

Banking in India: An Emperical Study on Innovative Trends by use of IT Products

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Abstract: As far as the Indian banking is concerned, the sector has emerged as one of the strongest drivers of nation's economic escalation. The Indian banking industry has made stupendous advancement in the last few years, even during the time when the rest of the world was struggling with financial meltdown. This could have been possible due to two vital factors. Firstly the liberalization of the financial and banking sector resulted in the launching of new generation tech-savvy private banks, ultimately creating a new competitive economic environment. Secondly, the conservative policies of the Reserve Bank of India (RBI) have protected Indian banks from recession and global economic turmoil. In this way the Indian banks manage to be at higher value in comparison to Asian banks. Today, we are having a fairly well developed banking system with different classes of banks such as public sector banks, private banks, foreign banks, cooperative banks and regional rural banks. Booming of IT industry in India and subsequent implementation of IT solutions has taken the Indian banking sector one step closer towards the technological revolution. Computerized inter connectivity across bank branches, modernization of payment services, transaction through Electronic Clearing Service (ECS), Real Time Gross Settlement System (RTGS), National Electronic Fund Transfer (NEFT), mobile banking, internet banking, SMS banking, tele-banking, online submission of loan applications, issue and distribution of ATMs, and credit cards are all landmarks in banking technology revolution. There has been a considerable innovation and diversification in the mode of operation in major Indian banks in recent years and it seems that the implementation of innovative technologies in India banking sector has a positive impact. This paper gives an insight into the current trends and changes in the technological evolution in Indian banking sector.

Keywords: RBI, liberalization, conservative policies, innovative banking, banking technology

INTRODUCTION

We belong to a technologically modernized era. In this era, in every aspect of life human being needs comfort. Therefore needs and need based contentment of humans has gone past the previous level. Service sectors are the major players in fulfilling the changing dynamics of the need with progress of the information age. Among the service sectors, the banking industry around the world is conventionally the most synchronized, apparently because of its direct role in economic growth and development [1]. From the Indian point of view the banking sector has become an emerging sector in recent time, providing a lot of services to the customers, thereby directly or indirectly affecting the human life and their lifestyles. The Indian banking sector has evolved from being a sleepy business institution to a highly proactive and dynamic entity. Today the Indian banking sector is fast pacing and is constantly in the throngs of change, with new regulations, processes and policies in place. The key players in this process of transformation are liberalization and economic reforms. The liberalization of the financial and banking sector resulted in the

launching of new generation tech-savvy private banks, ultimately creating a new competitive economic environment. These new generation banks were fast to influence emerging technology, spirited in wooing customers and attracting them by providing professional services. This competitiveness atmosphere helped to initiate a sense of pressure in public sector banks and older private banks to mend their ways, which in turn completely revived banking sector in India [2]. In the present scenario there are 274 commercial banks in service in India, among those, 223 banks are in the public sector and 51 in the private sector [3].

The rapid expansion of information and communication technologies has had a remarkable impact on all areas of human life. It cannot be overruled that the banking sector has been greatly benefited from the implementation of superior technology during the recent past. The technological revolution has brought a complete pattern shift in the operation of banks and the deliverance of banking services. The advances in information and telecommunication technologies (IT) in the past 25years have had a intense impact on the nature

