for banks to attract and retain customers. About 75 percent of the Italian banks have adopted some form of internet banking during the period 1993-2000. The study also found that the higher likelihood of adopting active internet banking activities is by larger banks, banks with higher involvement in

off-balance sheet activities, past performance and higher branch network.[5]

Jeevan,(2000) in his research on the paper titled "Only Banks-No Bricks, Voice and Data" has observed that the internet banking enables banks to offer low cost and high value added financial services. US web-corporation argues that finally banks are finding that a comprehensive online banking strategy is indispensable for success in the increasingly competitive financial services market. Changes in technology, competition and lifestyles have changed the face of banking and

banks in the present environment are looking for alternative ways to provide differentiated services.[6]

Chou D. C., Chou A. Y. , (2000) through their research on"A Guide to the Internet Revolution in Banking" has shown that banking is an industry that is expected to undergo drastic change because of the e-commerce revolution. This article maps out the direction of the Internet revolution in banking by surveying the phenomenon's history, its technological development, and associated managerial and technological issues.[7]

ANLYSIS OF THE INFORMATION COLLECTED FROM THE RESPONDENTS SELECTED FOR THE STUDY

Table- 1: Showing the names of the respondents using e-banking services

Sr. no.	Name of the respondent
1.	Pushpa Sharma
2.	Mithun Das
3.	Animesh Agarwal
4.	Bipul Duarah
5.	Krishna Neog
6.	Kamalkant Nath
7.	Rubul Barual
8.	Ritam Phukan
9.	Jyoti Patel
10.	Shilpa Goel

Source : Field Survey

Analysis : Table 1 shows the names of the respondents in Tinsukia town who are using e-banking services and the respondents were randomly selected from the town for the purpose of study.

Table 2: Showing names of the banks in which the respondents have account

Name of the respondent	Name of the Bank
Pushpa Sharma	State Bank of India
Mithun Das	Indian Overseas Bank
Animesh Agarwal	State Bank of India
Bipul Duarah	Punjab National Bank
Krishna Neog	Axis Bank
Kamalkant Nath	Bank of Baroda

Rubul Barual	State Bank of India
Ritam Phukan	Canara Bank
Jyoti Patel	Dena Bank
Shilpa Goel	State Bank of India

Source : Field Survey

Analysis : In the above table an attempt has been made to show the bank with which the respondents are associated with. From the above table it can be stated that the respondents are associated with different banks such as State Bank of India, Bank of Baroda, Dena Bank, Punjab National Bank, Indian Overseas Bank, Canara Bank but the bank most commonly used is the State Bank of India

Table 3: Showing the problem faced by the respondent while using e-banking

Name of the respondent	**Problem Faced**
Pushpa Sharma	Hacking of account
Mithun Das	Network Problem
Animesh Agarwal	No Problem
Bipul Duarah	No Problem
Krishna Neog	Fake call in the name of Bank
Kamalkant Nath	No Problem
Rubul Barual	Network Problem
Ritam Phukan	No Problem
Jyoti Patel	No Problem
Shilpa Goel	No Problem

Source : Field Survey

Analysis : In the above it can be seen that out of 10 respondents, maximum that is 6 respondents said that they do not have any problem as far as e-banking is concerned. 2 respondents said that they face the problem of network because of which operating internet becomes really difficult. 1 respondent has the problem of account hacking. And 1 respondent has received fake call in the name of the bank asking for his bank account details.

Table 4: Showing whether the Respondents are satisfied with the e-banking services

Whether the respondents are satisfied	**Number of Respondents**
Yes	9
No	1
Total	**10**

Source : Field Survey

Analysis : From the information given in table 4 it can be said that except 1 respondent all the respondents are satisfied with the e-banking services in their town. The reason for the dissatisfaction of the respondent may be account hacking or fake call in the name of the bank.

Table 5: Showing whether the respondents prefer traditional or e-banking

Banking system preferred	**Number of Respondents**
e-banking	10
Traditional Banking	0
Total	**10**

Source : Field Survey

Analysis : In the above table it is seen that all the 10 respondents who were selected for the study prefer e-banking over traditional banking as it is much more faster and convenient than traditional banking. Moreover

one can access e-banking services 24x7 hours. Also the respondents do not have physically visit the bank like in case of traditional banking. So they prefer e-banking than traditional banking.

Table 6: Showing whether the bank charge anything for e-banking services

Bank charges on its e-services	Number of Respondents	Percentage of respondents
No charges	7	70%
Very nominal charges	3	30%
Total	10	100%

Source : Field Survey

Analysis : From the information given in the above table it is clear that majority of the respondents that is 70% of the respondents said that their bank do not charge anything for using e-services while 30% said that their bank charges a very nominal amount of fee for the same.

Table 7: Showing the reason for opting e-banking

Reason for opting e-banking	Number of Respondents
Faster	10
More convenient	10
24x7 hour service	7
Need not have to visit the bank	8

Source : Field Survey

Analysis : Here in the above table it is found that all the 10 respondents opted for e-banking as it is very fast and convenient system. Also 8 respondents out of 10 said that 24 hour e-banking services are available. 8 respondents also said that one of the other reason for opting e-banking is that they do not have to physically visit the bank.

Table 8: Showing the source from where the respondents got to know about e-banking

Source of information	Number of Respondents
Advertisement	6
Bank staff	10
Bank website	5

Source : Field Survey

Analysis : Table 8 shows that majority of the respondents that is all the 10 respondents got to know about e-banking from their respective bank staff. They also got to know about it from other sources like bank website and advertisement.

Table 9: Showing whether e-banking is secured system or not

Whether e-banking is secured system or not	Number of Respondents
Yes	9
No	1
Total	10

Source : Field Survey

Analysis : In the above table it is stated that out of the 10 respondents selected for the study 9 of them feel that e-banking is secured and only 1 respondent feels that it is not secured.

Table 10: Showing various e-banking services used by the respondents

Various e-banking services	Number of Respondents
RTGS	7
ATM	10

Online shopping	6
Statement of Account	6
Balance check	8

Source : Field Survey

Analysis : From the above table it is very much clear that all the 10 respondents uses ATM facility and it is the most popular e-banking service. 8 respondents uses e-banking to check their balance. 7 respondents uses RTGS facility and 6 each uses it for online shopping and to have their statement of account.

Table 11: Showing whether the bank officials help the respondents if they have any problem while using the e-banking services

Whether the respondents are helped	Number of Respondents
Yes	10
No	0
Total	10

Source : Field Survey

Analysis : From the above table it can be analysed that all the 10 respondents are being helped by the bank officials in case they face any problem while using the e-banking services. It may be because today in the competitive world customers are treated like king and customer satisfaction is the prime motto of all the companies.

CONCLUSION

From the information collected from the respondents which have been presented in various table above and analysed, we can conclude that most of the customers using e-banking services are satisfied with. Only 1 customers have complained about account hacking and 1 about fake calls in the name of bank.

Bank employees are found to be very cooperative and helpful. Customers prefer e-banking over conventional banking. Online banking is definitely a significant move in the right direction as far as the convenience of the customer as well as the banker are concerned but it must be applied with adequate precaution to avoid falling prey to unscrupulous elements poaching the internet.

SUGGESTIONS

1. In case of e-banking hacking is a common problem in the cyber world. In order to get rid of it more sophisticated security software should be developed to ensure safety to the online banking users.
2. The users should not provide any personal information. Be very suspicious of any e-mail from a business or person that asks for your password, passport number etc.
3. The users should review the link provided to ensure it leads to a valid website.
4. If the user feel that someone is trying to commit fraud by pretending to be your bank, notify the financial institution immediately.
5. The user in order to protect their account from being hacked should use a strong password.
6. The users should make it sure that his/her home computer has the most current anti-virus software.Install a personal firewall to help prevent unauthorized access to his/her home computer.
7. In no case the user should operate his bank account from cyber café.
8. The user should keep changing his/her password or pin code frequently.
9. After finishing online transactions, the user should log out carefully and should close the browser window.
10. The user should not visit suspicious sites. If he/she suspect that a website is not what it purports to be, leave the site immediately.

11. The bankers from time to time should conduct awareness programmes to train innocent users.

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DIGITALIZING BANK CHEQUE SIGNATURE VERIFICATION SYSTEM

Ashok Kumar. D and Dhandapani. S

ABSTRACT

Commercial transactions in business are mostly dependent on payments. If the payments get delayed, the goodwill of the company and reputation gets down, leading to a decreasing share price. One of the most traditional payment systems used by business is the cheque. Cheque plays an important role in financial transactions even now after online transfer has been in effect. Due to this importance, cheque transactions have been speed up by introducing CTS system and thus making the cheque payments quickly. Cheque can be filled properly with the guidelines given by RBI. Online transactions are faster and so banks too has gone online in reflecting account debits and credits immediately with IMPS transactions. The delay may be from the customer part in forgetting to sign the cheque, mismatch of amount in figures with that of the words written. If the signature is incorrect or not matching the genuine sample signatures, the customer may have the chance of losing his claimed overdraft facility at the bank. Signature Verification on bank cheques is one of the important requirements for business cheque transactions. In this digital era, verification of signatures on bank cheques is still done manually. The signature is scanned in to the computer and manually verified for each transaction. If this signature verification is automized, it can speed up the transaction and aid the business collections. This article aims to design automated signature verification on bank cheques using Neural Networks. The designed model decreases the processing time taken for cheque payments and also avoids signature forgery which is a raising issue now-a-days.

1. INTRODUCTION

Businesses in modern days are more sensitive to sections like payments. Payment has to be made in time and it is in the hands of the banks to deliver and complete transactions very soon. Banks clear the cheques after thorough scrutinization. It takes time in verifying the signatures on the cheque. Every signature is verified manually for passing the cheque for payment. If there are a lot of cheques that has to cleared [7], it may take its own time and there will be a queue. This article aims to model an automatic signature verification system for bank cheques so that business payments are made faster. Signature is one of the oldest and easiest biometric accepted by people at all times. It is non intrusive in nature and it does not leave any impact like the ink left by thumb impression [13]. Signature is an artistic representation of oneself's identity. It is an economical, widespread, non-intrusive and most accepted behavioural biometric feature. It takes the advantage of traditional biometrics like password, PIN, Id cards which may be stolen, lost or forgot. Verification of signatures started immediately after its inception and can be online or offline as shown in Figure 1.

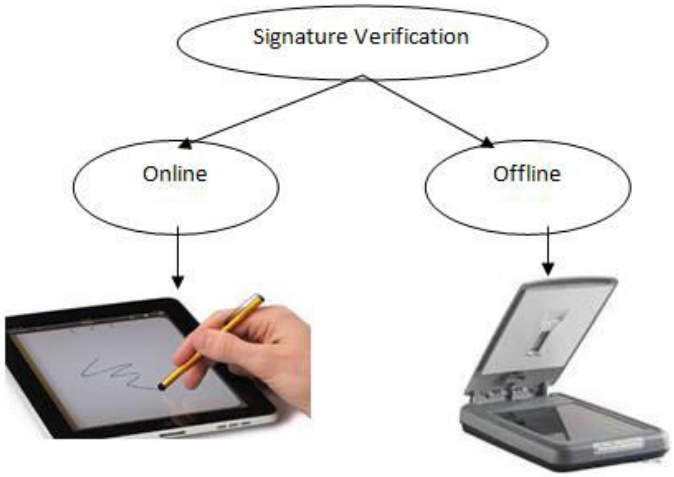

Figure 1: Signature Verification Schemes

Forgery has started as soon as the signature came to practice [16]. When a signature is doubted, forgery has already crept in. There are variations in signature each time. The variations caused by the genuine user himself is the intra class variations and the other variations are termed as inter class variations or forgery. Signatures other than the customer and their own intra class variations are considered as forged signatures. Forgery can be classified as simple forgery, random forgery and skilled forgery. In simple forgery, the imposter knows only the name or he may have seen the signature somewhere previously. Using any one of them, he tries to imitate the signature. In random forgery, the imposter does not know the name or the signature shape. In skilled forgery, the imposter has the sample signature handy and after several practices, he tries to forge the signature.

The cheque when comes for collection, the officer keys in the account number of the cheque holder. The software gives the transaction history, balance amount in the account and the customer details. Since handwritten signature is the vital key to pass a cheque for payment, a pop- up window with the specimen signature will be seen to aid the transaction. If there is an unusual pattern of transaction, new bearer with higher amount and mutilated cheque, the officer verifies with all the specimen signatures collected from the customer for intra class variations. If still he has a doubt, he may call upon the customer to ensure or verify that the cheque is issued with his knowledge. Signature verification is getting complex for even forensic experts classify the signatures with an accuracy of 70% [14].

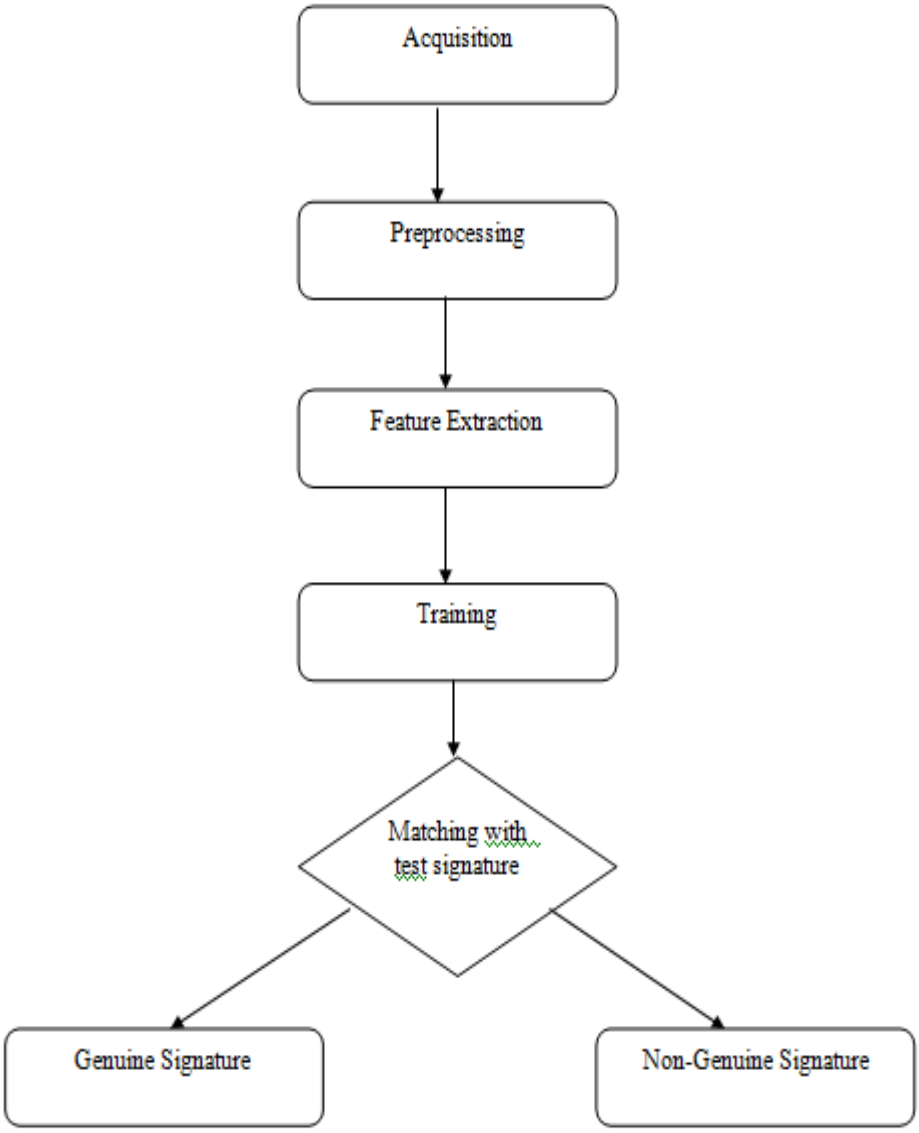

Figure 2: Signature Verification System

The general model for verification is shown in Figure 2. The main challenges faced by offline signature verification is the intra-class variations, non-availability of number of samples and rejecting a genuine signature [10]. The rest of the paper is organized as follows. Section II discusses the background and literature review. Section III discuses about the signature acquisition followed by preprocessing in section III. Section IV discuses the feature extraction and section V discusses the training and verification methodology Section V discuss the experimental results and finally section VI concludes the article.

2. BACKGROUND AND LITERATURE REVIEW

There are many research works on offline signature verification. Ashwin etal [4] has used pixel based comparison to identify signatures. If the 50 % of the sample signatures pixels matched, they are considered as genuine. Jungpil [9] used the internal angles as features and neighborhood comparison to evaluate signatures. Mayank etal [11] used the multiclassifier combining both the static and dynamic features. Texture and topological features are extracted for offline features and this hybrid combination yielded high accuracy rate. Sangeetha and et al [15] uses shape context for signature verification on bank cheques. They used k-nearest neighbhourhood classifier and the system works better for signatures on complex background like bank cheques. Juan and Youbin [8] used texture features based on gray-level as pseudo-dynamic features which reflects the writing strength. Histogram of oriented gradients was also used as pseudo-dynamic feature and got best results. Ashok Kumar and Dhandapani [1] extracted GLCM features from the signature image to train a neural network and the accuracy attained was 92.08%. Javier [6] proposed a complimentary approach to offline signature verification. They proposed wide baseline matching and evaluation by local interest point matching techniques. They used Bayes classifier and yielded an FRR of 16.4% and FAR of 14.2%. Ashok Kumar and Dhandapani [2] used connected components labeling technique to find the number of connected components and extracting properties of each blob and found that when using fractal dimensions as one of the feature, the accuracy rate increased. They used neural networks for training the feature set and the same authors [3] extracted features using the concentric circles masking method to extract features. Since the signatures are encircled by concentric circles from the centroid of the signature image, the extracted features remain rotation invariant. Different neural network training functions are used for the training purpose and found that CCMM features shows higher accuracy for traincgf function with an accuracy of 97.89%. Miguel and et al [12] blended the signatures from the popular database with cheques and invoices with complex background and found that basic version of local binary pattern are more robust than rotation invariant uniform local binary pattern. They used support vector machine with histogram oriented kernels for classification.

3. ACQUISITION

The Cheque is scanned and digitized to segment the signature portion alone from the cheque. This process is termed as acquisition. The acquisition type may be of two types. Online and Offline as shown in Figure 1. Online acquisition method requires an electronic pen or stylus to put the signature. it can capture the signature features like speed of signing, number of pen lifts, angle, azimuth, pressure applied at various points, time taken to sign, etc. these are all dynamic features of the signature. The accuracy rate also will be higher because of these features. This digital data acquiring method has a chance of hacking [5]. Whereas Offline signature will contain only the scanned soft copy of the cheque, from which signature image is extracted. The researcher will have only the 2-d image of the signature. The features are static and the verification accuracy is lower when compared to dynamic features. Since this article deals with signature verification on bank cheques, offline mode is concentrated.

4. PREPROCESSING

The scanned image may contain some noise. Preprocessing is done to remove noise and to enhance the signature [16]. Noise is the unwanted portion in the image for verification. It may be the rubber stamp seal partly placed on the signature, date overlapping the bottom portion of the signature or dust in the scan bed. These noises can be removed by preprocessing the image. There are various methods to remove noise. The simplest method is subtracting the blank cheque with that of the filled one. Since the implementation of the CTS, signature will be in the bottom right corner of the cheque. Based on image thresholding, the handwritten signature part alone is extracted and enhanced for further verification process as shown in Figure 3. The next stage is the feature extraction which depends upon the quality of preprocessing.

Figure 3: Preprocessing steps

5. FEATURE EXTRACTION

Features are the important unique property of a signature. They are measurable and can be numbers or symbols. Extraction algorithm or an operator can be applied on the image to extract features from the signature. Features are extracted from the signature image and are used to train the neural network. Various features like Gray Level Co-occurence Matrix(GLCM), Regional Properties, Fractal Dimension, Zernike Moments, Circularity, Aspect Ratio, Concentric Circles Masking Method features and Symmetry are extracted from the signature image. GLCM is a statistical method for extracting texture featurs from the signature image. Signature is shape conscious and so texture features can easily identify them in verification. It is the spatial distribution of gray levels. The matrix is created by finding the frequency of occurrence of pixel values and its spatial relationship. Regional Properties of the signature is found using connected components labeling. It scans the signature image and groups pixels into components. All the connected components are labeled uniquely. The signatures can vary each time and so the verification system should be translational, rotational and scale invariant. Moments are good translational and rotational invariant shape descriptors. Circularity property reveals the roundness of the signature. If the signature is a circle, the circularity is 0. Aspect ratio is the measure of the ration of height to the width. Fractal dimension is an important property of a fractal. Fractal is an ever ending pattern which repeats itself at intervals. The irregularity property of the fractal is considered for the irregularity signature shapes. A concentric circle masking method is a methodology where concentric circles are drawn on the signature from its center and pixel distribution ratio is found in each circle which forms the feature. This methodology is scale and rotational invariant. The symmetry is the property to check whether both the halves of the signature are exactly like the specimen signature. A forger can easily put the first half of the signature and when he is about to put the second half, he may take a pause and may also vary the angle, which is tracked in this symmetry feature. The extracted features are used to train the Neural Network. These features are extracted from the specimen signatures recorded at bank at the time of opening the account.

6. TRAINING AND VERIFICATION

The extracted features are used to train the neural network designed. It is a FeedForward Backpropagation Neural Network. Neural Networks are the most powerful and widely used pattern recognition and classification tool. It is easy to implement. The number of features will be the number of input layers. The output layer will have a single neuron which carries values between 0 and 1. A ‘1’ represents genuine and a ‘0’ represents non-genuine signature.

$$Accuracy = \frac{TP + TN}{TP + TN + FP + FN}$$

Accuracy is calculated by using the above formula. Here TP is the number of correct positives, TN is the number of correct negatives, FP is the number of incorrect positives and FN is the number of incorrect negatives. After the Neural Network is trained, Genuine and forged signatures are given and

7. EXPERIMENTAL RESULTS AND DISCUSSION

The extracted features are used to train the designed Neural Network. Neural Network classifies the signature into genuine or forged. There may be threshold value to the output and if it is greater than 0.5, the signature is considered as genuine. If the NN output value is below 6, the signature is considered as forged.

Table:1 Accuracy with various features

Feature	NN Model Accuracy %
GLCM	92.08
Reg. Prop.	93.33
RP with Frac.	95.00
Zernike, Cir & AR	95.833
CCMM	97.88
Symmetry	96.67

Table 1 shows the accuracy percentage when various features like GLCM, Regional Properties, Regional Properties with fractal dimensions, Zernike Moments, Circularity, Aspect Ratio, CCMM and Symmetry. These features are extracted and fed to modeled Neural Network and the results are tabulated. It shows that Concentric circles Masking method emerges with highest accuracy percentage when compared to other experimental setup.

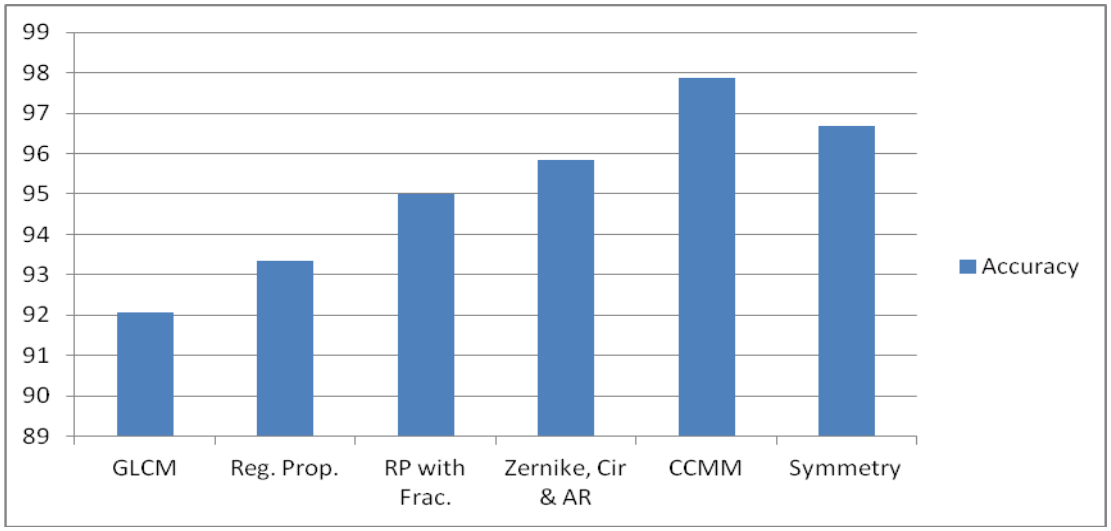

Figure 4: Chart showing accuracy Percentage of Features

It is also noted that when fractal dimensional feature is added to the regional properties, the accuracy rate increases. When the NN gives a '0', the signature is considered as forged and if it needs a human intervention to verify again, the teller. Figure 4 shows the Accuracy chart with the extracted features from the signature image.

8. CONCLUSION

This article aims to digitize and automate the signature verification process in bank cheques. The cheque collection and processing rate will drastically improve by this methodology of signature verification using

the Neural Networks. The features of the signature are extracted and fed to the NN for training and signatures on cheques are tested with the trained NN. So cheque payments will not be a problem from the banker's point of view and thus business cheque payments can be faster and easier with this type of automatic verification implementation.

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ASSESSMENT OF E-GOVERNANCE PROJECTS IN SOUTH RAJASTHAN

Prof. Meera Mathur and Shubham Goswami

ABSTRACT

Government is using Internet and Communication Technology as a prospect to improve transparency and responsiveness. For future sustainability of e-governance projects, evaluation of impact of these citizen centric services is important and should not be a onetime affair. The present study attempts to conduct an impact assessment of a G2C service like e-mitra in Rajasthan in comparison with manual delivery system. Results show that e-delivery system increases the responsiveness and transparency in system with low level of corruption but citizen rate e-mitra service low in the dimension of data security and complaints-handling mechanism. Study also found unfavorable citizen perception towards e-governance services in scope of operation but shows a positive citizen opinion on more government investment in e-governance services.

Keywords: e-governance, e-mitra, impact assessment, citizen perception

INTRODUCTION

India is known for its diversity with people from different culture, tradition, language and economic condition. But a majority of population is below the minimal socio-economic benchmark and suffers a low penetration of telephone, PC, Internet and also with unreliable electric power supply particularly in rural areas. Successive governments have recognized e-Governance (e-Gov) as an excellent opportunity for improve quality of government services to people, providing equitable access to all sections of society, improve monitoring and introducing administrative reforms. It harnesses information and communication technologies (ICT) like internet and mobile computing to transform relations with citizens, businesses and amongst various arms of governments. Governments' citizen centric governance plan focus on three broad areas which include governance that improve transparency, people participation and public services that should be cost-effective and accountable to citizen.

Government efforts for a citizen centric governance includes delivering services electronically which can be shared between citizen, business, government and employees. Indian government has formulated an ambitious National e-governance Plan (NeGP) in year 2006 to cover all the important areas relating to e-Governance (e-Gov) like Policy, Infrastructure, Finances, Government Process Reengineering and Capacity Building across the Central and State Governments. NeGP is aimed at introducing e-Governance systematically through 27 Mission Mode projects, which would touch the lives of billions of people. But the lack of backend computerization of government department becomes the major challenge to integrate these heterogeneous computer systems working with different technical standards and architecture (Charag, 2013). In context of project evaluation, many times project objectives are defined in ICT terms like computers, network rather than ultimate business process outcomes for end users like citizens, which make the post implementation evaluation more difficult. The key mantra for success in citizen centric e-governance projects is 'citizen first'. So it become vital to assess the nature and quantum of impact on users to create a virtual feedback cycle by which the findings are sent back into the project conceptualization (Chandrashekar, 2008).

For the current study author use a case approach and select a G2C service in state of Rajasthan called e-mitra. The research identifies the e-Governance impact on its major stakeholder i.e. the citizens (clients) on key dimensions like cost of availing, quality of governance and service. The study explains the nature and degree of impact through contextual factors. The responses from clients are encapsulated by survey on the use of computerized system as well as the manual system (state government office). The study also analyzes the citizen perception towards e-governance initiatives. The outcome of impact assessment study aims to present a benchmark guideline for service delivery for future projects.

e-Mitra project is an integral part of Rajasthan state e-governance framework which aims to provide a unified platform bringing government closer to citizens in a 'multi-service' to 'single-window' mode tp offer all possible government information and services to rural and urban masses through e-enabled centers and kiosks implemented on PPP (public-private-partnership) model. Apart from increasing transparency and

responsiveness, this model provide an integrated information approach for keeping all information at one place in an electronic form. There are two major components of the e-Mitra project. One is Back Office processing and the other is Service Counters. Back office includes computerization of participating departments and district level data centre. Service counters or kiosks are place where citizen avail the services related to multiple departments right from deposition of application to financial transaction to final deliverable collection. These counters are managed by private partners called Local Service Provider (LSP). For services that any government department wants to avail of, like bill/taxes collection and awareness generation, the payment of service charges will be made by the concerned department. While in case of services which are rendered on citizen's demand, e.g., Caste Certificate, Death/Birth Certificate etc. the payment will be made by the citizen himself. Beside government services, LSP are encouraged to offer private service like sale of insurance services, Internet café, Fax, mobile bill payment etc. Major role players in e-Mitra projects are citizens. Presently there are six LSPs (private partners) are operating 425 kiosks in all 33 districts of Rajasthan.

LITERATURE REVIEW

The domain of electronic governance has received increased prominence and attention over the last few years. Even though many avenues in the area of e-Governance remain unexplored and one such area is the comprehensive assessment of projects. A large body of literature defended that 'ICT for development' and 'Bridging the digital divide' are the central driver for development in e-governance (Wade, 2002; Castells, 1998, Ciborra, 2002). ICTs in general and e-governance in particular offer tremendous opportunities for improving demand driven transparent and accountable service delivery targeting the underprivileged rural India (Kaur, S. and Mathiyalagan, N. ,2010). Reliey (2001) defined e-governance as a commitment to utilize appropriate technologies to enhance governmental relationships, both internal and external, support economic development and encourage the fair and efficient delivery of services. The term e-governance is primarily used to refer to the usage of IT to improve administrative efficiency, transparency, accountability of government processes and reduce corruption (Gasco, 2003, Proskuryakova, et al., 2013). Recently, Elsa Estevez et al. (2013) proposed a framework for sustainable development with electronic governance.

The major challenge for a citizen centric solution is offering a hassle fee, easy-to-use, round-the-clock services to customers. Some researchers also analyzed that despite initial success of e-government projects often fail either totally or partially in achieving their objectives (Heeks, 2002). In a study of a rural e-government project in India, Cecchini and Raina (2003) found that though service satisfaction was high but usage over time was low and the poorest people were not using the services. In another study of e-Gov in India, Subhash Batnagar (2008) reveals that awareness about the project can only help in bringing users to that service delivery channel once but it cannot guarantee sustained use of the system unless it is designed to encourage the use. Kolsaker et. al (2008) emphasized on the need of greater participation of common citizens in the decision making process in-order to ensure more transparency and efficiency e-Governance projects. He also emphasized on redesign of internal operations of government with developed e-Governance projects.

The design, acceptability and performance of any service delivery model largely influenced by end user requirement and user feedback. Impact assessments conducted in a scientific manner do provide invaluable result for further refining the design of the subsequent e-governance projects and those results should be compared with the target set. With the increase of e-governance services and ICT based service initiatives by private sector and government makes the end user consultation easier (Kumar, 2008). Baseline surveys can help agencies understand the attributes on which project importance varies around states (Bhatnagar, 2008). User satisfaction level should also be measured on a year-to-year basis to maintain minimum service levels (Kumar, 2008).

A number of empirical studies focus on ICT impact in improving the performance but majority of study use a heterogeneous framework to rate the success or failure of projects. So, it was difficult to compare the outcome for a project with other projects. Some studies focus on implementation success, some looked at long term sustainability and replicability of the project, some measured the benefits delivered to agencies but there are few studies that have focus on the benefits to clients.

RESEARCH FRAMEWORK AND METHODOLOGY

An impact measurement framework was developed after literature review and based on 'then' and 'now' comparison on selected parameters. A major part has been adopted from the existing framework that was used in earlier assessment study of eight projects encompassing service delivery to citizens (G2C), businesses (G2B) and internal staffs (G2G) in three states include Andhra Pradesh, Karnataka and Gujarat in 2008. The study was carried out by Indian Institute of Management, Ahmedabad (IIMA) and was sponsored by the World Bank, Department of Information Technology (DIT), Govt. of India (Subhash Batnagar et al., 2007). Indicators on which qualitative impact can be measured are also used in the present study.

The proposed framework (table 2) aims to measure the impact on qualitative and quantitative factors .Study also attempts to understand the citizen perception towards e-governance. Framework includes key areas of direct and indirect impact on citizens and some indicators on which qualitative impact can be measured. The study not only evaluates the functioning of the computerized system but also efforts to assess the difference made by use of ICT in manual and computerized delivery system.

Table 1: Research Framework

(a) Impact on Client

Dimensions
Cost of Availing
Number of trips to service centers
Direct or indirect service charges to client
Average waiting time
Number of documentation errors
Bribe payment to functionaries
Number of documents required
Quality of Governance
Level of corruption
Feedback by agency and its implementation
Level of accountability
Rules and procedures are stated clearly
Quality of Service
Work timings
Responsiveness of staff
Data security
Location of service center
Functionaries courteous and friendliness
Timeliness of response
Satisfaction with complaint handling mechanism

(b) Perception on e-Governance Initiatives

Dimensions
e-Governance improve the image of the government
Government should make more investments on e-governance initiatives
e-Government services benefits to all (rich/poor and rural /urban)

DEVELOPMENT OF HYPOTHESES AND DATA COLLECTION

In the current study, magnitude of impact has been measured on three dimensions which include cost of availing, Quality of governance and quality of service. To measure the impact and analyze the citizen perception, following hypothesis has been developed as:

H1: There is no difference in cost of availing the services at e-mitra centers and manual system

H2: Quality of governance in e-mitra and manual system are equal

H3: There is no difference in Quality of service for e-mitra and manual system

H4: Citizens have favourable perception towards e-governance services

In order to examine the hypothesis, a final questionnaire was developed and pre-tested for reliability. To test the reliability, the prepared questionnaire was demonstrated to 10 respondents consisting of students pursuing higher education, and faculty members of the university. The pre-tested questionnaire was further, advanced to conduct survey from the identified survey pool. A sample size of one hundred eighty was selected by applying convenience and judgmental sampling technique, and data was collected through survey method. A survey pool comprises of citizens availing the e-mitra services and also had the experience of manual delivery system in Udaipur and Chittorgadh district of Rajasthan State. Respondent profile is presented in table 3. The respondents are largely urban, educated, employed or business people. For majority of questions respondents are asked to rate the manual and computerized systems in a 5 point scale. The last section of questionnaire measures client perception towards government initiatives of e-delivery projects.

Table 2: Respondent Profile, n=180

Attributes		**% of respondent**
Education	Schooled	8
	Graduate	53
	Post-graduate	19
Profession	Private/ public sector employee	32
	Business	37
	Farmer	11
Gender	Male	67
	Female	13
Urban/Rural	Urban	69
	Rural	11

RESULTS & ANALYSIS

This section deals with the testing of hypotheses by using appropriate statistical tools. SPSS-19 software has been used for the purpose of analyzing responses gathered.

4.1 Testing of H1

H1: There is no difference in cost of availing the services at e-mitra centers and manual system

In order to test this hypothesis, a questionnaire gathered the average waiting time for the service. Mathematical statement of null hypothesis on the dimension of average waiting time is as follows:

$H_{0:} \mu_E = \mu_M$ Where, μ_E and μ_M are the hypothesized mean for e-mitra and manual system services respectively.

$H_1: \mu_E \neq \mu_M$

The statistical significance of the data has been tested using Student's paired sample "t" test at 95% confidence level. It was found that gap is statistically significant ($t_{average\_waitTime} = -11.344$, $p = .000 < .05$). Since our Paired Samples Statistics box revealed that the Mean wait time for manual system is greater than the Mean for e-mitra center, we can conclude that average waiting time of manual system is higher than e-mitra systems.

Table 3: Paired t test for 'Cost of Availing'

Paired Samples Statistics					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Avg_waitTime_E	11.9000	180	4.27260	.60424
	Avg_waitTme_M	31.1000	180	11.83604	1.67387

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Avg_waitTime_E - Avg_waitTime_M	-19.20000	11.96764	1.69248	-22.60117	-15.79883	-11.344	179	.000

Values for other scale items for measuring cost of availing are captured as Boolean variables of yes/no. Results summarized in table 5, shows that large section of sample is able to finish their job in one trip with less documentation errors and by paying less service charge and bribe.

Table 4: Responses on the various attributes, n=180

Attributes	% of respondent	
	e-mitra	manual
Finish Job in Single Trip	88%	68%
Encountered Document Errors	4%	14%
Pay Service Charges	4%	22%
Pay Bribe	6%	26%
No. of Document *(upto 2)*	78%	28%

4.2 Testing of H2

H2: Quality of governance in e-mitra and manual system are equal

In order to test this hypothesis, the attributes configuring quality of governance which include level of corruption, statement of rules and procedure, and implementation of suggestion have been taken into account. Dimensions are measured in 5-point scale. For 'Level of corruption' 1 denotes for very corrupt and 5 denotes for not at all corrupt; for 'statement of rules' 1 indicate for Not at all clear, 5 for Very clear and in case of ' implementation of suggestion' 1 specify for Never- and 5 for always.

Mathematically, a general statement of null hypothesis has been expressed as below:

$H_{0:}\ \mu_E = \mu_M$ Where, μ_E and μ_M are the hypothesized mean for e-mitra and manual system services respectively.

$H_1: \mu_E \neq \mu_M$

The statistical significance of the data has been tested using Student's paired sample "t" test at 95% confidence level. It was found (table 6) that the mean difference is statistically significant for the dimension of 'Level of corruption' and 'Implementation of suggestion' ($t_{Lvl\_corruption}$= 2.436, p = .019 < .05; $t_{Suggestion\_Imp}$ = 11.809, p = .000 < .05). But there is no statistically significant difference for the dimension of 'Clear Statement of rules and procedure' ($t_{procedure\_stated}$ = .715, p = .478 > .05).

