

# Banking on Technology: Emerging Trend in Indian Banking Sector

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**Abstract** - The purpose of this paper is to explore the evolution and transformation of digital banking in Indian banking sector. The study also examined the implication of the changing trends in banking sector. The results show that digital banking has grown significantly across the world but still there are certain factors hindering in its adoption which are supposed to be eradicated for better growth globally. It was also found that digital transformation and its adoption has been well studied in the context of developed countries whereas, developing and under developed countries still remains fertile for further academic research.

**Keywords** - Digital banking, opportunities, challenges, literature analysis, digital transformation.

## I. INTRODUCTION

The Banking sector has been immensely benefited from the implementation of superior technology during the recent past, almost in every nation in the world. Banking transactions have become easier and customer friendly due to the technological improvements. Globally, the banks are poised to use technology that will gradually give new dimensions to the banking products, services and delivery systems. The changes that new technologies have brought to banking are enormous in their impact on officers, employees, and customers of banks. Rapid access to critical information and the ability to act quickly and effectively will distinguish the successful banks of the future. Productivity enhancement, innovative products, speedy transactions seamless transfer of funds, real time information system, and efficient risk management are some of the advantage derived through the technology.

India is one of the top 10 economies in the world, where the banking sector has tremendous potential to grow. The banking sector in India is on a growing trend. It has vastly benefitted from the surge in disposable income of individuals in the country. There has also been a noticeable upsurge in transaction through ATMs and internet/mobile banking. According to KPMG-CII report (Confederation of Indian Industry) published in Business Standard by Somasroy Chakraborty, Kolkata, Sep 13, 2013. The banking industry in India has the potential to become the fifth largest banking industry in the world by 2020 and

third largest by 2025 India's banking and financial sector is expanding rapidly. Indian banks have adopted better operational strategies and upgraded their skills. They have withstood the initial challenges and have become more adaptive to the changing environment. In the complex and fast changing environment, the only sustainable competitive advantage for banks is to give the customer an optimum blend of technology and traditional service.

## II. OBJECTIVE OF THE STUDY

1. To analyze the utility of technology in Banking Sector.
2. To understand the emerging technological trends in Banking Sector in India.
3. To analyze the implication of the changing trend in Banking Sector in India.

## III. METHODOLOGY

This study is based on secondary data collection through banking books, journals, internet (websites), research papers etc

## IV. LITERATURE REVIEW

There are numerous papers that sought to study the present status and services of digital banking nationally as well as internationally. For instance, Sathye (1997), Jayawardhena and Foley (2000), Sullivan (2002), Suganthi Ayadi (2006), Hamid et al. (2007) Sanjay Kumar Dhanwani(2009) and

Sunindita Pan(2015) studies investigated the status of Digital banking and banking services offered by Internet banks in developed countries like the US, the UK, Australia, New Zealand, Malaysia, United Arab Emirates and developing countries like Bulgaria, Saudi Arabia, Jordan, Tunisia, Greece and Zimbabwe.

Ravi Nath, Paul Schrick and Monica Parzinger (2001) examined banker's views on providing banking services to customers using the internet and its effect on customer-

bank relationships. The study also covered perceptions of banks regarding the strategic and operational value, its benefits to customers and banks, and the key technology considerations. They concluded that few respondents thought that internet banking is just a fad while nearly half 49% believed that it is essential for a bank's survival and thus mandatory in order to compete effectively. Bankers see Internet opportunity and the benefits of Internet Banking outweigh the associated costs.

Rupa Rege Nitsure(2003-04)states that E-banking, facilitated by the technological revolution, has strongly impacted strategic business considerations for Indian banks (including the PSBs) by cutting down costs of delivery and transaction massively.

Sharman Lichtenstein, (2006) did an interpretive study in the context of Australian banks to understand consumer adoption of digital banking. The findings suggested that convenience was the main motivator for consumers to bank on the internet, while there was a range of other influential factors that may be modulated by banks. Finally, the paper suggested that banks would be better able to manage consumer experiences with moving to internet banking. Conveniences, security, privacy, time saving were the main motivator for consumer adoption of internet banking security, privacy and trust concerns.

Bolongkikit (2006) studies e-readiness index of SAARC countries It inferred that there is position trend in e-adoption in all S AARC nations, while India had highest change level of 15 during 2003-2004.Rajesh kumar (2007) Narrated that in the usage of digital banking- gender factor, income factor and education factor has a pivotal role. This research has been proved with conceptual theory that stated if skills were upgraded then there will be more courage to adopt e-banking by the customer.

Zhao, Casu and Ferrari (2008) used a balanced panel data set covering the period of 1992-2004 and employing a Data Envelopment Analysis (DEA) based Total Factor Productivity

(TFP) index. The empirical study indicated that after an initial adjustment phase, the Indian Banking Industry experienced sustained productivity growth, which was driven mainly by

Technological progress. Foreign banks appear to have acted as technological innovators when competition increased, which added to the competitive pressure in the banking market.

Sanjay Kumar Dhanwani(2009) explained in his paper that the banking industry has experienced a series of significant transformations in the last few decades. Among the most

important of them is the change in the type of organizations that dominate the landscape. Since the eighties, banks have increased the scope and scale of their activities and several banks have become very large institutions with a presence in multiple regions of the country.' The paper examines the new trends in commercial banking. Thus, there is a paradigm shift from the seller's market to buyer's market in the industry and finally it affected at the bankers level to change their approach from "conventional banking to convenience banking" and "mass banking to class banking". The shift has also increased the degree of accessibility of a common man.

