CHAPTER 3

LITERATURE REVIEW

Introduction

The last few years have seen a spate in delivery channels replacing the traditional brick-and-mortar branches. This has led to reduction in dependency on branches and lowering of fixed costs and other overhead costs. Automated transaction processing, streamlining operations and fewer errors on account of human intervention are the hallmarks of information technology implementation. With focused and seamless integration of multiple channels, banks aim at higher standards of customer service and enhanced productivity and profitability. The constant pressure from the central regulator, the Reserve Bank of India, has not only encouraged and motivated banks to implement more and more IT but has at times pressurized banks into accepting change.

The present study deals with impact of information technology in general and electronic delivery channels in particular, on customer services and profitability of banks and therefore, the extant of literature in Indian as well as International context has been reviewed and presented in five parts pertaining to (A) Automated Teller Machine (B) Mobile Banking (C) Internet Banking (D) Impact of Information Technology on profitability and customer services of banks (E) Multiple delivery channels.

3.1 Part – A : Review of literature on Automated Teller Machine (ATM)

1. R. Renuka et al (2014), in the study “Customers satisfaction towards ATM” focuses on customer satisfaction towards ATM services offered by the banks and tries to suggest ways to improve services. Amongst other suggestions, the authors have suggested increasing awareness about various facilities and enhancing the withdrawal limit of cash per day. 24
hours access got the first rank while quality of receipt got the second rank for level of satisfaction. To find out the level of satisfaction respondents were provided a list of fourteen factors which were to be ranked. Likert scale was used for the purpose. The study considers only customer perceptions towards ATMs. However, staff perceptions have not been considered.

2. **Sisat S. et al (2014)**, in the paper “Secured Automatic Teller Machine (ATM) and Cash Deposit machine (CDM)” has segmented ATM threats into three types of attacks: card and currency fraud, logical attacks and physical attacks. The paper gives an idea about the basic ATM and its major security issues and basic requirements. Since, ATMs deal with currency notes, focus should be on note security while designing ATM. This paper is more theoretical in nature and is not backed by primary data.

3. **Dr. Giridhar et al (2013)**, in their research paper “A study on customer satisfaction towards services provided through ATMs in Malnad rural regions of Shimoga District with special reference to SBM”, have collected primary data of customers from only one PSB i.e. State bank of Mysore in Tirthalli Taluka of Shimoga District. Though this study is based on collection of primary data, it does not consider the perceptions of bank staff. The study does not focus on different types of problems faced by customers while using ATMs. The study concludes that “Despite the drawbacks in ATMs, it is still preferred as it benefits bank, employees and customers”. Unlike the present study, this study considers only one PSB bank but has not considered private sector banks, co-operative banks.

4. **R.Melba Kani et al (2013)**, in their research paper “Issues and challenges faced by ATM customers of State Bank of India in South Tamil Nadu” mention that increasing use of ATMs prompted the authors
to study the issues and challenges towards use of ATM services in South Tamil Nadu. The objectives of the study were to examine the awareness level of ATM services at South Tamil Nadu, to study the level of customer satisfaction on various aspects of ATM services in South Tamil Nadu, to identify customer problems while using ATM services and to offer suggestions to overcome the problems in ATM services in the near future. Primary data was collected from customers of State Bank of India in South Tamil Nadu which included three districts Kanyakumari, Trinevelli and Thoothukody. The study concludes that young people are drivers of emerging technology in developing areas and that SBI has been successful in the arena of ATM cards. This study has used statistical tools such as chi-square test and weighted average score. However, this study pertains only to the public sector banks and is not a comparative study. While trying to find out the problems faced by customers the study does not consider the cost effectiveness aspect.

5. Bishnoi (2013), in the research paper “An empirical study of customers perception regarding Automated Teller Machine in Delhi and NCR” attempts to find out the perceptions of customers of various banks regarding various issues related to ATM/Debit cards. The study concludes that ATM is a very convenient mode of electronic banking as a result its usage is increasing day by day. The authors have made a sincere attempt to ascertain customer perceptions about use of ATM services, perception about ATM services and the problems while using ATM/Debit cards. However, the author has not been able to other collect factors regarding customer perceptions other than those supplied to the respondents.

6. Tuli et al (2012), in the research paper “A comparative study of customer attitude towards ATM of SBI and ICICI bank” the authors have made sincere efforts to compare the attitude of people towards ATM of SBI
and ICICI Bank. The study aimed at finding out the factors influencing the use of ATMs and the problems faced by customers. Customers of both banks used ATM as it was convenient, availability of machines easily and due to security aspects. The problem faced by SBI customers was that ATMs dispensed old currency notes while that of ICICI bank customers was that ATM was out of cash. This study provides a comparison between public sector banks and private banks. However, Co-operative banks have not been considered in this study. Also, staff perceptions about ATM has not been considered.

7. Ramola Premlatha J. et al (2012), the objective of this paper “Analysis of customer satisfaction with reference to ATM services in Vellore District”, was to understand the socio-demographic variables of customers, to analyse the satisfaction level of customers towards ATM services in Vellore district, to study the convenience of using ATM and also to find out customer attitude towards safety, assurance & flexibility of using ATM service. Five point Likert scale was used to collect customer perceptions. Significant relationship between age and convenience and safety was found to exist. Important relationship between gender and tangibility, convenience and responsiveness was found to exist. There was no crucial difference among occupation of respondent with regard to satisfaction level. The researcher has suggested that bankers in order to retain the customer, must provide safety, accurate information and make for using ATM services. The research is based on customers belonging to various banks but the author has not presented data and results based on types of sample bank.