The sample statistics reveals that the level of corruption is comparatively more in manual system than e-delivery model. Moreover, citizen believes that suggestions are implemented in e-mitra centers than the manual setup.

Table 5: Paired t test for 'Quality of Governance'

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Lvl_corruption_E	3.6600	180	.82338	.11644
	Lvl_corruption_M	3.3000	180	.88641	.12536
Pair 2	procedure_stated_E	3.6400	180	.85141	.12041

	prcedure_stated_M	3.8000	180	1.16496	.16475
Pair 3	Suggestion_Imp_E	3.9400	180	1.13227	.16013
	Suggestion_Imp_M	1.7200	180	1.12558	.15918

Paired Samples Test

		Paired Differences					T	Df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Lvl_corruption_E - Lvl_corruption_M	.36000	1.04511	.14780	.06298	.65702	2.436	179	.019
Pair 2	procedure_stated_E - prcedure_stated_M	.14000	1.38520	.19590	-.25367	.53367	.715	179	.478
Pair 3	Suggestion_Imp_E - Suggestion_Imp_M	2.22000	1.32926	.18799	1.84223	2.59777	11.809	179	.000

It has also been found that 82 percent of citizen provides feedback to officials of e-mitra centers corresponds to 38 percent for manual setup.

4.3 Testing of H3

H3: There is no difference in Quality of service for e-mitra and manual system

Quality of service is tested on the dimensions including Work timings, Responsiveness of staff, Data security, Location of service center, Functionaries courteousness and friendliness, Timeliness of response, Satisfaction with complaint handling mechanism. Dimensions are measured in 5-point scale.

Mathematically,

$H_{0:}\ \mu_E = \mu_M$ Where, μ_E and μ_M are the hypothesized mean for e-mitra and manual system services respectively.

$H_1: \mu_E \neq \mu_M$

It was found from table 7 that statistical mean difference exists in the dimensions of accessibility, working hours, friendliness of functionaries ($t_{accessibility}$=3.031, p=.004<.05; $t_{working\_hour}$=3.133, p=.003<.05; $t_{friendly}$=2.795, p=007<.05) , but mean difference is not statistically significant for the dimensions including Timeliness of response, Data security, Data Confidentiality and complaint handling mechanism between the e-mitra and manual system ($t_{Timely\_Handling}$ =.688, p=.495>.05; $t_{data\_confidentiality}$ =.822, p=.415>.05; $t_{data\_security}$=-1.011, p=.317>.05; $t_{compliant\_handling}$=-1.492,p=.142>.05).

Table 6: Paired t test for 'Quality of Service'

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Accessibility_E	3.9200	180	.63374	.08963
	Accessibility_M	3.4600	180	.81341	.11503
Pair 2	working_hour_E	3.8800	180	.55842	.07897
	working_hour_M	3.4400	180	.81215	.11486
Pair 3	Friendly_E	3.9000	180	1.05463	.14915
	Friendly_M	3.3400	180	.96065	.13586
Pair 4	Timely_Handling_E	3.8400	180	1.13137	.16000

	Timely_Handling_M	3.5600	180	2.92882	.41420
Pair 5	Data_Confidentiality_E	3.5200	180	1.34377	.19004
	Data_Confidentiality_M	3.3600	180	1.08346	.15322
Pair 6	data_security_E	3.2000	180	1.53862	.21759
	data_security_M	3.4800	180	1.23288	.17436
Pair 7	Compliant_handling_E	2.5600	180	1.37262	.19412
	Compliant_handling_M	2.9600	180	1.15987	.16403

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Accessibility_E - Accessibility_M	.46000	1.07305	.15175	.15504	.76496	3.031	179	.004
Pair 2	working_hour_E - working_hour_M	.44000	.99304	.14044	.15778	.72222	3.133	179	.003
Pair 3	Friendly_E - Friendly_M	.56000	1.41652	.20033	.15743	.96257	2.795	179	.007
Pair 4	Timely_Handling_E - Timely_Handling_M	.28000	2.87878	.40712	-.53814	1.09814	.688	179	.495
Pair 5	Data_Confidentiality_E - Data_Confidentiality_M	.16000	1.37559	.19454	-.23094	.55094	.822	179	.415
Pair 6	data_security_E - data_security_M	-.28000	1.95918	.27707	-.83679	.27679	-1.011	179	.317
Pair 7	Compliant_handling_E - Compliant_handling_M	-.40000	1.89521	.26802	-.93861	.13861	-1.492	179	.142

4.4 Testing of H4

H4: Citizens have favourable perception towards e-governance services

To test this hypothesis, a questionnaire was developed using five point Likert Scale (1 for strongly disagree and 5 for strongly agree) on attributes explaining perceptions of citizen towards e-governance services. These attributes include dimensions like e-governance project that improve government image, government should make more investments on e-governance initiatives and scope of e-Government services is limited to rich, influential urban citizen. The statistical significance of the data has been tested using Student 't' test at 95% confidence level.

Mathematically,

H_0: $\mu = 4$ (Where 4 is the scale value corresponds to "agreed" category)

H_1: $\mu < 4$

Table 7: Perception towards e-governance service

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Improve_image	180	3.6800	.91339	.12917
more_investment	180	3.9800	.68482	.09685

benefit_rich	180	3.4200	1.10823	.15673
benefit_rural	180	3.4800	.90891	.12854

One-Sample Test						
	Test Value = 4					
					95% Confidence Interval of the Difference	
	t	Df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Improve_image	-2.477	179	.017	-.32000	-.5796	-.0604
more_investment	-.207	179	.837	-.02000	-.2146	.1746
benefit_rich	-3.701	179	.001	-.58000	-.8950	-.2650
benefit_rural	-4.045	179	.000	-.52000	-.7783	-.2617

The output of 't' test (table 8) reveals that no significant gap exists between the hypothesized test values with the calculated sample statistics on only one dimension of 'more investment' ($t_{more\_investment}$=-.207,p=.837>.05) . Thus, the perception of the citizen towards e-governance corresponds to remaining attributes tend to be unfavorable and dichotomous.

4.5 Service usage pattern

Table 9 and 10 provide details about the most availed service at e-mitra service counters and a matrix of the number of respondents who avail combinations of top 5 most frequently used services, respectively.

Table 8: The most frequently used service, n=180

Sr.	Service Name	% of respondent
1	Payment of Electricity bill	100
2	Payment of water bill	100
3	Payment of BSNL Bill (WLL, mobile, landline)	78
4	Caste certificate (OBC, SC/ST)	28
5	Dish TV recharge	20
6	RPSC exam fee	16
7	Board of secondary education answer booklet copy	14
8	Board of secondary education answer booklet copy	14
9	ICICI prudential life insurance FSO/new application	2
10	Police exam form / fee payment	2
11	Exam fees from Panchayati raj	0
12	PWD exam form / fee payment	0
13	Rajasthan Guaranteed Delivery of Public service application	0
14	Bus pass (Udaipur transport limited)	0
15	LSP deposits (District e-Gov societies)	0

CONCLUSION

Computerization of service delivery in India is in the early stages of evolution. Most government department is still struggling to digitize their data and service counters. Citizen satisfaction and perspective has been always a critical success factors for a citizen centric e-governance projects. It becomes important to assess the quantum of impact on end users for such e-delivery services. The present study attempts to measure this impact on various qualitative and quantitative factors for the chosen case of e-mitra. The degree of impact has been gauge on the key dimensions of cost of availing services, quality of governance and quality of service. The responses are captured for both computerized and manual delivery systems.

It has been found from the data analysis that the average waiting time and level of corruption is higher in manual system than e-mitra service. This affirms the basic motive of these e-services to increase the responsiveness and transparency in delivery system. The most popular services availed by citizen at e-mitra service counters are payment of electric bill, water bill and payment of mobile/landline bills. Moreover, citizen believes that suggestions are implemented in e-mitra centers than the manual setup. They are able to finish the job in single trip with less documentation errors and are seems to be satisfied with working hours, friendliness of functionaries and also with the current locations of e-service counters. But the e-mitra centers are not able to present a better impression on the dimension of response time, citizen data security concerns and complain handling mechanism.

Regarding citizen perception towards e-governance services, the study reveals that citizen have unfavorable perception about the current scope of e-service delivery model. They believe that these services only concentrate towards benefiting rich and influential people of urban locations. This fact restricts the government efforts in its positive image building and reach to all cadre of society. But people are optimistic about the initiative and perceive that government should make more investment towards e-governance services.

Impact assessments are not going to be one time affair and it is not necessary that a project doing well at present will continue to do well in future. So, the project may be measured again and again in definite interval. Clear guidelines should be provided to encourage their use by the actual end users and reduce users' dependence on intermediaries.

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ONLINE RECRUITMENT SYSTEM
Recruiting System User Guide, Instructions for users of the Online recruiting system

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ABSTRACT
Online recruitment system is emerged in an new era. The human recruitment system suffers continually from being a slow-paced process, in which, jobseekers and employers must do lots of in the hunt for find suitable person in a traditional way. Additionally the process is time, effort, and money consuming for the recruiter and jobseeker and to provide user guide, instructions for users of the online recruiting system. Due to lots of paper work, that effect unfairness decisionmaking. This research addresses the problem statement and provides the roles of internet solution for facilitate a fully automating the whole recruitment process, and eliminating the paper work and unfairness jobseeker selection. The developed solution is ORS (Online Recruitment System); ORS assist and improve human resource management and help both employers and jobseekers via internetworking mean that to increase the speed of recruitment and decrease the corruption decisionmaking. In addition, they become vital assistance to human discrimination to put right people in right places and highly mange the human resources in better Quality of Service. In this, an ORS is proposed; it supplied with some recommendation tools.

Keywords: Recruit, Internet-recruitment, Online Recruitment System, Job-finder, human resource, job-seeker, Job-center, User guide, Instructions.

INTRODUCTION
Online Recruitment System is an online website in which jobseekers can register themselves online and apply for job and attend the exam. Online Recruitment System provides online help to the users all over the world. Using web recruitment systems like recruitment websites or jobsites also play a role in simplifying the recruitment process. Such websites have facilities where prospective candidates can upload their CV's and apply for jobs suited to them. Such sites also make it possible for recruiters and companies to post their staffing requirements and view profiles of interested candidates. Earlier recruitment was done manually and it was all at a time consuming work. Now it is all possible in a fraction of second. It is all done online without much time consuming. Today's recruitment applications are designed to do a whole lot more than just reduce paperwork. They can make a significant contribution to a company's marketing and sales activity. Recruitment websites and software make possible for managers to access information that is crucial to managing their staff, which they can use for promotion decisions, payroll considerations and succession planning. Online Recruitment System enables the users to have the typical examination facilities and features at their disposal. It resolves typical issues of manual examination processes and activities into a controlled and closely monitored work flow in the architecture of the application. This multi platform solution brings in by default, the basic intelligence and immense possibilities for further extension of the application as required by the user. The system makes it friendly to distribute, share and manage the examination entities with higher efficiency and easiness. The objective of these websites is to serve as a common meeting ground for jobseekers and employers, both locally and globally, where the candidates find their dream jobs and recruiters find the right candidate to fulfill their needs. These sites are specifically designed for those who seek the most demanding and challenging positions in their chosen field, with the most dynamic employers. Thousands of websites compete for your attention-each has its own unique interface, URL and peculiarities.A quick look at the overall trends in Online recruiting shows the rise in the importance of marketing the web site, online training, dawn of video interviews and emergence of professional Internet Recruiters. Online recruiting and online recruiting systems, with its emphasis on a more strategic decision making process is fast gaining ground as a popular outsourced function.

SYSTEM ANALYSIS
System Analysis is the detailed study of the various operations performed by the system and their relationships within and outside the system. Analysis is the process of breaking something into its parts so that the whole may be understood. System analysis is concerned with becoming aware of the problem,

identifying the relevant and most decisional variables, analyzing and synthesizing the various factors and determining an optional or at least a satisfactory solution. During this a problem is identified, alternate system solutions are studied and recommendations are made about committing the resources used to the system.

DESCRIPTION OF PRESENT SYSTEM

Presently recruitment is done manually. That is if a company or organization needs employees they make an announcement through newspaper. People who are eligible send application to the organization or company. From these applications they are called for interviews or tests. After tests company has to do short listing manually. From these shortlisted candidates, they are called for interviews. After interview short listed candidates are employed. So it's all a time consuming procedure.

LIMITATIONS OF PRESENT SYSTEM

Recruitment is done manually. These tasks are time consuming. It may take one month or long. People around the world cannot apply. Online Recruitment system very convenient because in the manual system there are lot of difficulties in conducting and managing a recruitment exam, short listing, maintaining staff etc.

PROPOSED SYSTEM

Online Recruitment is aimed at developing a web-based and central recruitment Process system for the HR Group for a company. Some features of this system will be creating vacancies, storing application data, and Interview process initiation, Scheduling Interviews, Storing Interview results for the applicant and finally hiring of the applicant. This project Online Recruitment System is an online website in which jobseekers can register themselves and then attend the exam. Based on the outcome of the exam the jobseekers will be shortlisted. The details of the examination & Date of the examination will be made available to them through the website. People all around the world can apply and register. It has made all the process easy.

ADVANTAGES

Online Recruitment System enables the users to have the typical examination facilities and features at their disposal. It resolves typical issues of manual examination processes and activities into a controlled and closely monitored work flow in the architecture of the application. This multi platform solution brings in by default, the basic intelligence and immense possibilities for further extension of the application as required by the user. The system makes it friendly to distribute, share and manage the examination entities with higher efficiency and easiness. It is a comprehensive resource for finding a job online.

RECRUITING SYSTEM USER GUIDE, INSTRUCTIONS FOR USERS OF THE ONLINE RECRUITING SYSTEM

GENERATING IN-SYSTEM E-MAILS TO APPLICANTS

Applicants should receive timely communication from the Search Committee Chair to inform them of their status in a search. The Search Committee Chair or the Initiatormay ask the business center HR staff to send any one of the e-mails to applicants on their behalf.The following e-mails are the last four options in the "Applicant Status" drop-down menu. Once you select and save any of these four (4) e-mail statuses for an applicant, an e-mail is automatically sent to the applicant.

1) No Interview Firm – Send E-mail
2) May Interview Later – Send E-mail
3) Interviewed – Not Selected – Send E-mail (only use after you have an accepted offer from recommended appointee)
4) Recruitment Cancelled – Send E-mail

Applicant Status	Subject of E-mail	E-mail Text
No Interview Firm – Send E-mail	Status of Your Employment Application	We received applications from many qualified applicants for this position. The purpose of this message is to inform you that your application received full consideration, but you are not among those selected for further consideration.The following fields auto-populate from the posting: Appointment Type: Position Title: Department: Thank you.
Hold Status – Send E-mail	Status of Your Employment .	The purpose of this message is to inform you that your application is still under consideration at this time. The following fields auto-populate from the posting: Appointment Type: Position Title: Department: Thank you.
Interviewed – Not Selected – Send E-mail	Status of Your Employment .	Thank you for your interest in the following position at Oregon State University. On behalf of our committee, I wish to thank you for taking the time to interview for this position. After careful consideration of each candidate's qualifications for the position, we have selected another candidate for the position. The following fields auto-populate from the posting: Appointment Type: Position Title: Department: Thank you.
Recruitment Cancelled – Send E-mail	Notification of Recruitment Cancellation	The recruitment for the following position has been cancelled. We apologize for any inconvenience this may cause you. We hope you will continue to seek employment. The following fields auto-populate from the posting: Appointment Type: Position Title: Department: Thank you.

SYSTEM-GENERATED E-MAIL NOTIFICATION CHART

The system automatically generates e-mails to users when an action is submitted from one user to another. E-mails are also generated when certain applicant statuses are selected, a hiring proposal is approved, or a user account has been approved. The following chart outlines who receives e-mail notification, and when.

E-mail Notifications	Initiator	Reviewer
Action Returned to Initiator	X	
Approved (New Position Description)	X	
Approved (Position Description Updated)	X	
Approved (Position Description Reclassified)	X	
All Approvals Obtained (Posting Approved)	X	
All Approvals Obtained for Non-Recruitment	X	
Non-Resident Alien Review Complete	X	
Permission to Offer Employment to Recommended Appointee	X	
Hiring Proposal Approved (Position Seated)	X	
User Account Approved	X	X

REVIEWER ROLE

- The Reviewer has the ability to view an action in the system, and to make and save comments on the Comments page. The Reviewer does not have the ability to edit documents or pages inside an action.
- The Initiator will request that a Reviewer log into the system to review and approve an action before it is submitted to the business center.
- When you log in to the system, the Welcome page will appear. This is the default page. It will always contain a list of active postings assigned to the organization(s) you have access to.
- From the menu, select Search Actions under Position Descriptions.
- Click on the "Action Saved Not Submitted" box. Then click on Search.
- Find the action you want to review, and click View under the Position Title.
- Scroll down the page and review the summary for the action.
- If you elect to make comments on the Comments page, click on "Edit This Action" at the top of the page. Each tab across the top of the page represents separate pages inside the action.
- Review the comments made by the Initiator. Add your own comments in the Reviewer section of this page.
- Review the Position Details page.
- Review the documents on the Supplemental Documentation page.
- Review the Requisition Form page.
- When you have completed your review, click on the View Action Summary link at the bottom of the page. Save and confirm your work using the radio buttons. If you fail to save your work, any comments you made will be dropped from the system.

REVIEWING APPLICATIONS

If Search Committee Member must log into the system using your guest user name and password provided by the search administrator or business center HR staff. The posting you have been granted access to will appear. You will then click on "View" under the Position Title in order to see the Applicants page of the posting. To assist with reviewing applications, use the Sample Interview Evaluation form in this guide.As applicants apply to the posting, their applicant status is defaulted to Under Review by Committee. The applications are available for search committee members to review.

VIEW APPLICATIONS ONE AT A TIME

If the posting is for a classified position, click on the blue link under the applicant's name to view the Employment Profile with Education and Work History. If other documents are attached for the applicant, you will see them in the Documents column. To view a document, click on the document name. If the posting is for an unclassified position, click on the Employment Profile to view their personal information, and click on the document name in the Documents column to review application materials (i.e., resume, cover letter, etc). To reorder columns while on the Applicants tab, click on the button next to the column name. For example, to put applicants into alphabetic order, click on the button next to the name.View Multiple Applications/Documents at Once. In the last column, put the cursor on "All" and click. Check marks will appear in all of the boxes on the far right. Click on "View Multiple Applications" or "View Multiple Documents." The employment profiles (applications) for each applicant, or their documents (depending on what you selected), will appear in the order they appear on the active applicants list.

HOW TO VIEW INACTIVE APPLICANTS

As applicants are screened out of the applicant pool, their applications move to the Inactive list. Only the active applicants will appear on the Applicants page. If you want to review ALL applications at a later time, you will need to check the Inactive Applicant box and then click on Refresh to bring up the inactive applications.

SCREENING APPLICATIONS

At the screening stage, the role of the search committee is to evaluate applicant's qualifications and to subject them to intense scrutiny to determine which applicants are the most qualified for the position. Once applicants begin to apply for a position, the search committee members can begin reviewing the applicant pool to determine if the recruitment resulted in a sufficient number of qualified applicants for consideration, and if the pool is sufficiently diverse. If not, the search committee should confer with the hiring manager to determine the next steps in extending the search process and engaging in more additional focused recruiting.If the search committee determines that the applicant pool is acceptable, they proceed with the screening process. The screening process begins with the analysis of materials sent in response to the job posting. This analysis is undertaken to ensure that applicants have all of the qualifications specified in the job posting.

INITIAL SCREENING

To increase the fairness of the screening process, each committee member should screen each application. If the pool is too large, the chair can consider dividing the search committee into sub-groups (of 2-3), giving a portion of the applications to each sub-group to evaluate for the initial screening.Grouping of applicants is useful at every stage of the screening process. Ranking of applicants is not advised, and particularly not during the initial stages of screening. During this initial screening, each committee member should simply indicate whether each applicant is minimally qualified, and therefore should receive further consideration.Once the initial screening is complete, the search committee then selects the applicants they would like to consider further for an interview. The chair again reviews this list of applicants with the search committee to evaluate how women, people of color, and qualified veteran applicants have fared in the screening. After revisiting criteria that may need refinement and/or applicants that may merit additional consideration, the chair must provide the search administrator with job-related screening reasons for each applicant the committee has decided not to invite for an interview.A screening checklist can help the search committee quickly verify each applicant's possession of required and preferred qualifications. Two sample screening checklists follow.

COMPLETING THE APPLICANT DISPOSITION WORKSHEET

Screening reasons provided must be accurate and specific to EACH applicant. The agency which oversees OSU's affirmative action legal compliance--the Office of Federal Contract Compliance Programs--requires that OSU record three pieces of information for each applicant not selected:

(1) Stage at which the applicant withdrew or was eliminated from consideration,

(2) Reason the applicant was eliminated from consideration, and

(3) Individual or Group responsible for deciding to eliminate applicant from consideration.

Business Center HR staff and/or the Office of Equity and Inclusion (OEI) reviews screening information for compliance with OSU policy and regulatory requirements. Search committee chairs will be required to provide detailed documentation for each applicant screened out of any step of the process; therefore it is critical that detailed, accurate screening reasons for all applicants be maintained with the search records. Hand-written notes created by search committee members are auditable, and should be maintained by the department for a period of three years from the date an appointment is made.

EXTENDING AN OFFER OF EMPLOYMENT

Before extending a verbal offer of employment to an applicant, reference checks and verification of credentials must be completed. Search committee members may be charged with this responsibility, or the hiring manager may prefer to complete this step of the process. In either case, hiring officials are encouraged to talk with former supervisors and professional associates to obtain specific information about the applicant's experience and qualifications in previous positions. Degrees, professional licenses and credentials should be checked before an offer of employment is extended to an applicant. Completing these checks at this stage of the review process is also optional.

OFFERING EMPLOYMENT TO AN APPLICANT FOR AN UNCLASSIFIED POSITION

Hiring supervisors DO have permission to make a verbal offer of employment to a proposed appointee before the appointment and the draft offer letter have been reviewed and approved by OHR Employment Services. However, promising specific terms and conditions of employment (like the appointment salary) with an applicant before an appointment is approved is not acceptable because the terms and conditions of employment offered may not be approved by your business center HR Manager. The safe practice is for a hiring supervisor to make a verbal offer contingent upon review and approval of the offer by your HR Manager.

OFFERING EMPLOYMENT TO AN APPLICANT FOR A CLASSIFIED POSITION

Hiring supervisors do not have permission to make a verbal offer of employment to a proposed appointee before the appointment and the draft offer letter have been reviewed and approved by your HR Manager.

APPLICANT'S VIEW OF THE STATUS OF THEIR APPLICATION

When applicants view the status of their applications online, they only see three statuses:

- In Progress
- Position Filled
- Cancelled

Therefore, it is critical that the search committee chair complete communication with applicants IMMEDIATELY after an offer of employment is accepted. If you choose another communication tool (personal letters or phone calls), the communication to applicants must still be timely. Otherwise, an applicant will see that the position has been filled before they have been notified.

COMMUNICATION WITH APPLICANTS

Applicants should receive timely communication from the search committee chair to inform them of their status in a search throughout the recruitment and selection process. The chair may contact applicants by phone, send written letters, or ask the Initiator (typically the search administrator) or the business center HR staff to send any of the e-mail notification options in the online system to notify applicants of their status. The online system contains four (4) e-mails:

- No Interview – Firm
- Hold Status
- Interviewed – Not Selected
- Recruitment Cancelled

CONCLUSIONS

During the design and implementation phases of the proposed ORSis a self-service tool that allow employees to find post or vice versa by online (internet) or offline (on a computer) via web technology to improve the performance. An online self-service tool is portable and suitable for knowledgeable people, but the offline

self-service tool fixed and the unknowledgeable people can get help from information desk or training. Ever since the internet become public, another new modification introduced in the communication technology, that creates new generation. Thus, human resource became e-HR. e-HR is an active bridge between jobseekers, employers and HR manager for the reason of enhance the human resources strategy and directed support of and/or with the full use of webtechnology. E-HRM is the use of technology to automate human resource activities and functions. Installed copy of the proposed system in a single personal computer (PC); could not be considered as a traditional nor Electronic recruitment system, it is named "the semi electronic recruitment system. One of the advantages of the proposed system is it easy and updateable at any time there is need to change the applied rules along with user guide. Also, in real life, there is a need to employ one senior adviser (expert), or more, to be always online. In this work, the experience of human senior advisor been used in the test phase, for a certain period to refine the applied matching rules.

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DIGITAL MICROBIOLOGY – A LEAP INTO THE FUTURE

Dr. Jaya Vikas Kurhekar

We, the present generation, are lucky to witness a dream coming true, total digitalization of India! India is standing strongly and firmly, in the international scenario, armed with the advanced new information technology, which is showing its footprints in all fields; right from birth to death of human beings and age old occupation of farming to highly advanced industrialization! Slowly and surely, India is moving towards complete digitalization, a step towards paperless administration and research. It is surely a mark of progress.

In Life Sciences, digitalization has played a very important role. Especially, in the field of Microbiology, health, research related to health, diagnosis of diseases, treatment of diseases, prognosis detection and betterment; digitalization has made its significant mark.

Microbiology is one such field in Life Sciences, which is tremendously advancing every second and human life, without it, is unimaginable! In the past few decades, Microbiology has advanced beyond imagination. Study of microbial structures at genetic and molecular levels, unthinkable, at a point of time, has been possible because of the application of advanced and sophisticated instrumentation as well as genetic engineering, recombinant DNA technology, adding a new dimension to the magnitude and understanding of the subject. Digital Microbiology and automated processing of samples and specimens, has totally revolutionized the number of hours and the labour that went into it. Microbiology, for years together, characteristically used heavy manual laboratory procedures, taking days together, for the results. This scenario is rapidly changing today, with the advent of recombinant DNA technology and automated sample processing.

Microbiology is an all-encompassing branch, dealing with the invisible world of micro-organisms; living beings, which cannot be seen with unaided eyes! It deals with all the related aspects of Microbiology, which include almost everything under the sun!

The three basic needs of human life on earth include; air, water and food, along with clothes and shelter! Microbiology plays a vital role in all these amenities required for sustenance of human life on earth! Micro-organisms are ubiquitous, occupying every single niche, every single nook and corner of the earth! It will not be an exaggeration to say that there is not a single place on the earth, where they do not exist. We have to use technology to create places where they will not enter, for research and advanced methodologies!

Digitalization plays a key role today, in the various fields of Microbiology, including those having a vital role in human life!

Getting clean, pure drinking water is the right of every human being! Today, population explosion seems to have snatched this right! Contaminated drinking water bodies have led to increased incidents of water borne diseases. Digitalization can help us in repairing this situation, to some extent! Dreaming of a sustainable water future, digitized water treatment and optimization of digital assets, industrial internet solutions for solving water infrastructure challenges across the globe, solving the challenges of water distribution, storm water and wastewater collections through the use of data and analytics, using software to set right the aging infrastructures, manpower constraints, water conservation problems, seems a reality because of digitalization. Identification of risky pipelines, management of leaks, contamination and water pressure, optimization of available resources and assets, through software, water quality monitoring and better work force efficiency has been possible through digitalization.

Getting pure air to breathe is another necessity of a human being. With increasing population, air has been contaminated to a large extent due to industrialization, pollution and depleting ozone layer. Digitalization of monitors used in improving air quality can be a key word in air Microbiology. **A**ir filtration systems and filter maintenance are of high significance, to prevent the spread of disease by air.Micro – organisms are microscopic organisms of a size which helps in disease transmission to humans, through air inhalation. Bacteria, fungi, viruses, aerosols, ranging in size from 0.1 to 30 um, may cause lethal diseases. Automation

and technology using high efficiency filters, HEPA, can remove up to 99% of the particles. Active air monitoring systems help in improving breathing air quality. Detection of air pathogens, qualitatively and quantitatively, is using high end technology and automation today.

Microbiology is heading towards full laboratory automation and digitalization. This has been speeded up due to lowered budgets, decreased man power, laws and rights leading to errorless testing, increased demands and needs to maintain quality. Astounding use of automation systems in modular and open Microbiology laboratories utilize specimen processors, automatic seeding of cultures, preparing Gram staining slides, inoculating broths, conveyor belts connecting the processors to smart incubators, connected to image acquiring stations which gather images needed for digital Microbiology analysis. Smart incubators help in placing each plate on its own shelf, helping in faster retrieval by the microbiologists to access and process a particular plate. Moreover, the cultures grow faster in smart incubators, as compared to traditional incubators because of the homogeneous atmosphere and efficient thermal distribution and control inside, maintaining optimal conditions for the plate allowing faster growth of cultures being ready for further processing earlier!. The smart incubators are not opened frequently, maintaining optimal conditions uninterruptedly, leading to better optimized results and faster preparation of reports.

The image acquiring units in the laboratory automation systems use highly sophisticated cameras and versatile lighting systems to obtain sharp, unparalleled high-resolution images which can be zoomed in on the culture plates, helping in detection of even minute colonies, probably missed by the unaided human eye. Advanced software groups the plates based on the estimated number of colonies, sorts the plates from most estimated colonies to least estimated colonies, helping in data interpretation and analysis. Plates representing significant growth and be easily identified and worked on earlier! Positive cultures can be worked on first, leaving the no-growth cultures for last, speeding up the work, leading to faster interpretation and increased efficiency. Digital Microbiology has helped in bringing the Microbiology laboratory to the patient's bedside, facilitating the laboratory to share the image of a culture plate, stained slide with the treating physician, in a remote location. Patient treatment and care can be speeded up and made more efficient by providing all patient information to the treating physicians speedily, by the laboratory personnel. Moreover, standardization and rationalization of sampling is possible. Highest priority samples can be identified; workflow can be optimized through standardized apparatus, sample collection devices, leading to cost reduction, time savings for all involved in the process, improvement in patient comfort and faster results for faster patient treatment.

Digitalization has helped in sketching a digital diagram which depicts evolution of life, on earth, which was more than 3.5 billion years ago, in the form of a colourful kaleidoscope. A better insight into how millions of species on earth are related has aided in improving life style, requirements for sustenance of life, agricultural methods and better understanding of bacteria and viruses for betterment of health.

Software-based technology, data analytics and connected devices can work together to transform every aspect of our being on this earth!

With reference to biodiversity, it has been estimated that there exist about 1.8 million named species, which are yet unknown to man! Digitalization has helped in genetic mapping of 22 percent of the known species. Scientists from 11 organizations have digitized a "tree of life," which is a genetic map of 2.3 million named species of animals, plants, fungi and microbes that seem to have branched from a common ancestor, over a period of time!

The world population is increasing at an alarming rate. It is expected to be around 9.6 billion by 2050, which is almost 40%. Increasing population indicates increased agricultural produce and using more land for agriculture. Fertile land is already being used to its full capacity which indicates higher yield from whatever land is available. For feeding this increasing global population, sustainably, without succumbing to other pressures exerted by the deteriorating environment and its regulatory measures, digital revolution in agriculture seems to be the only solution! This step would transform agricultural industry and every section of agri-business. In this new technology, farming by trial and error would be replaced by precision farming, where everything would be accurately decided, measured, mapped, managed and implemented, without any loss of resources or time, so as to increase the yields, while lowering the costs. Digital technology will help

in analysing soil fertility parameters like acidity, alkalinity, organic carbon content, nutrient content, pH, history of yield and crops, climate conditions of the soil and the environment, water table, irrigation measures required, all of which direct the agricultural produce. Better decisions with reference to yield and produce would be possible through the vast range of information made available through digitalization and apparatus like GPS monitored tractors, aerial drones connected to satellites and internet, helping to monitor individual crops, software and algorithms helping to increase yields, sustainability and profitability of agriculture! Every square meter of agricultural land would be monitored for better yield and productivity. More pre-planning, reaping, storing, packaging, marketing, transporting, shipping, understanding the demand and supply features, customer needs, will be possible through digitalization. Reducing wastage, storing and preserving the excess, better and flexible methods of distributing food, reacting to consumer mentality, investing in the research and development, managing demand and supply, managing credits, financial risks, all will be easier and smoother with digitalization. Digital agriculture will give more business plans, strategies, product designs, customers' needs and organizational structures. Digitalization has the potential to totally transform the way we form and alter the whole agricultural chain. Agricultural revolution in the form of digitalization will help civilization to survive, develop and strive longer!

Health is one issue, very close to human heart and mind! Digitalization could revolutionize the health industry using technologies to improve our health! Genomics, telemedicine, 3Dbioprinting are a few such advanced technologies, which could change our perspectives about health!The process of digital transformation seems to be casting a tremendous and long lasting impact on our health and fitness. Its impact on the quality of life for millions, implications for the healthcare sector and employers cannot be ignored! Improvements in medicine and nutrition have helped life expectancies increase throughout the last century. Digitalization can help us live longer, healthier and more productive lives through its advent in genomics. Increased computer processing power has unlocked the true potential of human DNA analysis – leading to ersonalized testing and treatment, enabling us to vastly improve diagnostics and treatments for a wide range of diseases. At many work places, wearables have been introduced, which monitor the stress levels and health of their staff, that can collect personalized, real-time data, encouraging healthier lifestyles, and collecting data to feed into medical research. This helps in suggesting healthier habits, leading to higher productivity. More digitalized lifestyle data, records, comparative patient analysis, comparing the responses of patients with similar DNA, lifestyles and medical histories can help us in truly understanding health risks as well as the effect of different treatments.

Advances in DNA sequencing and stem cell research has helped in growing miniature organs, based on patients' own DNA. Connected to electronic sensors, they can measure response to any particular treatment at a cellular level to understand which methods will have the most success before applying them to the patient.

Digital surveys are playing a very significant role in identifying potential issues in improving the quality of care. Digital search engines are increasingly being used today, to help in identifying and responding to disease outbreaks.

Genetic engineering is one field which can help humanity in immense number of ways! Genetic engineering of human DNA to fight disease, gene therapy, use of genetically-modified viruses to fight disease, genetically-modified insects to fight against zoo noses, are the fantastic innovations useful for mankind!

Telemedicine, in the form of mobile technology has decreased the need of travelling to visit healthcare professionals, leading to a positive impact on productivity. Assessments of patients through mobile phones can provide health care and medicines for the deprived, at meagre costs. Development of creative solutions through connecting technologies to reach people in remote areas, for healthcare and its information has become possible. Use of surgical robots, enabling more precise surgery, speeding up recovery time, helping save man hours, use of robotic surgical equipment, enabling specialist surgeons to treat patients in remote areas through digital technology, reducing the need to travel for treatment are all fantastic innovations, unimaginable, some time ago! Successfully implantation of 3D printed bone,

muscle and tissue into animals, planting custom-made replaceable body parts with improved functionality, through DNA analysis, have become astounding realities! Strong health and wellness programs based on digitalization seem to perform better than those without.

Digitalization of health care is possible through electronic medical records leading to better patient outcomes, improved convenience, potentially lowered health care costs, personalized medicine, advent of new tools that can begin to give us a much more high-definition view of our patients; from affordable and rapid genetic testing to wearable sensors that track a wide range of important physiologic parameters continuously, improve the doctor patient relationship, enhancing human interaction, made possible by digital technologies, individualizing diagnostics and treatments. In the laboratories, reagents are widely used in a variety of analytical procedures. Advancement in technology has led to the growth in the market of these reagents and analysers.

Heavy manual procedures and multiday processing times are being replaced by robotic automation and rapid results, leading to automated plating and incubation to improve accuracy, consistency and safety by reducing direct handling of plates or specimens.

PCR-based tests have replaced culture for some organisms, reducing time required from days to hours. Mass spectrometry provides identification at the species, genus, and family level in only minutes. The ability to report the organism to a clinician in a shorter time reduces assumptions and allows for more effective treatment by getting the right drug the first time.

Digital molecular platforms can today detect and quantify infectious disease agents, in a way, as never before. Manual processes have been replaced to a large extent, by automated systems, increasing reliability, traceability, accuracy, precision, lowering cost and enhancing care taken for the patients. Research and Development labs are using user friendly, rapid tests for identifying pathogens. It is being estimated that the benefits of automation and digitalization will be profound and long lasting!

Virology is a branch of Microbiology, which studies the smallest living beings on earth today, their properties, their relationship with man and the related aspects.

Twenty first century marks this field as a very significant one, with the advent of all times of invading diseases like swine flu, dengue, bird flu, chikungunya making their appearances on the horizon and claiming a large section of human lives! It remains a rapidly changing field, with its techniques and diagnostics needed to be updated now and again, because of the upcoming newer viruses, targets and technologies in order to supply accurate, cost-effective and timely results for the treatment of those affected.

There was a time, about fifty years ago whenvirology diagnostics in teaching hospitals involved virus isolation of viruses in cell lines. Serological tests like complement fixation tests were the buzz word. Twenty years later, with the advent of electron microscope and immunofluorescence techniques, the scenario changed. HIV arising on the horizon, during the 1980s led to the development of enzyme immunoassays, later on by the popular polymerase chain reaction (PCR) assays. Today, the several new automated molecular techniques are dominating the diagnostic field. These are a result of three decades of research in genetics. A vast range of options are available today, with reference to the techniques and technologies, for diagnostic virology.

The latest technique that opened up a whole new world of scientific discovery and knowledge is the capillary electrophoresis-based Sanger sequencing, which enabled us to elucidate genetic information from any given biological system and is still routinely used by virology laboratories for HIV and hepatitis B virus (HBV) sequencing. The limitations in this field, led to the next-generation sequencing (NGS) technology, which is the buzz word today to describe a number of sequencing technologies, used for routine virology diagnosis.