Kamal Gulati and Sunil Kumar Kadyan (2010) did case study on e-banking services in India particularly Uttar Pradesh and found that in all respects the customers are satisfied with their internet banking. Major concerns of customers include security and privacy because of the growing number of online frauds, cheating cases and hacking. Younger generations were more likely to adopt electronic banking than older generations. People with higher education (university or above) are more likely to adopt electronic banking than those with less education. High-income group was more likely to adopt electronic banking than low-income group. Frequent visitors to banks' websites were more likely to adopt electronic banking.

Ilias Santouridisa, Maria Kyritsib (2011) examined the factors associated with the challenges and opportunities of e-banking for the banking sector. The main findings demonstrated that banks expanded to electronic banking services in order to remain competitive, to keep track with technological developments and to benefit from the lower transaction cost. The major problems encountered were the low response from customers and issues of data security. There was a steady increase in researches on the adoption and use of electronic banking channels.

According to Fernando (2011) transparency and disclosure norms as part of internationally accepted corporate governance practices are assuming greater importance in the emerging

environment. Banks are expected to be more responsive and accountable to the investors. Banks have to disclose in their Balance sheets a plethora of information on the maturity profiles of assets and liabilities, movements in NPAs, capital, shareholdings of the government, value of investment in India Reserve Bank of India(2011) IT Vision Document- 2011-17 It provides an indicative road map for enhanced usage of IT in the banking sector.

Dr Roshan lal & Dr Rajni saluja(2012) highlights the challenges faced by Indian banks in adoption of

technology and recommendations are made to tackle these challenges. The paper concludes that in years to come digital banking will not only be acceptable mode of banking but preferred mode of banking.

Ahmad Kabir and Mahmood Hussain Shah (2013) used secondary data and reviewed relevant literatures to help identify potential critical success factors of frauds prevention in digital banking to understand factors that could be critical in strengthening fraud prevention systems in electronic banking. The findings showed that besides technology, there were other issues, such as internal controls, customer education, staff education etc., that need to be addressed.

Shariq Mohammed, Soofia Shariq(2013) study the usage of customers of banks regarding ATM usage and The study revealed that the major hindrance in its adoption is the fear of insecurity among the non users which. can be alleviated by the banks. There is a scope of future research to determine the behavioural attribute

Maya Basant Lohani, Dr. Pooja Bhatia (2014) research reveals that there exists a small perceptual difference regarding overall service quality with the respective banks The bank have more concentration on the tangible factor like a computerization, physical facilities attract the customers If banks want to sustain customers on a long term basis, bankers should work towards 100% customer satisfaction that automatically

Sunindita Pan(2015) explain the changing banking scenario and analyze the impact of banking sector reforms on banking industry. The paper studies the challenges and opportunities of commercial banks in changing competitive scenario. The paper is an extension of knowledge in banking industry and is useful for bankers, strategies, policy makers and researchers. The competition from global banks and technological innovation has compelled the banks to rethink their policies and strategies. Different products provided by foreign banks to Indian customers have forced the Indian banks to diversify and upgrade themselves to compete and survive in the market.

K. Ratna Manikyam(2015) paper explains the changing banking scenario, the impact of economic reforms and analyses the challenges and opportunities of national and commercial banks It is evident that post liberalization era has spread new colours of growth in India, but simultaneously it has also posed some challenges. There is an urgent need to introduce new products. Existing products need to be delivered in an innovative and cost-effective way by taking full advantage of emerging technologies. The biggest opportunity for the Indian banking system today is the Indian consumer. Demographic shifts in terms of income levels and cultural

shifts in terms of lifestyle aspirations are changing the profile of the Indian consumer The biggest challenge for banking industry is to serve the mass and huge market of India. Companies have become customer centric than product centric.

Abbokar Siddiq(2015) analyze the use of technology and its impact on banking business. It has become the challenging job for the bankers to retain the existing customers and winning the new customers, otherwise sustaining in the banking business is a tough phenomenon, Information and communication technology is the major advent in the field of technology which is used for access, process, storage and dissemination of information electronically. While the new entrants have the advantage of latest technology, the goodwill of the established banks gives them a special opportunity to lead the online world. This growth has been strongly supported by the development of in the field of technology, without which this could not have been possible of course it will change our lifestyle in coming years.

Binija George(2015)explained the changing banking scenario. The paper discusses the various

challenges and opportunities like transparency, growth in banking sector, global banking, managing technology etc. Banks are striving to combat the competition. The competition

from global banks and technological innovation has compelled the banks to rethink their policies and strategies. Finally the banking sector will need to master a new business model by building management and customer services. Banks should contribute intensive efforts to render better services to their customer. Nationalized and commercial banks should overcome the challenges and to get advantage of opportunities in changing banking scenario.

## V. FINDINGS

### DIGITALIZATION IN BANKING SECTOR (PAST AND EMERGING TRENDS)

#### PHASES OF EVOLUTION OF INDIAN BANKING INDUSTRY

In the evolution of this strategic industry spanning over two centuries, immense developments have been made in terms of the regulations governing it, the ownership structure, products and services offered and the technology deployed. The entire evolution can be classified into four distinct phases.