of banking [4]. IT Act of 2000 gave a new aspect to the Indian banking sector. IT has created renovation in banking structure, business process, banking sector, work culture and human resource development. It influenced the profitability, productivity and efficiency of the banks to a great degree [5]. In the present day, IT not only facilitates automation of process and data processing but also provides more value addition to the entire banking sector. The growth of the internet and mobiles has further added value to the IT-based revolution in the banking sector and has completely altered the way that banking services are delivered. This development has enabled busy people to complete their financial activities in a cost-effective and efficient manner at any time of the day with their convenient location. Gone are those days when every banking transaction required a visit to the bank branch. Nowadays, most of the dealings can be done from the home and clients need not visit the bank branch for anything. This is how the innovation inputs through IT services play an important role in determining the performance of an organization. In the current global context, IT is an essential for organizations to remain competitive and grow. Novel trends in banking through IT implementation means the wider application of new methods and techniques, new scheme in the field of deposit mobilization, operation of credit and bank management, for example the bank have introduced various types of schemes such as pension plan, retirement scheme, akshaynidhi scheme, money lending scheme like home loans, car finance, education loans, household goods finance etc. In addition, many banks have started anytime anywhere banking module, Sunday bank branches and mobile banking for the benefit of the customers [6]. Inventive banking also allows bank customers to connect in a enormous range of financial services such as paying bills, checking account information, transmitting funds, and exploiting investment and check services through bank websites or by using of mobile banking, tele-banking, sms banking, internet banking etc. Practicing innovative banking through utilization of IT also increases service quality which is necessary for continuous existence in competitive markets and achieving to control the economic crisis. In this context, the article emphasizes on the recent trends and technological innovations practiced in banking sector by the use of IT products and IT services. Also the authors try to find out a correlation between the IT based innovative trends and the performance of the Indian banking sector.

LITERATURE REVIEW

For the first time in June 1999 Indian banking sector witnessed the IT revolution in the form of Indian financial net and the payment system was the first segment of the banking system, benefited from the introduction of the IT. Later on the payment system was

made fully mechanized with the introduction of Automated Teller Machines (ATM) [5]. In the early 2000 the emphasis shifted on to the implementation of core banking solutions (CBS), automation of branches and centralization of operations at the CBS by cultivating alliances with IT consultants such as IBM, HP and Accenture, among others. Since the RBI report of 2001, there has been a concerted effort to improve the payment and settlement systems. Innovations in these areas have included Electronic Funds Transfer (EFT), Real Time Gross Settlement System (RTGS), Centralized Funds Management System (CFMS), and the Structured Financial Messaging Solution (SFMS) [4].

Janki [7] analyzed the effect of technology on the employees' productivity and concluded that technology is the only tool to achieve their goals. Jalan [8] stated that IT revolution has brought about a fundamental transformation in the banking business. Perchance no other sector has been affected by advances in technology as much as banking & finance. Padhy [9] studied the impact of technology development in the banking system and also highlighted the future of the banking sector. Jha et al. have analyzed the use and effectiveness of information technology in the Indian Banking sector and concluded that the technology entree, innovations and up-gradations in various functional areas of banking are of the highest level in India and banking being one of the fastest growing sectors of the Indian financial system, where technology is consumer leaning service [10]. Kumar and Gulati inspect the issue of convergence of efficiency levels among Indian public sector banks (PSBs) during the post-reforms period spanning from 1992-93 to 2005-06[11]. The experimental results point out that the majority of PSBs have observed arise in technical efficiency during the post-reforms years. According to Nelson and Richmond [12] internet banking service is defined as a transaction oriented system that enables a bank's customers to engage in online banking activities. The conclusions depict that to a large extent, the banking reform process seems to be successful in achieving the efficiency gains in the Indian public sector banking industry. The results of this study show that the level of competitive practices and technology in the Indian banking industry during the post-reforms years served as a medium to improve technical efficiency and to bring convergence across PSBs in terms of their efficiency levels.

The analysis of literature on diverse aspects of recent innovative trends used in banking sector concludes that IT is playing a vital role in bringing this technology revolution leading to performance dynamics and it is the need of the hour to maintain the progress with IT.

Objective of the study:

1. To study the current trends and technological development in the Indian banking sector.
2. To analyze the ATM progress in Indian banking sector.
3. To observe the progress of information technology in Indian banking sector.

RESEARCH METHODOLOGY

The present study is based on the secondary data collected from different journals, magazines, net sites, published data from various issues of RBI and KPMG. The study is a conceptual one with detailed review of literature. Various paper studies on this subject have also been referred. A quantitative approach was used to gather adequate and reliable information to identify the recent technological innovations in the banking sector by the use of IT solutions and their influence on performance efficiency. The collected data was analyzed using a descriptive analysis which can provide very useful initial information of the data, ultimately leading to the inference. The collected data were also tabulated

and presented graphically to depict the relative effect of IT based technological innovations on the performance efficiency of the banking sector.