It has various applications like; detection of unknown viral pathogens, discovery of novel viruses, detection of tumour viruses, characterization of the human virome, sequencing of full-length viral genome, characterization of viral genome variability, characterization of viral quasi species, monitoring antiviral drug resistance, monitoring epidemiology of viral infections, viral evolution, quality control of live-attenuated viral vaccines, virus outbreaks, mapping quasispecies variations for Influenza virus, Hepatitis A virus,

Norovirus, Enterovirusand Ebola virus, testing HIV-1 tropism, genotypic resistance in influenza, HBV, hepatitis C virus (HCV), Cytomegalovirus (CMV) and so on. Benefits are many, including increased sensitivity, cheaper antiviral resistance tests, decreased reagent volumes, avoidance of disadvantages of manual pipetting, likelihood of original sample contamination and mix-ups; precision can be maintained in the repetitive steps, automation is being accepted, wherever possible and fully automating the process – from dilution and dispensing of samples to incubation and washing of microscope slides has resulted in increased capacity and decreased manual pipetting errors and inter-operator variations.

Liquid handling digital machines help in avoiding manual handling, improve capacity and speed, constantly evolving to accept different types of samples, require small volumes for generic specific reagents, dispense liquids easily in required containers. This has improved capacity and efficiency of the lab and enhanced the reproducibility of assays.

Platforms are set up to separate serum and plasma for the extraction of RNA and DNA, for liquid dispensing into various sample racks, plates and capillaries, sample aliquoting, sample dilution, complement fixation test (CFT) plates, agglutination assays, ELISAs and final aliquoting for sample storage. All samples are tracked via barcode and all worksheets are linked to digital systems. This has substantially improved capacity within the lab, as well as efficiency and the reproducibility of assays.

As with many fields of pathology, digitization is now revolutionizing the field of PCR used to directly quantify and clonally amplify nucleic acids. Like PCR, digital PCR carries out one reaction per single sample; high sensitivity and precision, high tolerance to inhibitors, a more reliable quantitation of nucleic acids is the high point of diagnostic laboratory.

Sample preparation is being combined with broad PCR amplification, electrospray ionization mass spectrometry of DNAamplicons in an automated platform is used to identify base composition based on molecular weight in bacteria, viruses, fungi and protozoa which can be screened against a library of more than 750,000 entries to perform classification, subtyping, identification of known virulence markers, antibiotic resistance genes and identification of mixtures of microbes from a single sample.

Digitalization has led to apps that are being developed to anticipate the onset of allergies. With the help of proprietary algorithm, the app uses parameters like weather and social media, various types of allergies, to give an idea of how likely you are susceptible to allergic symptoms each day on a scale of 1 to 12; 12 being a strong positive indicator which indicates you to keep medication handy.The app allows you to create a profile, so you can track your data over time to see if specific seasonal or behavioural patterns could be influencing your allergies.A wearable tracker has been developed that can help a person to manage rheumatoid arthritis, which collects behavioural and health information as heart rate, steps taken, sleep duration and daily levels of joint pain. Taken together, these details can indicate how well or not, medication is working and whether a patient's condition is worsening or improving.

An app has also been developed which can help you monitor glucose levels, enabling you to better manage your glucose levels.

Patients can monitor their progress every day in between doctors' visits, then share with their doctor and provide a more detailed picture of their overall health and how well their treatment is working.

Developing the immunological information database can help in a number of ways like; Westernblot, autoimmune diagnostics, infectious serology and allergy, digitization of strips while in the incubation tray, digitization of strips using flatbed scanner, fully automated identification, quantization and assignment of bands, modify results (changes are automatically documented), complete results obtained just a few minutes after finishing the incubation, automated administration and documentation of extensive individual data and electronic archiving of all images and data (avoids the need to store potentially infectious blot strips

Automation of tests used in immunology, like Indirect immunofluorescence, a standardized technique for the determination of autoantibodies and antibodies against infectious agents, innovations for the standardization and modernization of indirect immunofluorescence, microplateELISA, detection of specific IgE in allergy,

total IgE, use of microarray technique, has helped in betterment of human life. Automation has helped in easy handling, reliable and simple evaluation of all these parameters.

Food companies are using technology to improve their food safety operations, helping keep customers safe and satisfied.Food management involves time and temperature controls, a lot of industry certifications, brand standards and several safety processes. When food safety operations are run manually, they are error-prone. Food safety can be improved with digital technology.

Technological innovation is managing every industry and the way in which human beings manage their lives. In this world, the ever increasing acceleration of change is one of the few constants. Digital transformation is emerging as a driver of sweeping change around the world.

India is characterized by small farm holdings; 55% of India's population is engaged in agriculture with 40% farm mechanization. Agricultural Microbiology deals with plant-associated microbes, plant and animal diseases along with the microbial processes that increase soil fertility by microbial degradationof organic matter into soil nutrients and is presently using digitalization.

Digital technologies can be used in agriculture in the form of technologies like remote sensing, drones/unmanned aerial vehicles, big data analysis, mobile soil testing laboratories, soil health cards, digital soil maps, sensors networks etc.

Digital technology will be the key to increasing agriculture productivity by suggesting recommendations to farmers based on crop, planting date, variety sown, observed local weather and projected market prices. Utilizing crop growth models to estimate yields, harvest date and potential pest and disease outbreaks to optimise pest control measures, improved hydrology and watershed management, soil health, crop coverage and crop health estimates are a few other applications.

Nature conservation is changing under the influence of digital technology.

Metagenomics approaches, Microbial ecology with the application of genomics tools have revolutionized microbial ecological studies and changed our perspectives on underappreciated microbial world.

Molecular techniques are powerful tools for monitoring environmental effects and characterizing microbial diversity. Gene arrays are being applied for monitoring of environmental effects, vital to the protection of ecosystems. Molecular tools such as rRNA probes, DNA extraction and analyses, gradient gel electrophoresis and microarrayscan effectively monitor changes and help in understanding microbial communities involved in vital ecosystem processes.

DNA microarrays are one of the most promising methods for the analysis of gene expression. They allow the study of an immense amount of genes (over 10,000) with the help of only one experiment, drawing the picture of a whole genome. The presence of microorganisms, their viability for bioprocess control and improvementcan be done by DNA arrays, which is a more efficient and less time-consuming method.

Molecular biology has revolutionized the study of microorganisms in the environment and improved our understanding of the composition, phylogeny and physiology of microbial communities. Molecular toolbox includes a range of DNA-based technologies, methods for study of RNA and proteins extracted from environmental samples. The "omics" approach has helped in determining the identities and functions of microbes inhabiting different environments by integration of gene expression, proteomics, physiological, mutant phenotype and metabolic data into working cellular models, which can accurately predict the response of the organism to a given environment. DNA sequencing and amplification technology, coupled with genomic tools, have helped in analysing the composition and dynamics of microbial communities.

Microbiologyplasmid tools are used in diagnostic kits and fluorescence, cloning and expression and synthetic biologyfor diagnosis of bacteria, viruses, parasites such as protozoa and fungi.

Trying to encompass all the fields in Microbiology that are using digitalization seems to be a herculean task. There are many more fields, areas, where digitalization has been introduced either recently or some time back! Whether we look at the advantages or the disadvantages of digitalization, we cannot overlook the fact

that digitalization has brought an ease and speed in all microbiological techniques, which can very well outweigh the disadvantages, in a very short time!

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RURAL PROSPERITY THROUGH E-BANKING SERVICES

Pushyamitra Tiwari

ABSTRACT

The purpose of this paper was to examine the awareness level among rural consumers with regard to E banking services. Focus is also on rural growth with such a modern inputs of services from banking sector.

The study found that automated teller machine, mobile banking application, mobile/SMS banking , point of sales (POS), email, social banking and online banking are the major green innovative banking 3P's (products, paths and processes) common to banks. Consumer awareness is about making the consumer aware of his/her rights. In terms of economic output, rural India accounts for almost half (48%) of the country's economy, and the rural markets have the potential to reach $500 billion by 2020. E-banking was gradually replacing the traditional branch banking system. Customer awareness is necessary to identify the key success factors to survive in intense competition. This paper further, focuses on awareness level of latest technologies in banking sector especially among rural masses. Rural banks have, for a number of years, been regarded as the step-child of the banking system in India. The electronic banking system addresses numerous emerging trends like customers' demand for anytime anywhere services, product time-to-market necessities and increasingly complex back-office integration challenges. The research objective is to investigate the opportunity of using internet banking in the new generation of rural area as well as the trends and level of prevalence of on-line banking (i.e., e-banking) focusing on some emerging issues and challenges. Focusing on some emerging trends in rural banking.

Keywords: Internet Banking, Rural banking, Sustainable, E-banking services, Internet Application

INTRODUCTION

The world has changed and continues to change rapidly. Over the past few years rural India has witnessed an increase in the purchasing power of consumers, accompanied by their desire to upgrade their standard of living. The steps taken by the Government of India to address the poverty have improved the condition of rural masses. India lives in numerous villages, scattered throughout the country. Rural areas are form to nearly 70 percent of India's population and have historically accounted for more than half of Indian consumption. Even with increasing urbanization and migration, it is estimated that 63 percent of India's population will continue to live in rural areas by 2025. Thus rural areas will continue to remain vitally important to the Indian economy. In India a substantial number of the rural people are living below the poverty line, having high level of unemployment and poor literacy level; consumer awareness continues to remain low. Within the Indian financial sector, the role of the rural banks is important but not apparently pre-eminent. Of all the bank branches in the country, 49% are classified as rural branches while another 30% are regarded as semi- urban. However, the degree of E-banking proliferation in rural settings is unarguably under researched to date. With this proliferation of internet expansion and computers usage, the electronic delivery of banking service has become ideal for banks to meet customer's expectations. *Bharat Nirman,* an Indian plan for creating basic rural infrastructure, is having a budget of Rs 58,000 crores for 2011-12. It is a step towards bridging the gap between rural and urban areas and improving the quality of lives of rural masses. It comprises projects on irrigation, roads (*Pradhan Mantri Gram Sadak Yojana*), housing (*Indira Awaas Yojana*), water supply, electrification and telecommunication connectivity.

RURAL BANKING

The role of banks, which is central to formal credit in rural areas, was fast changing. The emergence of new technology allows access to banking services without physical direct recourse to the bank premise by the customer. At present, ATMs are city oriented in our country. It is inevitable that ATMs will be widely used, in semi-urban and rural areas. The increased popularity of credit cards which were bound to reach rural areas. As the level of education in rural areas rises, customers will start seeking efficient, quicker and low cost services. The innovations have brought efficiencies creating a better customer experience through best pricing, speed and convenience. In India, even now the rural areas lack of access to basic financial services.

Services sector is getting increasing importance in the rural areas also -from coffee shops to cable television operators. Assessing and meeting of credit needs of this sector is important. The integration between rural and urban areas has increased significantly, with the result, mobility of labour, capital, products and even credit between the two is increasing. There is significant commercialization and diversification of rural economies, progress is very uneven in different parts of the country. So, there are still many areas, where exploitation of tribes by money lenders or of agricultural labourers by landlord-money lenders, still persists. From the data on credit deposit ratios, it is clear that the banking system is a conduit for net transfer of financial savings from rural to non- rural sectors. On the other hand, a major part of informal markets would be local and hence savings would be locally deployed, within the rural areas.

TECHNOLOGY AND RURAL BANKING

The emergence of new technology allows access to banking and banking services without physical direct recourse to the bank premise by the customer. Concept of Automated Teller Machines (ATMs) is the best example. At present, ATMs are city oriented in our country. It is inevitable that ATMs will be widely used, in semi-urban and rural areas. The technology-led process is leading us to what has been described as virtual banking. The benefits of such virtual banking services are manifold. Through the competition, many banks quickly realized that there are a momentous number of customers like to do banking electronically. As such, many banks, based on their existing 24-hour telephone banking systems, have developed and implemented several important e-banking applications so that their customers now are able to pay bills, transfer money among accounts, check account history, download statement information, and computerize their chequebooks online all at easy and around the clock. E-banking which is gradually replacing the traditional branch banking system. Satisfied customers are central to optimal performance and financial returns. Customer awareness is necessary to identify the key success factors to survive in intense competition and increase the market share. Today, the concept of core banking has made 'Any where and any time' banking a reality. Along with technology, banking services have also evolved and the delivery of various banking products are carried out through the medium of high technology at a fraction of the cost to the customer.

ELECTRONIC BANKING SERVICES OF INDIA'S LARGEST COMMERCIAL BANK -SBI

Internet banking systems means that clients can now do banking at the leisure of their homes. Also known as online banking, the system allows both transactional and non-transactional features. Online banking allows customers to conduct financial transactions on a secure website operated by the virtual bank. State Bank of India offers a wide range of banking products and services to corporate and retail customers. Onlinesbi.com is the Internet banking portal for State Bank of India. The portal provides anywhere, anytime, online access to accounts for State Bank's retail and corporate customers.

Some of the most important services are, E-Ticketing is useful to book railway, air and bus tickets online through online SBI; SBI E-Tax is enables to pay TDS, Income tax, Indirect tax, corporation tax, wealth tax, estate duty and fringe benefits tax; Bill Payment is a simple and convenient service for viewing and paying bills online; RTGS/NEFT is useful to transfer money from State Bank account to accounts in other banks; E-Payment provide to pay insurance premium, mobile phone bills and also can purchase mutual fund units; Funds Transfer facility enables to transfer funds within accounts in the same branch or other branches; Third Party Transfer is useful to transfer funds to third parties by adding them as third party accounts. The Internet Banking application can generate an online, downloadable account statement for any accounts for any date range and for any account mapped to username. Online SBI enables to view Demat account statement and maintain such accounts etc.

Transaction speed: The advent of web technology constitutes a new medium of commerce which puts the customer in a position to directly and quickly interact with the web services of the bank and never communicate with any employees.

Security : Instead of a direct physical experience with the services or products, the virtual nature of the web medium seeks to retain traditional customer trust by graphic display.

User-friendliness: From the viewpoint of technology, ease of use is generally considered an important quality attribute in technical computer services accordingly; transactions conducted via traditional branch banking only involve communication with operators, increasing the importance of issues like ease of resource use and available help information. Obviously, user-friendliness sheds some light on the behaviour intention of Internet banking.

DIFFERENT TYPES OF ONLINE FINANCIAL TRANSACTIONS ARE

National Electronic Fund Transfer (NEFT)

National Electronic Funds Transfer (NEFT) is a nation-wide payment system facilitating one-to-one funds transfer. Under this Scheme, individuals, firms and corporate can electronically transfer funds from any bank branch to any individual, firm or corporate having an account with any other bank branch in the country participating in the Scheme. Individuals, firms or corporates maintaining accounts with a bank branch can transfer funds using NEFT. Even such individuals who do not have a bank account (walk-in customers) can also deposit cash at the NEFT-enabled branches with instructions to transfer funds using NEFT. However, such cash remittances will be restricted to a maximum of Rs.50,000/- per transaction. NEFT, thus, facilitates originators or remitters to initiate funds transfer transactions even without having a bank account. Presently, NEFT operates in hourly batches - there are twelve settlements from 8 am to 7 pm on week days (Monday through Friday) and six settlements from 8 am to 1 pm on Saturdays. As per the report on Digital Payments, prepared by the committee headed by former Finance Secretary Ratan P. Watal, suggests out sourcing electronic fund transfer systems like NEFT and RTGS and making the service available round the clock.

Real Time Gross Settlement (RTGS)

RTGS is defined as the continuous (real-time) settlement of funds transfers individually on an order by order basis (without netting). 'Real Time' means the processing of instructions at the time they are received rather than at some later time; 'Gross Settlement' means the settlement of funds transfer instructions occurs individually (on an instruction by instruction basis). Considering that the funds settlement takes place in the books of the Reserve Bank of India, the payments are final and irrevocable. The RTGS system is primarily meant for large value transactions. The minimum amount to be remitted through RTGS is 2 lakh. There is no upper ceiling for RTGS transactions. The RTGS service for customer's transactions is available to banks from 9.00 hours to 16.30 hours on week days and from 9.00 hours to 14:00 hours on Saturdays for settlement at the RBI end. However, the timings that the banks follow may vary depending on the customer timings of the bank branches.

Electronic Clearing System (ECS)

ECS is an alternative method for effecting payment transactions in respect of the utility-bill-payments such as telephone bills, electricity bills, insurance premia, card payments and loan repayments, etc., which would obviate the need for issuing and handling paper instruments and thereby facilitate improved customer service by banks / companies / corporations / government departments, etc., collecting / receiving the payments.

Immediate Payment Service (IMPS)

IMPS offers an instant, 24X7, interbank electronic fund transfer service through mobile phones. IMPS is an emphatic tool to transfer money instantly within banks across India through mobile, internet and ATM which is not only safe but also economical both in financial and non-financial perspectives.

Bharat Bill Payment System

Bharat Bill Payment System (BBPS) is an integrated bill payment system in India. Payments may be made through BBPS using cash, transfer cheques, and electronic modes.

Aadhaar Enabled Payment System [AEPS]

To make India as a cashless economy through digital or cashless transaction, Unique Identification Authority of India (UIDAI) will soon launch AEPS – Aadhaar Enabled Payment System in the form of android application which will be installed on the smart phones just like UPI app. This system will work like banking model for financial transaction at PoS (MicroATM) through business correspondent of any bank using Aadhaar authentication. Using this mobile based application you can do,

- Balance enquiry,

- Cash Withdrawal,
- Cash Deposit,
- Aadhaar to Aadhaar fund transfer

E- Wallet

E-Wallets are the digital wallets stored as an app in your smart phones. E-wallets stores or you may say link your credit and debit cards which you can use for digital payment. E-Wallets make your transaction faster because you don't need to enter your cards information again and again. This also overcomes the fear of lost your cards. There are three types of e-wallets are available in the market, Open Wallet, Closed Wallet, Semi-Closed Wallet.

UNIFIED PAYMENT INTERFACE (UPI)

(UPI) is another way of Digital payment service. UPI or Unified Payment System is a mobile application especially for Android users. This is a system that powers integration of multiple bank accounts into single mobile application. Almost every bank has UPI mobile app. UPI apps has many banking features, fund transfer, and merchant payment, etc. Currently UPI allows every bank to be registered as Payment Service Provider. UPI was launched by NPCI (National Payments Corporation of India) With RBI. UPI transfer cash using IMPS (Immediate Payment Service).

AWARENESS LEVEL AMONG RURAL CUSTOMERS

It is felt that offering good banking facilities in the rural areas is a vital for success of any banks especially SBI. The SBI and other commercial banks providing a lot of services to customers in the rural areas at the same time the level of awareness of the customers is not up to the mark. It is found that customers are having low level of awareness towards the E-banking services provided by the bank in the rural areas. Particularly most of the customers do not know the ranges of products and services offered by the banks and they do not benefit out of it. Even the employees themselves does not aware about E-banking services of banks. Bank customers are likely to adopt internet banking when it is easy to use. This shows that bank customers anchor their online banking adoption intention to the beneficial outcomes and ease of use process of the system.

BENEFITS TO CONSUMERS

- General consumers have been significantly affected in a positive manner by E-banking. Many of the ordinary tasks have now been fully automated resulting in greater ease and comfort.
- Customer's account is extremely accesses able with an online account.
- Customer can withdraw can at any time through ATMs that are now widely available throughout the country.
- Beside withdrawing cash customers can also have mini banks statements, balance inquiry at these ATMs
- Through Internet Banking customer can operate his account while sitting in his office or home. There is no need to go to the bank person for such matter.
- E banking has also greatly helped in payment of utility bill. Now there is no need to stand in long queues outside banks for his purpose.
- All services that are usually available from the local bank can be found on a single website.
- The Growth of credit card usage also owes greatly to E-banking. Now a customer can shop worldwide without any need of carrying paper money with him.
- Banks are available 24 hours a day, seven days a week and they are only a mouse click away

RISK INVOLVED IN E-BANKING

- Transactional risk
- Credit risk
- Liquidity Risk

- Legal Compliance Risk
- Strategic Risk
- Reputation Risk

CONCLUSION

The research report is useful to know the consumer awareness of E-banking system and what types of risk involved in E-banking system. The following are recommendation of this research :

1. Banking institution should have to aware the customer about the risk.
2. Most of the bank reluctant to give the information about e-banking. Banking institution should have to inform the customer through the aids & news papers.
3. Most of the respondent knows about the e-banking system. But they don't use it. Because they don't know about the procedure how to use it .so banking institution should have to aware the customer about the procedure of e-banking system.
4. Some services of e-banking are very complicated. Banking institution should have to develop user friendly services.
5. Customer should have to know about the security during the use of e- banking system,

E-banking in India is in budding stage with the high penetration of electronic as a growth driver. The use of e-banking is win-win proposition for both banks and banks customers. India has a long way to rich the level of e-banking; however it is an easier path to tread now as the security standard and the transaction protocols have been developed and tested. This research paper also gives opportunities to conduct the further development in e-banking and helps to the banking professional.

The study found that the consumer's awareness in India about the services provided by the banks is less, particularly regarding all internet banking services the awareness is very low in the rural area. It is suggested that The Banks should launch campaign to educate and create awareness to consumers. Instead of merely displaying the information in the branches through posters and banners, media could used intensively for this purpose in local language. Further It is suggested that the banks has to initiative necessary measures to increase the awareness level through awareness programmes in the rural areas and the bank has to concentrate more on Promotional measures through agents, banks' services, advertisement and merchant establishments are the sources of information and awareness providers for bank customers.

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E-COMMERCE IN INDIA: ACCELERATING GROWTH AND FUTURE PROSPECTS

Dr. R. Lokeshkumar and E. Maruthavani

ABSTRACT

Online business is playing one of the fundamental part in business alternatives and encourage investigate later on. Internet business is concerning the outlook change in the business world for exchanging. Gauge of E-Commerce is demonstrating unprecedented prospects in business development of Indian Economy. The user's base of web based shopping is enlarged by utilizing web of things (IOT) and cell phone applications. Thus the Indian web based business has seen energizing development since couple of years. It contemplating India's statistic installment framework and expanding web availability, the E-Commerce business is growing up to more noteworthy statures. Be that as it may, India's general retail opportunity is generous, the online business is tormented with some basic difficulties. Subsequently in going to current examination has been done to portray the current condition and the future forthcoming of web based business in India. It encourages to break down the present patterns, investigate the difficulties and chances of online business in India.

Keywords: E-commerce, Trading Indian Economy, customers, online shopping, Internet of Things

INTRODUCTION

E-commerce remains for electronic commerce. It means dealing in merchandise and services through the electronic media and internet. The fast development of e-commerce in India is being driven by greater customer choice and improved convenience with the help of internet the vendor or merchant who sells items or services directly to the customer from the gateway utilizing a shopping basket system or computerized truck and permits payment trough debit card, credit card or electronic store transfer payments. In the present scenario e-commerce market and its space is increasing in demand and also an impressive show or range of a specific type of services. E-commerce is already

appearing in all areas of business, customer services, new item development and design. E-commerce business is developing in India because of wide range of item with least price wide range of suppliers and customers internet. In this modern era every business units need to join online business because increasing proportion of internet users in India. E-commerce in India is still in developing stage however it offers considerable opportunity [1].The purchasing and selling of items and services by businesses and customers through on electronic medium, without utilizing any paper documents. E-commerce is widely considered the purchasing and selling of items over the internet, however any exchange that is completed solely through electronic measures can be considered e-

commerce. E-commerce is subdivided into three-categories: business to business or B 2 B (Cisco), business to consumer or B 2 C (Amazon) and Consumer to consumer C 2 C (eBay)[2][3].

Categories of E-commerce –Based on the parties involved in the exchange, e-commerce has been categorized into the following applications – B2B (Business to Business) – It encompasses all the electronic transactions between two organizations. Dealings between industrial manufacturers and distributors, partners, wholesalers and retailers, i.e every exchange which involves businesses at both the ends, comes within the spectrum of B2B e-commerce. B2C (Business to Consumer) – Though, the size of B2B e-commerce is almost six times the size of B2C in India, and is expected to reach $700 billion by 2020 (Shankar, 2016), it is the idea of B2C that an average customer holds with respect to e-commerce transactions. It involves the sale of goods and services by a vendor to the end consumers, through a website utilizing shopping cart software. C2C (Consumer to Consumer) –It includes all transactions of goods and services between consumers and doesn't form a significant portion of e-commerce. For example, an online portal can be provided by a third party like ebay, which can be used by consumers to put secondhand goods for auction or conduct other transactions. C2B (Consumer to Business) – Like B2C, C2B model also involves the interaction between business and consumers but with their roles reversed; it is the consumer who creates value for the business and gets paid for the same. The objectives of present study are: To

analyze the present trends & opportunities of e- commerce in India. To examine the barriers of e-commerce in India.To find out the growth factors of e-commerce in India.

RESEARCH METHODOLOGY

The Process used to collect information & data for the purpose of making business decisions. The methodology may include publication research, interview, surveys & other research techniques & could include both present & historical information.

THE DESIGN

The researcher has used just secondary information that has been collected from different articles, diaries, books, websites etc. It have been used to contemplate the evaluation, conceptual framework, definition, key players, present trends, future prospectus and barriers of e-commerce[3]. The researcher additionally used quantitative research that is the systematic empirical investigation of variables phenomena by means of measurable and mathematical, theories pertaining to phenomena all the information included is the secondary base and proper references have been given wherever necessary.

THE OUTCOMES

India has an internet user base of around 354 million as of June 2015. 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 however is developing substantially faster, including around 6 million new entrants every month [5]. The business consensus is that development is at an inflection point. In India, money down is the most preferred payment method, collecting 75% of the e-retail activities. Demand for international consumer items (counting long-tail items) is developing considerably faster than in-nation supply from authorized merchants and e-commerce offerings. Starting at first Quarter, 2015, seven Indian e-commerce companies have managed to achieve billion-dollar valuation. Viz. Flipkart, Snapdeal, InMobi, Quikr, Amazon India, Ola Cabs, and Paytm.

India’s overall retail opportunity is substantial, and coupled with a demographic dividend (young population, rising standards of living and upwardly mobile middle class) and rising internet penetration, strong growth in E-commerce is expected. From an investment perspective, the market is a primarily minority stake market, with maximum traction in early-stage deals. Such early stage funding will help companies develop a strong foundation to start from. With such strong market prospects and an equally upbeat investor community, we look forward to many more E-commerce companies from India entering the coveted billion-dollar club.

THE GROWTH OF CURRENT MARKET

India's e-commerce market was worth about $3.8 billion of every 2009, it went up to $12.6 billion out of 2013. In 2013, the e-retail segment was worth US$2.3 billion. Around 70% of India's ecommerce market is travel related. As per Google India, there were 35 million online shoppers in India in 2014 Quarter 1 and is expected to cross 100 million check by end of year 2016. Compound Annual Growth Rate (CAGR) opposite a worldwide development rate of 8–10%. Electronics and Apparel are the biggest categories in terms of sales [4]

KEY DRIVERS IN INDIAN E-COMMERCEARE

- 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.
- 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 consumers buying and selling second-hand goods.
- Evolution of Million-Dollar startups like Jabong.com, Saavn, Make my trip, Book my show, Zomato Flipkart, Snapdeal Etc.

With the entry of E-Commerce behemoths such as Amazon and Alibaba, the competition is expected to further intensify. Both these international players come with deep pockets and the patience to drive the Indian E-Commerce market. Also, their strong domain knowledge and best practices from their international experience give them an additional edge. Additionally, these companies have been part of markets where they have seen the E- Commerce market evolve and are aware of the challenges and strategies to address issues thereof.

PROBLEMS AND PROSPECTS OF E-COMMERCE

Web based business has progressed significantly since its origin and is just getting greater. As innovation keeps on developing quickly, web based business retailers are embracing more up to date strategies to encourage merchants and purchasers to offer and purchase online all the more proficiently, on account of consistently dropping rates of web surfing – both for web and versatile interfaces – which is complimenting to the taking off populace of web clients. It has consequently turned into the key constrain behind driving the pattern for internet business. The ascent of interpersonal organizations and mass selection of cell phones is going about as an impetus to quicken this drive further, forming the online business patterns for the Indian market [11]. Buyers are more associated than any time in recent memory and have more data and decisions readily available today. They are abandoning their inclinations, conduct and interests, which make an information ground for web based business organizations to investigate conduct example and offer all the more intriguing and focused items. The expansion of this computerized action and coming about information is an animating variable for conceiving internet business techniques, consequently influencing the plan of action and driving development for web based business players in the Indian market [12]. Give us a chance to build up all the more understanding considering the present situation and in locating a portion of the forthcoming patterns in this space.

CRITICAL HEALTH OF SECTOR

Losers and gainers According to an examination by Accel Partners, online shopping of physical merchandise in India will develop to US$ 8.5 billion of every 2016 and the number of online shoppers in India will be more than double to 40 million[3]. The internet user base is predicted to increase to 300 million by 2015. Does that mean that e-commerce is here to stay, and every little and huge fish will survive? That won't not be the situation. The ones that show potential to succeed are international deep-pocket incumbents who have experience, concepts and variety of offerings, and tend to develop at a quick pace as compared to the other existing players in the Indian market. Even Indian e-commerce players are making a decent attempt to acquire comparative concepts as their international competitors. They are attempting to bring impending and imminent combination, which is evident from the probable mergers of India's biggest e-commerce players.

MARKET AND TECHNOLOGY TRENDS OF E-COMMERCE IN NEAR FUTURE

Price has been the commanding element in the Indian market and the customer is not hesitant in changing brands frequently to benefit the lucrative offers presented by competing brands. There is a considerable measure that e-commerce players in India would have to do to make their customers feel special to retain them, as the devotion erodes quick when the shopper is confronted with advancements and deals. Recognizing what your customers need and offering them in like manner can drive this, which is possible by utilizing huge information techniques to predict consumer preference and behavior.

Logistics of The Retailers

The supplier list is set to grow, with a number of businesses and individuals looking to join the e-Commerce bandwagon. The customer/buyer has become the focal point for e-Commerce players. In this background, enablers such as logistics players and call centers are widening and evolving their offerings to align them with the strategies of e-Commerce players [14]. To gain an edge and differentiation power, all the key stakeholders are engaging in innovation to provide a rich experience to their customers. These stakeholders coordinate among each other to facilitate the three main flows in an e-Commerce transaction:

- Product flow: movement of goods from suppliers to end consumers through e-Commerce and logistic players
- Information flow: Information transmission of orders from customers and subsequent information flow of order status through the value chain

- Monetary flow: payments from consumers to e-Commerce players and/or suppliers and vice-versa through financial intermediaries

OFFERINGS ANDOPTIONS TO IMPROVING THE CUSTOMER EXPERIENCE

With the advent of technology, online retailers are devising attractive delivery alternatives, for example, same-day delivery or delivery inside 60 minutes, perks on purchasing from mobile applications, and attempt @ home @ your entryway for consumers that are leading improved customer experience. To further improve customer experiences, we may likewise see reception of international practices, for example, computerized or experiential stores and showrooms, fly up and fulfillment stores and drones that will fascinate the Indian market. The other technologies that will affect these trends and help shape the e-commerce business include:

Big Data applications

To gain, retain and attain more customers, online retailers would have to leverage technology to the fullest, and by developing strategies through analytics produced using big data will help in making customers feel special and increase brand loyalty. With the increasing adoption and use of Smartphone's, businesses are able to collect large amount of data on consumers, which can be further utilized to do target based marketing and advertising.

Mobile Application

Brands have taken the mobile advertising route and are gradually picking up. Online retailers have realized the potential increase of online shoppers through their mobile phones in future[4]. And as consumers grow more comfortable with using mobile devices for browsing and shopping, they are now more open to getting messages from brands via their mobiles. Businesses are implementing strategies for integrating mobile into their marketing campaigns and before they do that, they will have to make efforts to optimize legacy websites for mobile in order to improve customer experience [19]. This is where responsive design will come into play. Fixing the mobile clicks is imperative as an unresponsive design may lead to the customer abandoning the site in a few seconds causing a low conversion rate and poor return on investments.

Social Media

Another important consideration is the social aspect and marketers have realized its importance very well. Product and service feedback via social media channels have an impressionable effect on the minds of the larger customer base.

ADVANTAGES OF E-COMMERCE TOCONSUMERS

The distinct advantages e-commerce can offer to the consumers include but are not confined to the following only :Consumers have a much wider choice available on the cyber market[6].They bear lower costs for products due to increased online competition among sellers. Because of wide-scale information dissemination, consumers can compare products, features, prices and even look up reviews before they select what they want. They enjoy wider access to assistance and to advice from experts and peers. They enjoy saving in shopping time and money. Consumers also avail of fast services and delivery of products and services. They also have the convenience of having their orders delivered right to the doorstep. Finally, consumers are driven toe-shopping in hordes as even branded goods cost less on the Net.

ADVANTAGES OF E-COMMERCE TO SUPPLIERS

The major advantages that e-commerce can bring to the companies/suppliers are:

Minimization of Inventor 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.

Improvement in 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 [18]. High quality customer relationship called" "customization" is crucial for retaining customers 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 [7] 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.

Distribution costs Red cement

The Electronic Data Interchange (EDI) based on Organization for Economic Co-operation and Development (OECD) [12]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.

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 [15]. is 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.

CHALLENGES &OPPORTUNITIES

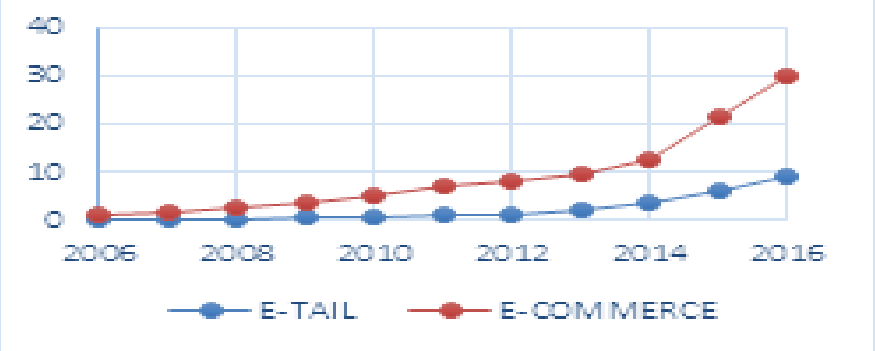
Backed by increased online user base & mobile phone penetration, Indian e-commerce has seen impressive growth in the last few years. Considering India's demographic dividend & rising internet accessibility, the sector is slated to scale greater heights. Although, India's overall retail opportunity is substantial, the sector is beset with some serious challenges. We take into the current e-commerce landscape & the sector's key drivers &challenges.

India's Growth Potential

Since the e-commerce industry is fast rising, changes can be seen over year. The sector in India has grown by 34% (CAGR) since 2006 to touch $16.4 bn in 2016. The sector is expected to be in range of $22 bn in 2016 as shown in figure1

Figure 1:The growth of the e-commerce sector in India-2016

YEAR	E-TAIL	E-COMMERCE
2006	0.2	1.2
2007	0.3	1.8
2008	0.4	2.5
2009	0.5	3.8
2010	0.7	5.3
2011	1	7
2012	1.4	8.2
2013	2.1	9.6
2014	3.6	12.5
2015	6	21.4
2016	9	29.8



Factors that will fuel growth

A significantly low (19%) but fast-growing internet population of 243 million in 2016 as shown in Table 1 is an indicator of the sector's huge growth potential in India. Also it illustrates the percentage % of internet penetration as percentage of population as shown in Figure 2 with geographical distribution of Internet users in India as showing in 3 for the details [16].

Table1: Internet users by country (Asia) 2016

Country Name	Internet Users by Country(Asia) :in Million
China	731.2
India	462.1
Indonesia	132.1
Japan	118.4
Bangladesh	67.2

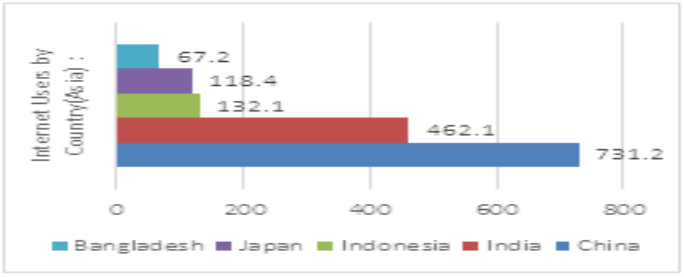
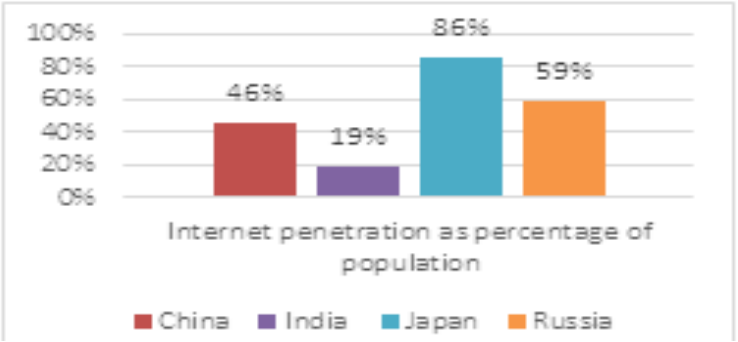


Figure 2: Internet penetration as percentage of population

Country Name	Internet penetration as percentage of population
China	46%
US	87%
India	19%
Japan	86%
Russia	59%



CHALLENGES IN THE E-COMMERCE SECTOR

Figure 3: Geographical distribution of Internet users in India

Year	Penetration (% of Pop)	Population Change
2016	34.80%	1.20%
2015	27%	1.22%
2014	18%	1.23%
2013	15.10%	1.26%
2012	12.60%	1.29%

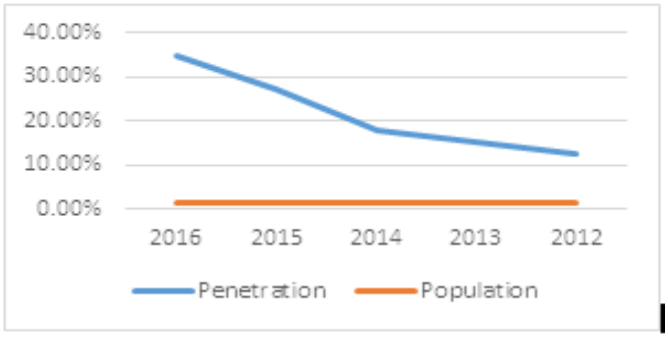
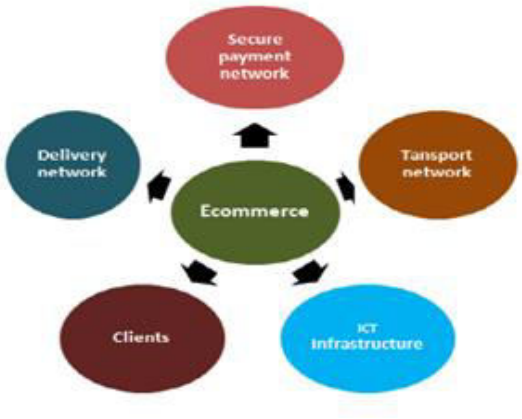


Figure 4: E-Commerce Challenges in Delivery



While the growth in this sector excited entrepreneurs & financial investors alike, some serious challenges are beginning to weight down on the sector [17]. E-commerce players in India need address eight key aspects of their business, both internal &external.

