CHAPTER – III  
REVIEW OF LITERATURE

3.1 Introduction

Information Technology (IT) is very powerful in today’s world, and financial institutions are the backbone of the Indian economy. Indian Banking Industry today is in the midst of an IT revolution. Nearly, all the nationalized banks in India are going for information technology based solutions. The application of IT in Banks has reduced the scope of traditional or conventional banking with manual operations. Nowadays banks have moved from disbursed to a centralized environment, which shows the impact of IT on banks. Banks are using new tools and techniques to find out their customers need and offer them tailor made products and services. The impact of automation in banking sector is difficult to measure.

In this research, the researcher has reviewed various articles and papers related with banking industry, introduction and adoption of IT enabled services as well as implications of IT based banking on customer service as well as bank performance. The purpose of the review is to understand, what are the opinion of experts on different aspects of banking, their observation and findings. This has helped the researcher to develop an insight and understand different facets of the study. Thus the review of literature offers a bird eye view of IT enabled banking scenario in India.

3.2 Previous Research

The technological development in the banking sector began with the use of Advanced Ledger Posting Machines (ALPM) in the 1980s and now a days banks are using core banking solution (CBS) for providing better services to their customers. Over the years several
studies have been conducted both at the industry and academic level to examine the impact of IT on banking productivity and profitability.

**Dos Santosh B. L. et al.** [1993] studied statistical correlation between IT spending and performance measures such as profitability or stock’s value. It is found that there is an insignificant correlation between IT spending and profitability measures, implying thereby that IT spending is unproductive. Brynjolfsson and Hitt [1996], however, cautioned that these findings do not account for the economic theory of equilibrium which implies that increased IT spending does not imply increased profitability. More recent firm level studies, however, point a more positive picture of IT contributions towards productivity. These findings raise several questions about mis-measurement of output by not accounting for improved variety and quality and about whether IT benefits are seen at the firm level or at the industry level. Such issues have been discussed in detail by Brynjolfsson [1993] and to a lesser extent by Brynjolfsson and Hitt [1996].

**Dr. Bharatbhushan U. Sankaye**, in his research thesis titled, “A study of reforms in Banking Sector and It’s Impact on Stakeholders”, submitted to the Solapur University has observed relating to the various services emanated from the IT use as follows:

**ATMs’ Service in the Bank:** The public sector bank’s customers were comparatively more satisfied than the other banks as the number of ATM machines availability of the category of these banks is more. Public sector banks customers rank second and the

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cooperative bank’s customer rank third so far as satisfaction indicator is concerned.

**Debit Card Facility in the Banks:** The use of the debit card facility was used more in cities than the small cities. Customers of public sector and private sector banks were expressed satisfaction about the debit card facility, while the customers of the cooperative banks were less satisfied, as the number of ATMs of these banks is less. He further observed that the customers of private sector banks were happier than the public sector banks.

**Credit Card facility in the Bank:** Credit card facility is not offered by the cooperative banks. The customers of public sector banks were comparatively more satisfied with credit card facility as compared with private sector bank customers respondents. The reason for unhappiness of the private sector banks credit card holders was that the hidden charges and excessive penalty charges charged by the Private sector banks.

**Net Banking Facility:** The cooperative banks had not offered this facility till the submission of the thesis. The use of net banking facility by the private sector bank’s customers is more than the customers of the public sector banks. Private sector banks customers were happier than the public sector banks in the use of net banking facility.

**The Phone Banking Facility:** The customers of cooperative banks were not offered this facility by the time this thesis was submitted. The private sector banks’ customers were happier than the customers of the public sector banks. The customers of the private sector banks rated the performance on this account as above average and best while there was no such comment from the public sector bank’s customers.
The researcher has suggested that the broad band penetration has to become better and computer literacy should improve for better and higher use of online banking. The customers should be given incentive for use of online banking. The employees should be trained properly so as to avoid delay in using computer for rendering services to the clients. As regards ATM facility the researcher has suggested that the withdrawal limit on debit card should be increased to maximum of Rs.25,000 per day which is a major problem by debit card customer. As regards mobile banking the researcher has suggested that the banks should undertake promotion programme to make phone banking familiar and favourable among customers.

**Verma, (2000)**, analyzed the impact of IT on public sector banks and new private sector banks and observed that IT is a threat for Public Sector Banks whereas strength of New Private Sector Banks are fully computerized and providing services on internet. Especially ICICI bank and HDFC Bank are very active on this front and are concentrating on internet and e-commerce to offer their clientele a whole range of products under one roof. New banks like IDBI, UTI bank are not lagging behind while some of them are concentrating on expansion and modernization; some are focusing on mergers and acquisitions for their growth. Hence, public sector banks have to do a lot on improving their productivity.

Although the above research findings may hold good during 2000, however, much water has been passed since then. The use of information technology by the public sector banks has substantially improved and these banks too are reaping the fruits of information technology and showing all round growth in their operations. So far as comparison between the public sector banks and the new generation private sector banks is concerned one has to note that the level playing field is not equal. Public sector banks have a large net work of
branches as well as their commitment is to reach to the masses, which is not so in case of the new private sector banks.

Avasthi and Sharma, (2000-2001),\(^4\) advances in technology are set to change the face of the banking business. Technology has transformed both the delivery channels used by banks in retail banking. It has also greatly impacted the whole markets of banks. Both the authors explored the challenges that the banking industry and its regulators face.

B. Janki, (2002),\(^5\) analyzed in his article that how technology is effecting employee’s productivity. There is no doubt, in India particularly PSBs will need to use technology to improve operating efficiency and customer services. Harnessing employee technology synergy is crucial for unleashing productivity and reaching out to the huge base of retail customers who are also dispersed in rural and semi urban areas. Banks can use technology to address customer needs and improve their interaction with customers keeping in touch through telephone and internet. The focus on technology will increase like never before to add value to customer service, develop new products, strengthen risk management and asset liability management and improve profitability. However technology is only as enabling tool and whether banks actually achieve what they want to achieve will be determined by the drive and motivation of their work force and response of the staff.

Bhasin, (2001),\(^6\) he analyzed the impact of IT on banking sector. The IT has revolutionaries various aspects of our life. It has

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transformed the repetitive and overlapping systems and has transformed the repetitive and overlapping systems and procedures into simple single key pressing technology resulting in speed, accuracy and efficiency of conduction business. The computerization of banks has provided a major push for enabling them to enter into the newer activities. The banking industry has itself prepared itself and is strongly emerging to play a major supplementary role in nurturing e-commerce applications which is still in the infancy stage in India. While few of the new generation private banks have taken early initiative in these innovative areas, other banks are gradually catching up. The author feels that utmost importance that proper security infrastructure should be in place for routing seemed transactions through the public network.

Kohali S.S., (2001), this study attempts to extend the study conducted by the Verma Committee more specifically to ascertain whether enough signals of weakness were indicated much before the event. The present study considers 1998-99 as the year of event when the Verma Committee identifies weak banks, strong banks and potential weak banks. This study considers nine efficiency parameters which are computed, based on the data collected from the Reserve Bank of India publications. The parameters include:

- Capital Adequacy Ratio.
- Net Profit/Total Assets.
- Gross Profit/Working Funds.
- Net Interest Income/ Total Assets.
- Interest Expended/ Total Assets.
- Intermediation Cost/Total Assets.
- Provisions and Contingencies/Total Assets.