8. Dr. Pahwa et al (2011), in their study “Analytical study of customer satisfaction at ICICI Bank with special reference to ATMs” aims at analyzing the satisfaction levels of customers of ICICI Bank having ATM cards in city of Udaipur. Some aspects of service quality include
ATM personnel, location, sufficient number of ATMs in the city, regularity in working of ATMs, their impact on overall performance and their opinions on various other related issues. The aim of the study was to analyse the average level of satisfaction ICICI bank customers using ATM. The findings include average level of satisfaction of ATM customers with respect to all aspects except sufficiency of number of ATMs in the city, location aspect, availability of power backup and complaint book at ATM booth, which need more attention by the Bank as the rank was below the neutral state. Though the study has been done on the basis of primary field research, the co-operative sector and Public sector have not been considered. Researchers have taken into account on customer perceptions but not considered staff perceptions of delivery channels which are equally important.

9. Vijay M. Kumbhar (2011), the research paper “Determinants of customer satisfaction in ATM service setting: Empirical evidences from India” strives to provide a preliminary investigation of factors affecting the customer satisfaction in ATM service. The study is based on primary data from customers of Nationalized and Private sector banks. The objectives of the study were to identify important service quality dimensions affecting ATM service quality and develop a specialized scale to assess customer satisfaction in ATM service, to examine the predictive ability of service quality, brand perception and perceived value in customer satisfaction in ATM service, to examine the dimensionability and reliability of the proposed scale and their future applicability. The study reveals that system availability, e-fulfillment, cost effectiveness, security and responsiveness, efficiency, easiness and convenience and contact were most important factors. This study is with reference to private and public sector banks. However, co-operative banks have not been considered. As regards, in the present study, banks from all the three sectors (public, private and co-operative) have been considered for
better comparison. Further, this study has not tried to find out the cost effectiveness in terms of actual saving in money, which has also been included in the present research study.

10. Dr. Choodambigai (2010) in the research paper “Customer satisfaction of credit cards and ATM services of SBI in Coimbatore” attempts to study customer satisfaction of credit cards and ATM services of State Bank of India in Coimbatore. The objectives of the study in relation to ATM cards were to study the awareness and usage of ATM services, to examine the difficulty faced by the samples using ATM cards, to identify the association between age and purpose of using ATM cards and to rank the reasons to choose the ATM card facility among the selected samples. According to this study majority people prefer to use ATM services for withdrawal of cash, followed by withdrawal and balance enquiry. A tiny number of people use ATM services for withdrawal and statement of receipt and balance enquiry and withdrawal and statement of receipt. Though this study is a good attempt to ascertain customer satisfaction of credit cards and ATM services, it is based on customer perceptions of only one PSB bank. Thus, there is no comparison available with customer perceptions of other PSB banks or banks belonging to private sector or co-operative sector which the present piece of research has ensured.

11. Sachin Kumar (2011), In the article “India riding the ATM wave” presents the reader with rising number of ATMs in the country by nearly one third while cash withdrawn through ATM rose three times between Jan 2010 and Jan 2011. The author points out correctly to the fact that the important reason for the increasing popularity of ATMs in India is the bouquet of services they offer. Present day ATMs have turned into mini financial stores offering services like money transfer, mobile and electricity bill payment, income tax payment, cash deposit and even air ticket booking. The articles draws attention of the readers to the fact that
customers trust of ATMs can be seen from the fact that many customers do not even count the money dispensed from the ATM.

12. **Sai Krishna (2009)**, in his study of “ATM cards in banks” has attempted to find out why customers are increasingly using ATM cards. The objectives of the study was to draw a profile of a urban ATM cardholders, to identify the factors influencing the people to use ATM cards, to assess the benefits of ATM cards to the cardholders, and to assess how, where and when ATM cards are used. This study certainly helps the banks to concentrate on increasing the volume of the number of ATM card holders by providing various user-friendly schemes. The author suggests that banks must concentrate more on promotional activities in order to create bank’s image in the minds of the card holders and try to balance the quality and service to remain as market leader. Though, this study is based on primary data and considers respondents from only one bank viz. State Bank of Hyderabad, Vishakapatnam, has focused on only public sector banks leaving out private and co-operative banks. Hence, it is not a comparative study of different types of banks.

13. **Sakthivel N. (2008)**, in the case study “Customers’ Perception of ATM services – A comparative Analysis” analyzes the levels of satisfaction of the ATM customers of ICICI Bank and SBI. The objectives of the study were to find out the factors influencing customers to select ATM services, to understand their levels of satisfaction of ATM services, to analyse the problems faced by the ATM customers at Gobichettipalayam in Tamil Nadu. The analysis showed that convenience was ranked first. Nearness was ranked second followed by round the clock facility. Prestige was ranked fourth and minimum balance was ranked fifth. From the analysis of customer satisfaction of ATM services, 72 percent of ICICI customers were highly satisfied and 78 percent of SBI customers were highly satisfied. The study revealed that “High minimum balance”
was the most significant problem faced by the customers. The second problem faced by customers was “Fine on not maintaining minimum balance” and the third problem was “crowd during peak hours”. The researcher has suggested opening up additional ATM counters to improve customer satisfaction. Thus, this study takes into account only private and public sector banks leaving out co-operative sector. Further, the researcher has not tried to find out the customer perceptions related to cost effectiveness of ATM usage. Also this study does not focus on staff perceptions unlike the present research study.