CONCLUSION

E-commerce is changing the way of buying & selling of product & services in India. E-commerce 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 e-commerce. 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.

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E- COMMERCE IN AGRICULTURE INPUT INDUSTRY: PROBLEMS AND PROSPECTS

Gautam Parmar, Swati Sharma, Alpesh Leua and Ruchira Shukla

ABSTRACT

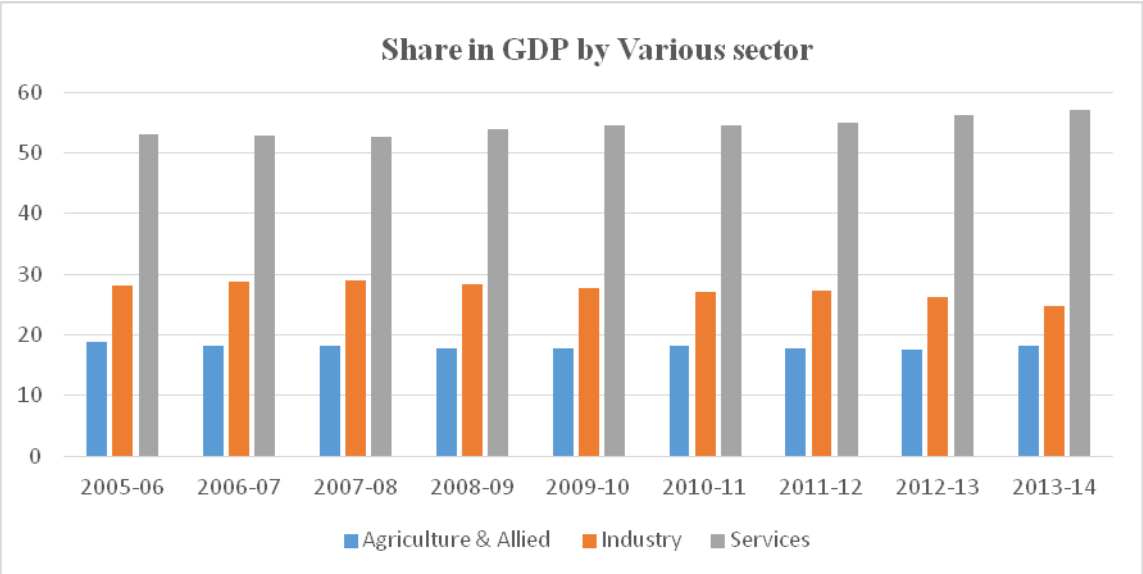
India holds the 2nd largest agricultural land in the world. The agriculture sector plays a significant role in Gross Domestic Product (GDP) in the country. For the majority of rural population agriculture is way of livelihood. Application of new and contemporary information and communication technologies (ICTs) for agricultural development in India has been evolving rapidly in past few years. The role of ICT in agricultural development is going to be significant in future initiatives for transforming agricultural. The one of the way can be application of E-commerce for agricultural inputs. Agricultural inputs includes seed, fertilizers, agrochemicals, farm machinery etc.. Most of the agriculture inputs are having time specific as well as derived demand. The supply chain of agriculture input industry is lengthy and there are various middleman plays role in it. Addition to this, the agriculture input industry facing problems of demand-supply gaps, improper distribution, spurious products, usage and dosage recommendation, The application of e-commerce to Agriculture input industry may help out to overcome such issues on one or other way. The e-commerce market in India was estimated at USD27.5 billion in 2016, and is expected to grow at a CAGR of 31 per cent to touch USD80 billion by 2020. The application of e-commerce in agriculture input industry may face certain problems and prospects. The increase in internet penetration, increase mobile tele-density, improvement in infrastructure, young India are some prospects for e-commerce while the problems which may face by players are proper agriculture information, nature of agriculture inputs, illiteracy, wide geographic area, distraction of youth from farming, infrastructure and security. The present paper discuss on the such problems and prospects of E commerce in Agriculture Input Industry

Keywords: Agricultural Input, E-Commerce, Indian youth in Agriculture, Information Technology in Agriculture

INTRODUCTION

INDIAN AGRICULTURE SCENARIO

Agriculture has played a critical role in the Indian economy and society for thousands of years. It is considered as backbone of Indian economy. According to IBEF report 2017, India holds the 2nd largest agricultural land in the world (157.35 million hectares). With 20 agri-climatic regions, all 15 major climates in the world exist in India. The country also possesses 46 of the 60 soil types in the world. In FY 2016, total food grain production in India was recorded at 253.16 million tonnes, which Increased to 273.83 million tonnes in FY 2017 and it is expected to reach Food grain Production 280.6 million tonnes in 2020-21.



http://statisticstimes.com/economy/sectorwise-gdp-contribution-of-india.php

The agriculture sector's contribution to the Gross Domestic Product (GDP) decreased from 54% in 1950-51 to 18.2 % in 2013-14, while that of the services sector increased from 30% to 53%. While the agriculture sector's contribution to GDP has decreased over the past few decades, the contribution of sectors such as manufacturing (employing 10.5% of the population) and services (employing 24.4% of the population) has increased.

India secure 1st position in the production of Milk, Jute, Turmeric, Chilli pepper, Ginger , Cumin, lemon, Mango, Banana, Pulses, Millets while securing 2nd position in the production in Tea, Cotton, silk, cardamom, walnut, peanut, cashew nut, sugar cane, rice, wheat and tobacco.

OVERVIEW OF AGRICULTURE INPUT INDUSTRY

Agricultural inputs covers not only crop related inputs like seed, fertiliser, and crop protection products but also seedlings, feeds, crop nutrition, and farm implements and machines which support crop production. The Indian seeds market reached a value of more than US$ 3 Billion in 2016, exhibiting a CAGR of around 17% during 2009-2016. The Indian seeds market is further expected to grow at a CAGR of more than 15% during 2017–2022, reaching a value of more than US$ 7 Billion by 2022. (http://www.imarcgroup.com/seed-industry-in-india). According to FICCI – Agriculture report, 2015, Farm mechanisation in India stands at about 40-45 percent. This is still low when compared to countries such as the US (95 percent), Brazil (75 percent) and China (57 percent). Overall industry estimated at approximately US$ 6.5 billion. According to care rating report Currently, India is the fourth largest global producer of pesticides with an estimated market size of around $4.9 billion in FY17 after United States, Japan and China. At present the Indian agricultural input industry is facing challenges of lack of quality, availability, accessibility and affordability for agricultural-inputs. The growth of Indian agriculture heavily depends on improving the quality and availability of inputs for the farmers. In this regard E-Commerce could help in boosting the growth of Indian agricultural input industry and overcoming the challenges faced.

ROLE OF INFORMATION TECHNOLOGY AND E-COMMERCE IN AGRICULTURE

Information technology has brought changes in various sectors. The application of information technology in the various aspects of agriculture may bring needed changes in agriculture. Broad basing agricultural extension activities; developing farming system research and extension; having location-specific modules of research and extension; and promoting market extension, sustainable agricultural development, participatory research, etc. are some of the numerous areas where ICT (Information and Communication Technology) can play an important role. ICT can also play an important role in bringing about sustainable agricultural development when used to document both organic and traditional cultivation practices (Shaik. N. Meera et.al 2004). Supply chains are principally concerned with the flow of products and information between supply chain member organizations—procurement of materials, transformation of materials into finished products, and distribution of those products to end customers. In case of agriculture inputs the products flows from company/government/ producer to the farmers via various middleman. The Supply Chain not only includes the producer and its suppliers, but also, depending on the logistic flows, transporters, warehouses, retailers, and consumers themselves. (FAO, 2007). The agriculture supply chain is an important area where ICT can bring significant change.

E-COMMERCE

The E-commerce refers to the use of the Internet to market, buy and sell goods and services, exchange information, and create and maintain web-based relationships between participant entities (Fruhling and Digman, 2000). According to KPMG Report 2016, the e-commerce market in India was estimated at USD 27.5 billion in 2016, and is expected to grow at a CAGR of 31 per cent to touch USD80 billion by 2020.

PROSPECTS OF E-COMMERCE IN INDIAN AGRICULTURAL Input Industry

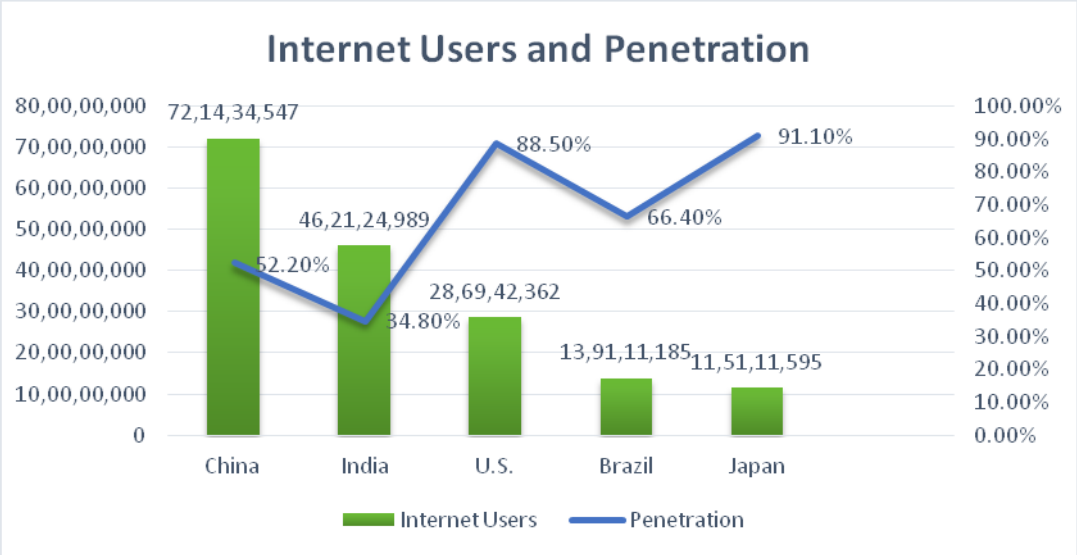
E-commerce in India is at nascent stage but there are ample opportunities lying ahead to the robust growth of E-commerce in Indian agriculture, like e-commerce for agriculture inputs, agriculture produces and agricultural services area. The various prospects of Indian Agricultural Input Industry are:

INTERNET PENETRATION

E- Commerce works on the platform of internet. According to IAMAI & KANTAR IMRB Report, 2016, As on December 2016, India had estimated 432 million Internet users. In Urban India, the Internet User base has

grown by 7% from Oct 2015 to Oct 2016 to reach an estimated 263 million. It is expected to grow to reach user base in a range of 275 - 285 million by June 2017. In Rural India, the Internet users have grown at the rate of 22% between Oct 2015 and Oct2016, to reach an estimated 157 million. The numbers are expected to reach in the range of 170-180 Million by June 2017

Fig-2 Internet Usage and Internet Penetration (Top 5 in terms of Numbers of Users)



Source: http://www.internetlivestats.com/

As shown in figure the china has highest numbers of internet users with penetration rate of 52.20 % while India secured second rank in numbers of internet users with penetration rate of 34.80 %. The penetration of Internet will enhance the growth of E-Commerce.

INDIAN YOUTH DOMINANCY

India is dominated by young generation. India has the world's highest number of 10 to 24-year-olds, with 356 million. (UNFPA Report, 2014). The Indian youth coming from urban and rural both area. The young people adopt the technology easily. Young workers are better able to adapt to new technologies. (Weinberg, 2004) .The youth who will enter in farming business will likely to adopt the mobile and other technology. According to KPMG report 2016, in the coming years, potentially 40 million shoppers in the age group of 19 to 24 years are expected to spend time and money online. These youth bracket may adopt the technology and mechanization at farm level which will help out to increase productivity, since Indian agriculture facing one of the major issue of productivity.

QUALITY AND GENUINE PRODUCT CAN BE DELIVERED TO THE FARMERS

The Indian agriculture input have major issue from spurious products, According to pesticides industry body, Agrochemicals Policy Group (APG), spurious and substandard pesticides accounted for ~40% of the pesticides sold in India in FY12. These products not only failed to kill pests but also inflicted damages on crops. (FICCI report on Agro-Chemical,2013). The illiteracy, price and supply- demand gaps are playing vital roles in spreading spurious products. By e- commerce the agricultural input producer can easily reach to farmers and vice versa, addition to that players can ensure them to quality products and can pass on monetary benefits to farmers which are generated with reducing channel members form entire supply chain.

INCREASE IN COMPUTER, MOBILE AND INFORMATION TECHNOLOGY PENETRATION

Many agriculture input companies are using computer, laptop, tablet, and smartphone for extension of services and products. More than half of the total 1.2 billion population of India falls under the 'below 25 years of age' bracket. Also, 65.0 per cent of India's population, representing the working age group of 15 to 64 years, would aid the further growth of e - commerce, driven by their rising disposable income. (IBEF report, 2013). These youth brackets are easily adopt the technology, which will help to e-commerce players to do easy entry in agricultural input segment.

MOBILE APPLICATION

A mobile app is a software application designed to run on mobile devices such as smartphones and tablet computers. The E – Commerce players are developing various applications which may use on mobile which will provide users ease and convenience. While the overall tele-density is 81.8%, the mobile tele-density is also high at 79.8% as of November, 2015 in India. Smartphone penetration in India is expected to grow to 520 MN by 2020, making India one of the largest smart phone economies in the world. (Ernst & Young Global Limited report,2016). According to a report by venture capital firm KPCB, India has the highest share of mobile based e-Commerce sales globally at 41%. The agriculture input players can get benefit of these network by creating application for e commerce in agricultural input.

CASH ON DELIVERY AND FREE SHIPPING

According to Ernst and Young report on rebirth of e commerce in India, Cash-on-delivery has been one of the key growth drivers and is touted to have accounted for 50% to 80% of online retail sales. The cash on delivery and free delivery will provide convenience and also reduces the chance of online frauds. Thus, the cash on delivery will prompt farmers to try this new channel of agriculture input which can help players in creating positioning in farmers mind.

CHALLENGES

At present the e-commerce in Agriculture is facing challenges like

Very Vast Geographic Area

India is land of villages, As per census 2011, India has 26 states in which there are more than 6 lakh villages covering arable land area of 159.7 million hectares (394.6 million acres) is the second largest in the world. To cover the vast area especially villages where agriculture in predominant activity for livelihood. The e commerce deals in agriculture input have difficulty in maintaining supply chain.

Information on Agriculture

Information plays a vital role in the Agriculture. The information requires on Projection of area to be covered by seed variety, expected output prices, rainfall behavior, pest attack and other related aspects. Agriculture input demands are derived demand. It is largely depends on whether condition and type of crop farmers have selected along with other factors. The right information in agriculture become difficult due to vast geographic area, various climatic zones and various crops and its varieties. These information are also important for E-commerce players to make decision related to inventory and other operation.

Illiteracy

According to census 2011, India have 74.04 percent literacy rate, the urban area has 85 percent literacy rate where as rural area has 68.9 percent literacy rate. Since the e commerce carried out on digital platform, the literacy rate plays a significant role. Lack of user capability and digital illiteracy (in addition to language illiteracy) to be main barriers to the e-commerce.

Distraction of youth from farming

Indian youth constituting to 28% of the Indian Population are with huge drawback in accepting agriculture as their profession because of less Knowledge, awareness, interest in adoption and middlemen role in marketing of agricultural products leading to less profit. (Chandra Shekara, 2016)

Youth's access to knowledge and information is crucial for addressing the main challenges they face in agriculture. In order for rural youth to shape agricultural policies affecting them directly, in terms of access to markets and finance as well as green jobs and land, they need to receive appropriate information and education. (FAO, 2014)

Delivery Time

Need of agriculture input requires on specific time period, the need of inputs depend on the various factors mainly weather. The delivery time play crucial role in the demand of agriculture input.

Cyber Security

E-commerce security is the protection of e-commerce assets from unauthorized access, use, alteration, or destruction. (Maurya and Bharti, 2016). Today's organizations are heavily depends on technology and e-

communication. The security in the network of the organization is important concern. Security is dominant factor which affects consumers to shop online. However many internet users avoid online shopping because of credit card fraud, privacy factors, non-delivery risk, post purchase service and so on (Qinghe et.al, 2014). The dosage and usage are important for agricultural input to work effectively as well as the timely delivery is also crucial and in such scenario non delivery risk, post purchase services and guidance on usage practices and dosage can play significant role for e-commerce players in agriculture.

Infrastructure (Speed of data transfer, Coverage, Logistics)

Around 70 % population of India lives in rural area. According to TRAI press release data, out of 1102.94 total telephone subscribers 460.47 (41.76%) are from rural. The Urban Tele-density is 160.50 compare to Rural Tele-density 52.43. The internet penetration is low in rural area. Very low bandwidth, Interrupted internet connectivity and low income are some reasons of poor Internet Access in rural area. (Anooja, 2016). According to ASSOCHAM and PWC report, Logistics in developing economies such as India may act as the biggest barrier to the growth of the e-commerce industry.

New Initiatives

There are various players who have started the selling agricultural input on online platform. The few players are kishanpoint, Agro star, Farmguru, Krushikendra, Agricart.

CONCLUSION

The agriculture plays vital role in development of nation. Agriculture is very important activities for the country like India having second largest population. The Indian agriculture is facing various problems. The information technology can help out to solve certain issues. The E-commerce refers to the use of the Internet to market, buy and sell goods and services, exchange information. The application of e-commerce in agriculture input industry may face certain problems and prospects. The increase in internet penetration, increase mobile tele-density, improvement in infrastructure, young India are some prospects for e-commerce while the problems which may face by players are proper agriculture information, nature of agriculture inputs, illiteracy, wide geographic area, distraction of youth from farming, infrastructure and security.

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E-COMMERCE IN INDIA: OPPORTUNITIES AND CHALLENGES

Dr. Rana Zehra Masood

ABSTRACT

Electronic commerce is a type of business replica or part of a larger business model which enables a firm or an individual to carry out business over an electronic network. E-commerce is the movement of business onto the World Wide Web. E-commerce is basically 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. 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. 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.

E-commerce provides multiple benefits to the consumers in form of availability of goods at lower cost, wider choice and saves time. It involves conducting business using modern communication instruments: telephone/mobiles, fax, e-payment, money transfer systems, e-data interchange and the Internet.

This paper explains the concept of e-commerce, business models for e-commerce; it further highlights various trends, key challenges and opportunities of e-commerce in India.

Keywords: E-Commerce, Trends, Opportunities, Challenges, India

INTRODUCTION

The E-commence business in India is witnessing an exponential growth at present and is expected to increase by leaps and bounds. E- Commerce has led to a shift in the business environment in the world including India. It refers to expansion of the business market and maintaining the relationship with the customers by using telecommunication networks. Currently, the E-commerce industry is the most prominent and rewarding industry in India. People have very well adapted the concept of buying products online and are interested in checking out things online and buying them.

Shopping on the Internet is convenient as there is no time restriction, it is comfortable since it is in a user friendly environment and there is also an instant satisfaction of ordering, paying and delivering. A one-to-one basis, as well as, a two way communication with customers through the Internet is possible. Enhancing brand image, creating awareness and providing customer service are more important than just selling the products or entertaining customers. With better technologies, companies can create a stronger brand image and thus increase sales. On the other side, it is easier for customers to receive a kind of acknowledgement; feeling that they did not waste their time. Nowadays, people live a busy life and shopping online is not time consuming for them. The company also saves time since whenever a customer uses his/her credit card to purchase a product. E-marketing is seen as a promotional as well as informational tool. This new era of commerce is beneficial for marketing logistics, a global presence, to establish and maintain a competitive edge, shorten components of supply chains, for cost savings and research advantage in India. Therefore, the E-commerce business owners focus on having the most perfect website and a wide range of products to choose from. One can notice that the online stores in India are increasing and multiple products can be bought online; gradually, this focus is going to shift towards the niche categories as well.

The companies like Ebay, myntra, flipkart, quikr, olx have established their name in the Indian e- commerce market. All these sites are selling varieties of products, movies tickets, electronic gadgets, accessories, household items and much more. This is a strategy which aims at payment only after the complete satisfaction of the customer. In this strategy the customer first receives the ordered product and he/she pays. This has been found quite successful in India. If any problem is found in the product ordered, then it gets replaced within few days. Earlier the customers had to do advance payment which was not favourable in the

interest of the customer as many complaints were reported in the goods which they ordered. So in this way the companies are trying to attract the customers towards themselves to increase their sales. Cash on delivery is done by Credit Cards, Debit Cards, Net banking, ITZ Cash Cards, Cheques, Demand Drafts or cash.

Internet growth has been regarded as the main cause of the new developments, such as decreased margins for companies as consumers turn more and more to the internet to buy goods and demand the best prices. E-commerce provides various benefits to the consumers as goods are available at lower cost, variety of choices are available and the tie of buyer is also saved. People can buy goods and services at a mere click of the mouse button without moving out of their houses or offices. Similarly online services such as banking, ticketing (including airlines, bus, railways), bill payments, hotel booking etc. have been proved a boon for the customers. Online businesses like financial services, travel, entertainment, and groceries are all on the verge of expansion. In the e commerce process the customer browses through internet to get the information about the desired product/services. When the customer is completely satisfied by product's features, its advantages after comparing it with other products then the order is placed for the desired product/services. Online transaction is done and then the selling company informs the customer about the payment and the delivery date is given. The Online Travel Industry is also one of the biggest segments in e-commerce in India and is booming due largely to the Internet-savvy urban population. The online travel industry includes some private firms such as Make my trip, Clear trip and Yatra. The Government has also started IRCTC, which is a successful Indian Railways initiative. The online classifieds segment is also increasing. It is broadly divided into three sectors; Jobs, Matrimonial and Real Estate. Mobile Commerce is also growing rapidly and proving to be a stable and secure supplement to e-commerce due to the record growth in mobile user base in India, in recent years.

OBJECTIVES OF THE STUDY

The paper has following objectives:

- To elucidate the concept of E-Commerce.
- To study Business models of E-Commerce
- To analyze the present trends & opportunities of E-commerce in India.
- To study various challenges faced by E-Commerce in India.

LIMITATION OF THE STUDY

The study has been conducted only by collecting the secondary data.

METHODOLOGY OF THE STUDY

The present study is conceptual with exploratory cum descriptive in nature. It is based on the analysis of secondary data. The secondary data is availed from various journals, magazines, research article, e-books and websites.

EVOLUTION OF E-COMMERCE

The introduction of internet in India in 1995 marked the beginning of the first wave of e-Commerce in the country. Moreover, Economic liberalization after the launch of reforms in 1991 attracted MNCs and brought about the growth of the IT industry. The implementation of liberalization policies led to the demise of the license regime, and high taxes and import restrictions, as well as facilitated the growth of SMEs. The IT industry and SMEs were the early adopters of internet. This led to the emergence of B2B, job searches and matrimonial portals.

- **B2B directory:** India's first online B2B directory was launched in 1996. The liberalization of the country's international trade policies was the key factor that accelerated the growth of B2B online portals. It enabled buyers and sellers to easily connect with their global counterparts.
- **Online matrimonial:** In 1996, the first online matrimonial portal was launched in India. A concept unique to India, online matrimonial portals transformed the perception about the matchmaking process from "marriages are made in heaven" to "marriages are made in cyber space." Such portals have now evolved to cater to various segments of the population such as NRIs, H1B visa holders, widows or widowers, divorcees and other special groups.

- **Online recruitment:** India's online recruitment industry took shape in 1997. The growth of the services sector, following the launch of economic reforms in 1991, resulted in the creation of additional jobs. In this background, internet proved to be an efficient medium that allowed employers and job seekers to connect. Prior to job portals, weekly government magazines such as *Employment News* and newspaper notifications were the primary means for employers and job seekers to interact.
- **Online travel:** The decision of LCCs to sell their tickets online and through third parties enabled the development of Online Travel Agents (OTAs). Prior to the entry of LCCs in 2005–06, air travel was considered a luxury meant only for the rich and for corporate travel. LCCs changed the scenario by making air travel affordable for a large number of people. They developed their own websites and partnered with OTAs to distribute their tickets online and, thus, contain costs. The Indian Railways had already implemented the e-ticket booking initiative by the time LCCs commenced their online ticket booking schemes.
- **Online retail:** The growth of online retail was partly driven by changing urban consumer lifestyle and the need for convenience of shopping at home. This segment developed in the second wave in 2007 with the launch of multiple online retail websites. New businesses were driven by entrepreneurs who looked to differentiate themselves by enhancing customer experience and establishing a strong market presence.
- **Group buying:** Starting in 2010, the group buying and daily deals models became a sought after space for entrepreneurs in India, emulating the global trend. Group-buying sites have seen a significant rise in the number of unique visitors and membership.
- **Social networking actively used by organizations to reach out to customers:** Social networking gained steam in the Indian online space. It has gone on to become an integral part of people's lives. Initially used for staying connected with friends, social networking websites have now emerged as an anchor in any company's digital strategy. Termed as social commerce, it is a key avenue for e-Commerce players to reach out to target customers. Companies have started establishing their presence in the social media space for branding activities, connecting with customers for feedback and advertising new product launches.

BUSINESS MODELS FOR E-COMMERCE

The most widespread models of E-Commerce are as follows.

- **Business-to-Business E-commerce (B2B)**

B2B business model sells its product to an intermediate buyer who then sells the product to the final customer for example; a wholesaler places an order from a company's website and after receiving the delivery, sells the end product to final customer who comes to purchase se the product at wholesaler's retail outlet.

- **Business-to-Customer E-commerce (B2C)**

B2C business model sells its product directly to a customer. A customer can view products shown on the website of business organization and can select a product and order the same. Website will send a notification to the business organization via email and organization will dispatch the product/goods to the customer.

- **Consumer - to - Business (C2B)**

In this replica, a consumer approaches website showing various business organizations for a particular service. Consumer places an estimate of amount which they wants to spend for a particular service for example, comparison of interest rates of personal loan/ car loan provided by various banks via website. Business organization that fulfils the consumer's requirement within specified budget approaches the customer and provides its services.

- **Consumer - to - Consumer (C2C)**

Website following C2C business model helps consumer to sell their assets like inhabited property, cars, motorcycles etc. or rent a room by publishing their information on the website. Website may or may not

charge the consumer for its services. Another consumer may opt to buy the product of the first customer by viewing the post/advertisement on the website.

- **M-Commerce**

The term of Mobile Commerce was invented in 1997 to aim "the buying and selling of products, information and services" via wireless handheld devices such as cellular phones, laptops and personal digital assistants. These wireless devices interact with computer networks that have the ability to conduct online merchandise purchases. Mobile commerce allows to users access to Internet and shopping in it without needing to find a place to plug in. Mobile Commerce transactions continue to improve and the phrase includes the purchase and sale of a wide range of products and services, online banking, bill payment, information delivery and so on.

THE RISE OF THE E-COMMERCE INDUSTRY IN INDIA IS DEPICTED THROUGH THE FOLLOWING TRENDS

- **The Rise of M-Commerce**

In India, the number of smart phone users and tablet users has significantly increased. Improvisations are done for the mobile internet as well. This fact is evident that the mobile internet traffic outweighs the desktop traffic. This is a prominent trend that is expected to increase and India might also become one of the mobile favourable markets. The Indian e-commerce firms are all set to invest in establishing the world-best mobile platforms in order to acquire a better market share.

- **A Resourceful E-Commerce Website**

When it comes to E-commerce, the website forms the first impression on the people. It has to be attractive, equipped with informative content and high quality images and it must be facilitated with easy navigation. The uptime and speed of the website are also equally important factors; therefore the website owners are investing in the best e-commerce hosting platforms. A resourceful website has become the key to e-commerce success. The usability of the e-commerce website helps in getting the business.

- **Social Media Becoming Prominent**

The e-commerce industry in India, adopted the use of social media platforms from the early stages itself. The social media websites present with great opportunity of grabbing the attention of the visitors. The thought behind creating an impressive presence in the social media platforms is that you should also be where your targeted audience is. The online reputation management of every brand must is characterized with seamless presence across the social media channels like Twitter, Face book, LinkedIn and Google Plus.

- **Product Videos**

Along with the product images, the videos also work towards enhancing the usability of the website. Usually, the products are photographed from various angels and the photos are edited in order to get the glamorous look. Photos tell some part of the storey, but in the coming years it is believed that videos will also be featured along with the photos. Some ecommerce websites in India have already adopted this trend. Videos create a great impact and if they are used in place of text, the convenience level is enhanced.

- **Emergence Of B2B Online Stores**

So far the Indian e-commerce storey has been dominated by the B2C e-commerce companies. However, there is one prominent trend that is yet to create its mark in the Indian ecommerce industry. The B2B e-commerce industry has revolutionalized the way in which business is conducted on an international level. This trend is slowly gaining momentum in India as well.

The e-commerce industry has made its mark in India and in the future people are going to witness further improvisations in terms of online shopping convenience. The age profile of Indian internet users is overwhelming; approximately 75% of the online users belong to the age group of 15-34. The young citizens of India are already performing tasks like booking movie tickets, purchasing cloths online, booking hotel accommodations online etc. Slowly the people belonging to all the generations have considered the online medium as the acceptable one for purchasing online and for performing various tasks. If the e-commerce industry continues to progress at this speed, it will be considered as one of the revolutionary industries shaping the future of India.

E-COMMERCE OPPORTUNITIES

- Growing consumer adoption of mobile devices opens the doors for e-commerce site owners to be accessible to the consumer literally 24/7. Mobile devices can do everything from accessing promotional coupons and scanning QR codes to researching products, comparing prices and making a purchase. Consider offering real-time order status tracking, recommendation widgets and interactive product and service catalogues.
- Providing social coupons, status discounts, location based services, community platforms for customer support, and integrating social and customer relationship management data collection from Twitter, Facebook, Pinterest, etc. are all important elements of supporting your e-commerce efforts.
- People are very brand conscious. They are interested in buying branded stuff rather than local. If such stuff is available cross border they will not mind it ordering through e-commerce. E-Commerce is fast and effective even financial transactions can be made from any part of the world. People of tomorrow will feel more comfortable to buy products through internet today.
- Consider choosing cloud computing to provide flexibility in scaling technical resources for busy periods. For example, use of the cloud makes it easier to address demand during "holiday season sales" and to rapidly scale your technology resources to accommodate the load.
- A retailer can save his existence by linking his business with the on-line distribution. By doing so, they can make available much additional information about various things to the consumers, meet electronic orders and be in touch with the consumers all the time. Therefore, E-Commerce is a good opportunity.
- In the world of E-commerce the existence of the wholesalers is at the greatest risk because the producer can easily ignore them and sell their goods to the retailers and the consumers. In such a situation those wholesalers can take advantage of E-Commerce who are capable of establishing contractors with reputed producers and linking their business with the on- line.
- Producers can take advantages of e-commerce by linking themselves with on-line, by giving better information about their products to the other links in the business chain and by a having a brand identity.
- As more people are getting linked with E-commerce, the demand for centre providing internet facility or cyber cafe is also increasing. Hence, the people who wish to take advantage of it can establish cyber and have their benefits.

CHALLENGES IN E-COMMERCE

E-commerce is blooming worldwide but it is still facing obstacles in ramping up in India. There are connotations of challenges as well at the same time. We, therefore, enumerate the major challenges for slow development of e-commerce in India.

1. Privacy and Security Concern

As of to-day, quite defenceless issues related to e-commerce are privacy and security. Fear of making online payment is a universal psychological factor of Indian customers. Most of the users do not trust the web as payment channel. Web transaction takes place with credit card, but credit card itself is not safe. Anyone who can transfer the data of credit card on the web is not sure about the salesman identity. So there is no protection offered either by Website or outside watchdogs against hazard created by exploiting one's privacy which causes a big challenge for e-commerce.

2. Payment and Tax Related Issues

Issues related to payment and tax is yet another problem constantly 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. Firstly, the penetration of credit card in India is very low .Secondly; the Indian customers are quite sceptical 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 authentication and recognition problems of electronic signatures

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.

3. Skepticism about e-payments, COD is preferred

Indian customers are quite skeptical of doing e-payments and are in constant fear to land into some fraud. Also, the penetration of credit cards is not much of help in India. COD or cash on delivery is the preferred payment option in India. Collecting cash manually is risky, expensive and burdensome.

4. Digital Illiteracy and Consumer Psyche

At present, digital illiteracy is one of the alarming problems e-commerce is facing in India. On the other hand, the continuous migration of skilled computer engineers to other countries has denuded India of software engineers. This has posed a real threat to the Indian IT industry.

The Indian consumer is also characterised by his unique psyche. In general, the Indian consumer does not go long distances for having any good of their choice when a neighbourhood store provides them whatever they desire. That is why the consumer does not browse the Net knowing the consequent hassles of connectivity and other botheration's. Further to this is that building faith on the electronic media also takes long time more especially when the salesperson is situated at a very far off place.

5. Unapproachable towns in India

Thousands of town in India are not accessible and have poor transportation facility. A large population face an absence of seamless access thus e-commerce companies loose a big portion of potential customers. Since cash on delivery is the preferred payment mode in India, it just adds on to the logistic problem.

Big firms are now backward integrating on their own, acquiring logistics firms and using services of new start-ups solely focusing on logistic in ecommerce space.

6. Profitability

This problem is more with the marketplace sellers as they have to bear deductions like marketplace commissions at an average of around 40% of the selling price. New sellers sometimes fail to calculate costs like packaging, cataloguing charges, handling and shipping etc. before fixing the selling price. Moreover, different sellers in a bid to survive, reduce prices forcing their competitors to sell with marginal profit levels. Also, product returns make the things worse. Low profitability and sometimes selling at losses force many sellers to quit. The best strategy for sellers is to find ways to procure unique products at best rates that have less competition.

7. Virus Problem

Computer virus is also an alarming problem in the execution of e-transactions and is confirmed by the computer virus originated in Manila. A computer virus lagged' I Love You' originated in Manila, Philippines on 5th May 2000 rippling across world, inflected millions of computer files causing huge loss to the Governments and the businesses.

8. English Specific

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.

9. Customer Acquisition Forces

Successful e-commerce interaction between markets should be strong. Issues related to lack of supply chain integration, high charges for products, delay in delivery and lack of proper courier services in some areas also make customers frustrated and one of challenge faced by e-commerce. To get people to come on e-commerce site and make purchase involves heavy cost due to advertisement and marketing which is biggest problem that early stage of ecommerce start-up will face.

10. Wrapping of the Product

Good packaging gives a good first impression on the customer and vice versa. A poorly packaged product shows that you are not concerned about customer satisfaction and makes you lose another repeat customer which already is one the biggest e-commerce challenges in India.

11. Cash on delivery

Indian online shoppers prefer to place 'cash on delivery' orders instead of making payment online. Though COD facility helps in generating more sales, it is also a risky option for sellers as some percentage of customers may refuse to accept goods at the time of delivery due to various reasons. Fake buyers too are a big harassment to sellers and make them suffer losses.

12. Lack of Internet connectivity

There are areas where internet connectivity is low and people don't use smart phones. So, these customers are not able to buy online. This is something sellers can't do anything about.

RECENT EFFORTS TO PROMOTE E-COMMERCE

- **Digital India**

"Digital India" is a government initiative that aims to improve India's digital infrastructure and increase access to information technology services, particularly in semirural and rural areas. Since an increase in mobile devices and access to affordable mobile data and internet services is a key driver of the e-commerce sector, the government's initiatives for promoting internet connectivity are expected to boost growth of e-commerce transactions in the future.

- **Demonetization**

The Modi's Government's decision to demonetize its 500 and 1,000 rupee notes which accounted for over 85 percent of currency that was in circulation, adversely affected all retail trade, including e-commerce. India is largely a cash economy, and fewer than 30 million people have credit cards. The "cash on delivery" offerings of e-commerce companies accounted for a majority of their online orders, and sales were badly hit due to a shortage of new currency. However, in the long run, demonetization is expected to push consumers toward cashless transactions and alternative payment methods, which will ultimately make it easier for consumers to shop online and enhance the e-commerce ecosystem. Digital wallet providers, for example, have already seen jumps in activations.

CONCLUSIONS

Despite all the e-commerce challenges in India, online sellers can build a big business by following the suggested steps to overcome these challenges. Take these challenges as an opportunity to improve the overall performance as an e-commerce entrepreneur. For online marketing the websites also play a vital role. The websites should be informative, entertaining and unique. The attention of the customer must be captured as soon as possible. They should be understandable and easy to search information needed. Moreover, it must continuously be up-to-date for most recent information about the company. Companies should also use different types of strategy to know what are the wants and needs of customers. Brand recognition should be made clear on the Internet but the number of purchase is not there yet. Sometimes the products are not available on the Web site and consumers hesitate before getting this particular product. To increase their confidentiality, recognized vendors should be mentioned on the Net. Authenticity is important for both sellers and products. In the long run, it will be better for the firms and industries, if they can concentrate on offering products with the unique characteristics at the most suitable cost. Online shoppers differentiate the products/services by the benefits and quality. A low price strategy should rely on cost advantage and high volume to be able to compete. There is also necessity of a direct-to-customer process. The industry has to be the first providing unique services to always be ahead of competitors as fast as possible to make a mark in the mind of customers. Promotional Strategy also plays an important role and depends on the marketing research and consumer preferences. It deals as how the companies want to promote their product. FAQ questions should be provided on the websites along with the advertisements on various sites such as You Tube which is most widely used by the people. Lastly terms and condition should be clear & realistic. If the truthful methods and practices are followed, a business will prosper in an e-commerce setting with much success and profitability.