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The above parameters focus on two major concerns of banks i.e. loan default and profitability whereas the Verma Committee covered all aspects of financial health. This article has given some evidence to indicate that no bank can weak or potential weak all of a sudden. There is a gradual deterioration in the position of loan default & profitability. Hence, it is suggested to develop a ratio model to arrive at a single score to classify banks into three categories i.e. weak, strong and potential weak.

**Abhijeet Arvind Shivane, (2012),** submitted his thesis titled “Impact of IT on Banking Industry Operations” to Rashtrasant Tukadoji Maharaj, Nagpur University. Some of his conclusions are enumerated below which are very similar to that of this present research.

While noting the impact of IT on bank clerical staff he has concluded that:

- Most of the staff has accepted IT enabled banking and they are aware of the benefits still there are few concerns mentioned below.
- Old skill sets in banks have become obsolete.
- Average age of staff is 46 years so they are reluctant to learn new things.
- New skill set is required and employees have to be computer savvy and computer literate.
- Better training and attitude shaping is required.
- The infrastructure and connectivity issues must be addressed by top management. Basically power crisis and connectivity are major concerns of the clerical staff.
- In some branches new staff is required as man power is very loss.
- Some respondents stated that IT has led to unemployment in banking sector.
Some respondents do not believe that IT enabled banking is 100% safe.

Few respondents stated that many account holders are illiterate and they can’t even fill in bank slips for withdrawal of cash so clerical staff has to help them. IT does not help in this regard.

He has summarized his findings on the primary data collected as under:

- ATM services have become popular and respondents are comfortable with ATM services.
- Usage of credit cards and debit cards has increased. Tele banking is also accepted by people but still not being used upto the extent of ATM. Net banking is being used by less people.
- Respondents stated that any time banking and faster services are the main reasons for usage of IT based services. 40% respondents do not feel safe while using these services. It means that safety is considered as most important issue while using these services. Around seventy percent respondents are satisfied with these services. Around sixty percent respondents are comfortable with these services.
- Young age respondents are comfortable with these services. They are not much worried about safety. These respondents gave importance to time and convenience. old aged respondents still believe in traditional methods of transactions.

Impact of IT on customers

- In case of Old age customers banks have to teach them IT operations.
- Customer expectations are very high.
New Payment Remittances like RTGS and NEFT are highly useful to businessmen and even to common people.

For Tech savvy person there is no need to go to bank so it has facilitated into 24 x 7 banking facility.

Customers can avail banking facilities from anywhere and at any time.

The financial transactions have become transparent and handy.

Risk is reduced because of no need to handle hard cash due to availability of ATM facility, Plastic cards like credit cards, debit cards etc.

3.3 Committee Reports

Information Technology and the Communication Networking Systems have revolutionized the functioning of banks and other financial institutions all over the world. Reserve bank of India has played an important role in implementation of information technology in banking sector. Various researchers have also contributed in this regard. In addition to the work done by various scholars in the area of Information Technology and Banking organization, RBI had appointed various committees to work in this area. The reports of various committees are briefly summarized below:

Dr. C. Rangarajan Committee [1983]8

Dr. Rangarajan committee had drawn up in 1983-84 the first blue print for computerizations and mechanizations in banking industry and looked into modalities of drawing up a phased plan for mechanizations for the banking industry covering period 1985-89. The committee in its report in 1984 recommended introduction of computerization and mechanizations at branch, regional office / zonal office and head office levels of banks.

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In 1988\(^9\) another committee was constituted under the chairmanship of Dr. Rangarajan for making plans for computerization for the next five years from 1990-94 for the banking industry. It identified the purpose of computerization as improvement in customer service, decision making, housekeeping and profitability. The committee observed that banking is a service industry and improved efficiency will lead to a faster rate of growth in output and help to expand employment all around. The workforce in the banking industry must, therefore, look upon computerization as a means to improve customer service and must welcome it in that spirit.

**W. S. Saraf Committee [1994]**

In 1994, the Governor, Reserve Bank of India had appointed a committee on technology issues under the chairmanship of W. S. Saraf. The committee looked into technological issues related to the payment system and to make recommendations for widening the use of modern technology in the banking industry. The Saraf committee recommended setting up institutions for electronic funds transfer system in India. The committee also reviewed the telecommunication system like use of BANKNET and optimum utilization of SWIFT by the banks in India.

**Shere Committee [1995] \(^{10,11}\)**

In 1995, RBI formed a committee under the chairmanship of K. S. Shere, to study all aspects relating to electronic funds transfer and propose appropriate legislation. The Shere committee had recommended framing of RBI (EFT system) regulations under section 58 of the Reserve Bank of India Act 1934 (RBI Act.), amendments to the RBI act and to the bankers book evidence act, 1891 as short term

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\(^{10}\) www.rbi.com

\(^{11}\) www.Banknetindia.com
measures and enacting of a few new acts such as EFT act, the computer misuse and data protection act etc. as long term measures.

**Narasimhan Committee [1998]**

In order to examine the various issues related to the technology up-gradation in the banking sector, the Reserve Bank of India appointed Narasimhan committee in September 1998. The committee consists of representatives from the Government, Reserve Bank of India, banks and academic institutions associated with the information technology. The committee dealt with the issues on technology up-gradation and observed that the most of the technology that could be considered suitable for India in some form or the other has been introduced in some diluted form or as a pilot project, but the desired success has not been achieved because of the reasons inter-alia lack of clarity and certainty on legal issues. The committee also suggested implementation of the necessary legislative changes, keeping in the view the recommendations of Shere committee. The need for addressing the following issues was also emphasized:-

- Encryption on Public Switching Telephone Network (PSTN) lines
- Admission of electronic files as evidence
- Treating Electronic Funds Transfers on par with crossed cheques / drafts for purposes of Income Tax etc
- Electronic Record keeping
- Provide data protection
- Implementation of digital signatures
- Clarification on payment finality in case of EFT

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Taking into consideration the recommendations by various committees appointed by RBI and guidelines of RBI, banks have started using IT to automate banking transactions and processes.

**Mittal R. K. and Dhingra Sanjay**\(^{13}\)

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.

**Rajshekhar K. S. (2004)**\(^{14}\) described the adoption of IT in banking has undergone several changes with the passage of time. Today IT has become an inseparable segment of banking organization. The application of information technology in the banking sector resulted in the development of different concepts of banking such as – E-banking, Internet Banking, Online Banking, Telephone Banking, Automated teller machine, universal banking and investment banking etc. Information technology has a lot of influence on banking transactions. It ensures quick service with low transaction cost to the customers. The real success of IT in the banking sector depends upon the customer’s satisfaction. Therefore banks should organize and

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\(^{14}\) Rajashekhara K. S., “Application of IT in Banking”, Yojana, July 04
conduct customer awareness program in their service area. Security is an important issue in the context of E-banking. The development of technology for the identification of customers with different means of Communication devices is a must for successful business and also to reduce frauds in banking. In this paper the author has studied customer related aspects only. This paper do not present any study related to the bank employees and their problems regarding bank Computerization.

**Jadhav Anil (2004)**\(^\text{15}\) described various channels of e-banking services such as ATM, Telephone banking (Tele-banking), Mobile banking, Internet banking and its features. The focus is also given on e-banking opportunities, challenges and security aspects while performing the banking transactions on the internet. Comparison of public, private, foreign and co-operative banks and barriers to the growth of e-banking in India are also discussed. Finally the paper discusses an overview of the major private sector banks such as ICICI, HDFC, IDBI, UTI & GTB banks which provides e-banking services.

**Balasubramanya S. (2002)**\(^\text{16}\)

In his study analyzed 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 Narasimhan 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.