ANALYSIS AND FINDINGS

This section makes an attempt to study and analyze the changing scenario of banking sector by using the various IT products. A study of technological progress in the banking sector is vital for our country because bank act as an essential role in mobilizing and allocating the savings and the Indian bank have mobilized around 80% of funding from deposit, which help to increase the economic market. Indian bank consist mostly the scheduled commercial banks and cooperative banks, which includes public sector bank, private sector banks, foreign banks, regional rural banks, urban cooperative and rural cooperative banks as shown below in Table-1. The total sample analysis is restricted to 2004-05 and 2012-13 only. We have shown here the increasing structure of banking sector and application as well as impact of information and communication technology in the banking sector in India.

Table-1: The spread of scheduled commercial bank and their branches in India

Number of banks	2004-2005	2012-2013
Public sector banks	27	26
Private sector banks	30	20
Foreign banks	31	43
Regional rural banks	196	82
Total no. of banks	284	171
Number of branches	2004-2005	2012-2013
Public sector banks	57288	70421
Private sector banks	6196	14584
Foreign banks	242	331
Regional rural banks	14446	17007
Total branches	78172	102343

Source: Dinodia capital advisors, January 2013 [14], Prasad and Rao (2005)[15].

Following are the list of innovative services offered by the banking sector in recent past.

Automatic teller machine (ATM):

Automatic teller machine (ATM) is an electronic machine, which is used by any of the customer to make deposits, withdrawal and other financial transactions. So, ATM banking includes computerized telecommunication devices that allow customers of financial institutions to directly use a secure method to access cash as well as bank accounts. Banks are now using ATMs for product promotion as banks market broader financial services to their captive audience of ATM users. In India, Hong Kong and

Shanghai banking corporation (HSBC) installed the first ATM in 1987.

The lurching of ATMs in banks has altered banking by providing banking services any time & anywhere, any bank to the customer. Therefore ATM is preferred by 53% of total customers of bank in India [13]. As per Table-2 in 2012-13, the number of ATMs witnessed a growth of 85.6%, 84.1% and 36.7% for public sector banks, private sector banks and foreign banks respectively as compared to the year 2004-05. The overall ATMs growth approach to 84.5% in 2012-13 than that of 2004-05.

Table -2: Number of ATMs

Name of banks	2004-2005	2012-2013	%Change
Public sector banks	9992	69652	85.6
Private sector banks	6853	43101	84.1
Foreign banks	797	1261	36.7
Total no. of banks	17642	114014	84.5

Source: Report on Trend & Progress of Banking 2004-05 and 2012-13 [17]

Electronic funds transfer (EFT):

Electronic fund transfer is a system whereby anyone wants to make payment anywhere to another person. EFT scheme used on the behalf of cheques and drafts for remitting funds between bank accounts located at different centers. The two most common technology used for electronic funds transfer is NEFT and RTGS. Nowadays EFT was replaced by NEFT.

Real time gross settlement (RTGS):

RTGS introduced in India since March 2004. The RTGS system is one which payment instruction between banks is settled individually and continuously all through the day. In India at present it covers more than 28000 branches of the 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. RTGS system does not create credit risk for the receiving participant because they settle each payment individually. Therefore money can reach the beneficiary instantaneously and the beneficiary bank has the responsibility to credit the beneficiaries account within 2 hours.

Electronic clearing services (ECS):

ECS is a mode of electronic fund transfer in quick manner across branches of one bank to any other bank through a central access of every bank, with the inter-bank completion being effected in the books of account of banks maintained at RBI. This can be used for making payment like pension, interest, dividend etc. and collect the different bills from customer on the behalf of other organization. For that the electronic clearing services use ECS-credit and ECS- debit products.