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E-AGRICULTURE: TRANSFORMATION OF INDIAN AGRICULTURE VIA E-COMMERCE

Swati Sharma, Ruchira Shukla, Gautam Parmar and Alpesh Leua

ABSTRACT

Agriculture is the backbone of India and it is an information intensive industry. But today the agricultural sector in India is currently passing through a difficult phase. India is moving towards an agricultural emergency due to lack of attention, insufficient land reforms, defective land management, non-providing of fair prices to farmers for their crops, inadequate investment in irrigational and agricultural infrastructure in India, etc. India's food production and productivity is declining while its food consumption is increasing. In this regard, E-Agriculture is an emerging field focusing on the enhancement of agricultural and rural development through improved information and communication processes. More specifically, E-Agriculture involves the conceptualization, design, development, evaluation and application of innovative ways to use information and communication technologies (ICT) in the rural domain, with a primary focus on agriculture. E-commerce is the trading or facilitation of 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. It is the India's fastest growing market with annual compound growth rate (CAGR) 52% to touch USD 6.7 billion by 2020. The increasing penetration of smartphones and internets are significantly 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 customerstowards online shopping. This paper will focus on the benefits of E-commerce to different stakeholders, its growth drivers, the challenges hindering the growth of E-commerce sector and importance and benefits of E commerce in Agriculture field along with the key initiatives taken for the growth of E-agriculture in India.

Keywords: E-commerce, E-agriculture, Information and Communication technologies (ICT), growth drivers, challenges

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.

The e-Commerce or electronic commerce, deals with the buying and selling of goods and services, or the transmitting of funds or data, over an electronic platform, mainly the internet. These business transactions are categorised into either business-to-business (B2B), business-to-consumer (B2C), consumer-to-consumer (C2C), consumer-to-business (C2B) or the recently evolved business-to-business-to-consumer (B2B2C). The e-Commerce processes are conducted using applications, such as email, fax, online catalogues and shopping carts, electronic data interchange (EDI), file transfer protocol and web services and e-newsletters to subscribers. For developing countries like India, e-commerce offers considerable opportunity. Ecommerce in India is still in growing stage, but even the most-pessimistic projections indicate a boom.

E-COMMERCE: PRESENT SCENARIO IN INDIA

India is showing strong growth in e-commerce. With $681 billion in online retail sales in 2016, China is the largest market for e-commerce globally, followed by the US, and the fastest growing one is India. According to reports published by International Monetary Fund (IMF) and Central Statistics Office (CSO), India is among the fastest growing economies of the world. According to the report given by ASSOCHAM-Resurgent India, the number of Indian consumers who purchase online is expected to cross 100 million by 2017 end with e-retail market likely jumping 65% on year in 2018. The report added that by the end of 2018,

Indian e-retail is expected to touch $17.52 billion. And as "The total retail sales is growing at an impressive rate of 15%, registering a double digit growth figure year after year,"

According to IBEF reports 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. India's e-commerce industry is expected to grow at a Compound Annual Growth Rate (CAGR) of 28 per cent from US$ 15 billion in 2016 to US$ 63.7 billion by 2020. 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.

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 34.08 per cent in 2016, registering a direct increase of 89 per cent in 2016 over 2007. The number of internet users in India is expected to increase at a CAGR of 15.6 per cent from 450 million as of June 2017 to 700 million by 2020.

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.

MODES OF E-COMMERCE TRANSACTIONS

The e-Commerce transactions can be segmented into three broad categories or modes, based on participants involved in the transaction:

1. Business-to-Consumer (B2C): The B2C market in India generates the bulk of revenues across the consumer-facing modes of e-Commerce. Furthermore, though online travel has typically held a major share of the B2C market, online retail is also growing rapidly and is expected to significantly increase its share. It includes online classifieds and online retail.

2. Consumer-to-Consumer (C2C): India's C2C market, though currently small, is set to grow with the entry of several players. These entrants are attracting VC investment.

3. Business-to-Business (B2B): The most common users of B2B online classifieds are micro, small and medium enterprises (MSMEs). These small businesses lack the requisite financial resources and, therefore, find it difficult to market their products and services to potential clients through traditional media such as newspapers, banners and television. Trade through online B2B portals increases the visibility of MSMEs in the marketplace and helps them overcome barriers of time, communication and geography.

INDIAN E-COMMERCE GROWTH DRIVERS

The trend of online shopping is set to see greater heights in near future due to changes in supporting ecosystem. The various key factors driving growth in this e-commerce industry are:

1. Geography and demography will play a critical role in the sector's future growth. Tier II and III cities and small towns have begun contributing meaningfully to the e-Commerce pie and will be pivotal for future growth driven by a rapidly growing internet population and significantly low internet penetration.

2. Advancements in technology adoption such as the increasing proliferation of devices such as smartphones and tablets, and access to the internet through broadband, 3G/4G, etc. will further lead to increase in the online consumer base.

3. Business models have been changing rapidly in the e-Commerce sector largely due to heightened competition and the inability of players to sustain high costs. Newer models such as private, white labels and drop-ship are also becoming popular.

4. Profitability will be the single most critical financial challenge. Key players continue to focus on building market share. Investor interest has also compelled players to adopt the gross merchandize value (GMV)-driven approach compromising profitability.

5. Consolidation in the near term appears inevitable. Players are aggressively rushing to build scale and those who cannot will likely be acquired. Common investors are also pushing for mergers, alliances and partnerships among players.

6. Increasing convergence of online and off line channels. Brands and brick-and-mortar retailers are increasingly focussing on 'going online'. E-Tailers are setting up physical stores in order to enhance the customer experience.

BENEFITS OF E-COMMERCE

1. Global trade: Due to E-commerce the trade is not only limited to national market but it have expanded global and worldwide.

2. Easy Reach: Any person having the knowledge about internet can do the business or transact through internet. E.g. Customer can easily do online shopping without going to the store.

3. Time Saving: E-commerce is a time saving tool because everything happens on one click whether it is business, shopping, payments etc.

4. Less costly: The money received for an E-Commerce transaction pays for the item, web hosting, shopping cart software, distribution and little else. The cost overall of maintaining a virtual store is far less than that of a store.

5. Customer oriented: Customers can shop from home or office. They don't need to stand in long queues to talk to a salesman. They can read details regarding model numbers, prices, features etc. of the product from the website and purchase at their own convenience. Payments can also be made online.

6. Effective performances: Due to E-commerce the quality improves, the service improves; customers are attracted much due to the quality service provided which leads to effective performance of the business.

7. Convenient: E-commerce is a convenient way of business including less Paper work and more of technology. E-commerce avoids going to the shops and store and 24 hours service are available

8. Direct communications with customer: It's a direct business between the seller and buyer as everything is available on the website and there is no need of any intermediaries.

9. Quick Delivery: It increases customer satisfaction through quick delivery of goods and redressal of customer complaints, if any. The customer need not visit the business firm for making purchases or redressal of grievances.

10. 24x7 Working: A website is open all 24 hours, 7 days in a week, it can, thus, take orders and keep an eye on delivery of goods and receive payments at any time. A business firm can provide information about its products and services to customers around the clock.

11.Quick Supplies: The business firm can get quick supplies from the vendors. It need not maintain huge inventories of material. Thus less capital is blocked in the inventories.

12. Wider Choice: For the consumers, the whole world becomes a shop. They can look at and evaluate the same product at different websites before making a purchase decision.

13. Direct Marketing: E-Commerce enables business firms to establish a direct contact with their customers by eliminating middlemen. It allows quick response to the queries of customers and other business houses through the internet.

14. Easier to Launch a New Products: It is easier to launch a new product through the internet. Complete information about the product can be provided over the internet. E-Mail about the launch of the new product can be sent to the dealers and the customers. So, it can be used as a tool of sales promotion.

E-AGRICULTURE

The agricultural sector in India is currently passing through a difficult phase. India is moving towards an agricultural emergency due to lack of attention, insufficient land reforms, defective land management, non-providing of fair prices to farmers for their crops, inadequate investment in irrigational and agricultural infrastructure in India, etc. India's food production and productivity is declining while its food consumption is increasing. E-agriculture is the Internet platform of this global innovation aimed at promoting sustainable agricultural growth and food security by improving the use of information, communication, and associated

technologies in the sector. To enable community member to exchange opinions, experiences, good practices and resources related to E-Agriculture and to ensure that the knowledge created is effectively shared and used worldwide. An emerging weld is focusing on the enhancement of agricultural and rural development through improved information and communication processes. More specifically, E-Agriculture involves the conceptualisation, design, development, evaluation and application of innovative ways to use information and communication technologies (ICT) in the rural domain, with a primary focus on agriculture.

E -AGRICULTURE OPPORTUNITIES IN INDIA

E-agriculture projects provide opportunities and benefits to a wide range of stakeholders, from small farmers to businesses and governments like as follows:

- **Agripreneurs:** New job opportunities with growth potential and opportunities to deliver much-needed services to farmers (soil testing, financing, logistics, farm machinery, etc.)
- **Farmers:** Lower costs , Increased productivity and income , Better risk mitigation (e.g., pests, disease, weather) , Greater access to expert information, services, and best practices
- **Government:** Economic growth and job creation in rural areas and Improved relationships with rural communities
- **Market aggregators:** Direct and cost-effective source produce in bulk and more market efficiency by connecting buyers and sellers
- **Microfinance institutions:** Access to detailed information on farmers to better assess credit-worthiness and manage risk, serve new customers who previously had no formal access to affordable finance and better understanding of unmet financial needs, enabling creation of innovative financial products such as crop loans and insurance
- **Suppliers:** Direct, inexpensive, and transparent access to larger groups of and stronger relationships with farmers
- **Technology companies:** New business opportunities using a proven model that increases readiness for technology adoption and reach new customer base early, for longer-term benefits
- **Universities and extension offices:** Direct access to otherwise unreachable farmers and opportunity to solve practical problems and share best practices with aggregated groups of farmers

INITIATIVES TAKEN UNDER E-AGRICULTURE

Numerous initiatives have been taken throughout the length and breadth of the country, aiming at extending the benefits of the information revolution to rural and remote areas. These include the establishments of following:

1. **Kisan call centers (KCCs)** were launched on 21st January, 2004 by the Department of Agricultural and Cooperation with the aim to deliver the extension services to the farming community in the local languages. The farmer dials a toll free number 1551, and the agricultural scientists provide the initial enquiry. The cost to the farmers is almost zero and they get the response in their local languages.

2. The Bhoomi project is a significant achievement on its own right and is an example of how an ICT project can be used for data processing, information production and access supportive of the right to information. It is primarily a state based project, which involves the digitalization ofall land records in Karnataka and the provision of access to these records through information kiosks and fingerprint authentication systems. This computerized land record facilitates the farmers in obtaining, so called technically, the Rights, Tenancy and Cultivation certificates (RTCs). Moreover, the Bhoomi project also provides online connectivity to various courts to make use of the land records database to settle civil disputes on land ownership and cultivation.

3. The Gyan Ganga project is what one would call a premium telecentre project that is committed to providing a range of ICTs services from telephony to e-governance. It is a joint state private sector initiative aimed at the use of ICTs in development, in Gujurat. It is an ambitious project aimed at the provision of information, connectivity, education, e-health and e-governance broadly within the parameters of the right to

information. In this project the villagers pay for the services. The project is based on a business model in which the key players- the private firm N-Logue, the Local Service Providers and operators of the local kiosks are involved in selling their services. Another feature of this project is the role of N-logue which is commited to providing low-cost voice and internet services to rural India.

4. The Gyandoot Project was started in the Dhar district of Madhya Pradesh, which covers 600 villages and 26 Soochanalayas. Soochanalayas are nothing but information centers at the village level. The service covers to provide information about the agricultural produce, auction centerrates, copies of land records, on-line registration of applications, village auction sites and more. The village Auction Site Project allows farmers and villagers to advertise and sell land, agricultural machinery, equipment and other durable commodities.

5. AGMARKNET, (Agricultural Marketing Information Network) is a joint venture of the Directorate of Marketing and Inspection (DMI) and the National Informatics Center (NIC). It has increased the efficiency in marketing activities by establishing a nation-wide information network, which provides information on prices, arrivals, availability, trends, analysis, laws etc. These timely information data are helpful to producers, traders and consumers. It has been connected to 670 agricultural produce markets and 40 State Agricultural Marketing Boards and Directorates. Each AGMARK portal of wholesale market provides daily information to AGMARK portals of its respective states, and then each state‟s AGMARK portal sends the information to the AGMARKNET portal. The National Information System maintains all of these portals. The food processing units, traders and different village kiosks, to help the farmers in taking the right decisions mainly use these portals.

6. The e-Choupal project is very popular in the country. The project now covers nine states and around 36,000 villages, empowering around 3.5 million people. These e-Choupal centres deliver real-time information and customized knowledge to improve the farmer's decision making ability, thereby better aligning farm output to market demands, securing better quality, productivity and improved price discovery. It also helps farmers to access higher quality farm inputs at lower cost.

7. The eSagu project is an initiative of the Indian Institute of Information Technology, Hyderabad, provides crop related advice from the experts in cities to the rural areas of Andhra Pradesh, using digital technology. In this system, a coordinator collects all the information regarding the crop in the local area and sends it to the team of experts in Hyderabad by using a storage device. The experts then evaluate the crop system and suggest solutions, which can be downloaded in the village information centres.

8. eNAM (National Agriculture Market), it is a single-window service integrating mandis (agriculture markets) online so that farmers and traders can view all APMC (agriculture produce market committee)-related information and services. This includes commodity arrivals and prices, and buys and sell trade offers, thereby helping farmers bid for the best price across markets.

9. Agri Business Centres: It provides a web based solution to the small and medium farmers as well as owners of large landholdings. It brings on a single platform all the stakeholders in agribusiness like farmers and farmer groups, institutions and autonomous bodies, agro machinery and farm equipment makers, cold chain tech., commodity brokers, cooperatives, food processors, pre and post harvest management experts, packaging technology providers, insurance companies, warehousing and logistics agencies, surveyors and certification agencies.

10. e-KRISHI VIPANAN: It professionalizes and reorganizes the agriculture trading business of Mandi Board by installing cost effective digital infrastructure using latest advancement in ICT by collecting and delivering real time information online. It makes the operations more effective, totally transparent, benefiting all stake holders (farmers, traders & the government), empowering them through accurate and timely information for effective decision making.

11. Query Redress Services: Empowering the farmer community through effective, need-based interventions. It enhances livelihood promotion of farmer community through information dissemination and extension services, using ICT as tool. The project helps the farming community by making available a 10000 plus network of experts to them. Any queries from farmers are forwarded to the ISAP central office from where it is routed to the relevant experts. The service caters to information and knowledge needs of the

farmers, professional members of ISAP, individuals and other stakeholders involved in the wider agricultural and allied sectors.

12. Recently some start-ups such as FarmsNFarmers.org, Barrix.in, FrontalRain.com, Microspin Machine Works etc. have been initiated by enthusiastic entrepreneurs who are working to provide end to end solutions to the Indian farmers via E-commerce.

MAJOR CHALLENGES IN E AGRICULTURE

The major question which arises is that will E-commerce be able to bring about meaningful change for the farmer in India. The Transformation of agriculture sector via the online medium will not happen overnight there are some challenges which need to be overcome:

1. Limited presence and lack of updated information and absence of integrated solutions: Online presence in most of the initiatives has been limited to providing basic data such as listing mandis across the country, and information on services, incoming produce and markets and about administration and bureaucrats as most are run by Governments. The coverage of these schemes should be broadened to provide really useful commercial information or interactive platform and should be more users friendly. However, eNAM hopes to go beyond the perfunctory, connecting mandis, enabling farmers provide information on what they want to sell, thereby eliminating middlemen. E-commerce will give a platform for supply chain members to source directly from farmers, who otherwise have to go through multiple agents.

2. Poor Inernet penetration: The poor internet penetration will be a dampener for rural farmers. It is apprehended that small farmers may not take to ecommerce platforms unless the government educates them on digital media. Economics drives this behaviour – farmers will take effort to acquire knowledge even for small benefits, especially if they can eliminate middlemen."

3. Lack of uniformity in taxes: Another hurdle has been lack of uniformity in quality and taxes among States. Two years ago, APMC rules were amended to eliminate the rash of taxes levied by States so as to bring down the prices for agricultural produces and let farmers sell outside local mandis. In this respect, an online platform could provide a wider customer base for them.

4. Infrastructural inadequacies: Other serious issues farmers have to contend with are infrastructural inadequacies in inter-State transactions and poor warehousing and cold storage facilities for their produce. Whimsical functioning of procurement centres also compounds their woes.

5. Lack of Uniformity in quality/grades: In ecommerce, what is seen online and what is happening on the ground are often markedly different. The necessity for an independent third party agency to verify the claims made by farmers and sellers cannot be undermined. Since these are perishable commodities in massive volumes, it is essential to have an accredited agency with no vested interest with that particular manufacturer. For instance, in the US, an independent agency called Rainforest Alliance, a not-for-profit organisation working towards biodiversity and sustainable livelihoods, grades commodities. In India, each State has different laws; so there is no common platform to decide quality or price. We need an independent agency with uniform standards across the States.

6. Lack of Credibility of source: Every step in agricultural innovation is an effort for sustainability, which has to come with quality. Credibility increases when the buyer has information on how and where the farm produces were sourced. Precision agriculture will work here. Farmers can keep track and provide information to the consumer online.With India facing unprecedented agri-crisis, the recently amended crop insurance scheme and zero balance bank accounts for farmers are among efforts to help build its agrarian economy all over again. Stakeholders are hoping government regulations will be relaxed to let more private funding flow into the sector.

7. Lack of E-Commerce laws in India: E-Commerce is a rapidly growing market in India, and domestic as well as international players are looking to tap the opportunity in the sector. However, there are no specific E-Commerce laws in India. The sector is governed by the IT Act 2000, which regulates the legal obligations of sellers and buyers of goods and services in cyberspace.86 Apart from the IT Act 2000, E-Commerce laws in India need to comply with other statutory laws in force in the country,

8. Rapidly changing business models: Business models have been changing rapidly in theE-Commerce sector. This could be due to heightened competition and the inability of players to sustain high costs. Some businesses in the online retail segment have shut shop due to their inability to sustain price wars with their competitors. Therefore, players in the E-Commerce space need to adapt to changing business models and innovate constantly to sustain their businesses**.**

9. Shortage of manpower: The E-Commerce sector is growing rapidly, but scarcity of trained manpower is threatening to slow down this growth. The attrition rate at some e-Commerce companies is as high as 65% at the junior level and 20% at the mid-senior management level. Furthermore, due to the competitive nature of the industry, companies poach from their competitors. This drives up the cost of retention for companies, which sometimes offer employee stock options (ESOPs) and other incentives to retain their employees.

10. Ethical issues: The online piracy, Email spamming, web spoofing are some of the ethical issues which come in the way of Growing E-commerce business. Cybercrime is a threat to E-commerce. E.g. Cyber stalking, Fraud and identity theft, Phishing scams Information warfare. Also fake websites of online purchase which attract the customers with some great scheme but in real that offers are actually not applicable. The protection of data is tedious and difficult task in E-commerce and the integrity of the system that handles the data and transaction.

11.Poor Customer satisfaction: Customer are not satisfied due to many reasons like fraud, shipping charges, network problem, quality issues , logistics problems and etc. Customers are the king of the market and their satisfaction is a big concern for all the E-commerce business.

12. High Start-Up Costs: The various components of costs involved with E-Commerce are:

– Connection costs to the Internet (i.e. direct link).

– Hardware/Software: This includes costs of sophisticated computer, modem, routers,etc.

– Set Up: This includes employee work hours involved in designing and installing of a suitable website.

– Maintenance: This includes costs involved in training of employees and maintenance of Web-pages.

CONCLUSION

E-agriculture provides a cost-effective and sustainable way to help small farmers via E- commerce. The impact on farmers' lives is potentially immense, as they are able to lower costs, improve productivity, and increase incomes. The impact on society of this bottom-up, collaborative business model is equally powerful, as countries can achieve greater food security, while also creating jobs and strengthening long-term economic growth. Considering the major initiatives taken in E-agriculture like Bhoomi, Gyan Ganga, Gyan Doot, AGMARKNET, e-choupal, e-Sagu, eNAM etc. highlight that these major developments are working towards the overall agriculture sectorial growth but there is lot more need to be done for the upliftment of agriculture growth in India via e Commerce. E-agriculture is at nascent stage in India and for the prosperity of Indian farmers there is an urgent need to focus on overcoming the challenges like Limited presence and lack of updated information and absence of integrated solutions, Poor Inernet penetration, Lack of uniformity in taxes, Infrastructural inadequacies, Lack of Uniformity in quality/grades etc. which are hindering the growth of E-agriculture in India.

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CUSTOMER SEGMENTATION WITH RESPECT TO MOBILE MARKETING IN TAMILNADU

Dr. S. Sasikumar and Prof. R. Veerappan

ABSTRACT

Television media plays a vital role in creating and providing awareness about the goods and services, in spite of this, outstanding development of internet has reached predominant position in exhibiting the knowledge and information to the target audience and customers. Today the evolution and development of mobile technology paves way for the mobile marketing, which also help the target audience and customers as change in lifestyle and very much attached to the modern technology with add-on features. We can observe that we live in mobile technology with plenty of apps., which enables them to deal from small to big goods/services.

In this modern world the maximum target customers use mobile technology starting from urban to rural, Younger to elder. This makes the producers to think about enhanced mobile technology for better platform for marketing their product. Thus marketers can create mobile portals for their brands, which were enhanced by the choice of tailored handsets, preloaded application that drive further contact with their brands.

Atkinson (2006) suggested that 90% of the US, mobile marketing is a marketing channel used to create awareness among the customers. This marketing channel gained moment over last two decades. Today all manufactures produce mobiles with distinct features which made many business concerns lucrative towards mobile marketing. Growth and advancement in mobile technical know-how and user's awareness persuaded many corporate to evolve with this mobile marketing strategies and helping them to reach the target audience. The researcher took this challenging task to organize the study to know the level of acceptance among the audience in Tamil Nadu, here the researcher has taken important variables for segmenting the market namely technological and demographic variables and it is exposed that certain variables which distinguish market segments from each other .So the researcher broadly classify the consumer segment of Tamil Nadu into 3 categories viz acceptor, uninterested and Knowingly un-user.

Keywords: Marketing channel, target audience, acceptor, demographic, technology

INTRODUCTION

Marketers of various brands were planning to initiate mobile marketing and they plan to minimize at least 25% of total marketing budget towards mobile platform. In many countries high penetration rate of mobile device among the customers creates a wide opportunity for the corporate to make use of this wonderful means to express information /Knowledge to the target audience/customers. This urges the corporate to utilize mobile marketing device to reach the real customers. The best to illustrate here was Adidas introduce a mobile marketing campaign, the missy campaign to overcome the stronghold market segment and to compete with its major competitors. Nike used an ad-supported mobile games and app distributor; introduce/started ad campaign for the movie "The Golden Compass". This app provided downloadable games, play full screen ads to the audience who are in the queue for loading this create more awareness among teenagers & adults who are faster in adopting mobile platform, which seems to have bright future but still many problems in this marketing are to be addressed the aim of this paper is to find out the distinct segment of the market based on target audience level of acceptance in mobile marketing

This paper highlights the fundamental concepts of importance of mobile marketing. The consumers are segmented based on their level of acceptance and behavior. The final sections of the paper highlight the methodology followed by results with managerial implication and conclusions.

Due to high penetration of mobile phones leads to high usage of mobile apps which helps the mobile users like teenagers and adults. Mobile marketing presents and includes terms like mobile advertising, wireless advertising etc.., this is web-based technology and its growth is phenomenal. The main objective of this mobile marketing is personalization, localization, uniqueness, ambiguity and interactivity. This marketing has high retention rate, reach, response rate with low cost, mobile marketing Association (MMA) defines

mobile marketing as "The use of wireless media as an integrated content delivery and direct response vehicle with in a cross media or standalone marketing communication program".

While wireless advertising associated (WAA) defines mobile marketing as releasing advertising messages to mobile phones or PDA'S though wireless network (xu,2007). It has been recommended in mobile networks, corporate can seek customers audience involvement by a call-to-action. This mode is impossible though other channel which instigate customers to respond via text messaging, multimedia messaging, pictorial messaging, blue tooth alerts or voice channels on their mobiles.

Marketers in Tamil Nadu decreased their cost on traditional channel (television, radio and magazines) by 61% , 52% on direct mail 11% on email . But at the same the marketers increased their spending on social media the researchers predicted that online search, email, social media, web displays, web ads, mobile marketing jointly contributes to 21% of budgets towards marketing .

CUSTOMER SEGMENTATION

The researcher segmented the Tamil Nadu customers /audience into three different segments namely, Knowing Unuser, acceptor and uninterested.

The Non user segmentation possess more technical knowledge about the mobiles apps to 4th Generation and 5th Generation but still there are certain factors like privacy issues, traditional issues, lack of interest towards innovativeness keeps these type of customers away from the mobile marketing. The accepters of mobile marketing have little technical knowledge and less interest in mobile operations/mobile related apps but these customers are the real consumers who always accept and use this mobile marketing.

The uninterested customers segment does not have sufficient knowledge and at the same time they do not have interest towards mobile marketing. Mostly they belongs to the age group above 50s. The customers are segmented on the following criteria.

SEGMENTATION ON THE BASIS OF DEMOGRAPHY

Generally the modern technology is easily accepted by teenagers and adults faster than elder generation. But skog (2002) found in his study that adults and teenagers are not homogeneous audience/ customers for mobile phones since their attitude and usage patterns varied and depending on their social background, technology literacy, life style, background area (urban and rural) and gender is important factor which is considered for segmentation, as the male and female are differently affected by varied technology and the acceptancy rate varied between the gender, the next variable considered for segmentation in education level which shows their extend of involvement in adapting the new technology. The above said variables will ensure the study to find the extended of acceptance with respect to mobile marketing. The very important variable is income level. It is believed to be positively correlated with accepting new technology, the reason behind this factor is 80% of higher income earners ready to accept and find easy to bear the marginal price hike which opting way to your high technology goods /services like Mobile phones , fabrics , cosmetics etc…

SEGMENTATION ON THE BASIS OF TECHNOLOGY

New Generation mainly focused their willingness and attitude towards technology based goods /services. This attitude was really influenced by the researchers through direct personal experience and previous reflection and reactions. This impact can be really observed through individuals experience and communication flow by media. Sultan and Rohm (2008) Highlighted that "Mobile usage features have direct impact on consumer's acceptance with mobile marketing"

The researcher observed clearly about consumers utility and experience of mobile usage in terms of browsing, chatting and developing the network through social media which has direct influence on teenagers and adults. Some of the varied usages are Code Division Multiple Access (CDMA), two way pager, GPS navigation device, web browser, instant messaging, games, etc., The major contents of mobile technology in based on the following.

1. 4G Networking
2. Operating Systems

3. Channels hogging &file sharing
4. Future of smart phones

Thus mobile technology helps the marketers to adopt this mobile marketing were the audience accept to receive SMS, from the advertisers and ready to reflect positively were the positive attitude of customers have greater intension to make use of the addon services. Thus idea / knowledge about mobile is highly influenced by the audience at the time of purchase.

Now a day's phones are just not only the communication device but it is the integral part of every one's life. This mobile phone completely engages the people. Where usage of mobile phones is the greater factor which makes them to have the ideology of social symbol and pressure to accept the technology based products.

The only negative factor of this Mobile technology is only at the time of online payment which has certain extent of risk and uncertainty. Here it is very much important for the marketers that they should get audience/ customers permission to increase their involvement to accept advertising through mobile marketing.

RESEARCH METHODOLOGY

The literature revealed the actual fact about the various concerns and emotions of the target group towards mobile marketing varied technical and behavioral aspect by this paper various factors were segmented on the basis of the observation.

The survey was conducted through mobile survey all over Tamil Nadu. The sampling method used for this study is convenience sampling method the sample size of this study 50.

The collected data were statistically analyzed & using SPSS to find the various segments.

FINDINGS OF THE STUDY

Though there are many number of variables this study in quite extensive. The researcher used an exploratory factor analysis to simplify the variable. Through this FA, method the eigen values were greater than 1.0 which helps to fix and select the criteria.

The researcher grouped the variables into seven factors which accounted for 77.75% of the total variance.

Croanbach's alpha coefficient is used to find out validity and reliability. The seven factors alpha is more than 0.6 which shows the internal consistency in this research study, based on this croanbach's alpha co-efficient was calculated it was 0.921. The factors are

1. Mobile usage features (F1): This factor shows the reasons for customer usage, which has direct impact on mobile advertising acceptance.
2. Knowledge on Mobile Technology (F2): It shows the customers knowledge about mobile technology and the extend of their acceptance.
3. Users Innovativeness (F3): It is related with the extend of users acceptance of modern technology (new innovations).
4. Privacy/Trust (F4): The 4^{th} variable represents the issues related to the privacy and trust this may inversely affect the acceptance of mobile marketing.
5. Economic Factors (F5): The income level which contributes the person to pay the price. For any new technology which are innovative.
6. Social Factors (F6): This factor represents the family, friends, and society of the respondents which shows the relationship about acceptance or rejections about modern method of advertising.
7. Attitude of customers towards mobile marketing (F7): This shows consumers' willingness, desire and extend of interest in accepting the mobile marketing .

RESULTS THROUGH FACTOR ANALYSIS

There are seven factors which was clusterized, Hierarchical clustering was used to analyze the data. Agglomerative method is used for analyses. Since it gradually build the cluster ie clustered formed by

adding to existing cluster between group linkage and squared Euclidean distance is used to find the cluster numbers. Each variable is standardized using Z scores to eliminate effect of scale difference.

The clusters are named and differentiated based on their characteristics. They are:

SEGMENT-1: THE KNOWINGLY NONUSER (36%)

This segment mainly consists of both young and old consumers with high education level (graduation, post-graduation). They are working professionals, businessmen, and students. They have technological knowledge related to mobile, but price sensitive and have privacy issue. They are sceptical about mobile marketing and do not trust such mobile marketing schemes. They only use mobile for calling or messaging purpose and do not as a media device. They are less innovative and privacy plays a major role in their life. Apart from students, the working professionals and servicemen have moderate (Rs 10-20,000/month) to high income level (Rs 40,000 and above), but do not want to spent on purchase mobiles with hi-tech features. So they are aware of technology and mobile marketing, but are not using it.

SEGMENT-2: THE REAL ACCEPTER (37%)

This segment composed of relatively younger consumers and very few middle-aged consumers. They have relatively higher education level than segment 1 and working in more qualified jobs (specialists in own field, middle and senior manager) and earn relatively higher. Only students belonging to this category have no income. This segment has higher technological interest and innovativeness. They want to try new products and services and are able and interested to spend for it. They know multiple use of mobile and go for it. Social group and peers influence affect them more, especially the younger customers. They have positive attitude to mobile marketing and family members also play major role to teach them many functions of mobile. So they are the real accepters of mobile marketing.

SEGMENT-3: THE UNINTERESTED (27%)

This segment includes individuals of higher age group (41 years and more) with marginal to higher educational level. This segment does not have much interest and attitude for mobile marketing. They are not only sceptical about privacy issue but the whole new technology of today. They act as per their own interest and do not have much technological know-how. Their knowledge about the mobile marketing is low to moderate level. These are the consumers who were not at all interested in mobile marketing.

LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The study is only based on 132 consumers of Tamilnadu. This segmentation can be conducted by taking more consumers from various parts of Tamilnadu. Since the study has taken place in one district, it limits the generalization of the finding. In future a cross-cultural study can be done to know the segments related to mobile marketing in other parts of the world. The study has taken only two criteria for segmenting the market: demographic and technological. More criteria can be taken into consideration, like psychological, behavioural etc. broaden the research. So the limitations of this study gave a lot of scope for working further and new areas of research can be explored.

CONCLUSIONS AND ITS IMPLICATIONS

The final results of the study clearly identify the target audience and customers who really use mobile for their buying and selling. It also explains that teenagers and adults attitude to accept it. The results show the real factors that differentiate the segments. Today due to the fast development of mobile technology and availability of more mobile brands the attitude of the customers in Tamilnadu was in favour of accepting the mobile marketing. This reveals that the customer's acceptance is mass acceptance. The next aspect is to focus on advertisement budget; there should be significant importance in mobile advertisement. So, that it is easy to target the target segment especially teenagers/adults. This will help the marketers to retain the target customers. So they can flourish inspite of stiff competition. The marketers can also find other promotions through online. The knowingly non user should be given attention and they should be converted as the user. The uninterested segment should also be forced by giving mobile technology awareness and they should be educated with respect to risk and uncercetainity. So they can change their attitude. Thus it is in the hands of the corporates to make use of this mobile technology to simplify the reach to its target customers and helps them to earn high profit.

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A STUDY OF CUSTOMER'S USAGE PATTERN ABOUT ICT TRENDS IN BANKING W.R.T. MUMBAI AND THANE REGION

Dr. Shraddha Mayuresh Bhome and Adv. Suyash V. Pradhan

INTRODUCTION

The adoption of ICT in banks has improved customer services, facilitated accurate records, provides for Home and Office Banking services, ensures convenient business hour, prompt and fair attention, and enhances faster services. The adoption of ICT improves the banks' image and leads to a wider, faster and more efficient market. It has also made work easier and more interesting, improves the competitive edge of banks, improves relationship with customers and assists in solving basic operational and planning problems. This paper work analyses the impacts made by the Information and Communication Technology in the Banking Industry. The application of information and communication technology concepts, techniques, policies and implementation strategies to banking services has become a subject of fundamental importance and concerns to all banks and indeed a pre-requisite for local and global competitiveness. ICT directly affects how managers decide, how they plan and what products and services are offered in the banking industry. It has continued to change the way banks and their corporate relationships are organized worldwide and the variety of innovative devices available to enhance the speed and quality of service delivery.

REVIEW OF LITERATURE

1. **Moghadam, Baytollah Akbari; Behboudi, Mehdi; Jafari, Farzaneh(Dec 2012)** in their research say that customers are encouraged to utilize ICT banking as first priority. Increasing the customer's arousal by ICT advertisements to use ICT banking creates a positive attitude toward bank's brand, which in-turn is the key factors in ICT banking effectiveness.
2. **Jahangir, Nadim; Parvez, Noorjahan(Dec 2012)** research states that ICT banking needs, compatibility, convenience, and communication on customer adaptation. In the context of private commercial banks in order to attract more users to ICT banking, it is not going to be enough only to introduce an ICT banking system, but they need to develop the belief of usefulness of the system among their users. The importance of ICT banking needs and the ease of using it should be acknowledged by demonstration on trial basis.
3. **Munusamy, Jayaraman; De Run, Ernest Cyril; Chelliah, Shankar; Annamalah, Sanmugam(Dec 2012)** in their research found that younger consumers are more likely to adopt ICT banking. The study states that consumers in the age group below 25 years old are the major contributor to ICT banking.
4. **Kesharwani, Ankit; Bisht, Shailendra Singh(2012) s**tated in their study that the main purpose was to extend the technology acceptance model (TAM) in the context of ICT banking adoption in India under security and privacy threat. The researchers have incorporated various inhibitors of ICT banking which restrict the use of ICT banking adoption under "perceived risk", and also consider the role of the bank web site as a key determinant of perceived risk and of perceived ease of use in the context of ICT banking services. The paper reveals that perceived risk has a negative impact on 134ehavioural intention of ICT banking adoption and trust has a negative impact on perceived risk. A well-designed web site was also found to be helpful in facilitating easier use and also minimizing perceived risk concerns regarding ICT banking usage.
5. **Patsiotis, Athanasios G; Webber, Don J; Hughes, Tim (Dec 2013)** found that personal capacity is an important determinant of ICT banking. Use of it in a standard, non-sequential approach has no significant effect when the model is sequential. Results suggest that policymakers should emphasize useful attributes of ICT banking when attempting to increase its usage by people who already use the ICT.

OBJECTIVE OF THE STUDY

1. To examine the awareness of ICT banking among customers w.r.t. Gender and Occupation.
2. To analyze the usage of ICT in banking by respondent customers.
3. To suggest measures for effective utilization of ICT banking.

RESEARCH METHODOLOGY

RESEARCH UNIVERSE	MUMBAI AND THANE COMMERCIAL BANKS
SAMPLE SIZE	25
DATA COLLECTION	STRUCTURED QUESTIONNAIRE
DATA	PRIMARY AND SECONDARY DATA
DATA ANALYSIS TOOLS	PERCENTAGE TECHNIQUE , CHI-SQUARE TEST, MEAN, KRUSKAL WALLIS TEST, MANN-WHITNEY U TEST RESULT

HYPOTHESIS OF STUDY

1. **H_{o1}:** All the reasons for usage of ICT in banking are equally preferred.

   H_{11}: All the reasons for usage of ICT in banking are not preferred equally.

2. **H_{o2}:** There is no significance of difference between the average preference by male and female.

   H_{12}: There is significance of difference between the average preference by male and female.

3. **H_{o3}:** There is no significance of difference between the average preference by graduate and post-graduate.

   H_{13}: There is significance of difference between the average preference by graduate and post-graduate.

ANALYSIS AND INTERPRETATION OF DATA

1. H_{o1}: All the reasons for usage of ICT in banking are equally preferred.

   H_{11}: All the reasons for usage of ICT in banking are not preferred equally.

TABLE 1: MEAN RANK TABLE

Reasons	N	Mean Rank
Curiosity	25	90.66
Inconvenient bank Time (24X7 service)	25	70.58
Inconvenient Branch location	25	79.08
Faster Transaction / information	25	71.84
Safe and secure	25	82.08
Low service charge	25	99.84
Online shopping	25	121.92

Source: Primary Data

TABLE 2: KRUSKAL WALLIS TEST

Test Statistics[a,b]	
	Curiosity
Chi-Square	19.587
Df	6
p-value	.003
a. Kruskal Wallis Test	
b. Grouping Variable: Index1	

INTERPRETATION

Since p-value for the Kruskal-Wallis test is less than that of 0.05 indicates that there is significance of difference between the average rankings for reasons. SO we reject null hypothesis and conclude that some of the reasons are preferred more than some others. From mean ranks table we can conclude that online shopping is the highest preferred reason for internet banking.

