CHAPTER -II

REVIEW OF LITERATURE

2.1 INTRODUCTION

This chapter is concerned with the detailed discussion of the previous studies undertaken by the researchers relating to e-banking Services. As such, it is very helpful to gain knowledge and new ideas relating to the present study. The review of literature can identify the study area which has not hitherto been analyzed by the researchers. The researcher can project the research on the basis of review of various previous studies. Review of literature is a part of the research study and gives the basic idea to find out the main area of a new study. At the time of analyzing the study, it broadens the idea about the research problem. The review includes articles based on research published in leading journals, books and reports. The some of the studies which enabled the researcher to undertake this study are discussed in the succeeding pages.

2.2 STUDIES RELATING TO E-BANKING SERVICES

Ravi Kumar Sharma (2005)\textsuperscript{1}, in his article “Technology and Security in Indian Banking System” deals with the growth of the Indian banking sector. The banking sector is now facing biggest challenges of rapidly changing customer expectations against the back draft of Liberalization, Privatization and Globalization (LPG). The retail banking clients today demand more care and extra facilities. They want more mobility of investments, interactive accounts, and better segmentation of banking products to cater to different
segmental needs, convenience and untimely hour’s services. Even the PSU culture could not adjust with the pace of the new technology and changes. At present, it is molding and adopting itself to new needs and the dynamism of the environment. It is high time that the banks should start thinking about the internal and external security of the whole banking system to ensure smooth and free flow of service to the customers. The technology should also be frequently assessed for its security vulnerability. Then only, the e-banking sector can be in the era of a secure virtual banking.

GV Chalam and KS Nageshwara Rao(2006)², in their study “E-banking Applications in Indian Bank- Emerging Issues” have pointed out that the security and privacy aspects continue to remain a major issue especially in the case of business people who lack awareness. This is one of the biggest road blocks for successful e-banking. To protect the interest of the customers, the government does not formulate the cyber laws and the legal frame work for e-banking on a full scale so far. The low density of telephone lines and low computerization of banking activities are other hurdles for e-banking in India. The breach of security in e-banking related applications such as internet banking could result in the siphoning off a large sum of money by perpetrators of computer crime. Therefore, the banks need to put in place computer security-related hardware and software such as firewalls, encryption programs and virus protection software. In the current scenario, legal issues arising out of siphoning off cash electronically by the computer criminals will pose a major challenge to Indian banks in the e-banking era. In India, IT Act provides the
security and legal frame work for e-commerce transaction. The IT Act also suggested the creation of a “Digital Signature Certification Authority” for authentication of electronic record/communication through digital signature an important step that will be taken by the banks in India. It is the building-up a pool of software application developers and data base administrators who can handle e-business applications under proper supervision. The banks can also explore the possibility of out sourcing the requisite personnel from reputed application software development companies/agencies.

Shyam Kumar Garg(2006), in his study “Successful Computerization in Banks” has stated that the banks should provide correct results to have minimum errors and bugs. To have fast response time, be user friendly, provide safe and secure working environment have the compatibility with the manual operational system of the bank, address the present problems in the manual operational system of the bank and be able to face the competition in the market. He has concluded that a great change in the banking system is foreseen and information technology will act as a catalyst of change. The methods of traditional banking would be more affected by integrating the implementation of innovative computerized systems. No doubt that information technology has to serve the banks in enhancing the business and infrastructural developments in coming days, but the burden of computerization is that the bank must choose carefully how to apply it.

J.Venkatesh and P.Periasamy (2006), in their study “Role of e-Banking in Emerging Scenario” state that the banking market which was largely
controlled by the public sector banks, is now facing stiff competition from the foreign players and new generation private sector banks. The banking segment in India is witnessing revolutionary transformation and the core of this revolution is “Concept Selling”. The future prospects therefore lie in strengthening the package of innovative banking services through technology. It is concluded that during the 21st century, foreign exchange banking has undergone tremendous changes with the economic liberalization, especially in the last three years. The banking and foreign exchange financial services segment in India is witnessing dramatic changes, which can be termed as a revolution by itself, and core of the revolution is ‘Concept Selling’. The future prospects therefore lie in strengthening the package of innovative banking services already provided as well as offering complementary services where the banking and foreign exchange financial service industries should contribute towards the customer oriented outlook with certain regulations to face 22nd century customers.

Shyam Kumar Garg (2007)\(^5\), in his study “Computer Policy for Banks” has stated that the computer policy should not only be confined to improve the operational efficiency of the bank, but it should also be able to face the competition. The need of computer policy arises broadly because of business needs, changing expectations of the customers and staff, lack of resources and changing technology. No computer policy is complete without considering security and control measures. All the data-bases, transaction processing systems, end-user computing and the like to be tested and they undergo
rigorous security and control checks and also concludes that the ideal computer policy should cover all the computer related activities and practices within the bank and make the room for other unforeseen circumstances such as incident handling and disaster recovery. The computer policy should be acceptable to everyone in the banks clearly stating the role and the responsibilities of the staff. The policy should be consistent throughout and there should not be any deviation from the corporate policy of the bank. Finally, the computer policy needs full support from the top management in order to be successful.

T.V.Balakrishnan(2007)⁶, in his study “Aligning to Techno-Banking” has explained that the technology has been identified as the fittest medium for the competitive edge. The positive elevation is attained by the banks by deflecting the approach of ‘Business Functional Model’ to ‘Technological Deliverable Model’. However, the indigenous banks could not take to technology in a big way and external forces and compulsions, like Central Vigilance Commission (CVC), threat of customer’s migration, and the like intimidated such banks to return to technology. No single straightforward thumb rule to include the technology orientation in banks is available due to differentiations in organizational setups, work culture, spread, banking approaches, customer friendly methodologies, financial strength and deliverables. In addition, Information Technology (IT) competency and maturity of individual banks vary in high degree. He has concluded that the net work of services of a bank is considered as its net worth. Today, customers ask for services with special interconnected features. The avenues of the expansion
of banking spheres can be looked into by the banks through any globally existing models of own/shared/bilateral/common tie-up. The IT should focus on cross-selling and up-selling of different products by the banks as a one-stop financial mall for the customers. It is worth mentioning that more efforts are required from the top management to align the banking towards techno-banking approaches.

B.Manoharan (2007), in his study “E-Service as a Tool for Marketing of Financial Services” observes that there is an urgent need for firms to place a new emphasis on customer-relationships that combines selling with personal financial consultation to meet client’s specific needs. Thus, financial planning, portfolio allocation and advice tailored to each individual’s risk tolerance and life stage will become the hall marks of the new full-service orientation, as firms are both pushed and pulled towards the brave new world of the retailing of brokerage. Despite all the challenges, e-broking industry seems like a sector set to grow day-by-day. For any organization to thrive in today’s dynamic business environment, it must learn to deal effectively with intense global completion, and cope with an increasingly rapid pace to change. Some times a fundamental change in the manner in which business is done is the only way to succeed or even to survive. Paperless environment, virtual organization, mass customization and internet-based customer services are some of the challenging hall marks of the organizations in the new millennium. These days, it is very difficult to imagine any organization that does not strive to use the innovative
tools of information technology to increase its competitiveness, and to capitalize on opportunities that contribute to its success.