Phase I- Pre-Nationalisation Phase (prior to 1955)

Major Changes:

1. Birth of joint stock banking companies.
2. Introduction of deposit banking and bank branches.
3. Presidency banks and other joint stock banks formed setting the foundation of modern banking system.

Phase II- Era of Nationalisation and Consolidation (1955-1990)

Major Changes:

1. State Bank of India formed out of imperial bank.
2. 20 SCBs nationalised in two phases.
3. Directed credit programmes on the rise.
4. Introduction of social banking.

Phase III- Introduction of Indian Financial & Banking Sector Reforms and Partial Liberalisation (1990-2004)

Major Changes:

1. Major changes in prudential regulations.
2. Interest rates deregulated.
3. Statutory pre-emption of resources eased more private sector players came in strengthened the system as a whole.

Phase IV- Period of Increased Liberalisation (2004- 2015)

Major Changes:

1. FDI ceiling for the banking sector increased to 74% from 49%.
2. Roadmap for inclusion of foreign banks declared.
3. More liberal branch licensing policy followed.
4. Multi-channel integration.
5. Rigid KYC norms

Phase V- Period of Digitalization(2010 till date)

Major Changes:

1. Branchless banking.
2. Customer centric.
3. Technology driven approaches.
4. Information Technology Vision Document, 2011-2017

*“Enabling IT as a Strategic Resource for Enhancing Enterprise Knowledge Improving Customer Service Strengthening Governance Increasing Overall Efficiency and Ensuring Environment Friendly Systems”*. Finally, the Vision Document focuses on adopting environmental friendly green IT.

VI. DIGITAL TRANSFORMATION IN BANKING

The traditional functions of banking are limited to accept deposit and to give loans and advances.

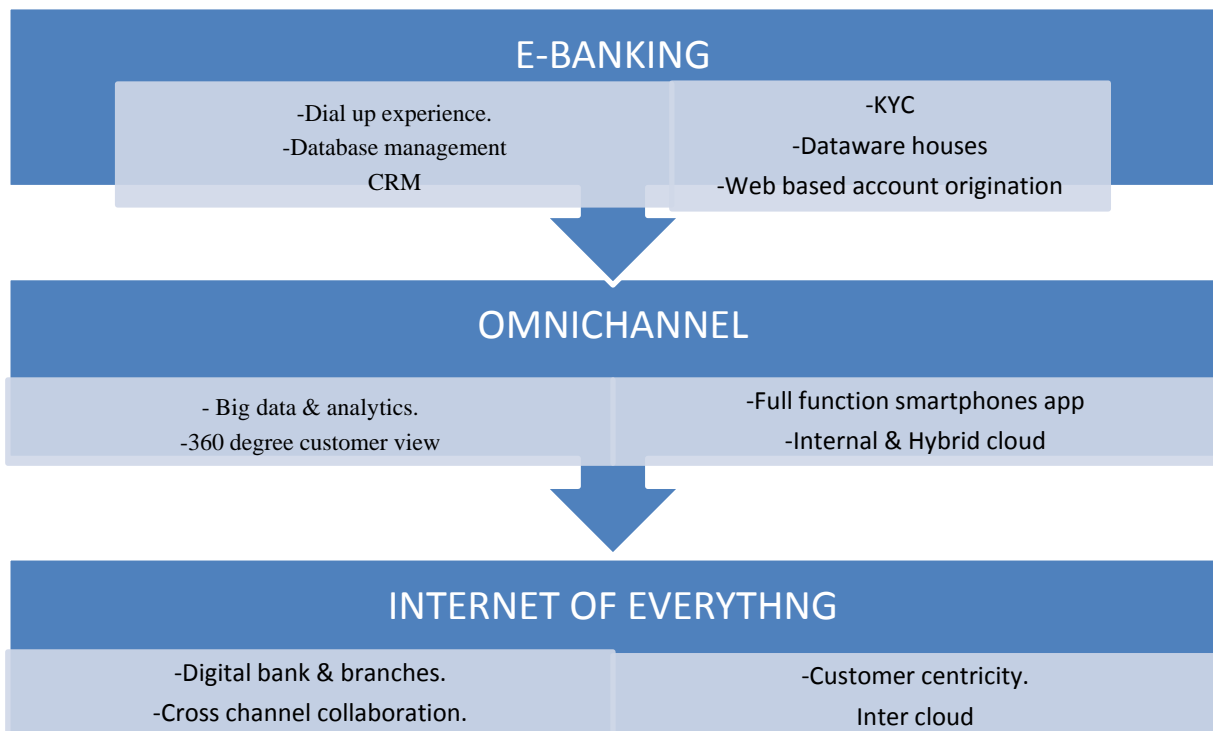


Figure1: The Internet of Everything (Digital Banking- customer driven innovation )Cisco consulting services

Today banking is known as innovative banking. Current banking sector has come up with a lot of initiatives that oriented to provide a better customer services with the help of new technologies. Indian banking sector today has sense of excitement and opportunity that is evident in the report by Cisco consulting services “Remaining the digital bank” by Joseph Bradley, Paul Jameson , Joel Barbier, 2014. They reported that the most useful tool for better growth is customer driven innovation, which is clearly explained in figure1. Since liberalization industrialization 1990’s era digital banking is changing from just e-banking to multi-channel then to Omni channel and now internet of everything 2015 onwards till date.