H_{02}: There is no significance of difference between the average preference by male and female.

H_{12}: There is significance of difference between the average preference by male and female.

TABLE 3: AVERAGE RANKING WITH RESPECT TO GENDER

Group Statistics					
	gender	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Curiosity	Male	11	2.73	2.284	.689
	Female	14	3.79	2.694	.720
Inconvenient bank Time (24X7 service)	Male	11	2.36	1.120	.338
	Female	14	2.36	2.240	.599
Inconvenient Branch location	Male	11	2.73	2.054	.619
	Female	14	2.71	2.301	.615
Faster Transaction / information	Male	11	2.27	1.737	.524
	Female	14	2.50	1.605	.429
Safe and secure	Male	11	3.27	2.240	.675
	Female	14	2.50	1.605	.429
Low service charge	Male	11	3.64	2.693	.812
	Female	14	3.64	1.737	.464
Online shopping	Male	11	5.45	2.207	.666
	Female	14	4.14	2.507	.670

TABLE 4: Mann-Whitney U test result

Test Statistics[b]							
	Curiosity	**Inconvenient bank Time (24X7 service)**	**Inconvenient Branch location**	**Faster Transaction / information**	**Safe and secure**	**Low service charge**	**Online shopping**
Mann-Whitney U	61.500	64.000	76.000	67.500	59.500	72.000	48.000
Wilcoxon W	127.500	169.000	142.000	133.500	164.500	177.000	153.000
Z	-.866	-.740	-.057	-.546	-.980	-.278	-1.622
p-value	.387	.459	.955	.585	.327	.781	.105
a. Not corrected for ties.							
b. Grouping Variable: gender							

INTERPRETATION

Since p-value for Mann-Whitney U test is greater than that of 0.05 indicates no significant difference between the average rankings for when compared between male and female for each of reason for respondent to open an Internet bank account.

H_{03}: There is no significance of difference between the average preferences by graduate and post-graduate.

H_{13}: There is significance of difference between the average preferences by graduate and post-graduate.

TABLE 5: AVERAGE RANKING WITH RESPECT TO EDUCATION

Group Statistics					
	education	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Curiosity	Graduate	15	2.93	2.712	.700
	Post graduate	10	3.90	2.234	.706

Inconvenient bank Time (24X7 service)	Graduate	15	2.20	1.781	.460
	Post graduate	10	2.60	1.897	.600
Inconvenient Branch location	Graduate	15	2.67	2.350	.607
	Post graduate	10	2.80	1.932	.611
Faster Transaction / information	Graduate	15	2.40	1.682	.434
	Post graduate	10	2.40	1.647	.521
Safe and secure	Graduate	15	2.40	1.765	.456
	Post graduate	10	3.50	2.014	.637
Low service charge	Graduate	15	3.53	2.386	.616
	Post graduate	10	3.80	1.874	.593
Online shopping	Graduate	15	4.20	2.859	.738
	Post graduate	10	5.50	1.354	.428

Mann-Whitney U test result:

Test Statistics[b]							
	Curiosity	**Inconvenient bank Time (24X7 service)**	**Inconvenient Branch location**	**Faster Transaction / information**	**Safe and secure**	**Low service charge**	**Online shopping**
Mann-Whitney U	56.000	65.000	73.500	73.500	53.500	71.500	61.000
Wilcoxon W	176.000	185.000	193.500	193.500	173.500	191.500	181.000
Z	-1.075	-.577	-.086	-.087	-1.220	-.197	-.793
p-value	.282	.564	.932	.930	.222	.844	.428
a. Not corrected for ties.							
b. Grouping Variable: education							

INTERPRETATION

Since p-value for Mann-Whitney U test is greater than that of 0.05 indicates no significant difference between the average rankings for when compared between graduate and post-graduate for each of reason for respondent to open an Internet bank account.

FINDINGS AND CONCLUSION

- ✓ There is significance of difference between the average rankings for reasons. SO we reject null hypothesis and conclude that some of the reasons are preferred more than some others. From mean ranks table we can conclude that online shopping is the highest preferred reason for internet banking.
- ✓ There is no significant difference between the average rankings for when compared between male and female for each of reason for respondent to open an Internet bank account.
- ✓ There is no significant difference between the average rankings for when compared between graduate and post-graduate for each of reason for respondent to open an Internet bank account.

SUGGESTIONS

- Banks should create awareness among the customers about use of ICT in banking apart from online shopping.
- They should take awareness programmes very often to educate customers.

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Recently two students have successfully completed Ph. D under her guidance and 8 are registered for Ph.D.

ANALYSIS OF IMPACT OF EXPERIENCE OF ICT IN BANKING AS COST EFFECTIVE TOOL ON CUSTOMERS IN CO-OPERATIVE BANKS OF THANE REGION

Adv. Suyash V. Pradhan and Dr. Shraddha Mayuresh Bhome

INTRODUCTION

Technology is the basic necessity that banks need to have in place. It includes centralized networks, operations and core banking operations. Use of Information and Communication Technology as a new medium has helped all to improve the efficiency and effectives in all the fields. Banking industry has also understood its importance and is one of the front runners in adopting the new technology. ICT in cooperative banks is making electronic services accessible to an ever widening population of users. In spite of security concerns the ICT has already become a reality to a certain extent though with limited functionality. The ever growing competition in this field has compelled them to change their way of working. They had to reinvent and improve products and services so that they become more user friendly, increase their profit and are less time consuming. As the time grows, the banks will get computer literate customers and it will be easier to sell services through only electronic ways.

OBJECTIVE OF STUDY

1. To understand the experience of use of ICT of customers in co-operative banks of Thane region.

HYPOTHESIS OF STUDY

Ho: Use of ICT in co-operative banks and its impact on business or service is dependant of each other.

H1: Use of ICT in co-operative banks and its impact on business or service are independent of each other.

REVIEW OF LITERATURE

1. **Balasubramanya S. (**2002) in his study analysed that the automation in the banking sector has come a long way starting with the Rangarajan Committee report on the banking sector reforms during the eighties, followed by reports of the Narasimham Committee in the nineties. With over 65,000 branches of the banks (public, private and the cooperative sector) in the country, the author found that the percentage of branches covered by automation was very low. Though many banks had claimed that more than 70% business has been automated due to the enforcement of RBI guidelines, in reality it was much lower, as many functions in each branch were still done manually or with partial automation. Hence, there was a significant amount of automation work to be achieved in the banking sector.

2. **Rajshekhara K. S.** (2004) described the several changes in banking industry over a number of years. IT has resulted as non deductible segment of banks. It leads to fast service with negligible transaction cost for the customers. The real success of IT in the banking sector depends upon the customer's satisfaction. The paper studied customer related aspects and not employees problems regarding bank computerization.

3. **Uppal R. K.,** (2008) described that in the post-LPG (Liberalization, Privatization and Globalization) era and Information Technology (IT) era, transformation in Indian banks is taking place with different parameters and the curves of banking services are dynamically altering the face of banking, as banks are stepping towards e-banking from traditional banking. The paper empirically analyzes the quality of e-banking services in the changing environment. With different statistical tools such as weighted average method and ranking, the paper concludes that most of the customers of e-banks are satisfied with the different e-channels and their services, but the lack of awareness is a major obstacle in the spread of e-banking services. The paper also suggests some measures to make e-banking services more effective in the future.

4. **Mittal et.al.**(2006-07), discussed the issue that the transaction through technology channels cost much less to the banks than the customers reaching the bank and doing the transactions. In the last decade banks have invested heavily in the technology. In the use of information technology, the new private and foreign sector banks have taken lead over the public and old private sector banks. Today public sector banks are also investing heavily in technology to compete with the new private and foreign sector banks. In the study authors have identified the different technology issues and challenges such as choice of right

channel, justification of IT investment in terms of ROI (Rate of Interest), e-governance, customer relationship management, security concerns, penetration of IT in rural areas etc. Banks are required to address these issues and challenges effectively to stay in business and grow.

5. **Rimpi Kaur** (2013), Banks are shifting focus from paper-based to electronic transactions. This paper analyses the computerization, expenditure on electronic banking and cost-benefit analysis of paper-based and electronic transactions. There is a swing from paper-based transactions to electronic transactions, with electronic transactions escalating drastically and earning business value at a triple rate. Per transaction value is 168 times per transaction cost which shows sound returns. The paper evaluates the effect of transactions on cost and value through correlation-coefficient and concludes that electronic banking has significant impact on the cost and value of each transaction.

RESEARCH METHODOLOGY

Sample Universe: Thane Region : Four co-operative banks which are of Thane origin

1. Thane Janata Sahakari Bank Ltd.
2. Thane Bharat Co-operative Bank Ltd.
3. Thane Distirct Central Co-operative Bank Ltd.
4. GPPJ Sahakari Bank Ltd.

Sample Size: 400 customers (100 customers of each bank)

Sampling technique: Convenient and Random Sampling Method

Methods of data Collection: Pre- structured questionnaire (Primary data)

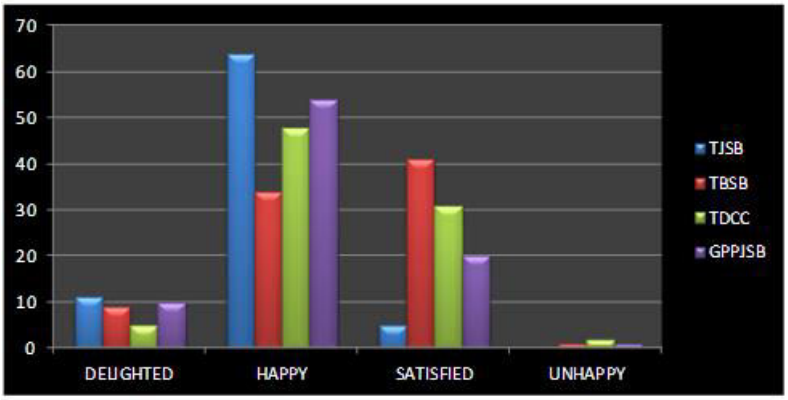
ANALYSIS AND INTERPRETATION OF DATA

Table 1: Bankwise Experience of Ict in Banking

EXPERIENCE	TJSB	TBSB	TDCC	GPPJSB	TOTAL
DELIGHTED	11	9	5	10	**35**
HAPPY	64	34	48	54	**200**
SATISFIED	5	41	31	20	**97**
UNHAPPY	00	01	02	01	**04**
TOTAL	**80**	**85**	**86**	**85**	**336**

Source: Primary Data

Chart 1: Bankwise Experience of Ict in Banking



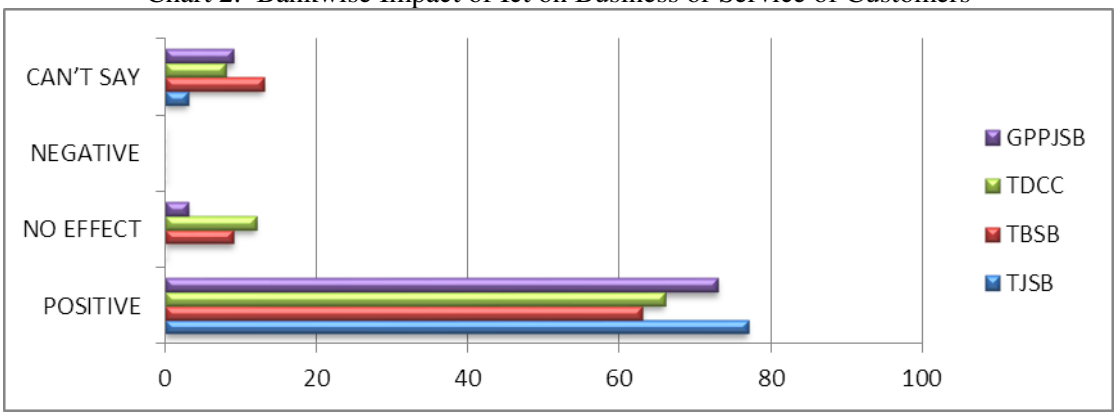
When asked the respondents about the experience of ICT in all the banks 80% of the TJSB Bank customers are happy with the service provided by the bank. It is then followed by GPPJSB with 63.50% of the customers and then TDCC Bank with 41.28% and then lastly TBSB Bank with 32%. All the customers of different co-operative banks are satisfied with the services offered under e-banking. Hardly few customers are unhappy on the same. It is observed that hardly 4 customer respondents out of the selected are overall sample respondents are unhappy which is purely negligible.

Table 2: Bankwise Impact of Ict on Business or Service of Customers

IMPACT	TJSB	TBSB	TDCC	GPPJSB	TOTAL
POSITIVE	77	63	66	73	279
NO EFFECT	00	09	12	03	24
NEGATIVE	00	00	00	00	00
CAN'T SAY	03	13	08	09	33
TOTAL	80	85	86	85	336

Source: Primary Data

Chart 2: Bankwise Impact of Ict on Business or Service of Customers



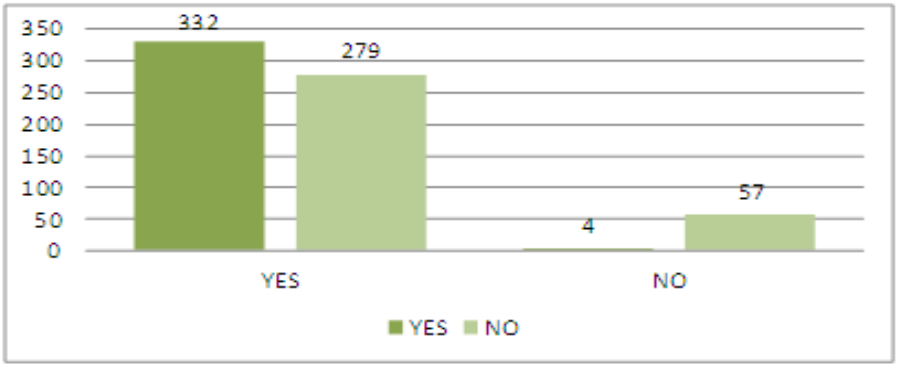
When asked the question to customer respondents, none of the customer of a selected sample bank is having the negative impact of ICT on their business or service as per their occupation. Out of the 80 customers who use ICT in TJSB Bank, 77 customers have positive impact of ICT on their business or occupation which is 96.25%. It is then followed by GPPJSB with 85.88%. Then 76.74% respondents of TDCC Bank have positive impact of ICT on their business or occupation or service. There are hardly few customers of each bank who say as ICT has no impact on their occupation. But amongst that TJSB Bank Customers are not saying at all about the any effect on business. They all have positive impact on business. So, one can conclude that overall TJSB Bank customers are more happy and have good impact on their business.

Table 5.46 Happy With Experience of Ict and its Good Impact on Business / Service

HAPPY WITH ICT EXPERIENCE / POSITIVE IMPACT ON OCCUPATION	YES	NO	TOTAL
YES	**332**	**279**	**611**
NO	**04**	**57**	**61**
TOTAL	**336**	**336**	**672**

Source: Primary Data

Chart 5.30 Comparison of Happy With Experience of Ict and its Good Impact on Business / Service



Further, the Q value i.e. Yule's Coefficient of Association is calculated as below:
Q = (332*57 – 279*4) / (332*57 + 279*4) = 0.7000

Thus, Q value is = 0.889
Chi square value at 0.05 level of significance = 50.6466
This, P value is 0.
This result is significant at $P < 0.05$.

The above graph and table indicates that around 83% of the respondents have positive impact of ICT on their business or service as mode of occupation. 98% of the customer respondents are overall happy with the ICT experience with selected sample banks.

Chi square value	= 30.6466
Yule's Coefficient of Association	= 0.889

It indicates that, the above two attributes are highly dependent on each other as ICT in banking as a substitute to traditional banking with positive impact on occupation of respondents as it saves the time of bank customers.

INTERPRETATIONS

1. ICT has resulted in reductions in branch visit, cash in hand, overall banking time. The respondent says that around 50% decreases has happened due to use of ICT in banking.
2. ICT has increased the speed of transactions & 52% respondents says that the increase in speed is 50% than earlier.
3. 46% respondents say that increase in updating of information, balance checking & cheque status has improved the speed of the work by 80%.
4. The respondents do agree with the reductions in cash in hand. 32% says it has reduced by 20 %. 39 % say that it has reduced by 50% and around 29% say that it has reduced by 80%.
5. Overall banking time due to use of ICT has been reduced to 50% as per 46.73% respondents. 32% respondents say that reduction is by 80% and 20% said that it has been reduced by 20% only. This all is result of ICT in banking and its positive trends.

CONCLUSION

Around 83% of the respondents have positive impact of ICT on their business or service as mode of occupation. 98% of the customer respondents are overall happy with the ICT experience with selected sample banks. It indicates that, the above two attributes are highly dependent on each other as ICT in banking as a substitute to traditional banking with positive impact on occupation of respondents as it saves the time of bank customers.

When asked the respondents about the experience of ICT in all the banks 80% of the TJSB Bank customers are happy with the service provided by the bank. It is then followed by GPPJSB with 63.50% of the customers and then TDCC Bank with 41.28% and then lastly TBSB Bank with 32%. All the customers of different co-operative banks are satisfied with the services offered under e-banking. Hardly few customers are unhappy on the same. It is observed that hardly 4 customer respondents out of the selected are overall sample respondents are unhappy which is purely negligible.

When asked the question to customer respondents, none of the customer of a selected sample bank is having the negative impact of ICT on their business or service as per their occupation. Out of the 80 customers who use ICT in TJSB Bank, 77 customers have positive impact of ICT on their business or occupation which is 96.25%. It is then followed by GPPJSB with 85.88%. Then 76.74% respondents of TDCC Bank have positive impact of ICT on their business or occupation or service. There are hardly few customers of each bank who say as ICT has no impact on their occupation. But amongst that TJSB Bank Customers are not saying at all about the any effect on business. They all have positive impact on business. So, one can conclude that overall TJSB Bank customers are more happy and have good impact on their business.

SUGGESTIONS

- ✓ To build a new customer base, the banks have to set up their prices very competitively. Investment in technology involves significant start up costs. Adequate opinion of experts is needed. Supervisors must

ensure that management of banks are aware of these risks involved in e-banking and carefully access their strategic options so that the added uncertainties may be compensated by additional returns.

- ✓ Banking activities must be inculcated right from school studies. The basic knowledge of e-banking transactions should be given to the student so that they can go well with this modern banking.

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Recently two students have successfully completed Ph. D under her guidance and 8 are registered for Ph.D.

FACTORS INFLUENCING E-SHOPPING AMONG WOMEN IN ERODE DISTRICT, TAMIL NADU

Dr. V. R. Malarvizhi

ABSTRACT

E-Shopping has become an admired shopping method nowadays because of easy access of internet facility across the world. Today several people are looking for remarkable alternatives for shopping and e-shopping is just the better option for them. It is a sound truth that women are the most intricate consumers in this globe. The major purpose of the study is to analyze the factors influencing e-shopping among women in Erode district, Tamil Nadu. A sample size of 120 women was taken and both primary and secondary data were used in the study. The data was collected through a questionnaire and simple percentage method, average score analysis and chi-square analysis have been adopted for data analysis. This article also reveals the level of satisfaction towards e-shopping among women.

Keywords: Consumers, e-shopping, factors, satisfaction, women.

INTRODUCTION

There is a significant increase in claim of e-business transactions in India. Since the ease availability and usage of computers, laptop, smart phones and other devices have increased, the percentage of internet users for e-shopping has full-fledged swiftly over the past decade among the Indian online shoppers. In general, the reasons to be believed for e-shopping have been time and convenience. The attitude of using online without leaving the home/office to have the products and/or services delivered to the door is the increasing mannerism for many shoppers. Out of the total 150 million Internet users in the country, around 60 million women in India are now in online and use the Internet to manage their day-to-day life, according to a report by Google India in 2013. Women are extremely busy and they are constantly pressed for time. They juggle many jobs together and also handle conflicting priorities. Few companies have understood them and have responded towards their need for time saving solutions, products or services. Nowadays, women are educated, knowledgeable, well informed and independent. They practice various professions and have a mind of their own. They do not believe in hearsay and would like to analyze and scrutinize the products themselves. It is very difficult to deceive women consumers, as many of them are quite tech-savvy and believe in comparing various features of the product before purchasing them (Vidya Panicker, 2015). In this study, the researcher analyzes the factors influencing e-shopping among women in Erode district. This study would facilitate to recognize the exact needs and wants of women consumers that will help the marketers to formulate apt strategies to focus them.

STATEMENT OF THE PROBLEM

There are some periods that women seriously view shopping as a family activity and always want to shop with the family. But in today's scenario, women's involvement in utilizing computers, laptops and smart phones is increasing and so women's involvement in purchase decisions is also increasing and changing in India. The number of working women in India is constantly increasing. This change is assumed to have an impact on the imminent of women on their purchasing pattern. This in turn can guide us to a thought on what factors would influence e-shopping among women especially in Erode district, Tamil Nadu. Women who shop online are aware of some of the discouraging features of e- shopping. The supposition for online retailers is that they should spotlight e-shopping more obliging and accessible. Therefore, it is vital to study the consumer response in their purchase decision through e-shopping.

LITERATURE REVIEW

Alreck, P. and Settle, R. B. (2002) in their study entitled "Gender Effects on Internet, Catalogue and Store Shopping" examined women's preferences in shopping. Women emerge to have pleasure in shopping than men. The study found that the gender gap represented a hard factor for consumer marketers, so it is recommended that thought of the gender of the market to be served would be a better approach in many cases. The study concluded that it would be better to recognize the gender differences and hold them.

Although very few studies have currently been done on Indian consumer-buying behaviour, and especially on the role of gender, there are indicators that different findings from those from the West may evolve. Sheth and Vittal (2007) in their article entitled, "Online Buying Behaviour of Homemakers in Western Suburbs of Mumbai and Social Media Influence" revealed that *s*hopping dynamics is different in India. They identified that shopping is a family activity and nearly 70% of shoppers always go to stores with the family, and 74% see shopping as the best way to spend time with the family. They also opined that this preference for family-oriented shopping was found to be consistent across age groups, income segments, regions and city sizes.

Rastogi (2010) examined that the employees of various companies are purchasing more than others through online shopping (51%) , maximum numbers of respondents (38%) feel that online shopping is having easy buying procedures; others think that they can have wide variety of products, lower price of the products, various modes of payments etc. Most of the respondents think that availability of online information about product and services is excellent (54%), most of the respondents purchase the products 2 to 5 times annually (46%). The result of this research showed that the prominent factors affecting this buying decision are impulse, information of availability and option to provide a review. This study concluded that since most of the e-shopping of the deals is taking place on impulse, marketers should put their focus on increasing awareness about the availability of goods and services and building a feedback mechanism.

Hye-Shin Kim (2011) in her article on "Fashion Leadership and Hedonic Shopping Motivations of Female Consumers" exposed that a woman will select the best for her satisfaction and will receive the attention from others. Chatterjee and Ghosal (2014) explored that e-commerce is an embodiment in India and it has become an integral part of our daily life. They stated that there are number of websites providing any number of goods and services. Theoretically it is more convenient to buy products online due to its flexible nature, but in India the adoption rate of the technology is significantly different from other nations because of the country's unique social and economical characteristics.

UshaVaidehi (2014) in her study entitled, "Factors Influencing Online Shopping Behavior of Students in Engineering Colleges at Rangareddy District" found that both male and female respondents preferred to purchase goods online and they were more interested to buy apparels, electronic goods and books through online. However male students are more interested in purchasing goods online when compared to female students. This study exhibits that the factors such as shopping online saves time, availability of the product for less price, promotions that e-retailers are providing, ease in payment are the motivating drives to encourage students to shop more online.

Rupali Mukherjee (2015) stated that contrary to popular perception, it's not just women who like to indulge in online shopping. Men spend 1.3x more time than women shopping on e-commerce sites every month on an average in India. The trend is reversed in developed countries like the UK and the US, where women spend twice the amount of time.

Tamilarasi and Angayarkanni (2016) analyzed factors affecting on e-shopping behavior of working women in Chennai city. They have used a model examining the impact of perceived risks, infrastructural variables and return policy on attitude toward online shopping behavior and subjective norms, perceived behavioural control, domain specific innovativeness and attitude on online shopping behavior as the hypotheses of study. The proposed conceptual model was developed and tested through a factor analysis to reduce data dimensions. The study concluded that e-shopping provides a very comfortable service by being able to save the item in the personal shopping bag, and buy it later on. The study concluded also concluded that e-shopping can become imperative tools for improving business and ensuring customers to be happy and loyal.

OBJECTIVES OF THE STUDY

The primary objective of the study is to identify the factors influencing e-shopping among women in Erode district, Tamil Nadu and the secondary objective is to know the satisfaction level of women about e-shopping.

RESEARCH METHODOLOGY

The researcher focused on descriptive research design. This research was conducted in Erode District of Tamil Nadu State. Since the size of universe is infinite, the researcher decided to select a sample size of 150

women customers. Convenience sampling technique was used in this study to meet 150 women in Erode district. Convenience sampling is a type of non-probability sampling design which refers to the collection of information from members of the population who are conveniently available. But unusable responses were 30 among total population and usable responses were 120. Hence, final sample size is 120. The primary data were collected through a questionnaire and the secondary data were collected from books, journals, websites, magazines and research articles.

TOOLS USED FOR THE STUDY

To attain the objectives of the study, various statistical tools were adopted. They are descriptive analysis / percentage analysis, Chi – Square Analysis and Average Score Analysis.

RESULTS AND DISCUSSION

Percentage analysis has been used to analyze the profile variables of the customers and perception towards e-shopping. Profile variables such as age, marital status, educational qualification, occupation, monthly income, type of family and place of residence are exhibited in table 1.

Table 1: Profile Variables of the Respondents

Factors	Options	No. of Respondents	Percentage (%)
Age	Below 20 years	17	14.2
	21-30 years	26	21.7
	31-40 years	38	31.6
	41-50 years	25	20.8
	Above 50 years	14	11.7
Marital Status	Married	91	75.8
	Unmarried	29	24.2
Educational Qualification	School level	24	20.0
	Diploma	11	9.2
	UG	49	40.8
	PG	28	23.3
	Others	8	6.7
Occupation	Agriculture	6	5.0
	Employed	72	60.0
	Business	27	22.5
	Others	15	12.5
Monthly Income	Below Rs.10,000	23	19.2
	Rs.10,001-15,000	31	25.8
	Rs.15,001-20,000	35	29.2
	Rs.20,001-25,000	21	17.5
	Above Rs.25,000	10	8.3
Type of family	Nuclear family	72	60.0
	Joint family	48	40.0
Place of residence	Rural	38	31.7
	Semi urban	31	25.8
	Urban	51	42.5

It can be inferred that majority (31.6%) of the respondents belong to the age group 31-40 years, 75.8% of the respondents are married, 40.8% of the respondents have UG qualification, 60.0% of the respondents are employed, 29.2% of the respondents are earned Rs.15,001-20,000, 60.0% of the respondents belong to nuclear family and 42.5% of the respondents are urban customers.

CUSTOMERS' ATTITUDE TOWARDS E-SHOPPING

Factors covered under customers' attitude towards e-shopping are awareness about e-shopping, laptop/computer/smart phone owned, internet usage, purchase of product through online, frequency of

purchase, aware about the terms and conditions of e-shopping, mode of payment, product delivery, quality assurance, return of products and recommend others for e-shopping. The response given by the respondents are revealed in table 2.

Table 2: Respondents' Attitude towards E-shopping

Factors	Options	No. of Respondents	Percentage (%)
Awareness about e-shopping	Friends	58	48.3
	Relatives	21	17.5
	Neighbours	9	7.5
	Advertisements (Newspaper, TV and Internet)	32	26.7
Laptop/Computer/Smart phone Owned	Yes	108	90
	No	12	10
Internet Usage	Always	52	43.3
	Frequently	20	16.7
	Rarely	48	40.0
Purchase of product through online	Tickets	19	15.8
	Electronic goods accessories	12	10.0
	Apparels	21	17.5
	Books	12	10.0
	Footwear	9	7.5
	Instant recharge of cell phone	14	11.7
	Gift items	8	6.7
	Cosmetics	15	12.5
	Sports	4	3.3
	Others	6	5.0
Frequency of Purchase	Often	30	25.0
	Once in a month	38	31.7
	Rarely	52	43.3
Aware about the terms & conditions of e-shopping	Yes	69	57.5
	No	51	42.5
Mode of payment	Cash on delivery	33	27.5
	Internet banking	42	35.0
	Mobile banking	20	16.6
	Debit & Credit cards	17	14.2
	E-wallet	8	6.7
Product delivery	Courier/Parcel service	47	39.2
	Door delivery	39	32.5
	In-store pick up	34	28.3
Quality assurance	Very good	28	23.4
	Good	40	33.3
	Average	31	25.8
	Poor	17	14.2
	Very Poor	4	3.3
Return of products	Yes	28	23.3

	No	92	76.7
Recommend others for e-shopping	Yes	74	61.7
	No	46	38.3

Table 2 shows that out of 120 respondents, 48.3% of the respondents are aware about e-shopping through their 'Friends', 90.0% of the respondents own Laptop/Computer/Smart phone in their home, 43.3% of the respondents 'Always' use internet, 17.5% of the respondents purchase 'Apparels' through online, 43.3% of the respondents 'Rarely' purchase products through online,57.5% of the respondents are aware about the terms and conditions of e-shopping, 35.0% of the respondents have chosen 'Internet banking' as their mode of payment, 39.2% of the respondents get their products through 'Courier/Parcel service', 33.3% of the respondents opine 'Good' for quality assurance, 76.7% of the respondents have given their response as 'No' to return of products and 61.7% of the respondents opine that they will recommend others for e-shopping.

FACTORS INFLUENCING E-SHOPPING AMONG WOMEN

Average score analysis has been applied to determine the important factors influencing e-shopping among women. The five-point scaling technique was employed in the study to convert the qualitative information into a quantitative one. Based on the information supplied by the respondents the average score was calculated to determine the level of agreeability towards factors influencing e-shopping. In the present study, ten important factors identified were Changing purchase decisions, Varieties of things, Offers and discounts, Price, Time saving and Convenience, Quality, Service, Comparison with other online stores, Availability and Image. The factors influencing e-shopping among the respondents differ significantly. To know the most important factor, they were asked to rate their factors in a five-point scale ranging from never to always. The scores assigned on these scales were 1 to 5 respectively. The mean score and rank for factors influencing e-shopping were computed and shown in table 3.

Table 3: Ranking of Factors Influencing E-Shopping among Women

Factors	Mean Score	Rank
Changing purchase decisions	2.25	8
Varieties of things	3.52	2
Offers and discounts	2.45	6
Price	2.82	4
Time saving and Convenience	3.71	1
Quality	2.68	5
Service	1.74	10
Comparison with other online stores	3.43	3
Availability	2.41	7
Image	1.97	9

It is observed from the table 3 that 'Time saving and Convenience' is the most considering factor among women with mean score 3.71. The second important factor ranked by the respondents, is 'Varieties of things' with mean score 3.52. 'Comparison with other online stores' is the factor, which got the third rank with mean score 3.43. 'Price' is the fourth rank as pointed out by the customers with mean score 2.82. The fifth rank selected by the customers is 'Quality' with mean score 2.68. 'Offers and discounts' is given the sixth rank with mean score 2.45 and 'Availability' is denoted as the seventh rank by the respondents with mean score 2.41. The eighth rank that influences e-shopping is 'Changing purchase decisions' with mean score 2.25and 'Image' got the ninth rank with mean score 1.97. The last rank expressed by the customers is 'Service' with mean score 1.74. It is concluded that the most important factors influencing e-shopping among the respondents are 'Time saving and Convenience', 'Varieties of things' and 'Comparison with other online stores'.

ASSOCIATION BETWEEN PROFILE VARIABLES AND LEVEL OF SATISFACTION ON E-SHOPPING AMONG THE RESPONDENTS

Chi-square test is mainly used to test the significance of one factor over the other. In this study, chi square test is used to find the relationship between profile variables and the level of satisfaction towards e-shopping among women in Erode district.

HYPOTHESIS

H01 – There is no significant relationship between the age of the respondents and level of satisfaction towards e-shopping.

H02 – There is no significant relationship between the occupation of the respondents and level of satisfaction towards e-shopping.

H03 – There is no significant relationship between the monthly income of the respondents and level of satisfaction towards e-shopping.

Table 4: Chi-Square Test Results

Hypothesis	Chi-Square value	Table Value	Result
H01	2.87	1.29	Significant
H02	3.11	1.03	Significant
H03	2.41	1.40	Significant

From the table 4, it is clear that the chi-square value of age 2.87 (1.29), occupation 3.11(1.03) and monthly income 2.41(1.40) of the respondents are significant at the level of 1% with the level of satisfaction. The result shows that there is a significant relationship between level of satisfaction of customers and demographic factors - age, occupation, and monthly income. So the hypothesis (H01, H02 and H03) formulated in this study is rejected.

RECOMMENDATIONS

It is a notable point that rural and semi-urban women are interested in e-shopping like urban women. And also most respondents' opined time saving and convenience as the significant factor for e-shopping. Hence the marketers may put in consideration with their distinguished services which make them more convenient and time saving. Nowadays each and every consumer is aware about choosing their products and brands. They are comparing the products and brands with other online stores for price, quality, image, service, availability, variety etc. Therefore marketers may focus on those issues to retain and attract more customers. The study found that some consumers are not aware about the terms and conditions of e-shopping. Cyber crimes are being increased due to the advancement of information technology in recent days. So it is suggested for women consumers that before getting involved in e-shopping, they must aware about the terms and conditions. The study finally suggested that it is essential for the marketers to tie the needs of the women consumers by adopting excellent marketing strategies for all commodities to gain better image and most satisfaction.

CONCLUSION

Today e-shopping is flourishing and customers are fascinated towards the novel mode of shopping in India. Since the customer needs, wants, preferences and attitude towards products/services keep on changing, it is essential for the companies to acknowledge the challenges and implement the strategies quickly. In this study, an effort was made to look at the factors influencing e-shopping and level of satisfaction towards e-shopping among women in Erode district, Tamil Nadu. The most important factors influencing e-shopping among the respondents are 'Time saving and Convenience', 'Varieties of things' and 'Comparison with other online stores'. Most of the respondents own Laptop/Computer/Smart phone in their home, and majority of the respondents opine that they will recommend others for e-shopping. The results show that there is a significant relationship between level of satisfaction of customers and demographic factors such as age, occupation and monthly income. The study concluded that the respondents belong to the age group 31-40 years and urban customers are very keen to shop online. It is also concluded that most of the respondents are employed and belong to nuclear family.

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SUPPLY CHAIN SYSTEM IN E-TAILING AS A COMPLEX NETWORK

D. Baruah and Dr. A. Bharali

ABSTRACT

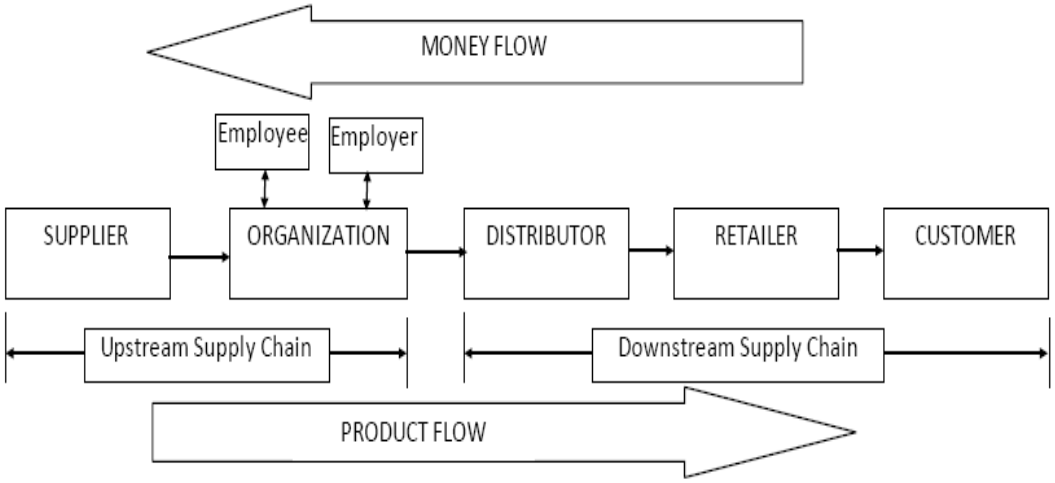
A supply chain system is a process in which raw material is manufactured in to final product and delivers to customer through distribution channel and e-tailing is the concept of selling of goods and services through electronic media, in particular, the internet. In this chapter, we analyze the supply chain system in E-tailing. In particular, we consider Amazon, an e-tailing network and discussed the supply chain system in Amazon in a complex network perspective.

Keywords: Amazon Network, Clustering Coefficient, Degree Distribution, Mixing, Supply Chain.

INTRODUCTION

We are living in a digital era and we can find every possible event in our surroundings finds some digital counterparts, e-shopping in one of such popular and frequently used digital services. There are different aspects of this system including economic, management and technology. Amazon India is an e-retailing company that provides services in India like many other countries. The success and reach of this kind of e-retailing companies are beyond ones imagination. Amazon India is case to study how the emergence of digital environment will create better supply chain management, easyand timely money transfers, better branding, marketing using the digital media, introduction of newkinds of products and services etc. A supply chain system is a process in which raw material is manufactured in to final product and delivers to customer through distribution channel [1]. The term supply chain refers to the entire network of companies that work together to design, produce, deliver and service products.It is an inter-linked set of relationships connecting customer to supplier, perhaps through a number of intermediate stages such as manufacturing, warehousing and distribution. The network of supply chain includes a material flow from suppliers to their upstream suppliers (organizations), transformation of materials into products, and distribution of products from organization to retailer and then retailer to customer.The drivers of supply chain are shown in figure 1 [3].