Narinder Kumar Bhasin (2007)\textsuperscript{8}, in his study “Indian Banking Towards Global Best Practices” has stated that the number of options with regard to risk measurement and analytics further compound the confusion around risk management practices. Almost every firm has desktop software installed, which more often than not enough to generate reliable risks analytics. The speed at which many of the derivative instruments change can be very troublesome for a small risk management team. Portfolio managers are often buying and selling the securities faster than the risk team can model the risk metrics. For some smaller firms, uploading end-of-day holding to an externally hosted ASP model may be the best bet. For others, contracting a large portion out to a managed service is other viable option. Each financial institution needs to develop a unique risk management structure based upon its investment style. Potential clients evaluating the risk management function within an asset manager or bank should ask why the combinations of risk management tools were chosen. Is it a sign of problems the firm has had for the past with regulators, or is it a sign of really proactive risk management? Either way, it warrants a few good questions. Historically, risk management as a discipline was looked upon to highlight the problem areas and control them rather than a way to improve process and products and bring tangible business benefits to banks. However, applying Six Sigma in risk management there is a strong business case of not only reducing operational risk but also improving process
and customer experience. Six Sigma is a proven methodology for reducing errors and cycle time and improving quality that has tangible business value. The banks will benefit as a result of improvement in processes that increase savings and drives revenues. Banks will also be able to improve risk perception and as a result, reduce capital requirement towards operational risk. To meet this challenge all the banks have to integrate their Six Sigma framework and their operational risk framework with their technology and systems network to ensure best risk management practices to avoid adverse situations.

Nadim Jahangir and Noorjahan Begum(2007)\(^9\), in their study “Effect of Perceived Usefulness, Ease of Use, Security and Privacy on Customer Attitude and Adaptation in the Context of E-Banking” have stated that study was a single cross-sectional study. To determine the casual paths of studied variables multiple cross-sectional studies or a longitudinal study is more appropriate. Hence, future research should consider experimental or longitudinal studies so that the causal inferences could be made more confidently and safely. There may be many other factors which influence customer adaptation towards e-banking. It is not practically possible to incorporate all the variables in a single study. Future research should make several extensions of the current study. The future researchers should also investigate whether customer perceived online service quality can influence customer satisfaction and in turn customer adaptation and loyalty. The future research can also examine whether promotional and communicational issues or the system characteristics, such as screen design and feedback, have any influence on the acceptance of e-banking
services. By attempting to explain these relationships, the researchers can represent e-banking both as a challenge and an opportunity for the marketers of financial products.

Dr.R.Vijayakumar and Dr.N.Raman (2007)\textsuperscript{10}, in their article “Digital Banking” have stated that the banking industry in India is facing unprecedented competition from non-traditional banking institutions, which now offer banking and financial services over the internet. The deregulations of the banking industry coupled with the emergence of new technologies are enabling the new competitors to enter the financial services market quickly and efficiently. In India, adoption of internet banking is the prime motive among the nationalized banks as the private sector banks are riding on the high-tech wave of buzzwords like E-banking and M-banking and they are going ahead with plans to tie-up with portals and service providers to help translate these buzzwords into transactions. Despite the public sector banks having woken up to competition posed by the foreign and private banks and recognized the need to adopt it. A cautious approach, lack of resoluteness and a clear strategy to translate into practice are acting as the biggest handicaps in the nationalized banks. Internet banking in India is to stay and will be a major channel to acquire and serve the customers. It is estimated that the cost to the bank per transaction done over the internet is nearly one eighth of that done through branch banking. So the challenge to all the banks will be to expand the internet banking user base and slowly increase the range of services the customers use. As the computer and internet penetration is high in India, there is a big
potential market for internet banking in India and it will effectively compete with the Asian counterparts in the near future. The banks in India have taken the first step towards adopting the internet banking and still have to go a long way before internet banking becomes a way of life.

Dr. Sumathy Venkatesan (2007), in her article “Banking Industry Vision 2010” concludes that on the growing influence of globalization on the Indian Banking Industry, the financial sector would be opened up for greater international competition under WTO. Opening up of the financial sector from 2005, under WTO would see a number of global banks taking large stakes and control over banking entities in the country. They are expected to bring out with them capital, technology, and management skills which would increase the competitive spirit in the system leading to greater efficiency. Government policy to allow greater FDI in banking and to amend Banking Regulation Act to remove the existing ten percent cap on voting rights of shareholders are pointer to these developments. The ability to gauge the risks appropriate position will be the key to successful banking in the emerging scenario. Risk takers will survive, effective risk managers will prosper and risk averse are likely to perish. In this context, the risk management has to trickle down from the corporate office branches. To conclude “The difference between a successful person and others is not a lack of strength: not a lack of knowledge, but rather lack of will”- Vince Lombardi. Gering up to face the challenges towards 2010, Banks of India are marching ahead in the right direction by building up robust risk management system, evolving good human relation
policies, embracing technology, effective communication, excellent interpersonal relations and by adopting creative thinking and innovative methodology.

R.K.Uppal (2008), in his study “Customer Perception of E-banking Services of Indian Banks” discussed the different e-channels such as ATMs, credit and debit cards, tele-banking, mobile banking, online banking and smart cards, which have changed the face of the Indian banks. The main objective of the study was to analyze the perceptions of the bank customers regarding e-banking services and to suggest some remedial measures to improve e-banking services. He found and concluded that the customers preferred e-channels with time and cost utility to provide efficient services. The customers are not fully aware of the operational part of each channel and their transactional facilities. On the basis of the observations of the respondents it can be stated that the future of e-banking services will be bright and that in the coming years, the e-channels will definitely help in the transformation of banking in a positive manner. On the basis of the findings the paper suggests that the details regarding operating system and facilities provided by the e-channels should be highlighted to each age group and also to the customer irrespective of their occupations. This will create a better awareness among the customers regarding e-banking services.

N Kamakodi and M Basheer Ahamed khan (2008), in his study “Customer Expectations and Service Level in E-Banking Era” has listed the top ten factors which influence the respondents to choose the bank, are safely of
funds, secure ATMs, availability of ATMs, reputation of the bank, personal attention, pleasing manners of the staff, confidentiality, closeness to work, timely service and friendliness of staff to help. When the difference between factors of importance and performance of the banks, minimum waiting time, friendly staff willing to help, higher rate of interest on deposits, clear communication, pleasing manners, accessibility to branch managers personal attention, timely service, quick/prompt response and quick redressal of complaint are the top ten parameters on the basis of difference in importance and performance. Out of these ten, nine parameters (except higher rate of interest on deposits) are about the performance of bank personnel on a face-to-face contact. The performance of these ten parameters is much below the expectations of the respondents and it leads to the interpretation that the banks are exceeding the expectations in technology based services, but the perceived service level on branch network is below the expected level of the respondents’. This results in tune with the respondents’ opinion on the perceived ‘gap’ with the bank because of the introduction of technology and opinion on the necessity of human contact with the clients by the banks.

Wai-Ching Poon and Booi-Chen Tan (2008)\textsuperscript{14}, in their article “Spread of E-Banking in Malaysia-A Consumer Perspective” have stated that the internet accessibility awareness, cost, trust in bank, security concerns reluctance of customer, ease of use and convenience are the major factors influencing the electronic banking services in Malaysia. The advantages of e-banking are modest when compared to other online channels. It is one of the fastest rising
services and is a powerful tool for improving customer satisfaction as well as increasing cross-selling opportunities. Therefore, banks should keep track of the ever-changing banking industry and the latest updates of internet technology to envisage future competition. Despite all the frenzy about e-banking, the banks should not neglect their branch networks as face-to-face communication is still vital.