\(^{16}\) Balasubramanya S. “IT wave breaks over banking”, THE CITY, Aug – Sept 2002
Hence, there was a significant amount of automation work to be achieved in the banking sector.

**Mariappan (2005-06)**

Analyzed that IT revolution has brought stunning changing in the business environment perhaps no other sector has been influenced by advances in technology as much as banking and finance, as a result, the banking pose a totally new look today. Technology has been used a strategies to win market and customers.

**Uppal and Kaur (2007)**

Analysis the efficiency of all the bank groups in the post banking sector reforms era. Time period of study is related to second post banking sector reforms (1999-2000 to 2004-05). The paper concludes that the efficiency of all the bank groups has increased in the second post banking sector reforms period but these banking sector reforms are more beneficial for new private sector banks and foreign banks. This paper also suggests some measures for the improvement of efficiency of Indian nationalized banks. The sample of the study in Indian banking industry which comprises five different ownership groups and the ratio method is used to calculate the efficiency of different bank groups. New private sector banks are compelling with foreign banks for continuous improvement in their performance.

### 3.4 Papers & Articles

**Namita Rajput and Harish Handa (2011)**

In their article “Banking efficiency: An application of DEA” have examined the efficiency of the banking sector in India and concluded that, as the economy grows and more and more opportunities come into the system, banks must focus on increasing their efficiency so that they can provide a firm support in the financial market for the industries to develop.
Daily Sakal (12th Oct. 2012)

“Debit cards are more popular”. We are now used to use plastic money. The World Payment report has revealed that although it is easy to transact with the use of either credit card or debit card, the debit cards are used more, all over the World. This report was released by ‘Capegemeny”, “RBS” and EFMA”. The report further says that next to debit card the performance for electronic payment and mobile payment is made.

The report gives a caution that in a bid to popularize these instruments for diverting the public towards plastic money, the issuers of these instruments should not wink at the rules and regulations framed for this. The new products should adhere to the framework laid down by the regulators. Brazil has emerged next to America in the use of plastic money. According to the report for 2010, in Brazil 20 billion transactions were put through plastic money, mobile payment, electronic payment etc. During the same period the total cash payment transactions in India, Russia and China put together were 13.1 billion. The world plastic money transactions during 2010 recorded an increase of 7.1% while in 2011 the increase was 8.7%. The report further states that the European banks are taking lead in bringing newer and newer products in plastic money, but while achieving the targets set out by the Basale Committee III report these banks are finding it very difficult.

3.5 Online Banking

In recent years, the application of information technology has been magnificently increased in the service industries, particularly in the banking industry, which by using information technology related products such as online banking, electronic payments, security investments, information exchanges, financial organizations can deliver high quality services to clients with less efforts.
Online banking refers to systems that enable bank customers to access accounts and general information on bank products and services through a personal computer. It provides the convenience of banking anytime from one's home or work, without having to incur some of the costs associated with a branch visit, like going to the branch and waiting on lines.

Shirley J. Ho and Sushanta K. Mallick (2006)

Paper titled, “The Impact of Information Technology on the banking Industry: Theory and Empirics” The aim of the paper was to investigate whether IT investments improve banks’ profitability. The paper is concerned with the impact of information technology on the banking industry, as banks are the intensive users of IT. The usage of IT can lead to lower costs, but the effect on profitability remains inconclusive owing to the possibility of network effects that arise as a result of competition in financial services. The paper analyzed both theoretically and empirically how information technology related spending can affect bank profits via competition in financial services that are offered by the banks. The paper utilized Hotelling model to examine the differential effects of the information technology in moderating the relationship between costs and revenue. The impact of IT on profitability is estimated using a panel of 68 US banks over 20 years. Both static and dynamic panel econometric techniques are utilized to examine the differential impact of IT on average prices, market share and profits. The results document the role of IT on the cost and revenue in banking and show the impact of network effects on bank profitability. While IT might lead to cost savings, the authors have shown that higher IT spending can also create network effects lowering bank profits. Besides, IT spending has a positive effect on market share.
The relationship between IT expenditures and bank’s financial performance or market share is conditional upon the extent of network effect. If the network effect is too low, IT expenditures are likely to (1) reduce payroll expenses, (2) increase market share, and (3) increase revenue and profit. The evidence however suggests that the network effect is relatively high in the US banking industry, implying that although banks use IT to improve competitive advantage, the net effect is not as positive as normally expected. In a broader context, the innovation in information technology, deregulation and globalization in the banking industry could reduce the income streams of banks, and thus the strategic responses of the banks, particularly the trend towards mega-mergers and internal cost cutting, are likely to change the dynamics of the banking industry.

**Aashish Shashikant Jani (2007)**


Rapid changes in technology increased competition by new players; product innovations in the financial services environment have led to a market situation, where there is an intense battle for customer's satisfaction. Most of the initiatives regarding technology are aimed at providing better and more efficient customer service by offering multiple options to the customers. The objectives of the study were to identify factors affecting consumer preferences for use of technology in retail banking, to assess the relative importance of these factors in terms of consumer perception, and to compare the consumer perception in terms of different technology provided by public/private sector banks. The study has drawn following observations:
• **Payment of Bills:** Bill payment through e-channels is very popular among the customers of private sector banks. Private sector banks are more effective in providing updated information on various monetary transactions through e-channels as compared to public sector banks.

• **Accessibility:** In terms of accessibility of e-channel, both public and private sector banks are almost similar. With reference to Transfer of funds using e-channels private sector banks are perceived to be better than the public sector banks. It is comparatively much easier to transfer funds through e-channels in private sector banks.

• **Receiving Alerts:** Now a day, banks are sending important transaction alerts to their regular customers regarding payment of bill, premium, via e-mail or mobile, etc. The public sector bank’s score is marginally less than the private sector banks.

• **Convenience:** Regarding this parameter, private sector banks are perceived to be much better than public sector banks. Location of ATMs is well selected by private sector banks, which offer maximum convenience to their customers.

• **Customer Correspondence:** There is no much difference between private and public sector banks.

• **Timeliness:** The private sector banks appear to provide better time saving service while operating the accounts.

• **Cost Effectiveness:** With regard to the cost-effectiveness of the debit and credit card services, private sector banks are scoring high as compared to the public sector banks. Further, there are reasonably high charges of services in public sector banks.

• **Network Coverage:** The private sector banks are perceived to be better in providing network coverage over the public sector banks.

• **Technical Efficiency:** It is the common complaint with regard to technical efficiency of ATMs and smart cards in public sector
banks, customers are facing many technical problems with operating ATM cards and other services through e-channels in the public sector banks.

- **Mobile Banking:** Both the sector banks are showing almost similar response form their respective customers towards the use of mobile banking. Private bank customers are better in the use of latest technology, than public sector bank customers. There are several other points the author has made his observations on the basis of the analysis of the data, but this review has taken note of only those observations which relevant for this study.

The author has concluded that the retail banking is mass market banking, where individual customers’ diverse needs are fulfilled at the local level, i.e. by providing multiple products. It has been facilitated by growth of banking technology and automation of banking process. Public sector banks are accessible, private and demo at the counter. Significant improvement is possible in the areas of transfer of funds, convenience, timeliness, cost effective services and network coverage. In respect of private sector banks their strength lies in Bill payment, customer correspondence, E-shopping, technical efficient services, and goodwill.