14. **Banknet Publications (2007)**, published the “*Report on Indian ATM Industry in 2007*”, is based on online survey of 316 respondents who were in the age range of 20-60 years, from cities spread across India. The objectives of the study were to get an insight into ATM users perceptions, requirements and problems, and to help banks and vendors in making ATM transactions user friendly and satisfying. The results of the survey showed an increase in the monthly usage of ATMs mainly due to large number of services offered by banks which are now being used by consumers. Limit on daily cash withdrawal was another major problem identified by this survey. Cash in ATM was depleted at a faster rate than what banks expected, due to inadequate cash management and the need for better forecasting of daily cash requirements at various locations by banks. The methodology consisted of only primary data collection using an internet based survey. This survey was open to all ATM users irrespective of which bank they belonged to. Hence, the findings cannot be related to a particular bank or any banking sector, thereby limiting the applicability of the recommendations. Whereas in the present research study a comparison of banks belonging to three different sectors has been done. As a result it will be easier for bankers to implement recommendations.

15. **Khanna (2006)**, in the article “*Prevention of Automatic Teller Machine Fraud*” discusses in detail frauds related to ATMs. The author has discussed different methods adopted by fraudsters like phishing,
skimming, the Lebanese loop, pretexting and spoofing. The author has suggested precautionary measures for customers and banks. This article is useful but theoretical and is not supported by primary data.

16. Ogbuji et al (2012), in their research paper “Analysis of the negative effects of Automated Teller Machine (ATM) as a channel for delivering banking services in Nigeria” proposed that the ATM system of delivering banking services not only contribute to increasing rate of fraud but equally lures Nigerians into profligate expenditure. The study reveals that ATM was lauded by several customers as an alternative to standing in long Q’s. But today, this has become a source of worry to customers and banks. This study concludes that ATMs have contributed to the alarming rate of fraud in Nigerian banking industry. ATM fraud could be reduced but cannot be wiped out completely. The study comes out with the conclusion that out of various services of ATMs, inability of the machine to deliver seamless service, poor maintenance by management, frustrating network, irregular deductions from customer accounts were problems faced by customers. However, problem of network failure was the most outstanding problem.

17. Moya et al (2010), in their paper “Technological innovations in Bank of Africa (Uganda) : An evaluation of customer’s perception”, have attempted to ascertain customers perceptions and employees perception on the effect of electronic delivery channels in Bank of Africa. The study indicated that electronic delivery channels have contributed positively for enhancing customer services in Bank of Africa especially due to ATMs and Internet banking. The authors recommend that “for banks to remain competitive there is considerable need to be innovative by adopting and diffusing various IT innovations”. Since, banks need to be competitive; the study recommends that Bank of Africa should make more and more investment in Information technology.
18. Dr. Islam et al (2007), have attempted a case study entitled “Customer satisfaction of ATM services : A case study of HSBC ATM” in Bangladesh. The study aims at investigating the satisfaction levels of HSBC ATM cardholders with respect to various aspects of service delivery. Both, staff and customer cardholders have been considered in this study to find out the performance of HSBC ATM, service quality of ATM personnel, recommendations to improve the service quality. The study highlights that machine complexity, machine breakdown, poor quality notes are the major problems faced by ATM users which are similar to problems reported by users in the present research study. Similarly, customers have recommended increase in number of ATM locations, new ATMs, better currency quality, increase in safety-security etc.

3.2 Part – 2 : Review of literature on Mobile Banking

1. Nayak et al (2014), in the study “A study of adoption behaviour of mobile banking services by Indian consumers”, aims to analyse the factors that influence the adoption behaviour of mobile banking services by Indian consumers. Through the literature reviewed, the authors highlight that banks should create awareness about mobile banking in different media and methods, trust-security and privacy are points of concern. Similarly, perceived cost and ease of use are important factors in the adoption of mobile banking. Although an effort has been made by the authors based on theoretical inputs to explain various models that help in study of adoption behaviour of mobile banking services, the study is not supported by primary data.

2. Niti Kiran (2013) in the article “Mobile banking on the rise in India” highlights that SBI group dominates the space in terms of volume with an overall share of 67.4 % in total volumes in Nov 2012. Private and foreign banks followed with an overall share of 30.1% and PSBs and Co-operative banks accounted for only 2.5% in November 2012. The article
also sheds light on the fact that mobile recharges, DTH recharges, ticket bookings (movies / travel) were among the fast growing transactions in mobile banking.