Tom Jacobs (2008)\textsuperscript{15}, in his article “Multi-Channel Banking” has stated that there is a huge amount of money at stake in the development of mobile banking. Similar to the introduction of currency that replaced barter trade, mobile banking is a revolution: banking, account management, and payments using mobile devices will change the way we do business and conduct our economic lives. This will pave the way to a cashless society. In order to position themselves for the mobile banking revolution, the banks should seek out solutions that have been designed to support multiple channels across the entire customer life cycle. The banks need platforms that have a vision and architecture for the future. As the revolution gains momentum, it is easy to see that mobile phone will also be an effective marketing and collection channel. It will not be long before a new revolution begins.

R.K.Uppal and Rimpi kaur(2008)\textsuperscript{16}, in their study “Customer Service in Banks-An Empirical Study” have attempted to compare the customer service with regard to the time taken for transaction in Public Sector Banks, private banks, and foreign banks; and suggest measures to improve the customer service in banks. They conclude that in the emerging competitive environment
and IT era, with little or no distinction in the product offering, it is the speed of rendering services that differentiates one bank from another. Prompt service is equated with quality. The service time is a major factor which affects the quality and reputation of a bank. E-banks are providing quick service and that is the reason for their popularity. Hence, it is very essential that all the banks should put in place that right kind of system to cut down on service time and render instantaneous services to the customers. Only such banks are likely to survive the rat race for market shares in the days to come.

A Sarat Chandra and Mukui Srivastava (2008)\textsuperscript{17}, in their article “Scenario 2009 Are Indian Banks Ready?” have found out that the Indian banks can transform the challenges into opportunities for managing change by initiating several measures, some of which are: adoption of best global practices in the form of risk management techniques, new business models, new operating models, technology upgradation through core banking solutions, skill development to the new generation banking techniques, synchronization and harmonization of planning process of various and operating models with technology as the base and augmentation of capital to meet the requirements of new credit growth. The Indian Banks are all set to meet the challenges as they are already well structured in their expertise and experience gained in the fulfilment of post reforms requirements. There should not be any doubt why Indian banks cannot meet the real challenge being thrown up into 2009. The Indian National banks have the ability, will and determination backed by the RBI.
Mallikarjunan Krishnamurthy (2008) in his study “Product Innovation in Banking Industry - A brief study of e-Banking Scenario” has stated that the banks face the necessity of obliging a large brigade of customers with mostly of needs. Compelled thus by clients’ needs, they are striving to shed the conventional; ‘at the counter’ banking products and are moving towards a more innovative and ‘tailor made’, ‘doorstep’ products. In addition to these developments in the banker-customer relationship, invasion of technology is driving the banks to innovate products that will suit a larger and fulfil their individual requirements. He has concluded that innovation does not come alone but in the form of unknown risks and challenges. Hence, the strategy of management of these risks should be evolved simultaneously and parallel to the steps taken at innovation of banking products. Innovation is, however, inevitable in the evolutionary environment. Here, the significant words of the English Poet Laureate Lord Alfred Tennyson appear to ring true. ‘The old order changed, yielding place to new’.

Jayant Kumar and Hitesh Bhatia (2009), in their study “E-Banking- Some Economic Implications” found an important economic implication of e-banking that has made the measurement of money supply difficult, thereby making the central bank’s task of monetary policy formulation and implementation cumbersome. Precisely, money stock is no longer a well-behaved intermediate的战略 variable which is amenable to targeting, so as to achieve desirable effects on output, employment and price stability. The influence of e-banking on the labor market is wide and penetrative. The
introduction of e-banking threatens not only to reduce the number of employees but also alter the composition of labor input in the banking sector. The Public Sector Banks in India being the largest employer suffer from low labor productivity. The only solution for them is to get rid of over-employment and adopt e-banking in its totality. This is not an easy task and comes directly in confrontation with worker’s interests.

Dr.A.Subbiah and Dr.Jeyakumar (2009)\textsuperscript{20}, in their article “E-banking – A New Dimension of Customer Service of Commercial Banks in India” has stated that the e-banking is becoming immensely popular globally and India is no exception to it. The declining interest rates, falling PC prices, broad bandwidth access through cable and digital subscriber lines accessing the NET through cable TV and the like would definitely encourage the boom in E-banking. It is reducing the transaction costs and is winning the trust of customers and proving to be an appropriate model for customer service of commercial banks in India. So the e-banking has a greater role in customer service of the commercial banks in India.

V.Dheenadhayalan (2010)\textsuperscript{21}, in his article “Automation of Banking Sector in India” has stated that the technological developments have vastly altered the banking landscape in India with significant improvement in processes and procedures leading to higher productivity, rapid product development through alternative delivery channels, and reduction in the transaction cost. In particular, technology is being leveraged increasingly to expand the banking outreach, especially in the rural areas. Information
Technology (IT) has a role to play in ensuring a fair return to the shareholders, by facilitating greater profits to the banking sector. The IT has revolutionized the services and mode of services offered by banks to their corporate clients. Compared to traditional banking, E-banking brings a nuclear charged experience to clients that provide scope for real time transactions as well as a single integrated platform for all the banking relationships. Banks should now move from mass marketing to targeting specific customers to and respond with the right product at the right time through the right channels and deliver conveniently, efficiently and effectively. New bank operations are mostly confined to urban areas and cities. They are able to leverage the benefits of IT better. So in order to be more competitive, appropriate action should be taken to achieve healthy growth in terms of both business volume and profitability by enhancing distribution network to rural areas. There is a need to bring about financial inclusion by using technological inputs such as smart cards, biometric IDs, e-cheques and mobile handsets, on a massive scale to increase the reach of banking services to the remote and rural areas and the to the people so far excluded from these services.

Dr.A.Subbiah and Mrs.R.Preveena (2010)\(^2\), in their article “Risk Management In E-Banking” conclude that while electronic banking can provide a number of benefits to the customers and new business opportunities for banks, it exacerbates traditional banking risks. Even though considerable work has been done in some countries in adapting banking and supervision regulations, continuous vigilance and revisions will be essential as the scope of
e-banking increases. In particular, there is still a need to establish greater harmonization and coordination at the international level. Moreover, the ease with which capital can potentiality be moved between banks and across the borders in an electronic environment creates a greater sensitivity to economic policy of the management. To understand the impact of e-banking on the conduct of economic policy, policy makers need a solid analytical foundation without one the markets will provide the answer possibly at a high economic cost.

2.3 STUDIES RELATING TO TECHNOLOGICAL BANKING SERVICES

Ramprasad and RS Bharatish Rao(2006)\textsuperscript{23}, in their article “The Role of IT in Micro Finance” have stated that there is an object reduction of poverty to the bare minimum by financing for the development of skills of the rural folks, providing employment opportunity to the poorest of the poor, cultivating the habit of savings from the little earning, providing credit at the affordable rate of interest, disbursing the credit amount at short notice, eliminating the collateral security for providing credit, eliminating the informal money lenders from the credit link, encouraging the rural folks, especially women entrepreneurs, providing better living to the rural folks, and ultimately providing better social status to the rural house holds. They have also concluded that the India can globally be visible only when its rural sector shines. By propagating the village and cottage sectors, the rural economy can grow and become prosperous. Now the time has come to restrict the entry of micro finance into urban sector to promote the rural mass and provide better, speedy and affordable financing
schemes. Infotech application in micro finance is laudable and with emerging computer and communication technologies, it can be made a simple tool for the rural folks to adopt and avail the finance for their proposed projects to make the rural economy a dream. So the rural economy can definitely contribute to the growth of the national economy with adoption of mixing infotech with microfinance.