## VII. BANKING ON TECHNOLOGY : SHIFT FROM TRADITIONAL TO MODERN BANKING

An economy of a country cannot be successful till it adapts to the dynamic environment so do applies to banking sector. This shift is clearly explained in figure 2. Big shift has been observed in banking sector from traditional to banking. With each shift banking is moving more closer to fulfil customer needs and providing them comfort in every way.

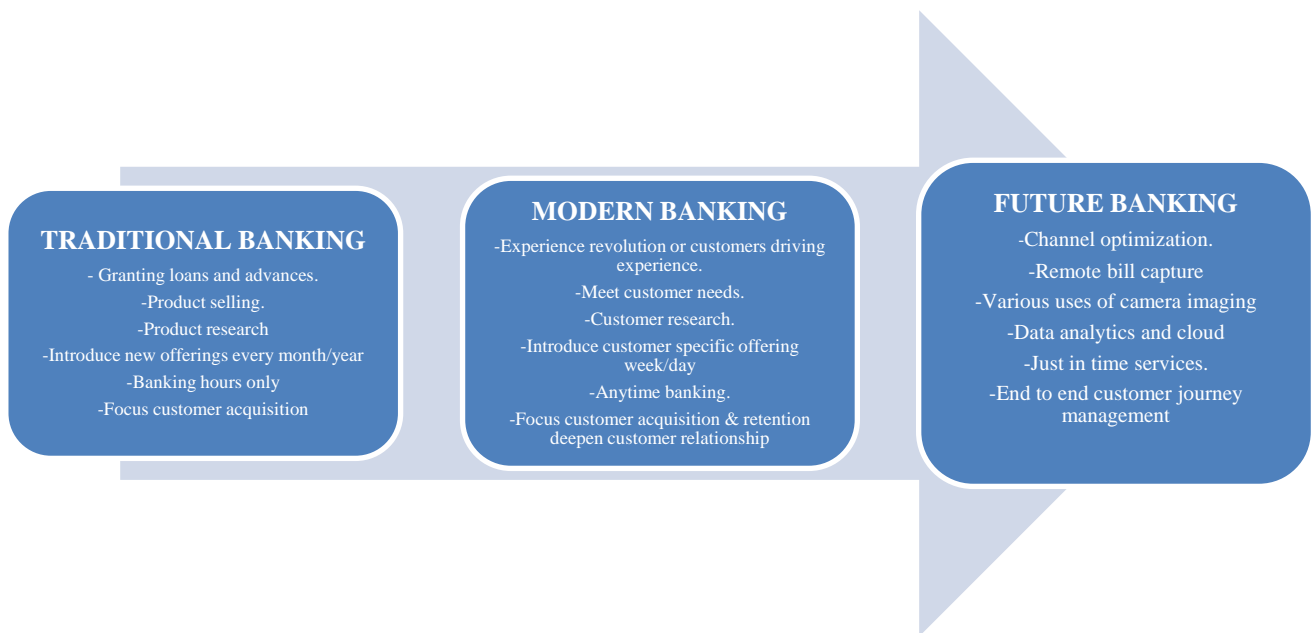


Figure 2: Transformation from traditional banking to future banking

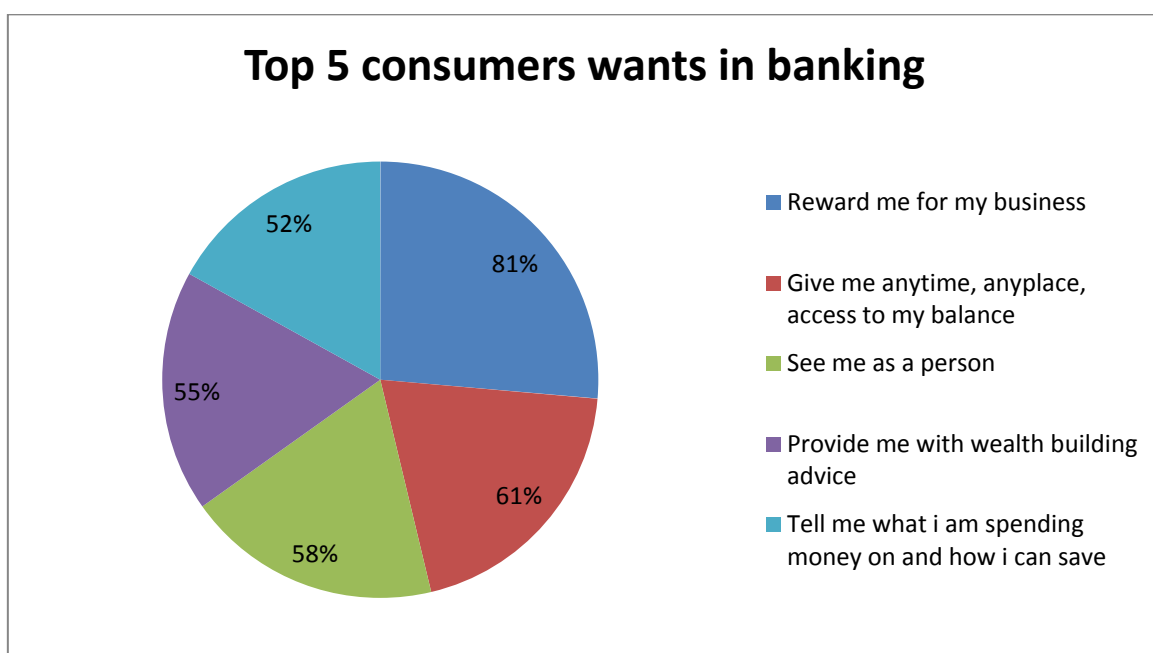


Figure 3: What do top 5 customers expects from their respective banks- Financial consumer survey (2015)