3. **Dr. Garima Malik et al (2013)**, in the paper entitled “*A exploratory Study on Adoption and Use of SMS/Mobile Banking in India with Special reference to Public Sector Banks*”, seeks to investigate the perceptions of banks and customers regarding the adoption of technology. For this purpose, an exploratory research was conducted in NCR (Northern Capital region) in 2012. Two public sector banks viz. State bank of India and Punjab National Bank were chosen to interview 200 bank customers using mobile phone for six months. The data was analysed using descriptive analysis like factor analysis and ANOVA. Research objectives include a. to gain an insight into SMS/Mobile banking users and non-users perceptions, requirements and problems, to find out the factors influencing the use of SMS/mobile banking and b. to help banks in making SMS/Mobile transactions user friendly and satisfactory. The research finding was that there is significant difference in acceptability of mobile banking services among customers of both the banks. The study concluded that “SMS/Mobile Banking services are gaining popularity among the users day by day but still banks have the potential of increasing its usage for customers. However, lack of Regulations for Electronic Banking in India remains a setback for mobile banking which needs to be addressed to ensure customer trust and to make it more effective in the times to come”. In this paper the authors have very rightly concluded that SMS/Mobile banking is gaining popularity among customers. Though the study is field based, it has studied only two PSU banks and one delivery channel. The study is not comparative study of different types of banks and delivery channels.

4. **Dr. Vinod Kumar Gupta et al (2013)**, highlights in the paper “*Mobile banking services as adoption and challenges : A case of M-banking in India (Positive and Negative impacts, mobile growth in India, adoption models and mobile technology)*”, that mobile banking scores over
internet banking as the former permits anywhere, anytime banking without the need for a computer terminal to access their bank accounts. The paper discusses the positive and negative effects of mobile banking. The positive impact of Mobile Banking includes cost reduction for services provided by banks, to control fraud it is a very effective way of improving customer service could be to inform customers in better manner. Reminder facility aids bank to send reminders to customers of outstanding loan repayment dates for the payment of monthly installments, easy to avail mobile services where the geographical boundaries do not matter anymore, security features like customers mobile receives only SMS alerts and last few digits of account number and type of account are sent to customer. On the other hand negative impact of mobile banking is primarily with respect to mobile banking not being available on any device. If the customer does not have a smart phone the types of mobile banking are limited. Cost of network charges, mobile banking charges may add up to quite a significant amount especially if customers accesses mobile banking frequently. Security especially with reference to “Smishing” which is a security threat on mobiles. The paper is good but theoretical in nature and would have been more effective if it had been supported by primary data.

5. Sunil Kumar Mishra et al (2013), in the paper “Mobile banking adoption and benefits towards customers service”, aim to find out the facilities provided by mobile banking, to study the advantages and disadvantages of mobile banking and to study the mobile banking services used worldwide. The study concludes “Evidently, mobile banking is considered as a new era in banking, in which banks are spending considerable amount of money to have it available to their customers and to cut their cost of operations. Unfortunately, evidences have shown that a large number of customers do not use mobile banking for various reasons, despite its benefits”. This is a descriptive research paper based on secondary data collected from different sources like
websites, research papers, magazines and would have been more effective if supported by primary data.

6. Neha S. Shukla et al (2012), in the research paper “Understanding the Adaptation of Mobile Banking among customers: An empirical evidence”, highlights on the adoption of mobile banking services by consumers and identifies different factors that influence the adoption and use of mobile banking in North Gujarat region of India. Mean rank was used to find out the reasons for not using mobile banking. The analysis revealed that less knowledge about the operations of mobile banking facility was the major reason for not using mobile banking. The second reason was because respondents felt that mobile banking was too complex to use and also respondents felt that it was too risky. Mean rank was used to find out which services were used the most. Enquiry and bill payments were most important reasons to use mobile banking. The services of top-up, cheques request and payment was more or less used similarly. The least used services of mobile banking is fund transfer. Satisfaction level of respondents with respect to different aspects shows that all time availability was the reason why maximum respondents were satisfied. The other reasons in order of respondent’s preference were easy to operate, easy access, cost effectiveness, less time consuming, trust & privacy. The study takes into consideration only customer perceptions, leaving out staff perceptions.

7. Prema Sharma Bamoriya et al (2012), in the paper “Mobile banking in India: Barriers in adoption and service preferences” focuses on the barriers in the adoption of mobile banking by customers, perceived utility of mobile banking services and influence of demographic variables on mobile banking usage. The study was conducted in Indore. It would have been preferable if the paper would have mentioned the type of banks considered for data collection. The findings suggest that customer’s security concern is the major barrier in adopting banking services. Also,
customers preferred information based services w.r.t. their accounts rather than financial services provided to them.

8. Malarvizhi V. et al (2012), in the study “Users criteria for selecting services in Coimbatore : empirical evidence” was conducted in Coimbatore city in Tamil Nadu. Customers using mobile services in urban areas were respondents. Samples were collected using purposive sampling technique. Simple percentage and Garrett ranking technique were used for data analysis. The survey tried to find out the criteria for selecting mobile banking services of respondents. The first rank was given to less charges for mobile banking followed by wide area network, third rank to safety transaction, fourth rank to no hidden charges, fifth rank to reliability and availability, sixth rank to 24 hours access, seventh rank to secrecy, eighth rank to easy to use.