N.Vijaya Kumar(2006)\textsuperscript{24}, in his article “Leveraging on Technology Initiatives” concluded that although the electronic payment systems in India have evolved, there are still a lot that can be done to increase the usage of electronic payments. In a country where 90\% of personal consumption expenditure is still cash based, with the present volume of electronic payments, we have only begun our journey. There is a huge opportunity in Indian Payment Arena waiting to be discovered. While a detailed study focusing on the needs and priorities of the various participants would bring about the opportunities and challenges in the electronic payment arena in India, as discussed earlier innovation, incentives, conveyance and legal frame work are the four critical factors that will decide the future of payment systems and its usage in India. There is also a need for an active participation of private sector in this process and that should include banks, technology companies, payment processors, academic institution etc. and the central bank facilitates the innovations in payment systems through dialogues and leadership. Providing a reliable legal frame work for electronic payments and dispute resolution process; consolidation of retail payments systems; implementation of some of
these recommendations to make it more convenient for users are some of the steps that can be taken to accelerate the usage of electronic payment systems in India.

RH Sarma (2007) in his article “Birth of Virtual Banks; Time to Write Obituary of Brick and Mortar banks” has observed that the era of currency notes and coinage is rapidly drawing to a close and the new age of cashless society is dawning. Bankers expect that currency notes will be eliminated after a short period of time and that only electronic money will be in use. We can not totally ignore the fact that in such a case, the debit-card system will become an instrument of absolute control over the human beings. However, virtual banking services are owing to the speed, convenience and round – the – clock access. Their acceptability will definitely increase in future. But there are number of issues of concern which have to be pro-actively tackled. It is true that most of the electronic banking has built-in security features such as encryption, prescription of maximum monetary limits and authorizations, but extreme vigilance by the system operators has to be ensured on a continuous basis. Banks may also have to evolve and provide clear-guideline for all the operations. Issues like authentication of payment instruction and responsibility of the customer for secrecy of the security procedure assume grater importance in the case of electronically – initiated fund transfer. It is to be kept in mind that such measures required use of high cost technology and this may under mine the much – touted cost advantage of virtual banks. It is into consideration
that the age of branch-based banking is dead and the internet-only banks may replace the traditional brick-and-mortar banks.

Vikas Shrotriya (2007)²⁶, in his article “Techno-Banking - Gateway to Market Leadership” has explained that a multifunctional banking kiosk will provide various banking services on 24 X 7 basis. Such kiosks will have an improved version of the present ATM and will be in a position to provide almost all the banking services anywhere, anytime. Depending on the customer’s account status, loans will be sanctioned instantly through the Multifunctional Banking Machine. In future, all the banks will use a Common Banking Network (CBN) that would reduce the operational cost as well as the competition amongst them. He has concluded that the banks are competing on the grounds of number of customers, number of branches, dimensions of fund reserves, profitability, types of services and the like. Though many of the banks are computerized, they are not really scattered throughout the geographical boundaries. There is still a big market potential waiting to be exploited. Today, it will not be a wise thing to establish branches everywhere. Rather, it will be beneficial to extend the technological network and cover the potential market territories through installation of hi-tech banking stations. Tomorrow, only a true techno-bank will become the market leader. A bank with adequate number of MBMs will be able to impress and attract large number of customers. The bank using CBN, yet providing differentiated as well as highly customized services in a cost-effective manner will be the future market leader of the banking industry.
Dr. Prasun Kumar Das (2007), in his article “Information and Communication Technology (ICT) - A Catalyst to Transform Agricultural Lending Business of Commercial Banks”, has brought out that a key issue in agriculture credit delivery is the availability of the authentic, authoritative, and complete data about the people, the environment and the activities of the area in a readily usable form on demand. The following models may improve the situation and empower the field level functionaries to achieve the business objectives of the banks. Model data warehousing – several procedures and documentation requirements emanate from the absence of the data for verification or otherwise to the banks in ready form. For instance, if the details of the land and cropping pattern, the record of rights were available in electronic form online to the bankers, there is no need for the bankers to ask for records of landholdings from the applicants of crop loans. The efficient rural credit delivery system has been used by the IT Data Centre warehousing all the required data and a Multi-service delivery machine with connectivity to the Data Centre and through it to the banks. In this model, there is outsourcing of the front-end banking operations and the manual interventions in the process of credit appraisal and credit delivery would be minimized and the bank personnel devote their time for making credit judgments and for credit monitoring as absence of credit information is posing a major hurdle in scaling up the client base in rural areas. Credit information tracking and sharing through a Credit Information Bureau in the line of CIBIL would enable the lenders to provide
incentives to those with good credit history and a strong deterrent to wilful defaulters.

Dr. K. Srinivasa Rao (2008)\textsuperscript{28}, in his article “Technology Innovation in Banking - A Tool for Inclusive Growth” has observed that the Banking System is the backbone of modern business and IT in turn has become the backbone of the banking technology and expansion of telecommunication network in the hinterlands of the country have provided a perfect launch pad for extending banking output to remote locations without having to open bank branches in the area. This could be achieved by leveraging technology to open up channels beyond branch network and create the required banking footprints to reach the unbanked extending banking services similar to those dispensed from branches. In short, technology has to enable the branch to go where the customer is present, instead of the other way around. The transformation in the last decade from Advanced Ledger Posting Machines (ALPM) to CBS resulted in lower cost of transactions, operational efficiency, product differentiation and new business opportunities for banks. By adopting the improved, innovative, IT enabled banking; financial inclusion can truly lift the financial condition and standards of living of the poor and the disadvantaged.

Dr Amrit Patel (2009)\textsuperscript{29}, in his study “Rural Banking Policy Should Promote Effective Use of Technology” has stated that with a view to enabling banks to increasingly involve in the area of rural banking during the 11\textsuperscript{th} Five Year Plan the government and the RBI have further committed to new innovations, such as (i) establishing financial literacy/ credit counseling
centers, (ii) technology adoptions, (iii) establishing Financial Inclusion Fund (FIF) and Financial Inclusion Technology Fund (FITF), (iv) establishing Microfinance Development and Equity Fund (MFDEF). It is in this context, an attempt is made here to appreciate the impressive role played by the commercial banks during the 10th Five Year Plan and the need for timely and effective use of technology, FIF, FITF and MFDEF to correct some specific deficiencies noticed and to meet the new challenges of financial inclusion in the area of rural banking by 2015. He has concluded that the slow, steady, systematic and planned evolution of rural banking policy by the RBI, the commercial banks in India showed impressive performance during the 10th Five Year plan. During the 11th plan, the banks may need to commit themselves to serve progressively all households in villages, initiate steps to establish FLCCs, and adopt technology applications. In the process, the government may consider creating enabling environment and building rural infrastructure to facilitate financial institutions to serve all the rural households by 2015.

A.K. Sohani (2009)30, in his article “Technology Initiatives by State Bank of India” has mentioned that in order to have the core Banking Solutions a contract was awarded to the Tata Consulting Services in 2002 to do the following activities (i) evaluation of the projects. (ii) Benchmarking and selection process. (iii) Implementation of Core Banking Solutions (CBS). (iv) Computerizing of all its branches. The CBS software was implemented as a pilot project, in one of the SBI’s branches on August 29, 2003 with the CBS offering the facilities such as 24x7 banking, anywhere banking, and integration
with the other strategic sectors. He has concluded that the SBI has made a great stride in adopting technology to tackle competition faced from the foreign banks and new private sector banks. Adoption of these technologies enabled the SBI to move from being a mere government controlled bank into a more responsive organization to meet the challenges of globalized economy. The SBI has realized that the threat of foreign banks and new private sector banks is to stay. Adopting the appropriate Information Technology has allowed the bank to meet the stiff competition successfully and at the same time offer the state of the art of banking experience to the customers.