Debit Card and Credit card:

For convenient payment the customer used debit as well as credit card without cheque and both are plastic payment card. Since the mid-2000s, a number of initiatives have allowed debit cards issued in one country to be used in other countries. Debit card is a

direct amount access card. The debit card used only the amount present in customers account. On the other hand credit cards involve provision of credit to the card user, which is remunerated by the card user on receipt the bill either in full or partial installments.

Credit card is a financial apparatus, which can be used multiple times to borrow money or buy products and services on credit. Banks, vend stores and other businesses generally issue these. On account of their credit limit, they are of diverse varieties like classic, gold or silver. Smart cards in India are lunched by the Ministry of Communications and Information Technology, Government of India. The cards will have multi-applications and will be working on the basis of inter-operable systems.

As demonstrated in the Table-3 the percentage change in volume of credit card, debit card and smart card was observed to be 99.94 % in 2011-12 as compared to 2004-05, whereas percentage change in the values of the same accounted up to 48.58 % in the mentioned time period.

Similarly the electronic payment systems such as Electronic Clearing Service (ECS) registered a tremendous growth of 99.99 in volume and 70.25 in value in 2011-12 as compared to 2004-05. National Electronic Fund Transfer (NEFT) started in the late 2005. So its value in volume in 2004-05 is not available. But only taking into account value (17903 billion) and volume (2260 million) of 2011-12 themselves, the potential growth can be realized. Likewise Real Time Gross Settlement (RTGS) though started year back in 1986 with only 3 central banks (south Africa, Italy and USA) implementing the same, in India the service got activated by late 2005. So 2004-05 data for the same is lacking. The value of RTGS in 2011-12 is observed to be 5,3,307,00 crore and the volume is reported to be 55 million. Such higher values depicts about the enormous growth of RTGS in the present time (Table-3).

Table -3: Electronic card based payment

Electronic based channel	2004-05 Volume	2004-05 Value (crore)	2011-12 Volume (million)	2011-12 Value (crore)	% Change in Volume	% Change in Value
ECS debit & credit	57,071	79,479	287	267200	99.99	70.25
Credit card &debit card or Smart card	3,620,40	7,712,0	648	150000	99.94	48.58
Progress of NEFT	NA	NA	226	17,903,00	NA	NA
Progress of RTGS	NA	NA	55	5,39,307,00	NA	NA

Source: Report on Trend & Progress of Banking 2004-05 and 2011-12 [17].

Core banking solution:

Core banking is all about the customers' needs. So, CBS is a centralized platform, which creates the environment where the entire bank's operations can be controlled. CBS also creates a centralized customer database, which helps anytime, anywhere and anyway banking possible. The function of core banking includes deposits account loan, payment and other activities. For banker as well as customer the CBS gave fast and efficient customer services and offering multiple delivery channels like ATM, mobile banking, internet banking, different types of credit cards etc.

Net banking:

The Internet has initiated an electronic revolution in the global banking segment. It's lively and supple nature as well as its everywhere reach has helped in leveraging a variety of banking actions. The Internet has come out as one of the key distribution channels of banking products and services for banks in the U.S and in European countries. By use of net banking the customer feels that banking is present in their desk. With E- banking services the customer can transact a number of transactions with just a few clicks. Also the customer check their account balance, pay electric and telephone bill, transfer funds, open of fixed deposit account and much more. The customer always gets instant information of their transaction and new schemes. All such transactions are encrypted; using sophisticated multi-layered security design, including firewalls and filters. One can be rest assured that one's transactions are secure and confidential.

Mobile banking:

Mobile banking facility is an extension of net-banking. The bank is in organization with the cellular service providers offers this service. The customers can use mobile phone devices as a channel for accessing their bank accounts, remitting funds from the accounts, making payments at shops and bill payment. This is envisaged as a safe, secure, 24 x 7, convenient payment mechanism for Indian for domestic transactions. The

customer, who is a remitter, should register for Mobile banking service with the bank where he/she has an account. Mobile banking is used to check or transact their account anywhere in the world.