## VIII. CURRENT SCENARIO

Banking industry is going through a phase of commoditization. In today's scenario, differentiated and delightful customer experience has become more important than just providing financial services. To grab a bigger piece of the cake, banking industry has to understand the unstated needs of the customer. Each and every day, new devices / technologies are providing various customer touch point and to sustain in this competitive era among big market players banks need to only to acquire customers but has to retain them by fulfilling their needs and providing customer satisfaction.

According to the study by CGI - Financial consumer survey (2015) Financial consumer demands for tomorrow's digital bank". Figure 3 shows what top 5 consumers wants from their bankers.

## IX. IT ADOPTED EARLIER IN INDIAN BANKING SECTOR

Automatic Teller Machine (ATM):- Automatic Teller Machine is the most popular devise in India,

This enables the customers to withdraw their money 24 hours a day 7 days a week. It allow customers to perform routine banking transactions like cash withdrawal, payment of utility bills, funds transfer deposit of cheques and cash into accounts, balance enquiry etc.

Tele Banking:- Tele Banking facilitates the customer to do entire non-cash related banking on telephone. Under this devise Automatic Voice Recorder is used for simpler queries and transactions. For complicated queries and transactions, manned phone terminals are used.

Electronic Clearing Service (ECS) :- Electronic Clearing Service is a retail payment system that can be used to make bulk payments/receipts of a similar nature especially where each individual payment is of a repetitive nature and of relatively smaller amount. This facility is meant for companies and government departments to make/receive large volumes of payments rather than for funds transfers by individuals.

Electronic Funds Transfer (EFT) :- Electronic Funds Transfer (EFT) is a system whereby anyone who wants to make payment to another person/company etc. can approach his bank and make cash payment or give instructions/authorization to transfer funds directly from his own account to the bank account of the

Receiver/beneficiary. Complete details such as the receiver's name, bank account number, account type (savings or current account), bank name, city, branch name

etc. should be furnished to the bank at the time of requesting for such transfers so that the amount reaches the beneficiaries' account correctly and faster. RBI is the service provider of EFT

Real Time Gross Settlement (RTGS) :- Real Time Gross Settlement system, introduced in India since March 2004, is a system through which electronics instructions can be given by banks to transfer funds from their account to the account of another bank. The RTGS system is maintained and operated by the RBI and provides a means of efficient and faster funds transfer among banks facilitating their financial operations. As the name suggests, funds transfer between banks takes place on a 'Real Time' basis. Therefore, money can reach the beneficiary instantaneously and the beneficiary's bank has the responsibility to credit the beneficiary's account within two hours.

Anytime banking - Anywhere banking: Installation of ATMs which offer non-stop cash withdrawal, remittances and inquiry facilities. Networking of computerized branches inter-city and intra- city, will permit customers of these branches, when interconnected, to transact from any of these branches.

Electronic Banking: This enables the bank to provide corporate or high value customers with Graphical User Interface (GUI) software on a PC, to inquire about their financial transactions and accounts, cash transfers, cheque book issue and inquiry on rates without visiting the bank. The technology used to provide this service is called Electronic Data Interchange (EDI). It is used to transmit business transactions in computer-readable form between organizations and individuals in a standard format.

Centralised information results to quick services: This enables banks to transfer information from one branch to another at ease. For example, if customers registered their account with a rural branch, they can still get details of

### Plastic Money

Debit Card: Debit card is a plastic card which provides an alternative payment method to cash when making purchase of goods and services. The card holder's bank account is debited for the payments made by him up to credit balance which exists in his bank account. There is no need to carry cash and it can be used to withdraw cash. It makes the transaction quicker and less intrusive.

Credit Card: It will enable the credit card holders to purchase goods or services from authorized retail outlets up to certain predetermined limit without immediate cash payment. The member establishments subsequently collect

amounts from the bank, which in turn collects the dues from cardholders. Thus, the credit card enables its users to avoid the risk of carrying large amount of cash for shopping, buying travel tickets and making other payments. Credit card is convenient method for payment of goods and services and provides advantage of credit extension to the customers.

**Mobile Banking:** A new revolution in the realm of e-banking is the emergence of mobile banking. Online banking is now moving to the mobile world, giving everybody with a mobile phone access to real-time banking services, regardless of their location. But there is much more to mobile banking than just on-line banking. It presents a new way to pick up information and interact with the bankers, to carry out the relevant banking business. According to this system, customer can access account details on mobile using the Short Messaging System (SMS) technology where selected data is pushed to the mobile device. The wireless application protocol (WAP) technology, which will allow user to surf the net on their mobiles to access anything and everything.