G. Shanthi (2009)\textsuperscript{31}, in her article “Expert Systems in Banking” has stated that in order to develop expert system, knowledge base is essential. The Artificial Intelligence (AI) researchers and Knowledge engineers spend months picking the brains of specialists to extract and structure the knowledge which becomes the bases for the specialist’s expertise. This is most difficult and time–consuming part of developing an expert system. Once a knowledge base is created, programmed techniques in the system shell are used to efficiently probe and process the facts on that base. User facts and queries may be presented in a natural language and series of user / system exchange is usually needed. As the user supplies input data, the expert system responds as an intelligent assistance by giving advice and suggesting possible decisions. It is clear that, the most time consuming and taking pains is the source of knowledge. Hence, structuring knowledge in such a manner and applying the most relevant knowledge to a particular problem, is distinct characteristic of an
expert. Therefore, the task of structuring knowledge or constructing a knowledge base entertains a knowledge acquisition, knowledge representation and application of knowledge.

Nidhi Choudhari (2009)\textsuperscript{32}, in his study “Leveraging Banking Technology For Improving Customer Service” has examined the role of the government in the development of computer interface in vernacular language so that local population can easily understand and can transact business. The banking industry is using technology driven systems such as On-line Tax Accounting System for collection of government tax receipts. Now the government needs to ensure that the funds are delivered through banking sector using modern technological infrastructure. The RBI should encourage banks to set up at least one ATM in every village of their service area and the government should set up at least one Internet kiosk at the village level to facilitate Internet banking. The National Bank for Agriculture and Rural Development (NABARD) can disburse various development funds through electronic modes and facilitate the use of IT in delivery channels in villages. It is to be mentioned that the relationship between IT and banking is fundamentally symbiotic which gives the confidence that banks in India are ready to get more empowered by using IT judicially and ensuring that optimal efficiency along with adequate security are provided for. In the area of IT, the Indian professionals are world leaders and building synergies between the IT and the banking industry will sharpen the competitive edge of banks. The directional inputs and guidelines, however, should continue to be provided by
the RBI. As stated in its annual report, the RBI should intensify the steps to achieve greater operational efficiency within the organization through large scale and holistic IT usage. A sound technological infrastructure can only lead towards fulfillment of vision of a vibrant, internationally active banking system, drawing upon its innate strengths and comparative advantages to make India a major banking center of the world.

2.4 STUDIES RELATING TO E-PAYMENT SYSTEM

Manish Ashiya (2006)\textsuperscript{33}, in her article “Electronic Payments-Current Offering and Developments” has observed that the evolution of payment methods started with the replacement of the barter system by coins which were then replaced by currency notes. Now we have electronic payments along with currency notes. Probably, this is the entire evolution of money in a nutshell. Cash, as a mode of payment, is the most dominant and wide spread. With the spread of banking services out through the world, cheques are also extensively used. We have also other modes like money orders, wire transfer, and traveler’s cheques. With the latest evolution of electronic payments, plastic cards usage has come up. Which are used in a variety of ways to make payments, like credit cards, debit cards, charge cards, smart cards, telephone cards, gift cards, petro cards and the like. These are used for the real world or for e-commerce transactions. The online payment options are credit cards, smart cards, digital cards, electronic cheques and secure third party payments. He has concluded that the article way in which electronic payments are evolving across countries can be seen through examples. The examples illustrate the various kinds of
innovations in technologies, financial aspects and application areas. These trends are driving the changing landscape in the field of e-payments.

Sanjay Sharma (2006)\textsuperscript{34}, in his article “Payment Systems” has stated that technology is the key to move towards providing integrated banking services to customers. Indian banks have been late starter in adopting technology for automating and integrated banking services, but this has helped the banks learn from global experience and adopt the state-of-the-art of banking solutions. Today, the Indian banks use one of the most advanced technology solutions in the world and have introduced many innovative products leveraging technology. There are various other factors which have played a major role in making Indian Banks world class banks. He concludes that the payment initiatives are built around the e-money concept, which is catching up in India. The capabilities of both – Internet and ATM channels- are used to an optional level, thereby extending its reach and availability to a larger segment of customers. Compliance with statutory and regulatory guidelines, wherever applicable, is ensured. Care is also taken to ensure that the project costs are kept at the bare minimum by resorting to in-house developments wherever possible. Also online banking is growing in popularity as new and new 24*7*365 delivery channels are being introduced by the banks and also it is becoming increasingly accessible to wider markets.

Kaza Sudhakar (2006)\textsuperscript{35}, in his article “Electronification of Payment System in India” has listed the channels being considered; (i) User friendly menu driven inter-faces at bank branches. (ii) Inter-bank products on bank
websites linked at the back end to the RTGS and (iii) the RTGS products on kiosks and ATMs. RTGS is typically considered by the corporate for making high value payments. Banks in the past year have made the RTGS very affordable to the customers as a replacement for Telegraphic Transfers, Drafts and issue of high value cheques. He concludes that the banks are creating several electronic products which are connected at the back-end to the RBI inter-bank settlement electronic platforms. Time and business criticality is usually factored into pricing. Internet based methods of payment are becoming increasingly popular as they free the customers from the business hours of the banks and the need to visit the branches. Enhanced connectivity and national reach would make it easy for the bank customers to use the electronic channels for payment. Several large corporate are re-engineering their cash management processes to take full advantage of the electronic payment methods now available.

B.Manoharan (2007), in his article “Indian E-Payment Systems and Their Performance” has stated that the RTGS clearly emerges as the principal payment system in India for wholesale payments. In a short span of three years since its introduction it has bypassed the cheque based clearing. The volume in terms of amount now accounts for ever 50% of the payment volume in India. Such high volume in terms of transaction and amount can be endorsed / established the following facts; inter-bank payments that are substantial are routed through this channel. Net settlement for clearing is routed through this channel. Net settlement for NEFT/EFT is also routed through this channel.
Although the electronic payments systems in India have evolved, there are still a lot that can be done to increase the usage of electronic payments. In a country where 90% of personal consumption expenditure is still cash-based, with the present volume of electronic payments, the long journey is just begun. There is a huge opportunity waiting to be discovered in the Indian payment arena. While a detailed study focusing the needs and priorities of the various participants would bring about the opportunities and challenges in the electronic payment arena in India, there is also a need for an active participation of private sectors in this process and that should include banks, technology companies, payment process, academic institutions and so on. The central bank can facilitate the innovation in payment systems through dialogue and leadership. Providing a reliable legal frame work for electronic payments and dispute resolution process; consolidation of retail payment systems, implementation of some of these recommendations to make it more convenient for the users are some of the steps that can be taken to accelerate the usage of electronic payment systems in India.

Narinder Kumar Bhasin and M Balakrishnan (2007)\textsuperscript{37}, in their study “Impact of Technology on Payment Systems”, has found that the Indian customers – retail and corporate – are aware of the emerging payment options. They are willing to move away from cheque based payment to electronic payments. In India, the contribution of electronic payment by value is almost on par with paper based instrument value. The RBI is aggressively promoting these payment options along with other banks to reduce the paper based
transactions – including cash transactions and are being fairly successful in accomplishing the goal. The effective use of technology has dramatically improved the efficiency of operations in banks leading to improved productivity and profitability. The advancement in computer systems, data communication and alternate electronic delivery channels also helped the bank reduce substantially their capital and operating cost from the customer’s perspective. Technology can provide them significant value proposition through the new convenient e-product and channels. Technology enables banks to have better centralized control systems. The normal approach of automating 20 percent of branches covering 80 percent of business is followed by large banks conveniently ignoring their rural branches as they are not economically viable for their expensive core banking solutions. On the other hand, there is a huge potential at the bottom of the pyramid for bringing in the large amount of cash used by the villagers into the banking system.