Tele banking:

Tele banking is another advanced technology, which provided the facility of 24 hour banking to the customer. Tele banking facilitates the customer to do entire non cash related banking on the telephone. Under this devise Automatic Voice Recorder is used for simpler queries and transactions. For complex queries and transactions, tele-banking is used. Tele banking is becoming popular since queries at ATM's are now becoming too long.

SMS Banking:

Short Message Service (SMS) is the other name for text messaging. SMS banking permits consumers to make uncomplicated transactions to their bank accounts by sending and receiving text messages.

Banking kiosk:

Kiosk banking is one type of machine which offers customer for their flexible transaction. It is only used by those customer having debit card and a pin. For using the kiosk banking one can insert the debit card into the kiosk machine and enter the pin.

Magnetic Ink Character Recognition (MICR):

MICR (Magnetic Ink Character Recognition) is a character identification technology adopted mainly by the banking industry to make easy the processing of cheque.

Money Link:

Money link card is a multi-function bank card with completely enhanced and improved function and can provide service of personal settlement, e-Banking, investment and financing and some daily convenient service. All the way through this service; customers are

able to withdraw cash from their accounts, at anytime, anyplace.

Phone Link:

The phone link represents a high-tech technology in the banking sector. With the help of this service, account holders may avail the services of doing a multitude of peripheral banking works on the phone. The following service available to the an account holders through phone-link service

- Inquiry on product services
- Change of accounts address
- Informing the bank about lost/captured Money Link ATM card.
- Stop cheque instruction.
- Order for pay order or DD preparation.
- Status inquires on remittance.
- Renew of FDR or opening of FDR and other accounts opening assistances.

Point of sale terminal:

Point of Sale Terminal is a processor terminal that is linked online to the programmed customer information files in a bank and magnetically encoded plastic transaction card that recognizes the customer to the computer. In a transaction, the customer's account is debited and the retailer's account is credited by the computer for the amount of purchase.

E-cheque:

In the similar approach of e-governance, e-mail, e-commerce, e-tail etc., a new technology is being developed in US for the commencement of e-check, which will eventually replace the conventional paper check. India, as a forerunner to the establishment of e-cheque, the Negotiable Instruments Act has already been amended to embrace; Truncated cheque and E-cheque instruments.

Society for worldwide interbank financial communication (SWIFT):

Formation of SWIFT was took place in 1973 where 239 banks were participated from 15 countries with its headquarters at Brussels. It started functioning in May 1977. In India the membership of SWIFT are RBI, 27 public sector banks and 8 foreign banks. At present the number of banks was participated in SWIFT more than 3000. SWIFT is a method which use for transferring the fund. This is highly gainful, reliable and safe means of fund transfer. This service is available for 24 hours. SWIFT technology is used for debit- credit statement, fixed deposit, foreign exchange etc.

Role of RBI towards the development of IT in banking sector:

Reserve Bank of India has continued its efforts in developing a modern, efficient, integrated payment

and settlement system for the banking sector by using technology. The first major step towards modernization of the payment system was computerization of clearing operations, its aim being to reduce the time taken in clearing, balancing and settlement, apart from providing accuracy in the final settlement. Mechanization of the clearing operations was another milestone with the introduction of Magnetic Ink Character Recognition (MICR)-based cheque processing technology using High Speed Reader Sorter systems driven by mainframe computers. The RBI has also introduced a 'Cheque Truncation System' (CTS) in the National Capital Territory of New Delhi. This system eliminates the physical movement of cheques and provides a more secure and efficient method for clearing cheques. Initiatives taken by RBI for setting up RTGS, CFSS, NDS, ECS, NECS, Prepaid Instruments, Mobile Phones and NPCI will have far reaching impact. A Real Time Gross Settlement system helps in reduction of systematic risk in the interbank payment system and to be implemented by the year end. The Centralized Funds Settlement System helps to facilitate effective liquidity management and the Negotiated Dealing System gives a modern electronic dealing platform for gilts and enabling straight through processing. Beside that the RBI constituted a working group on internet banking. The group divided the internet banking in India into three types based on the level of access granted. These are information only system, electronic information transfer system and fully electronic transactional system.