**SMS Banking:** SMS Banking is the next good thing which has evolved along with the mobile banking. Transactions using GPRS-enabled mobile phones and SMS alerts are the latest innovations in the delivery channels. OTP (One Time Password) is one of the recent additions which have made SMS a handy tool to communicate with the customer wherever they are. This has eliminated scepticism to a great extent among the users regarding the online transaction. SMS alerts are sent to customers for all transactions made by them above the specified value. Customers can also request to know their balances and the last few transaction details by sending an SMS. Since any high end smart phone or an i-pad or a high speed internet is not required to avail the benefits of SMS banking it has the potential to take digital banking to the farthest corner of our country and among the masses.

**Core Banking Solution (CBS):** Core banking or Centralised Online Real Time Environment banking enables anywhere banking. "Core Banking" is a service provided by a group of networked bank branches. Bank customers can access their funds and other simple transactions from any of the member branch offices in real-time. Under the CBS architecture, there are remote server (called data centres) and client (called Service outlet) branches which include a centralized branch computerization where branches are connected to a central host.

**Digital Wallet:** A digital wallet also known as e-wallet allows users to make electronic commerce transactions quickly and securely. It was first conceived as a method of

storing various forms of electronic money (e-cash), but with little popularity of such e-cash services, the digital wallet has evolved into a service that provides internet users with a convenient way to store and use online shopping information. The term 'digital wallet' is also increasingly being used to describe mobile phones, especially smart phones that store an individual's credentials and utilize wireless technologies to carry out financial transaction.

**Bankers Automated Clearing System (BACS):** This system was developed jointly by the main banks to allow customer data to be taken directly on to bank machines, in order to avoid doing it manually. First it was used by the local authorities to pay wages and salaries and to make payment to their suppliers. The banks also use it to handle the large number of standing order that they pay every month.

#### X. LATEST IT ADOPTED BY BANKS

**Talking ATM:-** Talking ATM has been introduced recently. This ATM is specifically designed for visually impaired persons in order to perform the financial transactions of their own. The ATM would provide audio commands through a head phone connected with the ATM Machine. The screen would turn blank during the operation so that no one does shoulder surfing. The ATMs are so designed that a person on wheel chair can enter the ATM room conveniently. This is an attempt to ensure that no one should be left out in reaping the benefits of the digital banking.

**PayPal:** PayPal is an e-commerce business allowing payments and money transfers to be made through the Internet. It serves as an electronic alternative to traditional paper methods such as cheques and money orders. It performs payment processing for online vendors, auction sites, and other corporate users, for which it charges a fee. It operates in 103 markets and manages over 133 million accounts. It allows customers to send, receive and hold funds in 17 currencies worldwide.

**Point of Sale Terminal:** - Point of Sale Terminal is a computer terminal that is linked online to the

Computerized customer information files in a bank and magnetically encoded plastic transaction card that identifies the customer to the computer. During a transaction, the customer's account is debited and the retailer's account is credited by the computer for the amount of purchase.

**Self-inquiry facility:** Instead of customers lining up or going to the help desk, banks have provided simple self-inquiry systems on all branches.

**Remote banking:** Remote terminals at the customer site connected to the respective branch through a modem, enabling the customer to make inquiries regarding his accounts, on-line, without having to move from his office. This facility has also enabled anytime banking, because customers can use ATM machines to deposit money on their accounts. Remote Banking has helped people in rural areas to improve on their culture of saving money.

**Centralised information results to quick services:** This enables banks to transfer information from one branch to another at ease. For example, if customers registered their account with a rural branch, they can still get details of their account while at the main branch in an urban area.

**Biometrics:** Banks across the country have started the process of setting up ATMs enabled with biometric technology to tap the potential of rural markets. Biometric Card provides automated methods of identifying or authenticating the identity of a living person based on unique physiological characteristics and recognition of the face, fingerprints, eyes or voice. This technology is a boon for millions of illiterates who have remained outside of banking ambit due to their illiteracy. This may prove helpful for old-age customers also who can be identified as a genuine beneficiary of various schemes run by Centre or State governments meant to improve their standard of living.

**Satellite Banking:** Satellite banking is also an upcoming technological innovation in the Indian banking industry, which is expected to help in solving the problem of weak terrestrial communication links in many parts of the country. The use of satellites for establishing connectivity between branches will help banks to reach rural and hilly areas in a better way, and offer better facilities, particularly in relation to electronic funds transfers.

**Interbank Mobile Payment Service (IMPS):** IMPS initiated by National Payment Corporation of India (NPCI) are going to transform the way financial transactions are done in India. IMPS are a game changer for an emerging and knowledge based economy like ours. In India most of electronic transactions are P2P or peer to peer, now days some banks have started offering P2M or person to merchant facility as well. IMPS have also enabled real-time transfer of funds through the medium of the mobile phone between the accounts in different banks, 24X7 and 365 days of the year.

#### IMPACT OF DIGITALIZATION ON BANKING SECTOR:-

With the change in technology over the time both the service provider and the service seekers are equally

benefited. Advent of technology or digital banking proved to be a boon to the Indian banking sector. But where there is profitability, there must be challenges.