The researcher suggests that banks must popularize mobile banking services through publicity which may be done through different media. Since training in use of these services is important, banks must arrange awareness programmes for customers. The researchers have not dealt with the problems faced by customers in the use of mobile banking. Also, it is not clear as to which type of banks were considered for the purpose of this study.

9. Gazal Aggrawal et al (2012), endeavours to study in the paper “Mobile banking : A new paradigm shift in buying channel” the impact of mobile banking on the service quality of the customer. The objectives of the study are to test the awareness level of customers of mobile banking, perceptions of customers regarding mobile banking and to determine the level of satisfaction in mobile banking. 100 customers from Patiala district were considered for collection of data. The study concludes that “The major concern of all customers is security and privacy related to
mobile banking. Due to this reason, branch itself is still the most preferred channel of banking”.

10. **Mohini S. Samudra et al (2012)**, *Factors influencing the adoption of mobile banking with special reference to Pune city* used the UTAT model to find out the adoption of mobile banking services amongst customers of private and public sector banks. The findings suggest that mobile banking services should be promoted to middle managers with a salary between Rs.1 to Rs. 6 lacs p.a. and falling in the age group of 25-30 years. The authors suggest that creating awareness is important and that ATM center having high footfalls could be the place to being with. This study does not give comparative results for private and public sector banks and also does not consider co-operative banks.

11. **Archana Sharma (2011)**, in the research work *“Mobile Banking as technology adoption and challenges”* tries to plug gap in research in the acceptance of mobile banking among the consumers. The primary objectives of the study are to focus on the adoption of mobile banking services by consumers, to identify factors influencing the adoption and usage of mobile banking in India. The paper is based on exploratory research. The research is quantitative as well as qualitative and uses a questionnaire to collect data from users and non-users of mobile banking. Primary data was collected in Ghaziabad in UP from 100 respondents. The barriers in the use of mobile banking were mainly on account of access problems where possibility of error is higher than in internet banking, using key code list with mobile phone is complicated and mobile phone is unpractical devise for banking with good positive correlations. On the other hand, dissatisfaction due to data transmission is very slow, mobile banking services are risky and not secure, mobile banking services are not versatile enough, are some of the reasons Lastly, due to inability to provide knowledge leads to insufficient guidance in using mobile banking service and is complicated reflects that respondents
behaviour is linked to solving problems. The non-users of mobile banking services were afraid of using new technology due to complicated systems and no proper guidance provided to them.

12. **Vijay M. Kumbhar (2011)**, in his research paper “Scope and problems of M-banking solution for unbanked : A review of Indian economy” depicts the scope of mobile banking in India and also attempts to identify the problems faced by users and non-users of mobile banking. The major problems and threats in m-banking in India are network coverage, security, low cost effectiveness, inconvenience in using mobile handset, IT literacy etc. Based on the outcome of the study, the author suggests that there is utmost necessity to create awareness amongst customers about m-banking, technology used should provide confidentiality, integrity, authenticity and non-reputability etc. The research methodology adopted mentions that primary data was collected from users and non-users of mobile banking. However, demographic data or any other analysis has not been depicted in the paper. The paper is largely based only on secondary data.

13. **Rajnish Tiwari et al (2006)**, in the paper “Mobile Banking as a business strategy : Impact of Mobile Technologies on customer behaviour and its implications for banks” examines the opportunities for banks to generate revenues by offering value-added, innovative mobile financial services while retaining and even extending their base of technology savvy customers. The customers acceptance of mobile banking was surveyed in the German cities of Hamburg, Frankfurt and Munich across 488 persons in the age group of 18-65 years. The paper concludes that “Mobile banking presents an opportunity to retain their existing, technology savvy customer base by offering value-added, innovative services. It might even help attracting new customers. Further, Mobile banking presents a chance to generate additional revenues”.
3.3 Part – C : Review of literature on Internet Banking

1. **Shilpan Vyas (2012)**, in the paper “Impact of E-banking on traditional banking services”, attempts to introduce terms like e-banking by giving its meaning, functions, types, advantages and limitations. More importantly it attempts to show the impact of e-banking on traditional services and finally documents the results. The researcher discusses the impact of e-banking on traditional services by focusing on the fact that e-banking transactions are much cheaper than branch or even phone transactions. This in turn could turn yesterday’s advantage of a large branch network into a comparative disadvantage allowing e-banks to undercut brick and mortar banks. This is called the “beached dinosaur” theory. The paper is based only on secondary data. Use of primary data would have added to the effectiveness of the paper.

2. **Geetha K.T. et al (2012)**, in the study “Acceptance of e-banking among customers (An empirical investigation in India)”, have collected primary data from commercial banks in Coimbatore. The study found that customers had weak understanding of internet banking, although they are aware about risk. Customers were reluctant to join new technologies or methods that might contain little risk. The researchers suggest that banks should design their websites to address security and trust issues. In order to enhance the level of security and trust, banks should ensure that online banking is safe and secure for financial transactions like traditional banking. Banks need to organize seminars & conferences to educate the customers regarding uses of online banking as well as security and privacy of their accounts. Customers are not using internet banking due to lack of computer literacy, should be educated with basic skills required to use internet banking. Banks must emphasize the aspect pertaining to saving in costs by using internet banking. The research work considers only commercial banks leaving out co-operative banks. If the researcher had presented a comparative analysis of findings
pertaining to PSBs and Private sector banks, the study would have been richer and more useful.