**Khan and Mahaputra (2009)**

Investigate the service quality of Internet Banking based on seven quality dimensions. i.e. Reliability, accessibility, user friendliness, privacy/security, efficiency, responsiveness using the factor analysis. It was found that customers are satisfied with the reliability of the banks but dimension, user friendliness are not satisfied.
Dr. V. K. Shobhana (2011)

Paper titled, “Operational Efficiency of Public Sector Banks in India”. It is a well known fact that the rate of economic growth of any country has a direct link with the efficiency of financial sector of the country and an efficient financial sector achieves faster rate of economic growth. Since the nationalization of banks in the year 1969, the public sector banks have acquired a place of prominence in the financial sector of the economy and have achieved phenomenal and unparalleled progress in expanding the geographical coverage, in mobilizing savings and providing funds for investments in key sectors of the economy.

Traditionally, commercial banks in India use per-employee business as a measure of their productivity or operational efficiency. Though receiving deposits and giving advances constitute the core business, these are not the only organizational objectives to be attained. In the post-reforms banking scenario a host of other parameters have come into focus to judge the operational efficiency of banks. Operational efficiency is an indicator which will help not only the public but the managements, regulators and supervisors to understand and judge the relative efficiency of the players competing in the market. The non-parametric productivity or efficiency of a unit can be measured as the ratio of an output index to an index of the input used. The author of this paper has attempted to use this non-parametric model in this study.

The author has concluded that the operational efficiency of banks assume greater significance in the prevailing financial and economic scenario. There is no relationship between banks’ efficiency level and factors such as size of assets, breach network and staff

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17 Paper published in “Banking Information Technology and Management” edited by Dr. N. Tejmani Singh and Dr. Preeti Agrawal, pp. 43-58
strength. Thus, it is a paradox for the policymakers so as to what should be the ideal size of banks.

**Dr. C. Paramasivan, (Oct.-Dec.2011)**

Article titled, “Customer Satisfaction through Information Technology in Commercial Banks.”

Information technology plays a key role in the modern world which meets the day to day activities of the human beings directly or indirectly associated. Commercial Banks in India are one of the largest segments of service sector which play a dominant role in the socio economic developments of the nation. Now-a-days, all the commercial transactions are fully computerized with universal data based transaction. A customer may know his account transaction even with the help of cell phone. He need not go to the bank and waiting for withdrawal of money or balance enquiry.

Everything is made easy with safe manner and able to capture the customer satisfaction. In the initial stage of the information technology, customers hesitate to use the information technology but now the situation has changed, a ban can attract more customers only if they apply the information technology in their banks.

This paper aims at evaluation of the level of satisfaction with IT in the Commercial banks. Analyze key determinants to increase the level of satisfaction with IT in Commercial Banks in Namakkal District and to offer suggestions to promote customer satisfaction through IT.

The author has observed that the customer service is a series of activities designed to enhance the level of customer satisfaction – that is, the feeling that a product or service has met the customer

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expectation. The banks strongly believe that customer service will be the most important factor in maintaining in improving its leadership in India’s Banking Industry.

The author has inferred that the income and education qualification has a moderate positive correlation, when compared with other factors. The type of work compared with educational qualification and income level of respondents are negatively correlated, whereas sex and age has a considerable positive correlation. Period of using account and type of bank account have positive correlation, when compared with all other factors and they have a significant association with the respondents.

He has concluded saying customer satisfaction becomes a popular word in the competitive world irrespective of business. It is very essential to survive the business with appropriate market shares. Customer satisfaction in the Banking is one of the unique features which is mostly based on the customer attitude towards the services provided by the bankers. Hence, the Bankers have been using information technology at all levels of their services. Impact of information technology on banking industry is one of the most needed research areas which bring whether the customer is satisfied with information technology or not. This study concludes that, customers are satisfied with banking services to some extent and the bankers should try to improve their services at an affordable cost with the help of information technology. It is high time that gains from technology be transferred to the customers as well.

**Dr. C. Parmasivan, P. Mari Selvam, (May 2012)**

Paper titled “Review of Performance of Commercial Banks in Tirunelveli” has observed that Annual Credit Plan is one of the key plans which help to fix the target to each and every sector and measure the achievements. Performances of banking sector in a
particular district were considered which lead is by the commercial banks in the concerned district. In this regard, the study made an analysis with the Annual Credit Plan report, it concluded that, commercial banks are provided mere financial assistance to all the sectors during the study period and flow of credit to agricultural sectors constituted more than 100 per cent during the study period. But it is not clear from the study that which type of agriculture sector, benefited the flow of credit is not clear. Hence the banks must concentrate clearly about their lending pattern which is really benefited to the priority sector of the society.

J. D. Sharma (Oct. 2012)

Paper titled, “Globalization, Technology & HR in Banks” has observed that the technology in today’s context has assumed an important role as a key driver of the Business of the Banks. The banks therefore, need to develop and maintain the IT in an effective manner. Apart from this the Vendor engagement and Vendor Management also need to be done in an effective manner. Learning, Unlearning and Relearning are the hall mark of today’s technology driven banks in India.

While on HR aspects his study revealed that the skill gaps are filled by re-skilling/up-skilling through internal training in the perception of 90% of the respondents while 94% respondents held the view that higher degree of skill gaps are addressed by sending the officers for External Training. 73% respondents felt that outsourcing posed an operational risk in specialized functional areas due to lack of ownership, responsibility, loyalty and accountability involved in outsourcing.

Development and leadership as an HR practice plays a significant role in pursuing a healthy succession planning in the Bank. It is done through job enrichment and empowerment of the
pipeline leaders. It is important to have Quality Management to implement a good and sustainable Leadership development Programme on a regular basis.

The business of Banking involves mobilization of resources and deployment of such resources with a view to protecting money of the depositors, earning adequate amount to help pay an interest to the depositors and plough back some part of profit after paying dividend to strengthen the balance sheet and help further expansion of business. It is therefore necessary for the Bank Leaders to practice ethical, honest, transparent policies leading to the healthy Corporate Governance. Leadership development programmes must bear it in mind.

While concluding the author has observed that globalization has transformed the Banking landscape by changing the traditional business models and also creating new models. To effectively meet such changes, the Public Sector Banks need newer skill sets. These skill sets are addressed through re-skilling and up-skilling the existing pool of human resources, recruiting Human Resources who pre-possessed the required skills in various specialized functions and by outsourcing some of the routine / mundane functions. There is lack of attraction in the job of a Bank officer and despite downturn in the economy and high unemployment rate the banks are finding it difficult to fill up the identified vacancies state wise thus leading to deterioration in the quality of the new recruits. To enhance the level of job attraction, the Bank, in Public Sector need to overhaul the Recruitment and Training Models, introduce a transparent and realistic Performance Management System which adequately rewards individually and team performances in an objective manner. Banks also need to enhance the compensation package across the grades as a strategy to attract the right kind of talent and also to retain the trained and leadership talent. Placement, development and
accountability policies need to be made friendlier to enhance the level of job involvement decision taking and minimizing the growing risk-aversion tendencies among the individuals. An investment in training infrastructure – both physical and intellectual will help re-skilling, up-skilling and transforming the employees’ attitude to serve the client. Awareness about the product and process coupled with a positive attitude will provide a competitive edge to the Public Sector Banks. Enhancement in the non-monetary hygiene factors would help the Banks in managing talent retention / attrition more effectively.