K.R.Subbakrishna (2008)\(^{38}\), in his article “Large Value Payments Through Electronic Payment Systems - An Initiative of Reserve Bank of India” has mentioned that it is appropriate to quote the address of the then RBI Governor, Dr.Y.V.Reddy, at the Regional Payment Systems Workshop on October 20, 2005. “I take this opportunity to endorse what Narayana Murthy, Chairman and Chief Mentor of Infosys said while speaking at this forum”. According to the RBI, there are about 48,000 public sector bank branches in the country, of which over 63% are in semi-urban and rural areas. Though over 70% of the branches have attained 100% computerization, the RTGS is
available only in 23,500, while the NEFT covers less than 5,000 branches. Hence, integrating semi-urban and rural areas into the electronic clearing system is critical. I agree that the coverage of the RTGS undoubtedly needs to be expanded over a period. This would require scaling up of its operations in terms of capacity and speed, for which efficient and effective transaction to the RTGS system and its stabilization would be essential. It is necessary to explore all the issues in a comprehensive manner that would arise in rapid up scaling of the RTGS in our country” he added that, perhaps knowledge of payment systems could be an element of intensive campaign for financial education that the RBI intends to launch soon.”

D.Satish (2008)\textsuperscript{30}, in his article “Forex Muddle Making Banks Scapegoats” has observed that the customers use only few facilities of e-banking for example, cheque deposit, money transfer and the like. Though e-banking provides a full amount of various services. The customers should be made aware of these services and must be encouraged to use the same. It has been found that the customers have doubts about the safety and security of e-banking services. It is the basic step to be taken up by the banks to build trust and confidence among the customers so that they can use it frequently without any trepidation. The best way to motivate the customers to use e-banking is the most efficient customer care service. The banks may improve existing facilities in rural areas through advertising, spread awareness about computer and net banking. The banks should be transparent enough about the charges involved in e-banking services. As there is a network of ATMs across the country, E-
banking facility can be installed at all ATMs for easy access by any customer. The banks should resort to ‘core banking’ and set up a network of all banks through a single network.

Dr. Ashish Srivastava (2008)\textsuperscript{40}, in his article “Payment and Settlement Systems in India - Recent Developments and Central Bank Oversight” has stated that the establishing, maintaining and managing an efficient payment and settlement system in a dynamic environment characterized by convergence of traditional payment and settlement mechanisms with technological advances is definitely an uphill task in a country like India due to existence of different types of banks in terms of ownership, age, spread, technology adaptation, staff skills, and so on. In such a scenario, making uniform policies and procedures for settlement systems is a tough task for the Central Bank, as settlement systems cannot offer differential treatments to different members. Increasing volumes and complexities of transactions have added to the challenges. Continuous monitoring, updating and adapting with unwavering focus on system integrity and security are the fundamental principles for a swift and efficient payment and settlement system. Challenges are many and sky is the limit of opportunities. The Reserve Bank is taking up such challenges and converting them into opportunities for establishing a world class payment and settlement system in India.

Dr. Priyanka Gite and Rahul Mishra (2009)\textsuperscript{41}, in their study “Application of Biometrics in Indian Banking Sector” have highlighted the online services to urban customers which do not, however reach the rural and semi-urban clients.
The rural customers still rely on the traditional methods of banking. The semiliterate masses are likely to benefit from biometrics. With the advent of biometric solutions for the ATMs, there is no need to remember the PIN numbers. Software vendors are developing fingerprint solutions for the rural masses. Recently, a Financial Software and Systems, a Chennai-based firm, launched its Biometric ATM Interface Solution (BAIS) which enables connectivity of ATMs with biometric support to electronic financial transaction switches. Elaborating on the working of the biometric solutions, G.P Shekar, Head – Consulting Practice, Financial Software and Systems (P) Ltd. said, customers opting for biometric authentication can visit a nearby ATM or bank, where his data related to physiological or behavioral characteristics would be scanned into a special PC with the help of one of the different biometrics devices and the scanned characteristic is then stored in an encrypted form in a central server. If a fingerprint scanned is used for authentication, a customer is prompted to set his finger on the fingerprint scanner when he inserts (or swipes) his card in a biometric based ATM. The transaction along with customer’s biometric information will be passed on to the switch. The switch verifies the fingerprint with the server, and if successful, requests the banking application to authorize the transaction.” Based on the result, the switch instructs the ATM to complete the transaction. The company’s BAIS solution meets the requirements by performing requisite message translations as well as confirming authorization.
Dr. A. Subbiah and Dr. Jeyakumar (2009)\textsuperscript{42}, in their article “Growth of ATMs In Banking Sector – An Overview” have stated that the Automatic Teller Machine (ATM) was first commercially introduced in 1960s. By 2005, there were over 1.5 million ATMs installed world wide. The introduction of the ATM proved to be an important technological development that enabled the financial institutions to provide services to their customers in a 24X7 environment. The ATM has enhanced the convenience of the customers by enabling them to access their cash wherever required from the nearest ATM. The ATMs have gained prominence as a delivery channel for banking transactions in India. The banks have been deploying ATMs to increase their reach. While ATMs facilitate a variety of banking transactions for the customers, their main utility has been for cash withdrawal and balance enquiry. Commensurate with the branch network, larger banks have developed more ATMs. Most banks prefer to deploy ATMs at locations where they have a large customer base or expect considerable use. To increase the usage of ATMs as delivery channel, the banks have also entered into bilateral or multilateral arrangements with other banks to have inter-bank ATM networks.

Dr. A. Subbiah and Dr. S. Jeyakumar (2009)\textsuperscript{43}, in their article “Customer Service of Commercial Banks with Special Reference to ATMs” have stated that the ATMs are on the top of the agenda of the banks for enhancing their customer services. The ATM machines work much faster than human tellers with lower error margins. The ATMs play an important role in tapping the customers to get the service from the commercial banks. The ATM card is a
revolutionary product of modern banking in India that offers convenience at its best. More people are now moving towards using the ATMs for their banking needs. The ATMs are functioning round the clock / day in and day out and so are providing non-stop services to the customers.

2.5 STUDIES RELATING TO CREDIT CARD PAYMENTS

Nancy John (2007)\(^44\), in her article “Skimming A New Credit Card Scam” has explained what credit card skimming is and how it happens, skimming of ATMs, skimming for the data capture, transmission and storage, what equipment skimmers use, how to prevent skimming attacks and the like. The skimming is turning out to be a very complicated thing. As technology expands, there are no boundaries to break credit card skimming. If the skimming menace is not controlled, it may pose a serious threat by way of brand erosion in the credit card industry. The industry leaders are trying to develop advanced technology solution to tackle the problem. Thus, if the credit card industry has to prosper in future, it should take necessary steps to shift to smart cards. Since smart cards cannot be duplicated, they could be used as an effective weapon against skimming.