3. **Sabita Paul (2013)**, conducted the research study “*The Adoption of electronic banking (e-banking) in Odisha*” with the main objective to find whether the younger generation is more computer savvy so they are more willing to adopt e-banking and the higher the respondent is literate and particularly PC-literate, is more likely to adopt e-banking, and to determine some important factors that influence the adoption of E-banking in Orissa. Data was collected from customers of commercial banks and in some cases from bank managers and IT Officers of different commercial banks. The study found that ATM was the most popular electronic channel used by the people separately or jointly with the traditional banking. Though a large no of respondents are using internet, more than 50 percent customers prefer traditional banking rather than E-banking. Mostly these respondents belong to the old generation. Traditional banking is popular among the old generation people who don’t have any computer knowledge and lacks some interest as they feel it somewhat insecure, sometimes due to lack of interest for internet hacking. The researcher should have also dwelt on issues like customer perceptions on problems faced in e-banking, e-banking services used, suggestions etc. to add more value to the research work. Though data has been collected from managers of banks, findings have not been depicted.

4. **Selvam V. et al (2011)**, in the paper “*Customers Awareness and satisfaction about e-banking : A study with reference to ICICI Bank, Gobichettipalayam Town*” aim to study whether the customers of ICICI bank have awareness about e-banking facility and the level of satisfaction of customers about e-banking facility provided by ICICI bank. The researcher concludes that though awareness level of students is very high about e-banking, the bank should take necessary steps to create awareness about e-banking to all types of customers. The bank should
take steps to create awareness among all income group customers and take steps to satisfy all types of customers. This study could have been more useful if the researcher had revealed details regarding usage patterns and also identified the services used and problems encountered in the use of internet banking.

5. **Dr. Sofri Yahya et al (2009)**, in the case study “Internet banking in Hyderabad – Issues and Prospects” has collected primary data from 200 respondents from Hyderabad which is an equal mix of people working in the banking sector and also the non-banking group. The case study findings reveal that respondents who had banking background and banking knowledge showed high levels of Internet banking usage, cost factor was not highly related to internet banking and awareness and availability of services and technology benefits has a positive impact on the acceptance of online banking technology.

6. **R. Bhavani et al (2008)**, in their article “Online Banking – A paradigm shift” have discussed the features of internet banking and given a brief description about the working of internet banking. Finally, they have discussed security aspects and suggested some remedies. They have also highlighted the advantages and disadvantages of internet banking. The article concludes that “the implementation of this technology seems to be relatively easy in developed economies, but not so in the developing economies”. The article is based on only secondary data and is not backed by primary data”.

7. **Manoj Kumar Joshi (2008)**, in the article “Internet Banking Authentication – The need of the hour”, concludes that “internet banking has become a cost-effective and convenient means for carrying out banking transactions in the present times. However, the rise in the theft of private and confidential customer data through a variety of software and hardware techniques has necessitated reliable authentication of data”.

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The article explains customer authentication with emphasis on single factor and two factor authentication. The author discusses different forms of fraud and the role of banks and financial institutions to provide customers better security and confidentiality. The study is not supported by primary data and is based on secondary data.

8. **Nagesh (2007)** in the article “Internet banking – A Regulatory Challenge”, concludes that “Various benefits like swift delivery of services and anytime/anywhere banking have increased its popularity. The technological advances, led to the growth of Internet banking, have also contributed to the emergence of various risks for banks as well as customers”. In this study on Internet banking the author has discussed the use of Internet banking in various countries of the world and provides lot of benefits to the customers. The study is not based on primary investigation and field research.

9. **Sivanand CN et al (2004)**, in the research study “Barriers to mobile internet banking services adoption : An empirical study in Klang valley of Malaysia” the researchers have tried to examine the perceived barriers for adoption of mobile Internet banking services by the customers of different banks in Klang valley of Malaysia. The study has identified some issues pertaining to telecommunications, network service providers and banks which can become barriers in diffusion of mobile internet banking technology. The authors conclude that “bankers take efforts in diffusing the mobile banking technology by developing the faith and usefulness, ease of use, credibility, reliability, access and fastness among customers”.

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3.4 Part - D : Review of literature on impact of Information Technology on profitability and customer services

1. **Taneesha Kulashretha (2012)**, in the article “The M-Banking Leader”, discusses the popularity of m-banking amongst Public Sector Banks and Private Sector Banks. The article concludes that “M-banking costs a tenth of what a bank spends at a branch for a similar transaction”. As a result banks are trying to push corporate customers to use mobile banking following the removal of Rs. 50,000 per day cap on m-banking transactions by the RBI.

2. **B. Muniraja Shekhar et al (2012)**, “It would be obviously difficult for laggard Co-operative banks to attract new young customers if they do not increase their investments on IT in the right direction with cautious approach”. Though the author has discussed about UCBs in detail but the findings are not backed by primary study. Thus, the research is theoretical in nature.