Figure 1:Drivers of supply chain



So the first driver of supply chain is supplier. A supplier is the person who helps the organization toachieve its goal through on time delivery of quality product in right quantity [9].Supplier play an important role in assuring that incoming materials aredefects free, which means that the buyer does not have to hold as much as safety stock asa contingency in case of defects in incoming materials [4].

The second driver of supply chain is employer. The employer is the main driving force in thesupply chain as only he can invest money for various purposes like research,manufacturing, advertising, etc. Actually, employer sets the target for the organization and provides various resources, facilities and guidance to achieve them.[3]

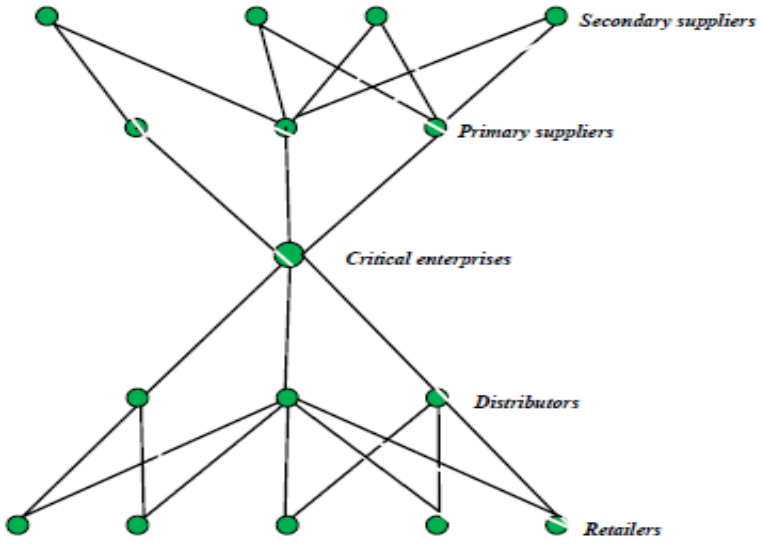
The third driver of supply chain is employee. Employee converts the dream of employer into reality by designing, manufacturing, selling the product, and establishes the reputation of organization.[3]

The next drivers of supply chain are distributor and retailer. The distributor helps organization to sell the product into market through various retailers. Distributor may be called as authorized stockiest who store finish goods inventory because of trust, commitment and market reputation of parent organization and supply the material to retailer according to demand. Retailer is the driver who really and directly faces the demand and reaction of customer. So feedback of retailer is very much important. Though reputation and service quality of retailer is very much important for customer but quality of product is also matter.[3]

Customer plays an important role in the performance of supply chain. Customer is the king of market and he decides good or bad. He is the main driving force.[3]

Now a days, many customers use e-retailing for purchasing many products. The e-retailing (Electronic retailing) is the concept of selling of goods and services through electronic media, in particular, the internet. For example: Amazon, eBay etc. However, creating and maintaining an e-tailing website may be expensive. Infrastructure costs for order fulfillment, warehousing goods, dealing with returns and other issues add up quickly. Also, consumers may not trust a company that is not well-established. A successful e-tailing requires strong branding. Websites must be engaging and regularly updated to meet consumers' changing demands. Products and services need to stand out from competitors' offerings and add value to consumers' lives. In addition, a company's offerings must be competitively priced so consumers do not favor one business over another based on cost alone.E-tailors need strong distribution efficiency so consumers are not waiting long periods of time for the products or services they purchase The supply chain system under the background ofglobal economic integration has a characteristic ofcomplex network which is defined as complex supply chainnetwork. Complex supply chain network is composed ofenterprises with some or all characteristics of self organizing, self-similar, attractor, small-world, scale-free.In such a supply chain network, the core enterprise,upstream suppliers, sub-suppliers, suppliers with theoriginal source of raw materials and the respectivesuppliers, distributors, retailers of these suppliers togetherconstitute network. These networks, as well as commercialrelations of the supply and demand connected nodes forma huge network, which is shown in Figure 2 [6] as follows.

Figure 2: Simplified diagram of supply chain network



As shown in Figure 2, an enterprise can be members ofthe supply chain network, at the same time also can bethe member of another network. Numerous relationsbetween members present the complexity of the network,such as scale-free feature and small-world feature. Eachnetwork is not existed alone. They compete and cooperatewith each other and form a complex supply chainnetwork. Network inside involves in numerousenterprises. Supply chain network is complex andchangeable global economic environment. The

nature ofthe enterprise within supply chain network is different.They have their own enterprise culture and the pursuit ofinterests. There are complicated and changeable relationsof the supply and demand between those enterprises.In addition, the identification relations of suppliers,manufacturers, distributors have no obvious boundaries.The identity of an enterprise may be more than one, suchas probably manufacturers, suppliers, and customers.Therefore, the supply chain network is a complex system [6].In this work we analyzed the network form by the e-tailor Amazon as a complex network.

The rest of this chapter is organized as follows. In section II, we present preliminaries of complex network. In section III, data analysis of Amazon network will be presented. Mixing and degree distribution of the network will be presented in section IV. In section V, supply chain system of Amazon network will be presented. Conclusions are made in section VI.

SOME PRELIMINARIES OF NETWORK ANALYSIS

In this section we present some preliminaries of network analysis, which will be used in the rest of this chapter.

Degree: Degree of a node is the number of edges incident to the node with loops counted twice.

Average degree: It is average of the total degree of the network.

Diameter: Diameter of a network is the longest shortest path between any pair of nodes inthe network. If L_{ij} is the shortest path between nodes i and j, then Diameter,

$d = \max_{i,j \in V} L_{ij}$, where V is the set of vertices in the network.

Clustering coefficient [2]: In a network, if node A is connected to node B andnode B is connected to node P, then there is a intensify probability that node A will also beconnected to node P. The clustering coefficient of a network is defined as:

$$C = \frac{3 \times \text{number of triangles in the network}}{\text{number of connected triples of vertices}}$$

where a ‘connected triple’ means a node with edges running to an unordered pair of others.
Clustering coefficient is also known as network transitivity.

Coefficient of mixing [7]: A network is said to be assortative if the high-degree nodes in thenetwork tend to have connections with other high-degree nodes, otherwise the network is calleddisassortative. For example, in social networks an individual is strongly affected by the language,race and age of other individuals among other things for the partners of marriage. If peopleprefer to associate with others who are like them, then the network shows assortative mixingor assortative matching and if they prefer to associate with those who are different, it showsdisassortative mixing. Friendship is an example of assortative mixing by most characteristics.The coefficient of mixing r is defined as

$$r = \frac{\sum_i j_i k_i - M^{-1} \sum_i j_i \sum_i k_i}{\sqrt{[\sum_i {j_i}^2 - M^{-1}(\sum_i j_i)^2][\sum_i {k_i}^2 - M^{-1}(\sum_i k_i)^2]}}$$

where $j_i$and $k_i$are the excess in-degree and out-degree of the vertices that the ith edge leadsinto and out of respectively and M is the number of edges. If the value of r positive then thenetwork is assortative and if the value is negative then the network is disassortative.

DATA ANALYSIS OF AMAZON NETWORK: A CASE STUDY

Amazon network is based on the "customers who bought this also bought" feature. In this network, nodes are products and two nodes are connected by an undirected edge if the corresponding products have been regularly bought together. It is an undirected and unweighted network with total number of nodes is 334,863 i.e. in this network about 334,863 products are available and the number of edges in this network is 925,872 (i.e. co-purchases). The average degree of the network is 5.5299 and the maximum degree is 549. The diameter of the network is 47 and the clustering coefficient of the network is 20.5%. [5]

Table 1: Network metrics of Amazon Network

Network measures	Values
Number of nodes	334,863
Number of edges	925,872
Average degree	5.5299
Maximum degree	549
Diameter	47
Clustering coefficient	20.5%

MIXING AND DEGREE DISTRIBUTION OF THE NETWORK

The value of the coefficient of mixing of Amazon network is found to be negative (–0.058820), so the network is disassortative in nature.Degree distribution is one of the most common measuresfor complex networks. Many complex networks have beenfound to exhibit the scale free nature characterized by thepower law distribution of vertex degrees, i.e., p(k) ~k−r,where p(k) is the fraction of vertices in the network thathave degree k. The degree distribution of the Amazon network is shown in figure 3 and the cummilative degree distribution of the network is shown in figure 4 with scaling exponent 3.5810. [5]

Figure 3: Degree distribution

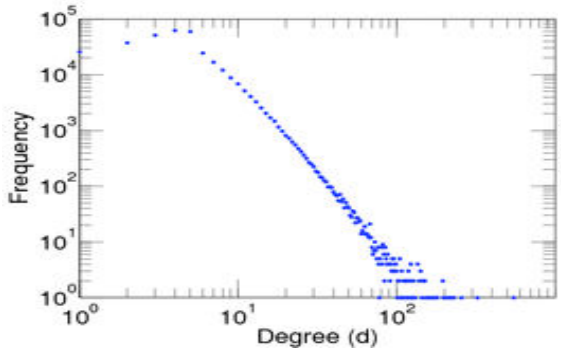
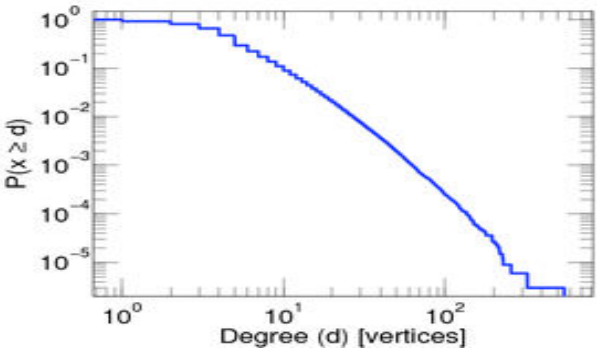


Figure 4: Cumulative degree distribution



SUPPLY CHAIN SYSTEM IN AMAZON

Amazon is a logistics company, as it facilitates the storage and sale of goods from third party vendors.Amazon.com relies on wide product sales forecasting and inventory management systems to fulfill orders quickly at a high rate of accuracy while optimizing shipping times to customers. Indeed, because of its aggressively innovative, internally developed e-commerce supply chain, Amazon can offer a vibrant and attractive customer experience that includes recommendation tools, a variety of shipping options, and excellent post-sale communications through its website. Managing supply chain and logistics in-house makes sense for Amazon, which uses these operations to build, leverage, and differentiate itself through scale and customer service. Moreover, maintaining internal control of the supply chain also allows Amazon to collect vast quantities of data, which can in turn be mined to improve all aspects of the supply chain and the website. [3]

The Supply chain system in Amazon is simple and effective. It starts with the customer placing an order. The order prompts a red light to come on in the warehouse which shows the worker the products that have been ordered, and the bar code is matched with the order. The product is then placed in crates on a conveyor, which goes through the distribution centre before being sorted by bar codes. Crates arrive at the central point, and bar codes of products are matched with orders and sorted automatically into one of several thousand chutes before going into a box. The bar code then identifies the customer order, boxes are packed taped and weighed, and they are shipped, and arriving at the consumer within 1 to 7 days. [8]

CONCLUSION

In this chapter we have discussed different aspects of a supply chain system in e-tailing as a complex network. The theory of complex network helps to find out drawbacks as well as stability of the network.As a case study we consider Amazon, an e-retailing network for study. We have found that it is a network with

scale-free property and disassortative in nature, which is the most desirable property in a supply chain network as it will make the network a stable one.

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COMMUNITY INFORMATION SERVICES THROUGH PUBLIC LIBRARIES IN DIGITAL ENVIRONMENT

Sanjoy Kumar Hazarika

ABSTRACT

Information is the primary need of a human being. In this age of Digital era the need of information is becoming more potent in the society. In this age all the activities of our daily lives are predominantly occupied by digital mode. So, we all must be accustomed with the digital environment. And that is why the gathering, processing and dissemination of information are the important functions of a civilized society. The human beings living in a particular area i.e. a community is always in the need of information i.e. Community Information Service (CIS). In the digital environment the CIS is becoming more challengeable. This paper covers the definition of Community Information Centre (CIC) as well as Heterogeneous Society. The manifold functions of an Information Centre in Heterogeneous Society are discussed to some extent. At present instead of the CICs Common Service Centres (CSC) are functioning and hence the functions of CSCs are also discussed. The CSCs are set up under the National e-governance Plan. Through the scheme the government services through online mode are taken to the public to minimise the digital divide. The CIS can easily be provided through Public Libraries. The role of Public Libraries for effective CIS is also given weightage in the paper.

Keywords: CIS, CSC, digital environment, e-governance, heterogeneous society and Public Libraries.

INTRODUCTION

From time immemorial of mankind we the human beings are using information for our development. The subject experts describe Information as the fifth need of man ranking after air, water, food and shelter. In fact, in view of the vital role played by information in daily life, it should be considered as the first need in terms of survival. This is because it is information about the availability of food, which food to be eaten, how to build a shelter, protection of territory, ensuring security and success, etc., which are primarily of organic importance. Without this information, it is difficult to go through the challenging process of life. As a matter of fact, every organisation knows or needs to know about its surroundings, availability of food and probable potential dangers for its life. Information is so basic that it is a part and parcel of nature. This is evident from the fact that every organism is endowed with certain amount of knowledge or knowledge-base by nature itself (for example, migration and imitation of natural groups) and it tries to add to its knowledge-base through sensory perception or experience. Without information, survival would he impossible. All human beings have information needs, both individual and collective. And it is information transfer and information revolution which are the key factors for the Cultural Revolution and societal development of mankind. Of course, the strength of any nation depends on its economic condition and/or economic development. Development is the most important challenge facing the human race. Despite vast opportunities created by the technological revolution of the twentieth century, more than one billion people, one-fifth of the world's population, live on less than one dollar a day—a standard of living that Western Europe and the United States attained two hundred years ago. Therefore, development is a greater challenge to the third world or developing countries and this challenge is much more serious in view of the constraints on their information resources. That is, the economic development of a country depends on soundness of the information system of its economy. Mountjoy states: "In this group (i.e., the third world countries) are the poorest nations in the world, technologically backward but capable of great advances and possessing in their territories a great wealth of mineral, vegetable and energy resources." This clearly means that the weakness of the third world in its information resources has a direct bearing on its economic development.

Allan Bunch who had first attempted to synthesise definitions of Community Information (CI), states that CI has two aspects: "one is concerned with the nature of the information provided, that is, information in the community to help people with daily problem solving or in raising the quality of their lives; the other is concerned with the nature of the clientele served, namely, those who belong to the lower socio-economic groups or are disadvantaged through an inability to obtain, understand, or act on information that affects their lives."

DEFINITION OF COMMUNITY

According to Oxford Dictionary a Community is a group of people living in the same place or having a particular characteristic in common. The common may include the race, language, religion, sex, age, profession etc.

HETEROGENEOUS SOCIETY

According to Oxford dictionary, the meaning of heterogeneous is something that is consisting of many kinds of things-let that something be different types of things or people. So, by the phrase "heterogeneous society" we mean such a society which consists of different kinds of people from various reason of the world-which is basically a society that is ethnically heterogeneous. Inside an ethnically heterogeneous society there might further heterogeneity in terms of faith or belief system. For example, India is heterogeneous society in terms of religious system because there are Indians who are following various major world religions.

COMMUNITY INFORMATION SERVICE

Community Information (CI) is a combination of two terms, i.e., Community and Information. The term "Information" is used to identify many concepts; hence, it is extremely difficult to define it precisely. Normally, information is a message, communicated by a communicator to a receiver. Giggey (1988) defines community as "a group of people who have something common. This can be their age, education, religion, interest, political affiliation, activities, work, possession or a combination of two or more of these". CI is information for the survival and growth of the community, or information required by members of the community to make effective use of the available resources around them. The information service through which CI is provided to communities is called Community Information Service (CIS). It may be worthwhile to look at two definitions of this concept in order to understand the focus and scope of CIS.

Joseph, C. Donhue described CIS in 1976 as offering: 1.Survival information, such as that related to health, housing, income, legal protection, economic opportunity, and political rights. 2. Citizen action information, needed for effective participation as individuals or as members of a group in the social, political, legal, economic process.

CIS was defined in 1980 by a group appointed by the British Library Association (BLA) as: Services which assist individuals and groups with daily problem–solving and with participation in the democratic process. The services concentrate on the needs of those who do not have ready access to other sources of assistance and on the most important problems that people have to face, problems to do with their homes, their jobs, and their rights. (BLA 1980)

The generally accepted definition today is services offered by all types of libraries and other organizations to provide people with information relevant to their everyday life, particularly those in the lower-economic and disadvantaged groups who need to learn how to obtain, understand, and use information. It was originally intended to help eradicate deprivation and illiteracy in the rural areas. CIS activities include health, education, employment, agriculture, village industries, daily necessities, consumer services, and so on.

COMMUNITY INFORMATION CENTRE

The place where a community member can gather information needed for any purpose is called a Community Information Centre (CIC). The items comprise and support information and referral service also referred to as a CIC are Inquiry, Databases, Publications, Social Reporting, Consultation and Community Development, Community Education, Professional Development and Administration.

COMMUNITY INFORMATION CENTRE (CIC) PROJECT

With a view to meeting the ICT need of the remote and fur flung areas of North East the Government of India thought a project for the Community Information Service. The World's largest Telecommunication initiative Community Information Centre Project was launched on August 17, 2002 where a total of 487 CICs were set up in the eight NE states namely Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. Another 68 centres were also set up and very recently 135 centres were set up in J&K. The project was for a term of five years. The stakeholders of the project were Department of Information Technology (DIT), National Informatic Centres (NIC), State Government and other vendors. The primary objectives of this project were to make the community members able to access web, internet

access, e-mail, market access, e-commerce, access to socio-economic data, e-learning, e-education, e-marketing, e-connectivity, e-governance, G2C etc. Every CIC was equipped with VSAT on a Local Area Network (LAN), TV for edutainment and two operators for service.

FIVE CATEGORIES OF SERVICE

The services offered by the CICs may be categorized in five main categories. They are

1. IT education and Training
2. E-mail and Internet access
3. Information dissemination
4. Citizen-centric applications
5. Entertainment and news

NIC developed Block Community Portal (BCP) for all the 487 Blocks of the state. With these portals any data on the block can easily be achieved by the community.

E-SUBIDHA

Through e-subidha several services are offered to the community. Among them the prominent where govt. certificates can be issued are

1. Land holding certificate
2. Income certificate for service holder
3. Income certificate for cultivator/farmer
4. SC/ST certificate
5. Land valuation certificate
6. Natural calamity certificate
7. No encumbrance certificate
8. Residential certificate
9. Family member certificate

In Assam *Gana seva* was started under *e-subidha.* With this the efforts were made to have e-governance with easy steps.

ASHA

NIC Assam in partnership with Assam Small Farmers' Agribusiness consortium has developed model ASHA-Making farmers prosperous through CIC using ICT for facilitating agri-business in the state of Assam.

BEST PRACTICE OF CIC

The best practices of CIC are listed below.

1. Electoral activities
2. e-governance services
3. Examination results
4. Other multifarious activities

The project has completed its term and so the CICs are about to close and a new project Common Service Centre has been in operation.

HETEROGENEOUS APPROACH

Common Service Centre (CSC)

The Government of India launched the Common Services Centre's (CSC) Scheme in 2006 as a part of its initiative under the National e-Governance Plan (NeGP). Through the CSC scheme, the government has committed itself to addressing the divide, since it believed that e-governance would improve the standards of

living of those on the wrong side of the divide and those residing in the rural areas, and allow them access to economic opportunities available to their urban counterparts.

The Common Service Centres (CSCs) are the Hub or Community Centres for the delivery of all e-governance and other services to the rural people. Sahaj e-Village Limited is in the process of setting up of over 28000 ICT enabled e-kiosks across rural India dovetailed with the NeGP scheme to impact livelihood opportunities for the rural communities. IT based rural information services have been developed to provide information and services to meet the needs of the rural population in the areas of agriculture, education, vocational training, health and hygiene. The idea is to provide sustainable digital access to rural India giving the necessary impetus for upliftment.

Information services and products range from e-governance services, utility services, payments, deposits, insurance and other financial services and a host of e-information and e-learning facilities which are delivered through these CSCs. Each CSCs is positioned at a ratio of one CSC for every six-census villages.

A CSC in a village is completely operated by the Village Level Entrepreneur (VLE) and monitored by the Regional Control Centre (RCC) and Central Control Centre (CCC). The funds for these arrangements are managed by Sahaj. The idea is to develop a platform that can enable Government, Private and Social sector organizations to integrate their social and commercial goals for the benefit of the rural population in the remotest corners of the country through a combination of IT as well as non-IT services. The aim of the scheme is not only to roll out IT infrastructure but also to build a network of over 28000 rural businesses across India. To that effect, the CSC scheme has been designed to create a value proposition for all stakeholders and alignment of their economic interests.

Sahaj Arunoday Kendra

In Assam Sahaj Arunoday Kendra was started in 2008. At present more than 5000 such centres are registered where more than 3000 are continuing its functions. In Golaghat district 160 registered and 35 are in operation whereas in Jorhat district 80 centres out of 160 are now functioning. The response from the community is increasing at significant level. According to source a total of 1,28,020 applications were received for G2C service since July, 2015 to till January 26 where 85,059 cases were approved, 4699 were rejected and 31,810 are in progress. Similarly in Golaghat district out of 4983 applications 3413 were approved, 280 rejected and 1214 are in progress. (NIC, Golaghat). At present version 2 of CSC has also been started where CSC-SPV (Common Service Centre- Special Purpose Vehicle).

Services offered by CSC

The basic services offered by CSC are categorized as G2C (Government to Citizen), B2C (Business to Customer) and Miscellaneous.

G2C

Under G2C a total of 46 services are to be allowed by the govt. but at present following ten services are started since July, 2015. They are

1. Permanent Residence Certificate
2. Non Creamy Layer Certificate
3. Next to Keen Certificate
4. SC Certificate
5. Bakijai Case
6. Senior Citizen Service
7. Stamp Vendor License
8. Delayed Birth Certificate
9. Delayed Death Certificate
10. Renewal of Explosive Certificate

B2C

Under B2C three basic services are offered. They are

1. Insurance Premium Payment
2. Bill Payment
3. Procurement of Medicine, Recharge of DTH/Mobile etc.

CIS and Public Libraries

CIS is concerned with the provision of problem–oriented information. UNESCO (1972) states that the "public library must offer to adults and children the opportunity to keep in touch with their times, to educate themselves continuously and to keep abreast of progress in sciences and arts. Its contents should be a living demonstration of the evaluation of knowledge and culture, constantly reviewed, kept up-to-date and attractively presented. In this way it will help people from their own opinions, and develop their creative and critical capacities and powers of appreciation. The public is concerned with the communication of information and ideas, whatever the form in which these may be expressed." The public library is rightly designated as an agency for the promotion of universal education. Its task is to disseminate information and enrich personal and social life. The idea of public libraries offering information on everyday societal problems is not new. However, public library involvement in this area in the UK and USA increased after World War II, with active cooperation among governmental and social agencies to help disadvantaged segments of the community. During the 1960s and 1970s, a shift took place and libraries started offering CIS directly. CIS was introduced by public libraries in the Western countries in response to an expressed need at a time when general library service was more or less universally available. The New York Public Library is one of the most active in offering CIS. Community services could be taken as extension services by libraries. CIS can be built over the existing public library system for free and impartial use of information.

Problems faced by CICs and CSCs

The basic problems that faced by the CICs are the in different role played by the state govt. The services of the operators were not regfularised and so they left the job. In other cases the power connection and the Internet connectivity were lost for which the services were interrupted and the community members felt unfriendly the centres. Similarly the CSCs specially in remote places are suffering low speed even sometime absence of Netweork the customers were to go back to the home. At present the CSCs are suffering Internet Connectivity problem. On the other hand due to the lack of connectivity the customers at the remote and fur flung areas are legging behind the e-governance facility.

CONCLUSION

The Community Information Centres (CICs) are the really a good vehicle to disseminate the right information to the right users at the right time. With the help of these centres a community member can easily gather his required information whenever needed. The CICs could make the community alert of ICT application. The CICs were best practiced in obtaining examination results, Computer Training, etc. On the other hand the Common Service Centres (CSCs) are now becoming the friends of the community members. In a heterogeneous society the information needs of all sections are different and so the CSCs are trying to satisfy them with latest information with ICT. It is pertinent to mention that the CSCs are operating by the VLEs where they must earn through other local services to the users. And to make the flow of community members to the CSCs the state government should extend more and more govt. services to the CSCs. Finally it is expected that the CICs as well as CSCs are the vital for the betterment of a heterogeneous society at present day context. In today's digital environment we all must take the help of Information Technology for our better information access i.e. Information Services.

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DIELECTRIC BEHAVIOUR OF SALINE SOILS IN VIEW OF MICROWAVE REMOTE SENSING

Kamlesh Kumari and V K Gupta

ABSTRACT

Dielectric constant (ε') and dielectric loss (ε'') of artificially salinized and moistened soil samples are determined at a single microwave frequency 9.78 GHz and at a single temperature 35.0 ^{0}C using a wave guide cell method. Further, the values of ε' and ε'' of saline and moist soil samples are obtained theoretically with Wang-Schmugge model at 35.0 ^{0}C with the incorporation of salinity effect. In view of the active and passive microwave remote sensing, radar backscattering coefficient (σ^0) and microwave emissivity (e) of artificially salinized and moistened soil surface have been estimated by Small Perturbation Model (SPM) and Emissivity Model respectively using complex permittivity of soil and view angle as input parameters. The present study reveals that soil salinity has a little influence on ε' unless the soil is sufficiently moist while ε'' of soil increases significantly as the salinity increases. Further, the σ^0 of salinized and moistened soil surface exhibit a little positive correlation with salinity and salinity marginally decreases the microwave emissivity of soil. In case of dry soil salinity produces hardly any effect on the emission and scattering behaviour of soil.

1. INTRODUCTION

The increasing percentage concentration of salts in agricultural soil is a crucial environmental hazard and may be one of the causes for the decline and disappearance of a civilization[1]. Worldwide, presence of salt in soil is one of the principal causes of its degradation. Ghassemi[2] estimated that nearly 20.0% of all irrigated land and approximately 7.0% soils of all over the world are salt-affected and these proportions tend to increase in spite of considerable efforts dedicated to land reclamation.

Soil salinity is the most crucial agronomic and ecological problems affecting the soil of Alwar, semi-arid regions of eastern Rajasthan. Large-scale application of fertilizers and improper irrigation techniques results in the salinization of large tracts of arable land. Salts introduced through irrigation, infiltrate deep inside the soil. Due to transportation of underground water by capillary movement, consequently evaporates at the surface salts accumulate in the upper soil profile. It is imperative the careful monitoring of the status of soil salinity and its dynamics to curb degradation trends and secure sustainable land use.

The effect of soil moisture on dielectric properties of soil has been widely investigated and variety of models is devised. But a little work has reported regarding the influence of salts on dielectric properties of soils. Compared to soil moisture studies, research on soil salinity and its effect on the dielectric constant is far less complete. Soil salinity and its dielectric properties are a complex multiple-factor-driven subject, a field that only a few papers have touched on. However, the concentration of salts in water affects its dielectric properties in a well-known manner. Salts may affect, ε' which is related to the polarization of medium that governs the velocity of propagation of microwaves through the material and ε'' which is related to the conductivity of the medium and represents the microwave attenuation by energy absorption (ohmic losses).

Active and passive microwave remote sensing for the study of salt affect soils is important emerging field of research because, microwave emission and backscattering of soil dependent on dielectric properties which are affected by salinity. Microwave remote sensing has a great potential for monitoring dynamical process like salinization of soils. Robbins and Wiegand[3] emphasised that the ability to accurate prediction of soil salinity from remote sensing is very important because, it saves labour, time, cost and effort when compared to field work. According to Metternicht[4] the various sensors and approaches of the optical and microwave remote sensing (aerial photographs, satellites and airborne multi-spectral sensors, microwave sensors, video imagery, hyper spectral sensors and electromagnetic induction meters) significantly contribute to detect temporal and spatial changes of salt-affected soil surface features. Hence, proper utilization, reclamation and land water management of saline soil the microwave remote sensing is very suitable tool.

2. DIELECTRIC PROPERTIES AND MICROWAVE REMOTE SENSING OF SALINE SOIL

2.1 Dielectric properties of saline soil

According to Schmugge[5] effect of salinity is somewhat little on ε' of soil while salinity produces a large increase in ε'' particularly at low microwave frequencies. The ε'' of saline soil increases due to it's enhance ionic conductivity. Lasne *et al*[6] studied that high soil salinity may significantly influence the electrical conductivity and imaginary part of the dielectric permittivity and these are interrelated each other. Microwave response study of Sreenivas *et al*[7] concluded that the ε' is independent but ε'' is strongly dependent of salinity and further emphasised that the ε' is strongly related with SMC only.

Yun Shao *et al*[8] studied the dielectric properties of artificially moistened and salinized soil (with sodium chloride solution) and natural soil samples taken from a salt lake in northern China over a frequency range 1.0–18.0 GHz and observed that both the soil moisture and salinity affected the ε' and ε''. The influence of soil salinity on ε' was relatively small and could even be negative in comparison to impact of soil moisture while ε'' shows a much higher respective correlation with soil salinity.

Mironov *et al*[9] observed that if soil is salinized with sodium chloride, the complex dielectric constant of bound water in saline soil depends on salinity concentration. Mohamed *et al*[10] reported that, the effect of salinity on the imaginary part depends on wetness and texture of soil and significant only at higher level of SMC. The important dielectric mixing models to determine ε' and ε'' of moist soil, W S Model[11] and Dobson Model[12] utilize the ε' and ε'' of pure water as input parameters which can be determined by Debye theory[13]. Ulaby *et al*[14] suggested a modification in Debye equations for saline water and determined ε' and ε'' of saline soils.

Lasne *et al*[15] reported that to characterize the dielectric properties of the soil and saline water mixture the W S Model[11] modified according to Stogryn[16] provide a better description. Further, Lasne *et al*[15] reported that salinity has a little influence on ε' except for soil with high moisture content (m_v > 0.2) for which ε' decreases with increasing salinity. For small salinity values, the increasing moisture content appears to be the main factor in ε' variations. On the contrary, the imaginary part ε'' is strongly affected by both salinity and moisture of the soil. The strong effect of salinity on the imaginary part particularly at higher levels of SMC is observed. Recently the simulation study of Wu and Wang[17] and experimental results of Meena and Behari[18] confirm that real part of dielectric constant decreases with soil salinity content while the imaginary part increases.

2.2 Microwave remote sensing of saline soil

Since the dielectric constant and loss factors describe the propagation and absorption characteristics of microwaves in the soil medium. Therefore, they determine the reflective and emissive properties for a surface.

Synthetic aperture radar (SAR) image can be a useful tool for monitoring soil salinity [8, 19]. Calla *et al*[20] estimated that at microwave frequencies the σ^0 decreases with increase in salinity for slightly rough and undulating surface. Ziad Aly[21] observed that the high values of dielectric constant are due to the extensive presence of salts that leads to significant effect on the backscattering values for the RADARSAT-1 satellite images of salt-affected soils.

Using the Advanced Integral Equation Model (AIEM) and modified Dobson dielectric mixing model Wu and Wang[17] simulated the effect of salinity on the σ^0 depends on the polarization of microwaves. Moreover, the simulation results also suggest that VV or HH polarization can be used to retrieve soil salinity at low volumetric soil moisture content (<0.3 $cm^3 \cdot cm^{-3}$).

Jackson and O'Neill[22] conducted field experiments using truck-mounted microwave radiometers for emissivity measurements and proposed that passive microwave remote sensing can be used for measuring both surface soil moisture and soil salinity and found that increasing salinity of soil can reduce its emissivity at certain water concentrations.

To adequately interpret the remote sensing data of wet and salted soils Tikhonov[23] suggested a microwave emission model that described emissivity of soil through the Fresnel reflection formulae and shows that emissivity is significantly affected by salt concentration in soil moisture at lower microwave frequencies. Recently Gadani *et al*[24] reported that at lower moist states emissivity values of salted soil are not significantly affected by salinity but above the transition moisture states emissivity decreases with an increase in salinity. McColl *et al*[25] observed that brightness temperatures were substantially below than that of simulated values when the salinity contribution is neglected and concluded that soil salinity may have a large effect on the microwave signal and the need for microwave satellite missions to consider the effects of salinity on soil moisture retrievals.

In a comparative research of emissivity dynamics of different soil sites Bobrov *et al* [26] observed that, emissivity of irrigated saline soil site changes slowly than that of non- saline soil site. The emissivity of wet saline soil is higher than non-saline soil but in case of dry saline soil opposite behavior is observed.

Many emissivity and backscattering coefficient models use the real part ε' of the dielectric constant because of the fact that the moisture affects the real part significantly. But the effect of salt mainly appears on ε'' so that, ignoring the effect of salt in the calculation of emissivity and backscattering coefficient by existing models causes a considerable amount of error. Therefore, the integration of ε'' on new emission and backscattering models is imperative.

3. MATERIAL AND METHOD

The soil from superficial horizon of local profile of Alwar region with textural composition sand=79.0%, silt=14.6% and clay=6.4% has been selected for preparation of samples. Texture of soil is determined using sieving and sedimentation methods. Firstly salt free soil is obtained by leaching of salts from the soil through repeatedly flushing with conductivity water until the residual d.c. conductivity of soil extract remains negligible. Salt free soil was oven dried for twenty-four hours at 110 ^{0}C and divided in eight different Groups namely A,B,C,D,E,F,G and H respectively.

The eight different solutions of NaCl soluble in conductivity water with different concentrations in part per million (ppm) corresponding to 0 ppm, 5000 ppm, 10000 ppm, 15000 ppm, 20000 ppm, 25000 ppm, 30000 ppm and 35000 ppm are prepared. Then each NaCl solution is mixed with dry soil such that each soil group (A to H) posses eight different desired level of saline water concentrations (0.0%, 2.0%, 4.0%, 6.0%, 8.0%, 10.0%, 12.0%, and 14.0%).

Total sixty four samples of saline soil at different levels of salinity (0 ppm to 35000 ppm) and moistness (0.0%, to 14.0%) are prepared. The saline water properly mixed with salt free soil and these artificially salinized and moistened soil samples are kept in air tight plastic container for uniform mixing and to avoid any evaporation from soil. Time of setting was twenty-four hours for homogeneous distribution of saline water within the entire volume of soil.

3.1 Determination of Dielectric Constant

3.1.1 Experimental

The real and imaginary part of dielectric constant (ε' and ε'') artificially salinized and moistened soil samples prepared in the laboratory as a function of salinity and water content are evaluated. The ε' and ε'' of artificially salinized and moistened soil samples are determined at a single microwave frequency 9.78 GHz and at a single temperature 35.0 ^{0}C using the wave guide cell method developed by Yadav and Gandhi[27]. The ε' and ε'' of the soil samples are measured using shift in minima of the standing wave pattern inside the slotted section of a X-band rectangular wave guide excited in TE_{10} mode. The experimental set up, theory and procedure for the present work is the same as used earlier by other researchers[27-29].

3.1.2 Theoretical

The values of real and imaginary part of dielectric constant (ε' and ε'') of saline soil samples are theoretically determined at 35.0 ^{0}C by W-S model[11] model with the incorporation of salinity effect as performed by Ulaby *et al*[14]. Wang and Schmugge[11] presented a set of equations which accounts for soil

texture, bulk and particle density for real and imaginary parts of dielectric constant of a soil-water mixture (ε) are given as:

$$\varepsilon = W_c.\varepsilon_x + (P - W_c).\varepsilon_a + (1-P)\varepsilon_{rock} \qquad W_c \le W_{ct} \tag{1}$$

$$\varepsilon_x = \varepsilon_i + (\varepsilon_w - \varepsilon_i).\left(\frac{W_c}{W_{ct}}\right).\gamma \tag{2}$$

$$\varepsilon = W_{ct}.\varepsilon_x + (W_c - W_{ct}).\varepsilon_w + (P - W_c).\varepsilon_a + (1-P)\varepsilon_{rock} \qquad W_c > W_{ct} \tag{3}$$

$$\varepsilon_x = \varepsilon_i + (\varepsilon_w - \varepsilon_i).\gamma \tag{4}$$

Where W_c is the volumetric water content [$m^3\ m^{-3}$] of the soil, P the porosity of the dry soil (total volume occupied by pores per unit volume of soil), γ is an empirical parameter and W_{ct} is the transition moisture [$m^3\ m^{-3}$]. ε_a ε_w , ε_{rock} and ε_i are the dielectric constants of air, pure water, rock and ice respectively. ε_x stands for the dielectric constant of the initially absorbed water.

Both γ and W_{ct} can be determined by particle size distribution through wilting point of soil[10]

The complex dielectric constants for ice (ε_i), solid rock (ε_r) and air (ε_a) are 3.2+j0.1, 5.5+*j*0.2 and 1+*j*0, respectively. The real and imaginary parts of dielectric constant of pure water ($\varepsilon_w^{'}$ and $\varepsilon_w^{''}$) can be given by the well known Debye equations[13].

For saline water Ulaby *et al*[14] (1986) used a slightly different version of Debye equations[13] incorporating the term effective ionic conductivity $\sigma(T,S)$ of saline water and given by equation (5) and (6).

$$\varepsilon_{sw}^{'} = \varepsilon_{sw\infty} + \frac{(\varepsilon_{sw0} - \varepsilon_{sw\infty})}{1 + (2\pi f \tau_{sw})^2} \tag{5}$$

$$\varepsilon_{sw}^{''} = \frac{2\pi f \tau_{sw}(\varepsilon_{sw0} - \varepsilon_{sw\infty})}{1 + (2\pi f \tau_{sw})^2} + \frac{\sigma(T,S)}{2\pi\varepsilon_0 f} \tag{6}$$

$\varepsilon_{sw}^{'}$ and $\varepsilon_{sw}^{''}$ are the real and imaginary part of dielectric constant of saline water. ε_{sw0} and $\varepsilon_{sw\infty}$ are the static and high frequency limit of the dielectric constant of saline water. f is the observation frequency in Hertz and τ_{sw} is the relaxation time of saline water. $\sigma(T,S)$ is the ionic conductivity of the aqueous saline solution and ε_0 is the permittivity of free space. Stogryn[16] pointed out that $\varepsilon_{sw\infty}$ is independent of salinity and has the value equal to high frequency limit of the dielectric constant of pure water ($\varepsilon_{sw\infty} = \varepsilon_{w\infty} =$ 4.9).