Tapan Kumar Nayak and Manish Agarwal (2008)\(^45\), in their article “Consumer’s Behaviour in Selecting Credit Cards” have stated that the study has been undertaken to identify the factors that influence the selection of credit cards in the National Capital Region (NCR). A statistical approach, ‘Factor Analysis’, has been used for the study and concluded that there are eight major factors which influence the selection of credit card among the customers. These
factors include service offer and promotional offer. Other such factors, besides these of that were aimed at studying the selection of the credit card explain the consumer buying behaviour of the credit card. It helps in providing essential insights into strategies of financial services, retailers and business. Knowledge of these factors also helps in promoting the use of credit cards. Moreover, the consumer credit card market in India is still in its nascent stage, and so the industry must endeavor to develop marketing strategies that appeal to the changing customer needs in order to promote the usage of credit cards. The main results of the study indicate that ‘service offerings’ are an integral part of selection of credit cards, which means while choosing a credit card, the services provided play a major role. ‘Security while transaction’ is what the customer in India think as one of the primary factors of influencing their decision to choose credit cards. In addition to these factors, various other value added services like ease of payment, cash benefit and interest benefits lure people towards the card. India is one of the most assertive competent markets for credit cards, and the competition is driven by low price rentals and value added facilities provided by the banks.

Dr.N.Yesodha Devi and Mrs.A.Gomathi (2008) in their article “A Study on the Frequency of Usage of Credit Cards in Coimbatore City” have stated that credit cards in India are extremely useful for the middle class people who increase their purchasing power through the plastic card. Credit cardholder’s usage is the maximum in the Departmental stores, shopping malls, in the purchase of consumer durables and in petrol stations. Age group of the
respondents has a significant influence on the frequency of usage of credit cards. Younger age groups and the respondents of the age group between 31 and 40 use the credit cards more frequently when compared to the older age groups. Income level and occupation do not influence the usage of credit cards. The T-test reveals that the level of usage does not vary among the male and female respondents. With a wider acceptance of the cards by all the merchant outlets and the issuance of the credit cards by more number of banks, the frequency of the usage of the cards have also increased rapidly. Therefore, there is a need for the cardholders to understand how better to utilize a credit card effectively and responsibly.

S. Nithys Sumathi (2009)\textsuperscript{47}, in her study “A study on Customer Attitude Towards Credit Cards with Reference to Standard Chartered Bank” has explained the factors related to the following is to study the factors influencing credit cards. The objectives of the study were to analyze the influence of the credit card on the purchase pattern of the card holders, to determine frequency of the credit card usage and to evaluate the mode of repayment made by the customers on their credit cards. She has concluded that a majority of the respondents are satisfied with the services of the Standard Chartered Bank in relation to credit card services. The customers are satisfied with the various schemes, except a few offered by the bank. The bank has been efficiently rendering the services to the customers through credit cards.

A. Kumaresan, I. Chitrakala and K. Gowtham (2010)\textsuperscript{48}, in their article “A Study on Credit Card Holder’s Expectations and Preferences Towards Selected
Banks in Coimbatore City, Tamil Nadu” have discussed various problems and offered appropriate suggestions. Interest and other hidden charges should be reduced for the frequent credit card users. Special offers and discounts should be provided during festive seasons. Various mass advertisement media should be used to attract new customers. Improvements should be made in provision of credit limit to the customers. Necessary actions should be taken to rectify the errors in the statements. Proper redressal measures should be taken to process customer’s complaints. Customer care services should be improved. The terms and conditions should be completely tangible for the customers. The customers should clearly be informed about the pros and cons of the credit cards. Proper review of the customers helps avoid various problems like late fees, misuse of credit cards and the like. They have concluded that in the present scenario, banking companies are playing a vital role. Many MNCs and Private Sector banks are entering in the credit card market for earning higher profits and to provide good services to the customers in all areas. Effective measures should be taken to make the customers more aware about the pros and cons of the credit cards among the users. Such an attempt will help the credit card industry achieve greater heights.

2.6 STUDIES RELATING TO INTERNET BANKING SERVICES

Praveen Dalal (2005)⁴⁹, in his article “Internet Banking and Its Challenges in India” has stated that the adoption of internet banking in India will have its own advantages to both the banks and ultimate by the customers. The use of information technology will not only reduce the cost of operation
but also would be effective, easy to maintain, speedier and highly competitive.

The banks cannot remain stand-offish from this concept of internet banking, and they should bring opposite changes to meet the necessities and challenges of internet banking. The challenges posed by the internet banking are mostly of procedural nature, which can be easily counterbalanced by adopting suitable technological and security measures. The domestic standards of banking have to be in conformity with the well-known international standards and in the near future international dealings from India would be a reality, which are at present not liberal enough. No system or institution can hope to benchmark it against international standards without making optimal use of technology. There can be no doubt about the enormous potential and emancipated opportunities offered by the technology. However, there are prerequisites and preparations, which have to be made before full benefits of the technology can be harvested.

Internet and Mobile Association of India (IAMAI)(2006)\(^9\), in its report “A study on the Internet Users” found that about 23% of the online users prefer internet banking as the banking channel in India, second only to ATM which is preferred by 53% out of the 6,365 internet users sampled, 35% use online banking channels in India. This shows that a significant number of online users do not use internet banking and hence, there is a need to understand the reasons for not using it. The prime factors for using internet banking include convenience, saving of time, better control over finance and availability of more information. Most of the people have come to know about internet banking from the bank officials followed by self-driven initiative and
advertisements. The share of online banking users is varying from state to state. Maharashtra has the highest percentage (28.7%) of online banking customers followed by Delhi (17.7%) the States like Bihar (1.6%) and Uttaranchal (1%) have the lowest of internet users according to the IAMAI Report 2006. In the study by the IAMAI, it was found that the people are not doing financial transactions on the bank internet sites in India because of the reasons such as security concerns (43%) preference for face to face transactions (39%) lack of knowledge about transferring online (22%) lack of user friendliness (10%) or lack of the facility in the current bank (2%).

T.R.Nagesh(2007)\textsuperscript{51}, in his study “Internet Banking - A Regulatory Challenge” has stated that internet banking has evolved rapidly over the years with technological advances and increasing number of internet users across various regions. It has developed as an effective distribution channel for banking products and services. Various benefits like swift delivery of services and anytime/anywhere banking have increased its popularity. The technological advances, which led to the growth of internet banking, have, however, also contributed to the emergence of various risks for banks as well as customers. There have been increasing instances of phishing and counterfeit e-mails. The regulators worldwide have acknowledged these risks and are framing effective security measures to be adopted by the banks offering internet banking services. Central Banks around the world are increasingly sharing information to counter various threats involved in internet banking. Implementation of Basel II norms and increasing trend of convergence in
European regulations will help in reducing various risks involved. Resolution of legal and jurisdictional issues as well as convergence of laws across the world are crucial for further growth of internet banking. It is vital for banks and regulators to amend regulatory mechanisms from time to time to counter various issues and challenges involved in the Internet banking environment so as to continue benefiting from one of the finest innovations in banking.

Geetika, Tanuj Nandan and Ashwani K.R. Upadhyay (2008)\textsuperscript{52}, in their article “Internet banking in India; Issues and Prospects” have specified that the internet banking for the retail segment is a recent phenomenon that has generated a lot of interest in the Indian banking industry. Their objective was to study the current state and practices in internet banking offered by the leading banks in India; to analyze the perception of internet banking customers and to study the various security features offered by the internet banks. They have concluded that in India there is a need for providing better and cost effective banking services to the masses. The internet has emerged as a medium for solving the problems and it provides the banks with a distribution channel, which can be leveraged for increasing the scope of the services as well as adding new customers. There exists not much difference in the basic internet banking services offered by various banks. A careful analysis of the website of various banks reveal that the design of the website technological upgradation of security features, consumer friendliness, and value added services vary from bank to bank. There is much emphasis on the concern for security by all the banks. They have taken steps to educate the customers regarding online
security. The customers look for ease in performing banking transactions along with more and updated information when adopting internet banking. Those banks whose policies and websites are complex will force a set back. The customers do not use all services equally.