#### POSITIVE IMPACT BY WAY OF NEW OPPORTUNITIES

Where there are challenges, there must be opportunities. Following are the opportunities for the banking sector.

**Expanding reach to Rural area customers**

Contributing to 70% of the total population in India is a largely untapped market for banking sector. In all urban areas, banking services entered but only few big villages have the banks entered. So the banks must reach in remaining all villages because majority of Indian still living in rural areas.

**Good customer services**

Good customer services are the best brand ambassador for any bank for growing its business. Every engagement with customer is an opportunity to develop a customer faith in the bank. While increasing competition, customer services have become the backbone for judging the performance of banks.

**Internet Banking**

It is clear that online finance will pick up and there will be increasing convergence in terms of product offerings, banking services, share trading, insurance, loans based on the data warehousing and data mining technologies. Anytime anywhere banking will become common and will have to upscale

**Product Differentiation**

Apart from traditional banking services, Indian Banks must adopt some product innovation so that they can compete in gamut of competition

**Expansion**

Expansion of branch size in order to increase market share is another opportunity to combat competitors. Therefore Indian nationalised and commercial banks must spread their wings towards global markets as some of them have already done it.

**Investment banking-** It will be among the fastest growing segments in the banking industry. The larger corporate customers expect to demand higher support for international expansion and mergers and acquisitions over next decade. As the wholesale debt markets deepen, the



larger corporate would avail of advisory and capital market services from banks to access capital markets. The revenue will shift from traditional corporate banking to investment banking.

CRM and data warehousing- Customer Relationship Management and data warehousing will drive the next wave of technology in banks. There is significant potential for cross selling amongst all categories of banks in India. Given that cross selling is highly cost-effective as compared to all other means of customer acquisition, banks will adopt CRM strategies aggressively in pursuit of cost-effective business model

### XI. NEGATIVE IMPACT BY WAY OF NEW CHALLENGES

#### Customer satisfaction

Customer is a king in the present day banking. The banks must provide services according to customer's needs and wants to acquire as well as retain them.

#### Competition

Competition in banking sector brings various challenges before the banks such as product positioning, innovative ideas and channels and new market trends and in this competitive era banks needs to cope up with competition in the market that to globally.

#### Global Banking

The impact of globalization bound to compete with global players. The foreign banks operating in India, becomes a major challenge for nationalised and private sector banks.

#### Managing Technology

Developing or acquiring the right technology, deploying it optimally and then leveraging it to the maximum extent is essential to achieve and maintain high service and efficiency standards while remaining cost effective and delivering sustainable return to shareholders. Managing technology is therefore, a key challenge for the Indian Banking Sector.

#### Market Discipline and Transparency

According to Fernando (2011) transparency and disclosure norms as part of internationally accepted corporate governance practices are assuming greater importance in the emerging environment. Banks are expected to be more responsive and accountable to the investors. Banks have to disclose in their Balance sheets a plethora of information on the maturity profiles of assets and liabilities, movements in NPAs, capital, shareholdings of the government, value of investment in India and abroad, the total investment made in the equity share, bonds, debentures, aggregate advances against shares etc. Capital mobilization-Capital mobilized by commercial banks is the monetary value that the mobilization of commercial banks in the market through the operation of deposit, loan and number of other sources.

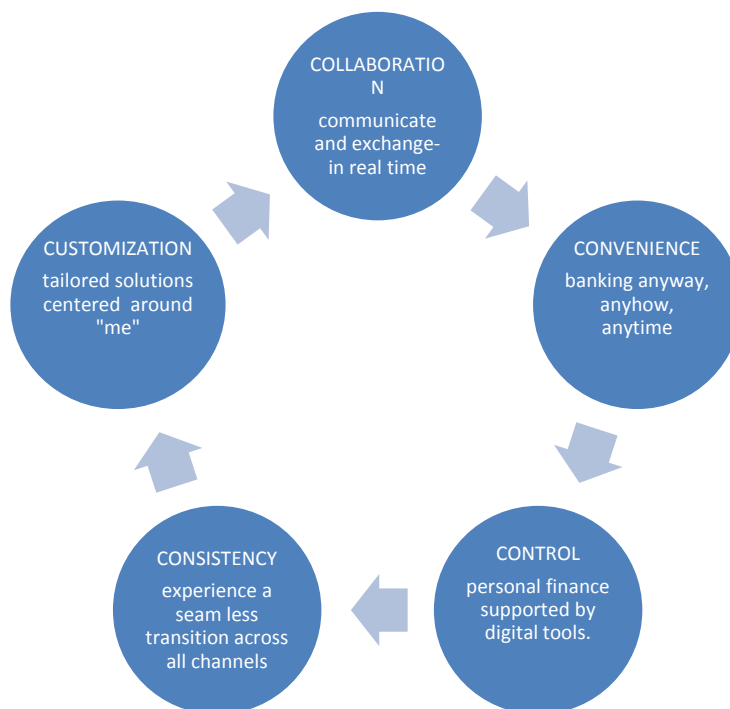


Figure 4: 5C's of Digital consumers expectations from their banking organization.