Namita Rajput & Monika Gupta, (2013)

Published a paper titled “Impact of IT On Indian Commercial Banking Industry: DEA Analysis” in Global Journal of Information System Jan. to June 2013 issue. In this paper the authors have analyzed the impact on Indian commercial banks both from public and private sector. Performance of Six banks from public sector and six banks from private sector was studied. The author has concluded as follows:

There is an increasing trend in performance of Indian banks caused by IT innovation and enlarged investment in new information technology during the recent time period (2005-06 to 2009-10). The banks were left with no option but to improve their functional attitude, strategies and policies, efficiently allocating the IT elements with proper guidelines to use them in the presence of required trained staff. Introduction of new technology-based services to their customers, for e.g. e-banking, mobile banking, ATM facility and card based funds transactions, etc. became a part of their functional norms. The Scheduled Commercial Banks made heavy investment in technology and computerization of branches from last few years, introduced new services and facilities to the customers which helped the banks to survive in the long run, i.e. to retain their existing customers and attract new ones (RBI, 2010). Taking the whole view,
the most efficient banks group is Foreign Banks followed by both groups. There is not so much difference in Public Sector Banks and Private Sector Banks but as compare in both Private Sector Banks are the best. Hence, Indian commercial banks have improved efficiency and performance after the advent of IT in recent era.

RBI is constantly taking steps to increase the use of IT in the functioning of Indian banks. Recently major initiatives were taken in Electronic Payment Systems with the ‘Vision Document’ on Payment and Settlement Systems for the year 2009-2012. The document clearly identifies the new frontiers and a road-map for implementation of new projects. The vision includes implementation of a new RTGS system which would provide additional features including that for liquidity management, India Money Line – a 24x7 system for one-to-one funds transfers, India Card – a domestic card initiative, redesigned ECS to function as a truly Automated Clearing House (ACH) for bulk transactions, and mobile payments settlement network. The growing trend in the usage of various modes of payment is a clear indication of the momentum acquired in the area of payment systems. The card-based payment systems have been evolving over the period. The card-based payment system in the country covers credit/debit and prepaid cards. About 230 million cards have been issued in the country. We have been witnessing an increase in the usage of cards (debit, credit) across various delivery channels like ATMs, Point of Sale (POS), internet transactions, etc. On an average, 396 million transactions of value one lakh crore are being processed during a month using these cards (RBI, 2011).

The evolving payment systems and other IT enabled culture poses new challenges and opportunities to all segments of this industry. To leverage on the opportunities provided by new products, the system providers/banks need to ensure that the challenges are adequately addressed. It also has to be ensured that the products
cover all segments of the population and provide an incentive to adopt these products. The regulatory process would support all orderly development of new systems and processes, within the legal mandate. The challenge before all the stakeholders including banks and non-bank players, IT vendors, other service providers, etc. is how to introduce such a next generation payment and settlement system and solutions that is needed to take the country into the 21st century.

**DNA- 17th January 2013,"Cosmos Bank to Launch Internet Banking"**

The Cosmos Cooperative Bank Ltd. Pune will be launching Internet Banking (IB) service on its 107th anniversary on Friday (i.e. 18th January 2013). The Bank’s Chairman-In Charge, Krishan Kumar Goyal made the announcement at a press conference.

He said with the help of Internet Banking, customers can now check their account balance, access details of their transactions in clearing, register for SMS and E-mail alerts, transfer funds, within and outside Cosmos Bank and apply for cheque books and Demand drafts, register for e-statement with desired frequency, and get their doorstep delivery, get information about different deposit schemes as well as open fixed and recurring deposit, conduct TDS inquiry, make stop payment of cheque and secure bill payments etc. Cosmos is the first cooperative bank in India to introduce this IT banking facility to its customers in India.

**Dr. Rajani Anil Jadhav, (2009)**

In her thesis titled, “Problems and prospects of Bank Computerization” has studied the “Problems and prospects of co-operative banks Computerization in Pune” he has observed that: The present co-operative banking scenario is far from the anywhere and any time banking. This is mainly because the system reengineering for anywhere and anytime banking demands use of high level of
technological tools on one hand and strengthening the infrastructural facilities like communication system, networking etc. on the other hand. In addition to the enhancement of knowledge, skills of the bank employees play an important role to achieve this end. This apart, the level of awareness amongst the customers, consciousness of the banks for extending such facilities to the customers is very low so that the co-operative banking sector has not yet considered the anywhere and any time banking as one of the important parameters for their customer service. The reasons for non implementation of anywhere and anytime banking in the co-operative banking sector are listed as follows:

- Lack of consciousness of the co-operative banks about extending facilities, like anywhere and anytime banking to the customers
- Lack of awareness amongst the customers about their rights to various banking facilities
- Lack of necessary computerized systems and tools
- Lack of proper communication system required for such facilities
- Requirement of the funds for investment on computer and communication system
- Lack of knowledge and skills of the employees of the banks
- Lack of IT literacy of the customers who are to use the technology to avail themselves of the facilities
- Resistance against change in the system by all levels of the employees and management including top executives of the banks
- Delay in framing rules and regulations for electronic transactions
Most of the co-operative banks in Pune have adopted computerization according to their financial capacity. About 18.19% co-operative banks have adopted core banking solutions to provide centralized services to their customers out of which only 7.27% banks are providing all types of high class services with electronic channels to their customers.

The banks have faced different problems during the computerization process. The problems faced by the banks at different stages of the computerizations are listed below:

Problems faced by the banks during implementation of back office application: Duplication of work, Limited functionality: Customers has no direct benefit of the back office computerization.

Problems faced by the banks during implementation of total branch automation: Data back up, Antivirus Updating, Employee resistance to accept bank computerization: (55%) Lack of technical knowledge: (about 28%),

Problems faced by banks during implementation of core banking solution: At the time of implementation of core banking solution, maximum numbers of 94.40% of the co-operative banks have faced the problem of huge investment in computerized infrastructure and the problem of more dependability on outside service providers.

In the changing environment the customer prefers anywhere, anytime banking and rarely visits their bank branches. Thus the banks need not open so many offices and they can very well do their business from a few offices using IT tools. Thereby the cost of maintenance of the offices can be reduced considerably.
In anywhere and anytime banking, the banks have to perform the job of consolidation of data at one of the branches, known as Master branch. At this master branch all the transactions are merged and reports are generated and collected at one point and such reporting system is simpler. Thus, reports, particularly the management information system (MIS) reports will be available to the senior management more quickly, accurately and systematically. This will help them to take important decisions. Thus, the decision making process becomes quicker and accurate in anywhere anytime banking environment.

Even though banks have introduced computerized system, the customers are still accustomed to the traditional method of banking transactions. They have a common purpose of depositing the amount or withdrawing it, either by cash or cheques and always visit their banks to enquire about their balance. There is still scope for each customer to use the computerized transaction system for deposit cash or cheque, money transfer, repayment of loan, demand draft and investment.

He has suggested as under:

- **Computer literacy of customers:** In case of core banking a very high level of technology is used at both the branch and customer level. The customers may not be familiar with the level of IT. In such cases, the customers may not feel comfortable in handling business transactions with their banks. The banks have to play an important role in educating their customers in this area.

- **Training of employees:** In some cases, the employees of the banks may not be in a position to handle such sophisticated level of technology because of lack of knowledge or skill. This is more so in case of Indian banks. Therefore, the top management of the banks should take the necessary steps to
provide adequate training to their employees in the IT area so that the employees feel more comfortable in handling high technology based transactions.

- **Optimum use of Bank Employees’ Services:** With the use of technology most of the bank work can be computerized. Manual intervention of various banking jobs will not be needed. At the same time, since the customers will mostly do the banking transactions from their own place, their visit to the bank branches will be reduced considerably. Thus, the counters of the bank branches will be less crowded resulting in minimization of the workload in the branches. Thus, the employee will get more and more free time. The management of the banks will have to decide about how the employees can be optimally utilized for various banking jobs other than the traditional banking functioning.