Sandeep Kautish (2008)\textsuperscript{53}, in his article “Online Banking - A Paradigm Shift” has observed that the internet banking is the need of the hour and its future is undoubtedly bright because online banking saves a lot of time. Globalization certainly shrinks the size of the world. Required steps must be taken for sound management of online banking. The most important aspect is to gain the confidence of customers. These objectives can be achieved only when the banks adopt appropriate design (logical and user interface) methodologies. It is very important for the banks to keep the customer’s point of view as the top priority. The banks must offer a fair blend of services with an ideal combination of traditional banking flavor and new emerging internet banking tools. In short, we can say that the internet banking is relatively a new concept in the global banking. It is passing through into growth phase of its development cycle. Results of recent developments and experiments in online banking are yet to come, but it is assured that the internet banking will not remain as only a value added tool as long as it becomes one of the most important keys to success into banking industry.

Monoj Kumar Joshi (2008)\textsuperscript{54}, in his article “Internet Banking Authentication - The Need of the Hour” brings to limelight the rise of online criminal activity and the development of new methods of stealing private
details of the consumers. This has been a major cause of concern for the banking and financial service sectors. But this sector is not fully geared to meet the rising challenges and ensure the faith of online users. The techniques used at present for online authentication such as usernames and passwords have become progressively outdated. Two factor authentications is recommended by many organizations compared to one factor authentication. Stronger authentication technology such as quantum cryptography may prove effective against the rising trend of stealing consumer data. In addition, there is a need for the customers to acquaint themselves with multi-factor authentication methods and use them diligently. The banks should support R&D efforts for the development of low cost and simple to use authentication methods as an antidote for various types of frauds.

2.7 STUDIES RELATING TO MOBILE BANKING SERVICES

Srinivasan and Sanjay Sharma(2006), in their study the “Internet Banking and Mobile Banking” have explained concluded that according to an Ernst and Young study, the telecom subscriber base is expected to reach 203 million by 2007 and revenues are expected to treble to $23 billion to $25 billion by the 2007 from $9 billion in 2002. People are ready to embrace the technology, especially internet and mobile. Potential group of customers are in the age group of 18 – 35 years, who are net savvy professionals, more educated and affluent. Customer education and awareness is a must. Concerted effort to educate, and popularize the channels through various media would enable banks to cash in on, taking the first mover advantage. Most preferred functions
of internet / mobile banking are – balance enquiry, Air - ticket booking, credit card payments, rail ticket booking, knowing ATM locations, funds transfer, bill payment and alerts on balance threshold and transactions. The reputation for trust is a tremendously valuable asset, which can be leveraged to address other shortcomings by the public sector banks in India. Seamless integration of channels, embracing customer control and threats from new business models like person–to–person lending, emergence of cash–like equivalent e-gold etc., are the areas of concerns. Finally, public sector and private sector banks should focus on delivery channels, as Mobile Banking and Internet Banking would dominate future use of channels by the customers. Delivery channel integration would post challenges and would be the differentiator.

T.Paulraj(2007)\textsuperscript{56}, in his article “Mobile Banking Right Call for Financial Inclusion” has explained that the banking sector, the fulcrum of the economy, has also realized the mobile phone’s huge potential of reaching customers within no time. In future, the analysts predicts that the mobile phones will replace credit cards, debit cards and online banking, which are very vulnerable to the thefts and malpractices. On the other hand, the mobile communication technology that covers even the remotest part of the country, and approachable even to the people who are enlisted under the Below Poverty Line (BPL) category, holds the key to future banking. Researchers are working on the feasible, hassle-free and user-friendly mobile platform. Now a days, even a street vendor owns a mobile phone thanks to its low price, which is expected to fall down further. Finally, technology, especially mobile telephony,
is able to bridge the divide between the poor and the rich, urban and rural. It would become a great leveler before the end of these decades. The two thirds of the world population will have a mobile; it really to a huge market for the service providers. The banks should positively respond to the call from mobile banking technology to reach the rapidly growing mobile population. Mobile banking will certainly enable banks to realize the dream of full financial inclusion and empower the poor and women. Now, mobile banking technology is in the banking sector’s hand to make the right call and invite the needy to take part in the formal financial system.

Manoj Kumar Joshi (2007), in his study “Mobile Banking At the Doorstep of the Masses” has stated that the banks have a major role to play in the promotion of the mobile banking through education and awareness among the masses. The procedure for using this channel must be simple and user–friendly for its adoption in large numbers, since the screen of mobile device is very small compared to that of PC or a Laptop. The customers may find it difficult to read or send messages. In India, where major part of the population is concentrated in rural areas the infrastructure of telecommunication needs to be developed on par with urban areas on a massive scale for its adoption. The banks also need to take steps to introduce software which supports multi-lingual banking transaction, since English language is not widely understood throughout India. Banks can bring the middle and lower middle class population under the ambit of mobile banking by offering a number of incentives. The use of this channel should not be thrust upon the customers for
the sole purpose of reducing the cost of operations but should be introduced in a phased manner after sustained promotion, highlighting its ease of use and security. The Reserve Bank of India should issue guidelines from time to time to prevent money laundering and other financial frauds that may be perpetuated to course of popularity of this channel. They should set reasonable limits for mobile payments and transfers, based on the prevailing conditions ensuring that the interests of the customers are preserved and protected.

T.R.Nagesh(2009)\(^{58}\), in his article “Mobile Banking Gaining Momentum” has stated that as m-banking operates in the internet environment, and involves various stake holders apart from banks and customers, bank these are certain risks are inherent in its domain. The guidelines and technological standards undergo continuous evolvement with changes in the risk environment and threats involved. Since m-banking is at a nascent stage in India, the banks, telecom companies, and regulatory authorities need to study the following: risk involved in m-banking, guidelines issued by the authorities concerned and relevant legal provisions in various countries, architecture and authentication requirements, data encryption technology, Intrusion detective systems, anti-virus protection requirements, technological advancements, and continuous review of the m-banking technology at regular intervals.

2.8 RESEARCH GAP

Different studies have been carried out on e-banking services with different objectives, relating to the particular area from e-banking services
offered by the public and private sector banks and foreign banks. The studies include the e-banking services, customer services in banks, customer services of commercial banks with special reference to ATMs, and have different concepts of e-banking services such as e-payment systems, internet banking system, mobile banking services, and technological banking scenario and the like. They have also included the comparative perception of the customers of public and private banks to e-banking services and give a chance for further enquiry. However, there has been no study specifically on the perception of the customers in the distribution of e-banking services. It has been the effort of the researcher to analyze different services of e-banking and customer opinion about such e-banking services. It is in this context that a study of customer satisfaction in the delivery of e-banking services through different devices has been undertaken to fill the research gap and to e-banking in general and e-banking services in Madurai district in particular.

2.9 SUMMARY

This chapter has discussed the studies relating to e-banking services with a focus on the important findings and conclusions of each study. It helps to identify the base for the researcher to pay attention to various concepts of the study enabling him to evaluate the areas of study for further research.
REFERENCES