Here, the three variables of equation (5) and (6), static dielectric constant (ε_{sw0}), relaxation time (τ_{sw}) and ionic conductivity $\sigma(T,S)$ of the aqueous saline solutions are strong functions of salinity and temperature as given by Stogryn[16].

The dependence of ε_{sw0} on salinity (S_{sw}) and temperature (T ^{0}C) is given by equation (7).

$$\varepsilon_{sw0}(T, S_{sw}) = \varepsilon_{sw0}(T,0).a(T, S_{sw}) \tag{7}$$

Where, $\varepsilon_{sw0}(T,0)$ is the dielectric constant of pure water and $a(T,S_{sw})$ is salinity and temperature dependent function.

Klein and swift[30] generated the expressions (8) and (9) for $\varepsilon_{sw0}(T,0)$ and $a(T,S_{sw})$ from the experimental data measured by Ho and Hall[31].

$$\varepsilon_{sw0}(T,0) = (87.134 - 1.949\times10^{-1}\times \mathrm{T} - 1.276\times10^{-2}\times \mathrm{T}^2 + 2.491\times10^{-4}\times \mathrm{T}^3) \quad (8)$$

$$a(T,S_{sw}) = (1 + 1.613\times10^{-5}\times \mathrm{T}\times S_{sw} - 3.656\times10^{-3}\times \mathrm{S_{sw}} + 3.210\times10^{-5}\times \mathrm{S_{sw}^2} - 4.232\times10^{-7}\times \mathrm{S_{sw}^3}) \quad (9)$$

The relaxation time of saline water is given by equation (10).

$$\tau_{sw0}(T,S_{sw}) = \tau_{sw0}(T,0).b(T,S_{sw}) \quad (10)$$

Where, $\tau_{sw0}(T,0)$ is the relaxation time of pure water and $b(T,S_{sw})$ is salinity and temperature dependent function.

Stogryn[16] and Klein and swift[30] generated the expressions (11) and (12) for $\tau_{sw0}(T,0)$ and $b(T,S_{sw})$.

$$2\pi\tau_{SW}(T,0) = (1.1109\times10^{-10} - 3.824\times10^{-12}\times \mathrm{T} + 6.938\times10^{-14}\times \mathrm{T}^2 - 5.096\times10^{-16}\times \mathrm{T}^3) \quad (11)$$

$$b(T,S_{sw}) = (1.0 + 2.282\times10^{-5}\times \mathrm{T}\times \mathrm{S_{sw}} - 7.638\times10^{-4}\times \mathrm{S_{sw}} - 7.760\times10^{-6}\times \mathrm{S_{sw}^2} + 1.105\times10^{-8}\times \mathrm{S_{sw}^3} \quad (12)$$

Temperature and salinity dependence of ionic conductivity of the aqueous saline solution for sea water is derived by Weyl[32] (1964) and later modified by Stogryn[16] (1971) as given by equation (13).

$$\sigma_i(T,S_{sw}) = \sigma_i(25,S_{sw})e^{-\phi} \quad (13)$$

Where, $\sigma_i(25,S_{sw})$ is the ionic conductivity of sea water at 25 ^{0}C which is given by equation (14).

$$\sigma_i(25,S_{sw}) = (0.18252 - 1.4619\times10^{-3}\ S_{sw} + 2.093\times10^{-5}\ \mathrm{S_{sw}^2} - 1.282\times10^{-7}\ \mathrm{S_{sw}^3})\mathrm{e}^{-\phi} \quad (14)$$

The function ϕ depends upon S_{sw} and Δ expressed by following equation (15).

$$\phi = \Delta[2.033\times10^{-2} + 1.266\times10^{-4}\ \Delta + 2.464\times10^{-6}\ \Delta^2 - \mathrm{S_{sw}}(1.849\times10^{-5} - 2.551\times10^{-7}\Delta + 2.551\times10^{-8}\ \Delta^2)] \quad (15)$$

Where $\Delta = 25 - T$,

Ulaby *et al*[14] pointed out that above expressions are valid for the salinity range of water $0 \le \mathrm{S_{sw}} \le$ 40,000 ppm

Using the above equations (7) to (15) the three variables ε_{sw0}, τ_{sw} and $\sigma(T,S)$ are determined at the temperature 35 ^{0}C and at the salinity values varying from 0 ppm to 35000 ppm. The real and imaginary parts of complex permittivity of saline water are determined at 9.78 GHz by modified Debye equations (5) and (6) as used by Ulaby *et al*[14]. Further, using real and imaginary part of complex permittivity of saline water along with other required parameters described above in Wang-Schmugge model[11] the real and imaginary parts of complex permittivity of saline soil are calculated.

3.2 Estimation of microwave remote sensing parameters

Radar backscattering coefficient and microwave emissivity are the basic observational parameters of active and passive remote sensing. Small Perturbation Model (SPM) proposed by Ulaby *et al*[14] is suitable for estimation of radar backscattering of slightly rough surfaces given by equation (16):

$$\sigma_{pp}^0 = 4k^4\sigma^2\cos^4\theta\left|\alpha_{pp}\right|^2\left[W(2k_0\sin\theta)\right] \quad (16)$$

Where, σ^0_{pp} is co- polarized backscattering coefficient, σ is the RMS surface height, θ is the angle of incidence or scattered for back scattering. $|\alpha_{pp}|^2$ is the polarized Fresnel reflectivity of smooth soil surfaces either for horizontal-horizontal or vertical-vertical polarizations. k_0 is free space wave number of microwaves . $W(2k_0 \sin\theta)$ is the normalized roughness spectrum which is evaluated at wave number $2k_0 \sin\theta$ for isotropic Exponential surfaces.

SPM is employed with the values for σ = 0.14 cm and correlation length, l = 2.0 cm which are in accordance of validity conditions h < 0.3 and $k_0\sigma < 0.3$. Where h is the surface RMS slope given by $h = \sigma / l$.

For horizontal-horizontal and vertical-vertical polarizations Fresnel reflection coefficients

(α_{hh} and α_{vv}) are given by the equations (17) and (18) respectively.

$$\alpha_{hh} = \frac{\cos\theta - \sqrt{\varepsilon - \sin^2\theta}}{\cos\theta + \sqrt{\varepsilon - \sin^2\theta}} \tag{17}$$

$$\alpha_{vv} = (\varepsilon - 1).\frac{\sin^2\theta - \varepsilon(1 + \sin^2\theta)}{\left[\varepsilon\cos\theta + \sqrt{\varepsilon - \sin^2\theta}\right]^2} \tag{18}$$

Where ε the complex permittivity of saline soil and θ is the observation angle.

The values used for standard deviation height ($\sigma = 0.14cm$) and roughness correlation length ($l = 2.0cm$) are in accordance with the agricultural field roughness[33-34] and Exponential correlation function[35-36] is well approximated for agricultural soils and describes the smooth natural surfaces.

The emissivity of saline soil is estimated using the emissivity model proposed by Peak[37] considers the radiations coming from a homogeneous single layer soil medium. The emissivity model assumes a grey body approximation by assigning a uniform moisture and temperature profile of soil with depth. Emissivity at any given location is related to the Fresnel reflectivity, if the subsurface dielectric and temperature profile is uniform (isothermal), Kirchoff's reciprocity theorem relates the emissivity to the reflectivity. The surface reflectivity may be computed from the knowledge of the dielectric constant of the medium and the surface boundary condition. The horizontal and vertical components of microwave emissivity (e_h and e_v) are the functions of view angle (θ) which can be written as

$$e_h\ (\theta) = 1 - R_h(\theta) \tag{19}$$

$$e_v\ (\theta) = 1 - R_v(\theta) \tag{20}$$

Where $R_h(\theta)$ and $R_v(\theta)$ are the Fresnel reflectivities for horizontally and vertically polarized components of microwaves

4. RESULTS AND DISCUSSION

Variations of ε' and ε'' of soil with respect to salinity of NaCl (0-35000 ppm) at different levels of SMC (0.0% to 14.0%) determined, experimentally and W S model are shown in figures-1,2 and 3,4 respectively.

(i) It is evident from the figures:1 and 3 that real part of dielectric constant (ε') increases with increasing percentage concentration of SMC. Initially ε' increases slowly when water is added to dry soil but at a certain moistness around SMC=10% addition of more water in soil causes the increases of ε' rapidly. Molecules of water possess permanent electric dipole moment because polarization. The high dielectric constant of water depends on the molecule's ability to align its dipole moment along an applied field. Hindrance to the

molecule's alignment (adsorption, freezing, tight binding to a soil particle, etc.) reduces the dielectric constant of water. Since the initial water quantity added to dry soil is tightly bound to the surface of the particles, it will cause only a small increase of the soil dielectric constant. This water is referred to as bound water. As more water is added, above a transition limit of moisture, the soil dielectric constant will rapidly increase because the additional molecules are far from the soil particle surface and free to align. Water in this phase is referred to as free water. Dielectric constant of free water is higher than that of bound water. The imaginary part of dielectric constant value is slightly increases with increases in SMC.

(ii) It is evident from the figures: 2 and 4 that imaginary part of dielectric constant (ε") increases with increasing percentage concentration of SMC. Due to increases in the SMC, conduction loss, polarization loss, rotational inertia are increases. Hence, there is increasing lag between the forcing field and orientation of dipole. Resulting more power absorption in the soil and causing enhancement in the dielectric losses.

In addition of more water with soil more and more polar molecules are available to interact with microwaves, dielectric constant of moist soil is proportional to the number of water dipoles per unit volume, so that real and imaginary part of dielectric constant of soil increases as the SMC of soil increases.

(iii) An inspection of figures-1 and 2 reveals that soil salinity has a little influence on ε' unless the soil is sufficiently moist. The negative correlation is observed between ε' and salinity of the wet soils. Dielectric constant of soil is primarily controlled by SMC and according to Stogryn[16] dielectric constant of water decreases as its salinity increases. Hence, the increasing salinity of mixing water produces slightly decreasing trend in wet soils.

(iv) There is no effect of salinity on dielectric constant is observed for dry soil but for wet soils the effect of salinity increases as moistness increases. The influence of salt on dielectric properties of soil is related to its solubility in free water. At low levels of moistness only bound water phase of SMC dominates and salts are not properly dissolved to interact with bound water, resulting into a weak effect of salinity on real part of dielectric constant. At higher levels of SMC salts are easily dissolved into water and interact with soil particles.

(v) An examination of figures-3 reveals that the imaginary part (ε'') is strongly affected by both salinity and moisture of soil samples. ε'' of soil increases as the salinity increases. At the higher magnitudes of humidity the stronger effect of salinity on the dielectric loss factor is observed. In case of dry soils effect of salinity on the imaginary part is negligible. The effect of salinity on ε'' can be explained on behalf of the conductivity of soil. Increase in soil moisture content leads to a greater amount of salts dissolved in the free water component. Large number of positive and negative ions is available and thus, increase in ionic conductivity of soils is observed. These free ions or charges interact with oscillating electric field of microwaves and enhance the conduction losses. Hence, ε'' is proportional to the salinity or conductivity of soils.

(vi) An examination of in figures-4 reveals that the W S Model calculated values of ε'' soil at different levels of SMC are weakly dependent on salinity of NaCl. The experimentally determined values of ε'' are higher than that of predicted values by model calculations. This can be explained as the W S Model is a semi-empirical model derived from specific data sets and is mostly valid only for certain soils and emphasize on certain parameters (particle size and moisture content) in the soil. Soil is a complex mixture and its dielectric properties are characterized by a large number of parameters so that the experimental values may differ to the values derived by the W S Model.

The variations of co-polarized radar backscattering coefficient, horizontally incident -horizontally scattered (σ^0_{hh}), vertical incident - vertical scattered (σ^0_{vv}), horizontal and vertical component of emissivity (e_h and e_v) of saline soil, mixed with different concentrations of saline water (0.0% to 14.0%) with different salinity of NaCl (0-35000 ppm), estimated at 30^0 observation angle are shown in figures-5 ,6 and 7,8 respectively.

(vii) An examination of figures-5 and 6 reveals that σ^0_{hh} and σ^0_{vv} increases weakly with the salinity in the comparison of moisture. These variations may be explained as the increase in salinity or moisture leads to an increase in the magnitude of complex permittivity, resulting into an increase in the soil reflectivity (from the Fresnel equations), which eventually leads to an increase in radar backscattering coefficient.

(viii) Effect of salinity on radar backscattering coefficient becomes significant only at higher levels of moistness of the soil. The salinity produces no effect on radar backscattering coefficient of dry soils. This is because of the fact that effective role of salinity come into play only at higher SMC levels where the free water dominates over bound water and salt is dissolve in free water.

(ix) An inspection of figures-7 and 8 infers that salinity marginally decreases e_h and e_v. Effect of salinity on emissivity is very small and considerable only at higher wetness of soil. In dry soils no impact of salinity is observed on its emission behaviour. The slight decrease in emissivity of moist soil with increasing salinity can be attributed to the increased dialectic contrast between emitting layer of soil and overlapping air media. Thermal microwave emission from soils is generated within the soil volume and the amount of energy generated at any point within the volume depends on the soil dielectric properties. As this energy moves upward and crosses the surface, it is reduced by the effective transmission coefficient (emissivity) of the surface, which is determined by the average dielectric characteristics of the soil in a transition layer. Dielectric contrast between emitting layer of soil and air causes more energy to reflect back within the soil media than that of transmitted out in air. Hence, emissivity of soil decreases as salinity increases.

(x) The figures 7 and 8 reveal that e_h and e_v decreases as SMC in the soil increases. Emission of microwaves from soil is conversion of molecular excitation energy (thermal energy) of soil particle into electromagnetic energy. This may be occurs due to molecules are activated by solar or any other type sky radiation, the interaction of molecule with each other and this activation energy is converted into emitted microwaves due to de- activation of molecules . The radiation emitted during repeated energy transmission comprises a spectral distribution depends on the temperature and dielectric properties of soil. Moist soil and air have very different electrical properties (large contrast between dielectric constant of air & water) but dielectric properties of dry soil and air are comparable (dielectric constant does not differ much). So that soil air interface is homogenous in case of dry soil only. The thermal radiations generated within the volume of moist soil beneath the surface, more of radiations are reflected back into moist soil and less is transmitted into air. Hence, power emitted from moist soil is much less then the power emitted from dry soil. As SMC increases electromagnetic contrast between soil and air increases and soil becomes less bright hence emissivity decreases.

4. CONCLUSIONS

Dielectric study of salt affected soils and associated microwave remote sensing parameters, is very important regarding mapping, monitoring and management of salt effected soils. Because of the differential behaviour of the real and imaginary parts of the complex permittivity, microwave remote sensing appear to be efficient in detecting soil salinity (the real part is independent and imaginary part is highly sensitive to variations in salinity). This allows separating saline soils from non saline soil. Further, for active and passive microwave remote sensing the scattering coefficient and emissivity data for saline soil for different moisture contents and for different types of surfaces are useful for image analysis and its applications. The results of present investigations provide a basis for using passive and active microwave sensors in the detection of soil salinity. Also precise microwave dielectric measurements of saline soils and recognition of their dependence on salinity is interesting and can be used in support of radar or radiometer investigations of the salt deposition on land or Earth's geology.

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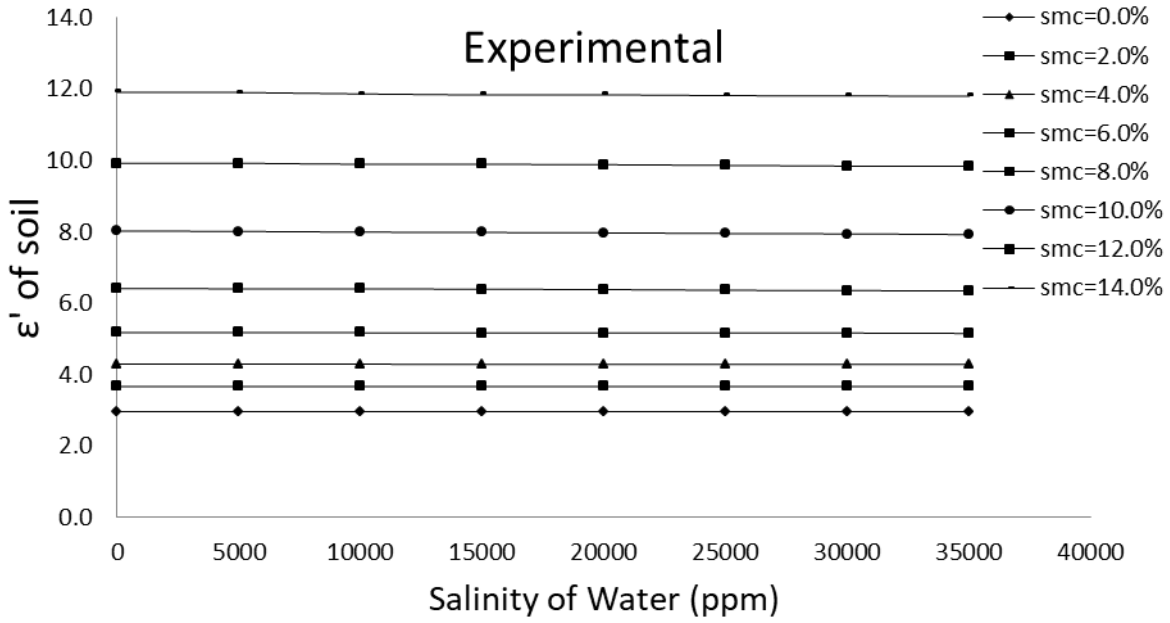

Fig-1: Variations of experimental values of ε' of soil w.r.t salinity of NaCl at different levels of SMC

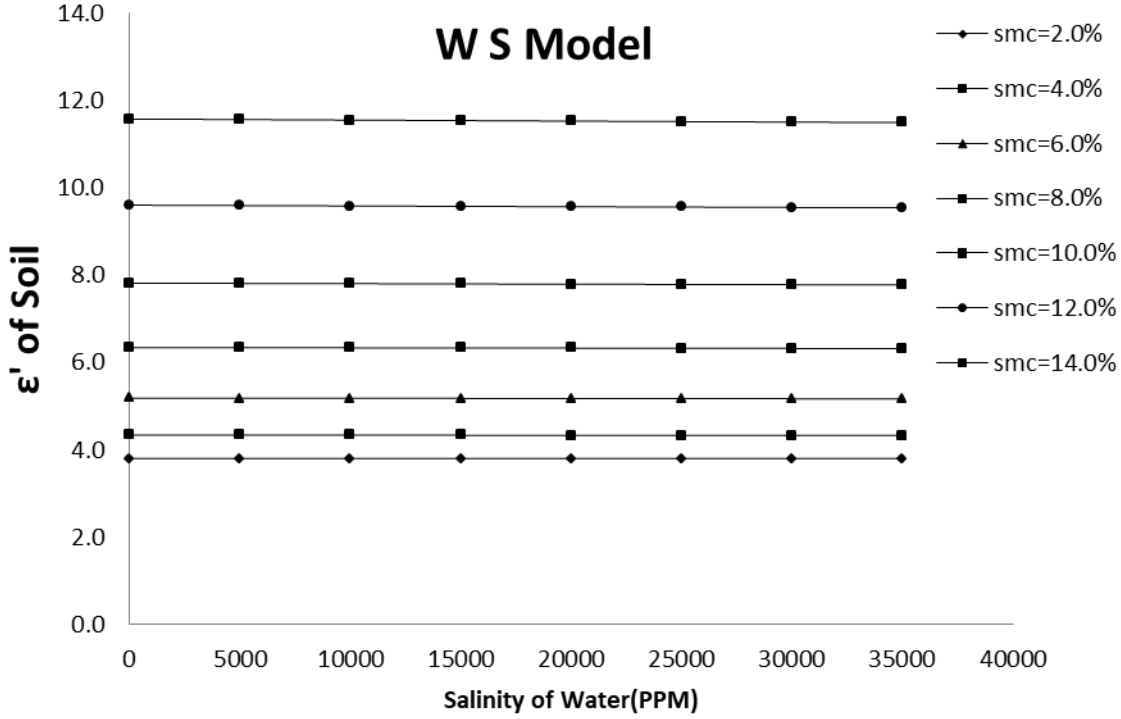

Fig-2: Variations of W S Model calculated values of ε' of soil w.r.t salinity of NaCl at different levels of SMC

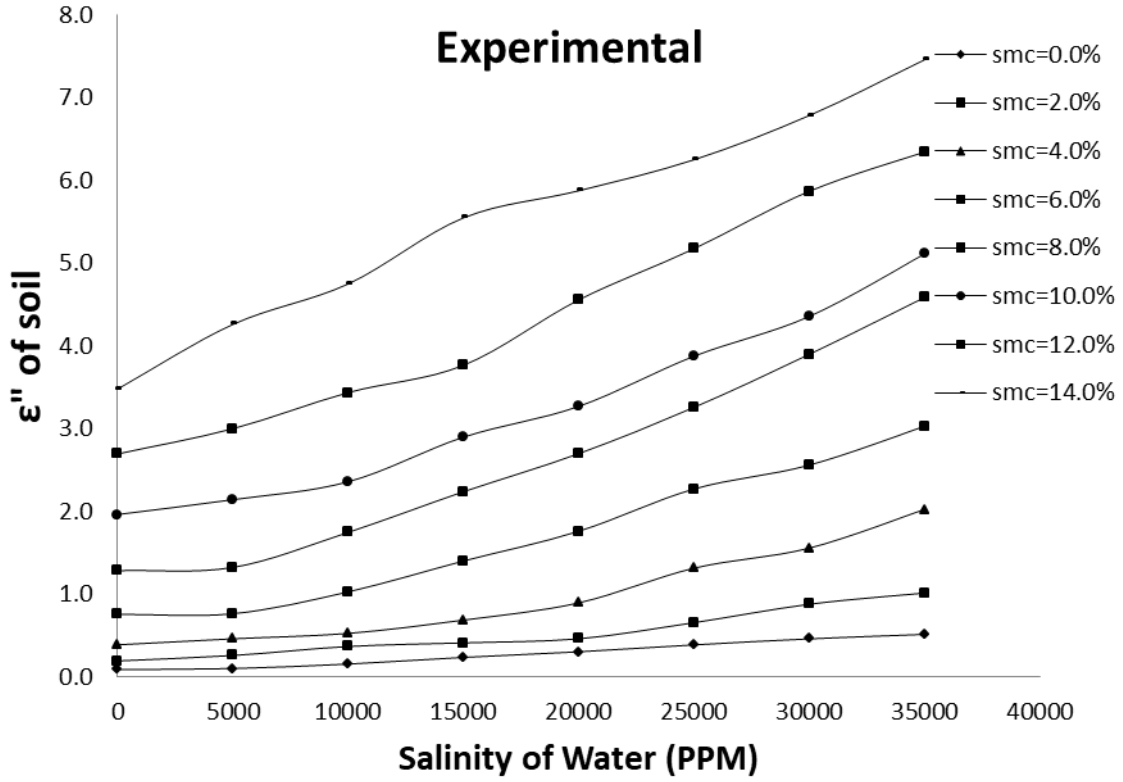

Fig-3: Variations of experimental values of ε'' of soil w.r.t salinity of NaCl at different levels of SMC

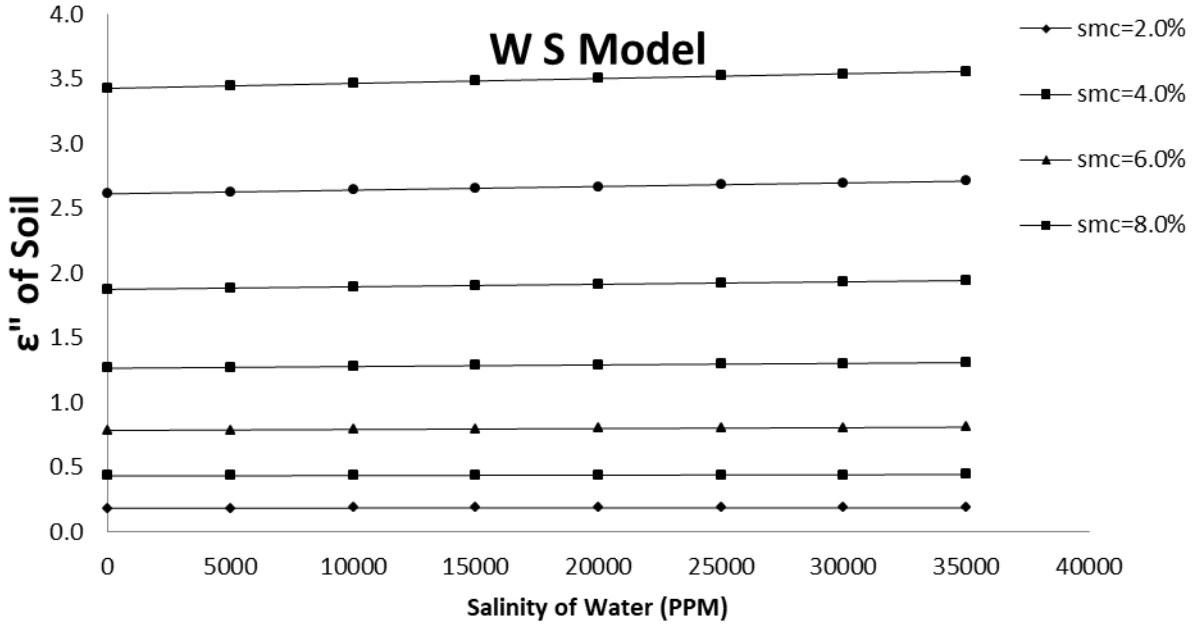

Fig-4: Variations of W S Model calculated values of ε'' of soil w.r.t salinity of NaCl at different levels of SMC

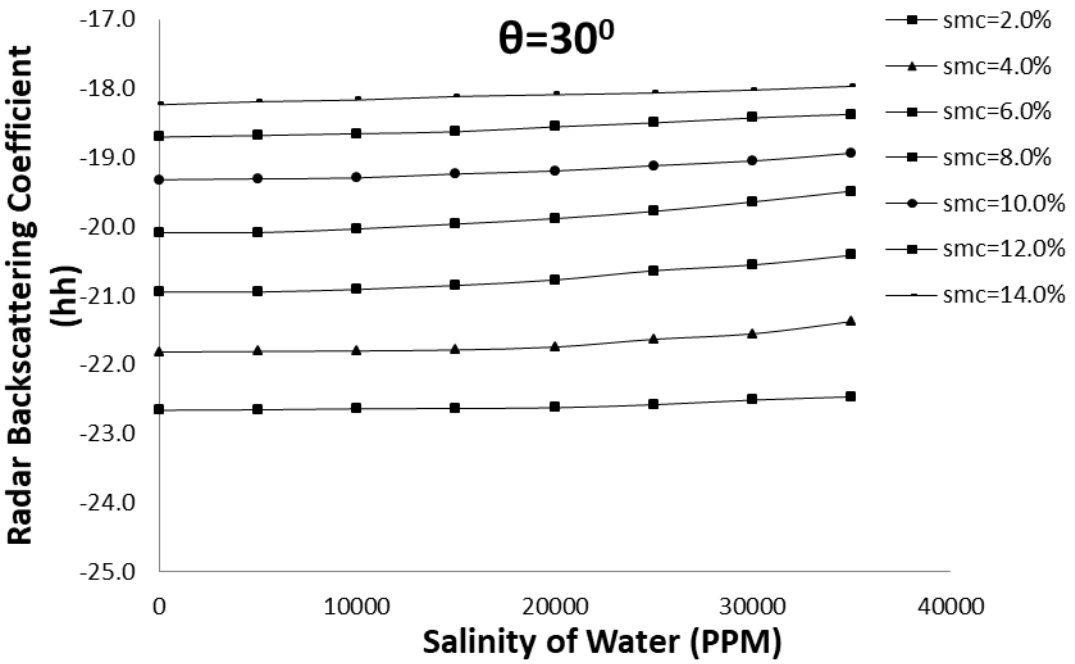

Fig-5: Variations of σ^0_{hh} of soil w.r.t salinity of NaCl at different levels of SMC at 30^0 observation angle

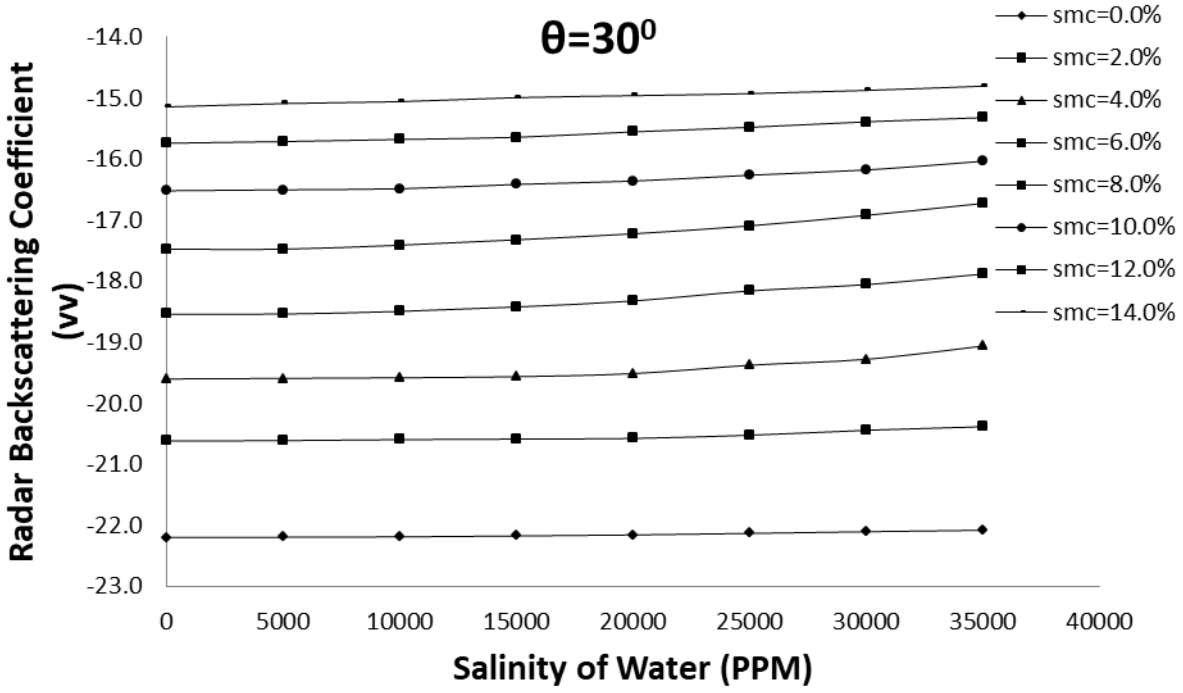

Fig-6: Variations of σ^0_{vv} of soil w.r.t salinity of NaCl at different levels of SMC at 30^0 observation angle

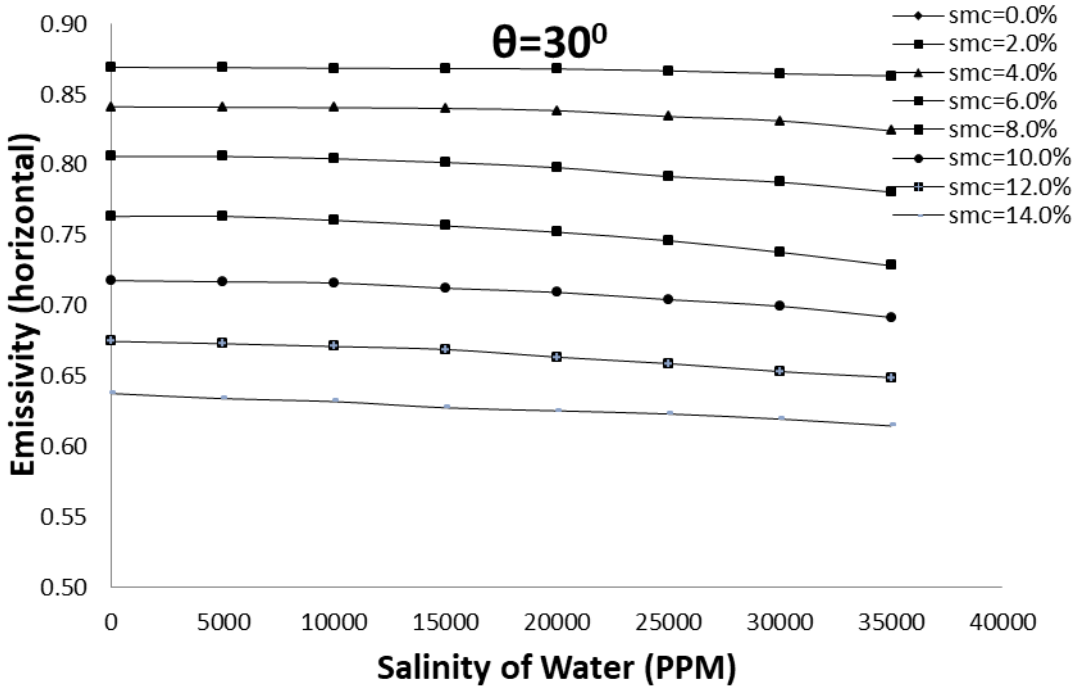

Fig-7: Variations of e_h of soil w.r.t salinity of NaCl at different levels of SMC at 30^0 observation angle

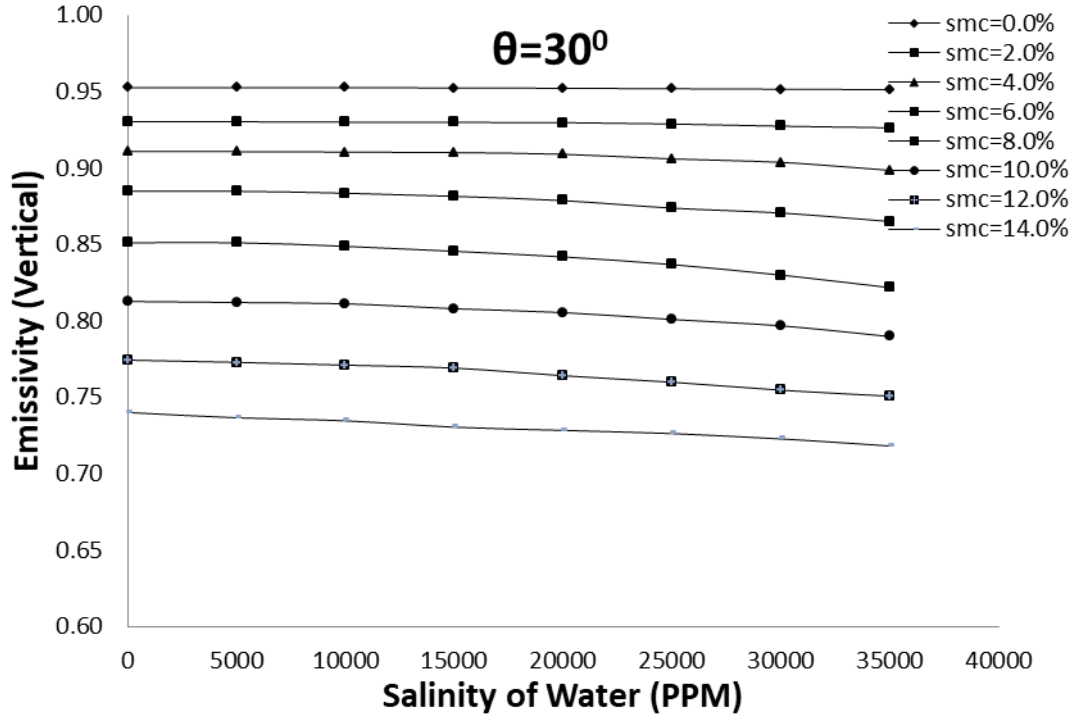

Fig-8: Variations of e_v of soil w.r.t salinity of NaCl at different levels of SMCat 30^0 observation angle Contributors

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ABOUT THE BOOK

The articles in this edited book titled “Digital India - A road ahead” tries to find out how e- Commerce and digitalization of India is going to change the entire scenario of the way how business is conducted today. The volume with its chapters like Digital India, E-services, E-retailing, E-marketing, Social media, Digital Library, E-safety & Ethics and e-commerce offers an understanding of how this change is going to take place and what will the implications of the same. The vision of Digital India programme is inclusive growth in the areas of electronic services, products, manufacturing and job opportunities etc. and it is centred on three key areas – Digital Infrastructure as a Utility to Every Citizen, Governance & Services on Demand and Digital Empowerment of Citizens. The book tries to find out how the emergence of digital environment will create better supply chain management, easy and timely money transfers, better branding, marketing using the digital media, introduction of new kinds of products and services etc. It will provide a platform to academicians, practitioners, students and specialist to present their views on how the use of internet and digital media can transform the business to enhance the capabilities of organizations and society.

The edited book will be helpful to the management and commerce students, research scholars and business executives.

ABOUT EDITOR

Dr. Tazyn Rahman is Associate Professor & Head Scholar's Program at Institute of Management Studies (IMS), Noida with close to thirteen years of experience in academics and industry. She holds a Ph.D. in Commerce from CCS University, Meerut and M.B.A with specialization in HR and Marketing from Gauhati University. She was also a Programme Director of Management Development Programmes in “ Brand Management” conducted by Jaipuria School of Business, Ghaziabad. She is the Editor - In - Chief of International Journal of Research in Management & Social Science published by Empyreal Institute of Higher Education, Guwahati which is an UGC approved journal. She has been conference convener of many international conferences. Her research interests are focused on Strategic Human resources Management, Entrepreneurship, Marketing with a focus on emerging markets. She has published /presented /contributed more than 50 research papers in various National and International Journals and conferences. She has prepared study materials in Organisation Structure and Design, Marketing Research, Production and Operations Management for a leading Management Institute

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