- **Introduce New Technology:** Physical location of the bank branch will be less important and possibly irrelevant as new technologies such as ATMs, internet banking, mobile banking etc. provide wider access to a broad range of new facilities/service.

- **Co-operation rather than Competition among Banks:** Despite competition amongst various banks, a greater degree of co-operation amongst them will be forthcoming which will benefit all the banks. For example, an ATM placed at a centralized location of a city may be shared by many banks. This will simplify operational complexities and at the same time be cost effective for all the banks. Similarly, network may be shared by various banks to make it cost beneficial. Thus, competition will not prevent co-operation and collaboration amongst various banks to provide all kinds of service/facilities through strategic alliance.
• **Preventive Measures to Avoid Interruption in Computerization:** The database of the banks will be accessed by so many customers and as such there is more possibility of the database getting corrupted because of virus or some other reasons. In such eventualities the whole system will be stalled. Therefore, the banks have to take abundant precautionary measures against occurrence of such incidents and such measure should be taken on preventive basis at regular intervals.

• **DNA, Pune, 8th February, 2013**

News titled, “Cyber crimes up, but more cases solved”. The number of cyber crimes in the city (Pune) has gone up from 93 in 2011 to 108 in 2012. On the brighter side, the number of solved cases has increased from 58 in 2011 to 65 in 2012 and the number of arrested persons is up from 43 in 2011 to 52 in 2012. In 2012, the maximum number of cyber crime cases reported to the Pune Police were about misuse of social networking sites, issuing threats by email and bank frauds. The number of cases of misuse of social networking sites increased from 55 in 2011 to 60 in 2012. The number of email threats increased from 26 in 2011 to 35 in 2012. There was a marginal rise in other crime heads such as bank frauds, credit card frauds, Nigeria frauds and website hacking, while there was a marginal decrease in data theft cases.
Table No. 3.1: Data relating to Cyber crimes in Pune City during 2011 & 2012

<table>
<thead>
<tr>
<th>Types</th>
<th>No. of crime registered 2011 / 2012</th>
<th>Solved 2011 / 2012</th>
<th>Arrests 2011 / 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email threats</td>
<td>26 / 35</td>
<td>17 / 23</td>
<td>13 / 20</td>
</tr>
<tr>
<td>Data theft</td>
<td>04 / 02</td>
<td>01 / 01</td>
<td>01 / 01</td>
</tr>
<tr>
<td>Website hacking</td>
<td>01 / 02</td>
<td>01 / 01</td>
<td>0 / 01</td>
</tr>
<tr>
<td>Nigerians fraud</td>
<td>02 / 03</td>
<td>03 / 03</td>
<td>03 / 02</td>
</tr>
<tr>
<td>Credit card frauds</td>
<td>02 / 02</td>
<td>04 / 02</td>
<td>0 / 0</td>
</tr>
<tr>
<td>Banking frauds</td>
<td>03 / 04</td>
<td>05 / 02</td>
<td>03 / 02</td>
</tr>
<tr>
<td>Social networking</td>
<td>55 / 60</td>
<td>27 / 33</td>
<td>29 / 26</td>
</tr>
<tr>
<td>Total</td>
<td>93 / 108</td>
<td>58 / 65</td>
<td>43 / 52</td>
</tr>
</tbody>
</table>

Source: Pune Police Commissioner’s Press Conference on 7th February 2013, published in DNA of 8/02/2013

From the above news item it is clear that as the use of advanced technology is being resorted even there is growth in the Cyber crimes and that the police department is also getting equipped to solve these crime cases.

- Reserve Bank of India Press Release dated 31st January 2013:19

The Reserve Bank of India released a paper for “Discussion Paper on Disincentivising Issuance and Usage of Cheques”. This being a step which has been possible because of usage of Information Technology in banking and which will have positive impact on the banks’ profitability over a period of time carries greater importance and is relevant to the topic of this research. As the matter is too technical the researcher has reproduced salient features of the RBI paper in nut shell.

The Reserve Bank of India has been spear-heading reforms in the payment and settlement systems of the country, leveraging on the

benefits derived from technological developments. This has facilitated the existence, today, of a bouquet of payment systems to suit the requirements of various types of customers, purposes and segments.

Over the last decade, the Bank has been sharing and signaling the expected developments in line with its objectives for developments in payment and settlement systems for the country, in the form of a Vision Document. The present scenario is such that all payment systems - paper to electronic - need to be developed simultaneously to reduce use of cash in the economy. The current Vision Document for Payment and Settlement Systems (2012-2015) envisages the move towards a “less-cash” society and greater adoption of electronic modes of payments. This inter alia implies that the role of cheques has to reduce significantly while electronic payments grow significantly.

With the growing trend visible in electronic payments, decline in cheque usage is inevitable. This is already visible in the statistics which show reduction of cheques being cleared. The question of import is whether further developments in this regard should be left to the users themselves (market forces) or whether this declining trend should be “managed”. If the decline in cheque usage is managed and actively discouraged in a structured manner, the results could not only be achieved in a shorter time-span but could also ensure that no particular section of society is marginalised due to these developments. Further, it could also pave the way for a structured migration and adoption of electronic payments by all sections of society.

Given the still high use of cheques, any strategy to discourage the use of cheques by individuals as well as institutional users has to have a multi-pronged approach encompassing cost and time considerations, incentives for use of electronic modes of transactions and disincentives for the use of paper-based instruments. In this
direction, it was announced in the Second Quarter Review of Monetary Policy 2012-13 that a discussion Paper on the subject will be placed in the public domain for comments.

Accordingly, this discussion paper has been prepared in consultation with a few stakeholders. Studies conducted by and experiences of other countries in their efforts at reducing cheque usage have also been considered as they provide valuable insights in meeting our endeavor. To this end, we seek views on the matter of disincentivising cheque usage in the country. Specific and actionable feedback would be highly valued.

**Introduction – Status of Cheque usage in the Country**

Developments in the banking and financial sector have been critical in facilitating economic growth, and the role of safe, secure and efficient payment and settlement systems in this regard is well-documented. The payments eco-system in the country is gradually moving from a purely cash and cheque-based scenario to one where electronic payments are slowly but surely taking the lead. With the Reserve Bank of India leading the change and also vocalizing its payment system policy objectives through its Vision Document, the payments scenario is set to move towards a ‘less-cash’ society where everyone has access to various safe, efficient, accessible electronic payment services.

The growth in electronic payments in recent years is quite heartening registering a year-on-year growth of nearly 30% on an average since 2003 (2009-10 being an exception). In terms of volume, while the share of cheque-based payments has begun to decline, the share of electronic payments is increasing. In a scenario of increased turnover in non-cash payments, this trend is significant.
In value terms, electronic payments are certainly the dominant one in the non-cash payments turnover in the country.

**Figure 3.1 : Non-cash Payments Turnover : Paper vs Electronic Value**

![Graph showing non-cash payments turnover by value with values in Trillion from 2003-2012.]

**Source:** RBI Annual Report

In spite of the above, in absolute terms cheque volumes continue to be high at nearly 52% of total payments turnover (Chart-2). Significantly, the share of cheques is showing a declining trend.

**Figure 3.2 : Non-cash Payments Turnover : Paper vs Electronic Volume**

![Graph showing non-cash payments turnover by volume in millions from 2003-2012.]