Following the financial liberalization, some shifts have taken place in the ownership pattern of bank deposits. As the financial sector develops, the share of non-deposit saving instruments tend to increase at the expense of bank deposits. The challenge for the banks is to mobilize untapped savings and to improve their services to retain their existing depositors and attract their new depositors. Risk management system-To overcome the risk and to make banking function well, there is a need to manage all kinds of risks associated with the banking. Risk management becomes one of the main functions of any banking services. Risk management consists of identifying the risk and controlling them. The basic objective of risk management is to maximize the profit and optimizing the capital funds for ensuring long term solvency of the banking organization.

Financial inclusion- Providing affordable banking services to the lowest strata of the population is one of the primary goals and big challenge for Indian banking sector.

I.T. Training of banking personnel- Personnel should be trained with updated technologies and should be prompt to assist their customers.

Customer awareness- Customers should be aware of latest and updated technology. They should be assisted well by various means.

Technological Frauds- it is bank's responsibility to cure all kind of frauds faced by the customers.

5C's of Digital consumer expectation- 5 C's digital consumer expectations from their banking organization as per the study by Deolitte. Figure 4 reveals these 5C's if fulfilled, will lead to customer satisfaction at large.

## XII. RECOMMENDATIONS

-Customer centric approach-

This approach is based on a single brand name, providing customer centric experience to each and every customer as per their preference and behaviour.

-To know the various customers touch points. The bank has to attract more customers by improving the Core Banking Solution and make the banking operation simple. In order to make electronic banking more popular bank must segment the customers based on demographic priority (i.e., age, gender, occupation, etc) and customize banking services as per their needs and requirements.

-To spread the awareness among the customers it is desirable that promotional measures through various media, such as print, internet, SMS, hoardings, ATM

locations, Display screens at Branches, TV and Radios are to be further strengthened by the bank to promote digital banking.

-In order to reduce the complaint against the electronic banking services there is a need for continuous up grading the technological infrastructure. As customers turn to online and mobile banking to manage their financial accounts at an ever increasing rate, it becomes more important for the bank to understand their customer's unique online needs and provide a secure and user-friendly experience for accessing financial information and conducting financial transactions.

-Customers should be aware of all kind of security measures and handling of ATM's, credit cards and

debit cards. They should be informed by banks not to reply to phishing mails.

## XIII. CONCLUSION

Everyone today is convinced that the technology is going to hold the key to future of banking. The achievements in the banking today would not have made possible without IT revolution. The banking today is re-defined and re-engineered with the use of Information Technology and it is sure that the future of banking will offer more sophisticated services to the customers with the continuous product and process innovations. Thus, there is a paradigm shift from the seller's market to buyer's market in the industry and finally it affected at the bankers level to change their approach from "conventional banking to convenience banking" and "mass banking to class banking". The shift has also increased the degree of accessibility of a common man.

The pre and post liberalization era has witnessed various environmental changes which directly affects the aforesaid phenomena. It is evident that post liberalization era has spread new colours of growth in India. Undoubtedly this shift from traditional banking to modern banking is advantageous both for bankers as well as customers and to the whole economy. Core banking solutions provides variety of solutions to customers. Digital banking is the key to future banking but it needs precautions and the safety nets. The increasing use of technology in banks has also brought up 'security' concerns. Digital banking is also affected by challenges and opportunities. Banks need to focus more on e-governance, customer relationship management, security concerns, technological obsolescence, mergers and acquisitions, penetration of IT in rural areas, and outsourcing of IT operations. The banks should be able to enlarge their outreach in terms of customer base and product choices by leveraging

technology enabled payment systems in affordable, accessible, acceptable and assured manner. Banks are striving to combat the competition. The competition from global banks and technological innovation has compelled the banks to rethink their policies and strategies. Bankers are in the people's business and it is the goal of the bankers to make the customers happy to achieve their targets. . Different products provided by foreign banks to Indian customers have forced the Indian banks to diversify and upgrade themselves to compete and survive in the market. Another challenging task is satisfying the customers, the banks are turning towards the technology for the help. Finally, the banking sector will need to master a new business model by building management and customer services. Banks should contribute intensive efforts to render better services to their customer.

#### XIV. LIMITATION AND FUTURE DIRECTION

This article present review of research papers assessing the utility of technology in Indian banking sector. However it should be more focussed on emerging economies like Brazil, Russia, China, South Korea, Mexico, Indonesia, Turkey, Saudi Arabia, Iran etc to compare and relate the factors hindering in adoption of digital banking. It was found that digitalization in banking has totally shifted the paradim from traditional banking to modern banking which is beneficial to economy as a whole but still it is affected by various challenges and risks associated.

This paper does not cover bankers as well as customer's perspective towards issues related to adoption of digital banking which can be further studied. An important delimitation of the paper is that the literature analysis was limited to digital banking and there is much beyond digital banking in purview of study.

With globalization and changing economic dynamics, today is the era where banks are not only focussing on domestic market as well as international market with variety of services. The scope of the present study could be expanded in the future to include both bankers as well as customers' perspectives regarding the adoption and utilization of digital banking. There is always a communication gap between service provider and service seeker. This research will help both of them to overcome this constraint and benefit each other.

Banks services are expanding day by day with latest new and advanced services which should be targeted in future studies. While our literature review was extensive and spanned a number of different research domains though, some articles were missed. In order to advance research in electronic banking, future researchers should cover all essential aspects and consider diversifying their theoretical

and methodological approaches using the opportunities uncovered in our findings.

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