3. **Dr. Seema Sant et al (2012)**, the paper “A study of the profitability of Urban Co-operative Banks (in Greater Mumbai and Andjalgaon for 5 years)”, evaluates the performance of urban Co-operative Banks for the period 2004-2009. Financial ratios to measure the profitability, liquidity and credit quality performance of top 10 urban co-operative banks from Jalgaon and Greater Mumbai, have been used. The study concludes that the technological changes have significantly improved the productivity and profitability margins of the banks. The statistics indicate that the performance of UCBs in Greater Mumbai is significantly better than performance of UCBs in Jalgaon. Moreover, with the advancement of communication technology the UCBs have been successful in reducing the burden and credit-deposit ratio. Although the study evaluates performance of only urban co-operative banks, it does not consider public sector banks and private sector banks.
4. **Harsh Anand (2011)**, the purpose of the paper “Productivity and profitability in banking of Bank of Baroda Vs Ing Vysya Bank” was to compare the productivity and profitability of a public sector bank with that of Private sector bank. The study compared the performance of Bank of Baroda, a public sector bank with that of ING Vysya Bank, a private sector bank. The findings of the study show that profit per employee and business per employee of Bank of Baroda is better than Ing Vysya mainly due to two reasons a. the computerization and b. commencing of retail loans and SME loans. The retail and SME loans on one side increase the margins and on the other side are helpful in controlling NPAs. However, this study does not consider Co-operative banks.

5. **M.Musara et al (2010)**, the objective of the paper “Has technological innovations resulted in increased efficiency and cost savings for banks customers?” was to determine the role played by technological innovations in improving efficiency in banks and reducing costs for customers. The findings of the study support the contention that technological innovations are benefitting customers in terms of improved efficiency and reducing costs for the banking sector customers and has proved that technological advances played a significant role in improving the welfare of the customers.

6. **Subbiah (2009)**, “Growth and profitability of banks to a large extent depends on customer service”. The author discusses different aspects of customer service in Commercial banks but has not considered co-operative banks and the findings are not supported by field data.

7. **Seema Sant (2008)**, concludes in the paper entitled “Urban Co-operative Banking & technology” that human resources and technology upgradation are important for ensuring optimal performance of Urban Co-operative Banks. Co-operative Banks have a larger reach in terms of customer numbers, and hence need to be more efficient. Thus, technological upgradation helps the banks in enhancing the quality of
customer services. The article focuses on only urban co-operative banks leaving private and PSBs out of the scope for discussion. Besides, this paper is based on theoretical aspects and not backed up by primary data.

8. In their research paper Mittal & Dhingra (2007), have made a sincere attempt to analyse the impact of technology on productivity and profitability of banks. In their paper it is concluded that “The output of DEA, indicates that private sector banks are much better than public banks in productivity and profitability indicators. Hence, of the many factors which could lead to improved performance of banks, increased IT investments is one of the vital contributing factors for enhanced performance”. Thus, it is a good effort made by the researchers. However, in this paper researchers have studied only private banks and PSU banks. Thus, the study would have been much better if they would have included co-operative sector in their research work.

9. Amandeep (1993), in the book titled “Profits and profitability in Commercial Banks” has tried to determine the share of different factors that help in determining the profitability of commercial banks. The author has used trend analysis, ratio analysis, and multiple regression to assess the profitability of commercial banks.

3.5 Part – E : Multi-delivery channels

1. Dr. Uppal R.K (2012), the objectives of the study include analysis of customers perceptions regarding e-banking services, problems faced by bank customers while using e-channels and to prepare some strategies to enhance e-channel service on the basis of empirical study. Public sector banks, Private sector banks and foreign banks operating in Ludhiana district of Punjab were considered for the study. The study found that ATM was the most popular delivery channel followed by online banking, e-payments, m-banking and tele banking in order of preference. Problems faced by bank customers while using e-channels were in order
of rank as inadequate knowledge, poor network, lack of infra-structure, lack of knowledge regarding IT, poor response to employees, unsuitable location, time consuming, lack of cash of big amount, lack of online shopping facility, misuse of ATM cards, and difficulty in opening account. The study concludes that “all banks whether it is public sector, private sector or foreign banks are providing e-banking services. Also customers have become more demanding with the passage of time”. The study considered only the commercial banks but left out the Co-operative banks. A comparison with co-operative banks would have added more value to the present research.

2. Dr. B.S. Sawant (2011), in the paper “Technological developments in Indian banking sector”, discusses the technological developments in the area of payment systems. The paper concludes that banks in India use IT not only to improve their own internal usage but also to provide more facilities and services to their customers. The author has made sincere efforts to present the technological developments based on secondary data but the paper would have been more useful if it had been backed up by primary data.

3. Vijesh R. et al (2011), in the study “Technology management in bank –risk on alternate channels – A global study”, has discussed several alternate channels. Data was collected from top level managers of 10 banks from five countries. The study concludes that “technology is very significant factor for launching a new product, further promotion, growth strategies execution, risk eradication and advancements in regular activities of banking sector among the tight competition”. The study does not consider views of staff at different levels nor does it consider views of customers.

PSU and Private banks in Satara city” revealed “service quality of alternative banking and customer satisfaction is close related factors”. Though this study has been done on the basis of primary field research the co-operative sector has not been considered. Further, the researcher has not taken staff perceptions & profitability of delivery channels into consideration.