Significance of the study:

The reality of the banking sector is that, it only depends upon the information technology. The use of information technology in all spheres of the financial sector is profound reality. The banking sector has enabled to go beyond its traditional role and is now playing gradually more important role in its key areas of operation as securitization, risk predilection and liquidity among others to which IT helps. With IT revolution, banks are more and more interconnecting their computer system not only across the branches in the town but also to other geographic locations which high speed network infrastructure and setting up local areas and networks are now exposed to a growing number. The customer always having high expectation and they have become more demanding now as they are also more techno-savvy as compared to their counterparts of the yesteryears. They demand the instant bottom facility without anytime and anywhere banking facilities. While the RBI has formulated many policies on adoption of IT in the overall banking sector in India, yet there is an urgent need to address the issues involved in this respect to compete with the international banks.

Future trends:

The computer is used for banking applications in India had their beginnings in the middle of 80s. The early 90s saw banks going for the total branch automation scenario which has automated most of the banking processes and hence reduced computation time. The late 90s and early 2000s witnessed the tornado of financial reforms, deregulation, and globalization coupled with a rapid revolution in communication technologies. The early 2000s in India, banks as well as other financial entities entered the world of information technology and adoptions of technology of e-payments and mobile banking are clearly the emerging areas which are bound to strengthen in the near future. In between 2010-2020 it also expected that the banking sector grows their branches and ATMs as compared to some of other developed and developing nations. The various sources have NCR, BCG consumer survey and BCG matrix are clearly shown the requirement of ATMs and Branches in India. As per the sources, there is a prerequisite of no less than 40,000-50,000 additional branches and 160,000-190,000 extra ATMs in the coming decade. This will be 3 times more than the last decade. The penetration of internet and broadband access in India has been stumpy so far. Though, with the launch of mobile banking facilities could completely get revolutionized over the next decade. There would be 250 to 300 million customers who would access banking service over the mobile. On the other hand, 3000 customers in urban areas have indicated that call centers and internet are the most displeasing channels. We wait for the Indian banking industry to spend significant attention in technology innovation to drive next generation framework for transaction banking. The customer relations ship management and data ware housing will drive the next wave technology for the banking industry. As we heard that the cross selling is highly effective as compared to all other means of customer acquisition, the bank will adopt CRM strategies insistently in pursuit of cost-effective business models. In the next decade the banks would experiment with different low cost business models, smaller money-making branches and new use of technology, which can serve this segment profitably.

CONCLUSIONS

In overall, the analysis leads to conclude that the innovative trends have resulted in improved efficiency and reductions the banking costs for customers in India. The main prominent technological advances in the banking sector contributing to the improved efficiency and cost reductions for customers are using ATMs, credit cards, internet banking, mobile banking and computers. ATMs and internet banking have made the greatest contributions in improving the banking sector as well as the cut throat competition and increasing expectation of customers had resulted in

increased awareness of information technology among the commercial bank in India. The entry of foreign and new private banks with their excellent technology based services has also forced the banking sector in India to switch over to the new technology. So, the banking today is redefined with the use of information technology. If, the banking sectors of our country should use electronic banking system more and provide more services to their customers then earn a sustainable amount of money to support the national economy. The growth of electronic banking users increasing is a significant manner. However, last 5 years it has got tremendous importance over the bank customer and hopefully it will increase day by day after nurture the product by the professional bankers.

Overall the message for Indian bank is very clear that innovative banking techniques help banks to compete with other sector. The bank in India is using information technology not only to improve their own internal processes but also to improvise facilities and service to their customers and it is sure that the future of banking will offer more sophisticated services to the customers with the continuous product and process innovations.

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