**Source:** RBI Annual Report
Developments in Electronic Payments

Gradually, many options of electronic payments have been made available in the country which can easily be adopted by the cheque using public – both institutional and individual users. These include systems such as:

Electronic Clearing Service - While the ECS is generally operated at local levels, the National ECS (NECS) system, operated from a central location at Mumbai, is a pan-India system facilitating crediting of accounts of beneficiaries across bank branches. It leverages on Core Banking Solutions (CBS) of member banks. The Regional ECS (RECS) covers all CBS-enabled bank branches within a state or a group of states, thus facilitating state-wide payments/receipts to be processed at a centralized location. There are two variants of ECS - (i) ECS (Credit) which can be used by corporates and governments for making bulk and repetitive payment requirements like salary, interest, dividend payments etc. It facilitates crediting the beneficiaries account on the appointed date without involvement of any paper instruments (ii) ECS (Debit) enables utility companies, insurance and loan companies, etc. to effect the periodic and repetitive collections from consumers (EMIs) directly from their bank accounts, based on the mandates given by them. In case of EMI payments, the ECS (Debit) system greatly obviates the need for using Post-dated cheques (PDCs) by lenders for collecting the periodic installments from the borrowers.

National Electronic Funds Transfer (NEFT) system facilitates near-real-time funds transfer facility with its twelve batch settlements at hourly intervals, which can be best used for domestic fund transfer requirements. Some salient features of the system include – acceptance of cash for originating transactions by walk-in customers, positive confirmation to the sender regarding successful credit of funds to the beneficiary account, provision for penal interest for
delayed credit to beneficiary account or delayed return of funds to originator, no minimum or maximum amount limitations, facilitating outward transfers to Nepal to enable migrants from that country to remit funds to their families using the formal banking channel, etc.

Real Time Gross Settlement (RTGS) system facilitates both inter-bank and customer transactions with transfer of money taking place from one bank to another on a 'real time' and on 'gross' basis. Settlement in 'real time' means payment transaction is not subjected to any waiting period. 'Gross settlement' means the transaction is settled on one to one basis without bunching or netting with any other transaction. All inter-bank payments and customer transactions above Rs.2 lakh can be processed through this system.

Inter-bank Mobile Payments (IMPS) operated by NPCI facilitating inter-bank transfer of funds through mobile phones. This leverages on the high penetration rate of mobile phones and is built around the convenience and ease of use among mobile phone users. Further, the IMPS also provides the convenience of using the IMPS for internet-based on-line transactions.

National Automated Clearing House (NACH) operated by NPCI is similar to the ECS payment service enabling pan-India processing of bulk payments and receipts. The system has just been operationalized towards the end of December 2012. It also has the capacity to electronically manage Debit mandates and holds great promise for substituting the cheque system.

Introduction of second factor authentication for card not present transactions in order to make card transactions more secure.

The Aadhaar Bridge Payment Systems (ABPS) has been put in place by NPCI as a payment bridge in order to facilitate direct credit of
government benefit payments to beneficiary accounts based on the Aadhaar number, Amount and Transaction reference number. Account number and Aadhaar number mapping has been done by each beneficiary bank and uploaded to the NPCI central system. Thereafter, through Aadhaar Enabled Payment System (AEPS), the funds are withdrawn by the intended beneficiary at Business Correspondent (BC) locations by providing Aadhaar number and validation of biometric identification.

All efforts are being made by both the RBI and the banks to create awareness about the safety, security and ease of operations of electronic modes, using various platforms including customer interactions during town hall meetings etc. Similarly, in recent times, the charges structure for most of these products have been rationalized even as the necessary payments infrastructure in the ecosystem is being strengthened.

Action Points

I. General Comments

There are some issues which need to be addressed – both regarding disincentivising cheque usage as well as incentivising greater adoption electronic payment products and services. While it is difficult to build an exhaustive list of such issues, some of them are highlighted below:

**Setting of targets for implementation:** It would be advisable to set a target date by which majority of the cheque users are disincentivised from this mode and migrate towards electronic payment methods. However, keeping in mind the diversity of users and the disparity in availability and accessibility to alternate payment services, these target dates can be further divided into phases for better implementation and monitoring. Some of these target dates could commence immediately by the beginning of the financial year.
i.e., April 2013 while others could be phased for implementation. Targets can also be set suitably for urban areas and rural areas within each segment of users – individuals, institutions and governments.

**Dispute resolution and complaints redressal**: In parallel, the practices and procedures in electronic payment services should be geared to meet not only the technological requirements but also the operational expectations of the users who migrate from cheque usage to these systems. As indicated earlier, one of the important factors influencing persistent cheque usage relates to needs for documentation, customer grievance redressal, etc. Towards this end, various entities, such as system providers, intermediaries and payment gateway providers, corporate users including educational institutions and utility companies, etc. should ensure that the payment processes are simple to use by the ‘least aware’ of users, reconciliation and reporting mechanisms are efficient, and complaints are handled quickly and efficiently with least inconvenience to the users. For instance, if schools begin to use electronic payment services to collect fees from students, then it is imperative that their systems are capable of matching the incoming payments with respective students, and parents/students must not be inconveniented because the reconciliation system at the school is not efficient. Such ‘bad experiences’ may ill-dispose the users to move away from cheques (where they can control the documentary requirements) to electronic payment services.

It, therefore, becomes imperative that some sort of functionality (e-invoicing for instance) is built within the institutions such as companies, schools and educational institutions, etc which receive payment and provide an immediate documentary evidence to the payer in the form of printable receipts and also facility automatic reconciliation at the institution’s end. In the event of any dispute, the payer will at least have some record evidencing the payments made by
him/her. Another feature which could aid dispute resolution and provide evidence of payment is the system of providing electronic confirmations when transactions are initiated and completed, along with the transaction reference number. At present, many utility companies provide such confirmations through e-mail and SMS so that some trail is built around the transaction. Similarly, the NEFT system also provides for a system of positive confirmation to the sender which enables him/her to be aware regarding the time the funds were credited to the beneficiary account. Incorporation of such payment details in bank account statements / pass books would also facilitate record-keeping requirements of customers.

**Protection for bouncing of ‘electronic payments’**: Section 25 of the Payment and Settlement Systems Act, 2007 accords the same rights and remedies to the payee (beneficiary) against dishonour of electronic funds transfer instructions for insufficiency of funds in the account of the payer (remitter), as are available to the payee under section 138 of the Negotiable Instruments Act, 1881. The sub-section (5) of the section 25 of the Payment and Settlement Systems Act, 2007 provides for punishment of two years and twice the amount of electronic funds transfer instruction, or both for dishonour of such electronic funds transfer on par with the penalties stipulated for dishonour of cheques under the Negotiable Instruments Act, 1881. However, awareness of these provisions have not been sufficiently created amongst users of electronic payments, which needs to be done by all entities especially banks, so as to ensure that users of these systems are aware of their legal responsibilities and rights.

**Widespread accessibility to electronic payments**: As stated earlier, payments are ‘network goods’ and as such high growth in electronic payments can be witnessed when the network effect is strong and there is no skewness in demand and supply of such services. Card payments are generally considered as a more
convenient form among all electronic payments. As such, the card acceptance infrastructure needs to be further enhanced to ensure that it is geared up for all types of payments. Greater awareness also needs to be created about the availability of such payment options.

**Customer liability:** Another factor of equal importance which is very crucial in ensuring greater adoption of electronic payments relates to the matter about the responsibilities and obligations of customers as well as banks and service providers. For instance, in case of an unauthorised transaction taking place using a customer’s credentials, the customer needs to know to what extent he/she would be protected, what is the extent of liability to be borne by him/her and what is his/her obligation towards the bank/service provider. In the absence of such clarity, there would always be an apprehension that in case of any unauthorized transaction, the customer would have to ‘shoulder the loss’ while the bank/service provider may go away free.