5. **Ragini A. Jadhav (2009)**, in her thesis entitled “Problems and prospects of bank computerization – A study of selected Co-operative Banks in Pune”, has found that “The present co-operative banking scenario is far from the anywhere and anytime banking. This is mainly because the system re-engineering for anywhere 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 this study the researcher has considered only co-operative banks and not given any weightage to commercial banks which form a major chunk of the Indian banking industry.

6. Thesis submitted by **A.J. Joshua (2009)** on “Adoption of technology – enabled banking self services : Antecedents and consequences” reveals “with appropriate measures taken by banks in India, technology-enabled banking self services has the potential to revolutionise the way Indians do banking”. The author has discussed the role of delivery channels and the benefits thereon. However, the researcher has studied the Private and Public banks and not considered co-operative banks for purpose of comparison.

7. **Dr. R.K.Uppal et al (2009)**, in the case study “E-Delivery Channels in Banks”, tries to evaluate the perception of bank customers regarding e-delivery channels and prepare strategies to enhance e-banking services. The study is based on 768 respondents belonging to Public, Private and Foreign banks. The study investigates customer perceptions regarding
different delivery channels such as ATM, credit cards, internet banking, mobile banking, smart cards, and telebanking. The study concludes that customers are aware and highly satisfied with e-banking services and e-banking has a bright future and it serves as a powerful tool to the banks to satisfy the customers. Though this study is a good effort to ascertain the customer perceptions of multiple channels, the staff perceptions have not been considered. Also, the study does not consider the co-operative banks.

8. **Dr. Uppal R.K. et al (2006)**, in the research paper “*Quality of services in Traditional & e-bank : Employees perceptions*”, strives to study and analyse the efficiency of e-banks v. traditional banks, suggest some strategies for improvement of e-banking in traditional banks. Thus, a survey was conducted to understand the perceptions of bank employees regarding their preference of e-banks over traditional banks. The sample size of 60 employees having knowledge and experience of delivery channels was selected. The survey was conducted in 2006 in the Punjab. The findings of the study show that e-banks face problems regarding ATMs especially w.r.t. interrupted ATM service, higher service charges and longer working hours. Inspite of these problems e-banks are preferred by respondents as they offer better banks products and services, use latest technology, undertake better bank and branch management. Respondents felt that bank customers prefer e-banks due to quick services and accuracy in transactions and improved behaviour of employees. They also felt that customer retention in e-banks was better than traditional banks as the customer services were better and user friendly with the use of delivery channels. The study has not considered customer perceptions and has only considered employee perceptions.

9. **Dr. Uppal R.K. (2006)**, the research paper “*Banking service : A survival factor for PSBs in the electronic era*”, reveals that e-banking is needed for survival of PSU banks to face the challenges posed by competition. This paper investigates the perceptions of e-bank employees and also
makes suggestions. Primary data was collected from 60 e-bank employees having experience in dealing with delivery channels. The survey was conducted in early 2006 in the Punjab. The findings of the study revealed that socio-economic background of employees affects the perceptions about each aspect, improved performance of banks is due to use of e-channels and usage of e-delivery channels in India is not high due to high rate of illiteracy and lack of knowledge. The author suggests among other aspects that “cost-free and cost-effective e-channels should be made available for the priority sector”. This research is based on PSBs only and on primary data collected from staff of banks. Customer perceptions have not been considered.

3.6 How is this research study different from earlier studies?

No comprehensive research work has taken place in the last few years which relates to assessing the impact of Information technology encompassing banking delivery channels on profitability and customer services of banks.

The literature reviewed depicted that majority of the studies concentrated on only public sector banks or private sector banks. Some studies also compared public sector banks and private banks. However, the present study is unique as it compares public sector bank, new private sector bank and co-operative sector bank.

The literature reviewed also revealed that majority studies have considered one electronic delivery channel for the purpose of research. But, the present study considers three electronic delivery channels viz. ATM, Mobile banking and Internet banking.

Similarly, the literature reviewed throws light on the fact that for the purpose of research the impact of a chosen electronic delivery channels on either profitability or customer service of banks was carried out. However, in the
present study impact on both aspects i.e. profitability and customer service of banks has been studied which is very significant.

Further, this study considers perceptions of customers and staff unlike majority studies that consider one of the two.

During the course of literature review, it was observed that literature on Scheduled commercial banks was amply available whereas literature pertaining to urban co-operative banks was scanty.

Thus, a sincere effort has been made to study sample banks pertaining to three different sectors of the banking landscape, with the intention that a better comparison of sample banks will throw up important findings which banks can use to improve customer services and profitability.

**Conclusion**

In this chapter, the review of literature has been presented under five parts for easy understanding. The literature reviewed pertains to the Indian and International context. The uniqueness of the present study in comparison to the studies reviewed has also been pointed out. The present study would certainly help to bridge the research gap and also provide valuable findings.
## References

**Part – A : Review of literature on Automated Teller Machine (ATM)**


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Part – B : Review of literature on Mobile Banking


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Part -C : Review of literature on Internet Banking


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Part – D : Review of literature on Impact of information technology on customer services and profitability of banks


Amandeep (1993), “Profits and Profitability in commercial banks”
Part – E : Review of literature on multiple delivery channels