Keeping the above issues and strategies outlined in view, few ‘action points’ are indicated below which seek to discourage cheque usage. Segment specific approach is used to outline the action points and targets which is more ‘actionable’ and also ‘identifiable’ in terms of implementations and monitoring.

II. **Individuals as Cheque Users**

The following actions are proposed to discourage individuals from cheque usage:

Free cheque books may be kept to a minimum number on a per annum basis. The charges levied by banks beyond this number may range from moderate to steep (slab rate) depending upon the cheque usage history of the customer.
In case of fresh loans, PDCs should be completely stopped and repayments should be only through electronic payments, with suitable conditions for late payment and non-payments which should be disclosed upfront.

Existing PDCs should be converted to electronic payment mandates within a prescribed timeline.

Credit card dues should be paid electronically. In case card holders make payments of card dues using cheques, then high convenience charge may be levied by the card issuing bank. This can be implemented after giving due notice and sufficient time to the customers to change to electronic means.

It may also be considered to apply some amount/value limit for cheque issuance by individuals. For any cheques issued beyond the stipulated limit, charges may be levied at the time of payment / debit to the account by the paying bank when the cheque is presented for payment through clearing. Such charges may be higher than the charges levied on electronic payments of similar value.

In case of individuals who have invested in shares / debentures / bonds etc. and have not opted for receiving dividend / interest directly into their bank accounts, we may consider levying a processing charge when the cheque is deposited into their bank account for collection. To begin with, this may be implemented in major towns and cities where ECS facility is already available and then gradually extended to all areas.

In order to avoid increased dependence or slippage to cash-based transactions, high (both in amount and frequency) cash withdrawals and deposits of cash by individuals may also be charged.
Implementation of this may however be preceded by conduct of structured research and concerted efforts at customer education.

Discourage cheque collection boxes at public places - have it only at bank branches. This will reduce the convenience of using cheques by individuals.

III. Institutions as Cheque Users

Corporate and institutional customers are the largest users of cheques across all value bands accounting for 54% - 64% of cheques processed. Hence, it is imperative that this segment is targeted for moving towards electronic payments.

The following actions are proposed to disincentives corporate customers from using cheques and also to ensure that there is no slippage to cash:

As a first step, access to cheque books should be made costlier for such corporate / institutional customers. There should be no free cheque books given. The charges levied for cheque books issued to such customers may also be increased substantially so that it acts as a deterrent in comparison to alternate electronic payments.

Corporate and institutional customers need to stop issuing cheques and make their payments through electronic means, the rationale being that such cheques issued by them have to in any case be encashed by the beneficiaries through the banking system. Hence, logically the beneficiaries should be able to receive the payments from the corporate through electronic payment modes. Therefore, we may consider levying charges for cheques issued by current account holders and these charges may be higher than the corresponding charges if the payment were to be made electronically.
Corporate have to also be discouraged from issuing physical interest warrants and dividend warrants. Where such physical instruments are issued, a processing charge (for instance Rs.25/- per instrument) may be levied by the paying bank (on the corporate which has issued the instrument) when the instrument is presented for payment.

Further, institutional users are more capable than individuals in moving towards accepting funds electronically. In order to discourage them from accepting cheques from their customers, we may consider levying charges on them when they deposit cheques in their current accounts for collection. This should be made applicable to all institutional users including educational institutions, public utility companies etc. in a phased manner.

It is found that even where educational institutions and public utility companies are accepting electronic payments, they are levying certain convenience fees to the payers which need to be stopped.

Similarly, cash deposits in current accounts need to be discouraged actively. It is learnt that certain segments of business are heavy users of cash which not only adds to the ‘social cost of payments’ but also adds to the cost of cash handling at banks, which may be cross subsidised elsewhere to the detriment of other more efficient services. Hence, it is proposed that steep charges should be levied on cash deposits / withdrawals by current account holders into/from their accounts. These charges need to be levied by all banks.

IV. Government departments / agencies as Cheque Users

Given the sizeable nature of Government transactions, they often play a catalyst role in driving the payments in the desired direction. The concept of payment services as a ‘network good’ can be
highly influenced by the payment choices of the government and their agencies. In other words, if government departments / agencies including public sector companies / utilities migrate from cheque-based transactions to electronic payments, it would naturally drive many others to adopt electronic payment services. Similarly, some of the practices and procedures followed by government departments may also influence the choice of payment mode for those dealing with government departments.

Keeping the above in view, the following action points are proposed to ensure government payments/receipts move away from cheques and go fully ‘electronic’:

All government payments to non-individual customers (corporates, business entities, institutions etc.) should be made through electronic mode only. Towards this end, the Ministry of Finance has already issued a memorandum (dated 31st March 2012) directing all Ministries / Departments of the GOI to make payments to private parties such as suppliers, contractors, grantee / loanee institutions etc. above Rs.25,000/- by payment advices including electronically signed payment advices. This should be implemented immediately by all agencies including state government entities, public sector entities and utility companies too. Further, it should be made applicable to all payments without setting any amount limits.

In case of individuals too, government should quickly adopt electronic payments for which a specific timeline should be set for implementation. All benefit transfers and direct cash transfers should be done using electronic payment services as it would also give the necessary fillip to the financial inclusion efforts. Towards this end, the Government has already begun disbursing such payments using the ABPS in many districts in the country on a pilot basis.
In case of its receipts, government should enable all types of customers to make payments through electronic modes for which procedures should be simplified. For instance, often people making payments to the government prefer to do so through cheques as it provides them some means of documentary evidence.

In due course, if government departments persist in cheque-based payments and receipts then charges need to be levied on those departments/agencies when such cheques are presented for payment from / deposited for collection into government account. These charges have to be borne by the respective government departments / agencies and cannot be recovered from the customers.

Most importantly, government departments and agencies should immediately stop levying ‘convenience fee’ on customers who prefer to make payments using electronic means such as cards, online banking etc. Unless such extra charges are waived, customers would not be willing to use this method and may continue to use cheques as there is no additional cost involved (customers are already bearing the charges for initiating electronic payment transactions).

Government should consider providing tax rebates (for instance, reduce service tax liability etc.) to business establishments, corporates, institutions etc. that are accepting payments through electronic mode. This would not only encourage electronic payments but also actively discourage the present (indirect) advantage that cash payments enjoy.

Globally, the effect of IT on the banking industry has been positive. In general, studies have concluded two positive effects regarding the relation between IT and banks’ performance. First, IT can reduce banks’ operational costs (the cost advantage). Second, IT can facilitate transactions among customers within the same network.
Eyadat and Kozak (2005) examined the impact of the progress in IT on the profit and cost efficiencies of the US banking sector during the period 1992-2003. The research showed a positive correlation between the level of implemented IT and both profitability and cost savings. Berger (2003) also showed improvements in bank performance and consolidation of the banking industry in the US during the deployment of new technologies.

3.6 Conclusion

Review of literature shows that different researchers and experts in the fields of banking have discussed various aspects of the bank computerization like technology and Indian banking sector, channels of e-banking, technological revolution in banking sector, IT channels and customer service etc. It has been observed that none of the reviewed study addresses the issues such as technological developments (extent of computerization) of co-operative banks, different aspects affecting the development of co-operative banks, problems and prospects of bank computerization, responses of the employees and customers on bank computerization, and different software solutions available for bank computerization. Therefore, this study is an attempt to address these issues.