

**E-BANKING: THE STUDY OF BASIC FEATURE'S AND**  
**ENABLING IN LEGAL ENVIRONMENT**

**DISSERTATION**

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## **LIST OF ABBREVIATION**

E.B. : Electronic Banking

A T M : Asynchronous Transfer Mode

A T M : Automated Teller Machine

B o P : Balance of Payment

C R : Capital Receipts

G O I : Government of India

F T : Fund Transfer

C B T : Computer Based Terminal

I P : Internet Provider

M B : Mobile Banking

B O P : Balance of Payment

R T G S : Real Time Gross Settlement

## **LIST OF CASES**

- Bapulal Premchand Vs. Nath Bank Ltd.(AIR 1946)
- Overseas bank Ltd. Vs. Industrial Chain Concern (JT 1989)
- Union of India Vs. National Overseas Grindlays Bank Ltd. (1978)
- Tournier Vs. National Provincial and Union of England (1924)

## CHAPTER-1 INTRODUCTION

### **1. Introduction -**

E-Banking has become an important factor in the future development of banking industry. Electronic banking or online banking is a service provide by many banks that allow handling of all types of banking business, primarily over the internet by using the information technology and communication. In many developed countries E- banking plays a very vital role due to the fact that it's the cheapest way of providing banking services. Beside this it also facilitated swift movement of funds domestically and across borders. E-Banking is one of the most successful on-line businesses, which save the time and money of customers and companies. It is easily accessible anywhere to a PC, PDA, mobile device, with an internet connection. It also enables the customer to conduct financial transactions on the website of the institution, such as virtual bank, retail bank, a credit union etc. Despite of many benefits of E-Banking, there are some factors which affect its usage. This research paper will introduce you to e-banking, giving the meaning, functions, types, advantages and issues. In short e-banking is anytime and anywhere banking. In the current scenario, usage of Internet has revolutionized the entire banking system. People can bank anytime, anywhere without having the need to visit the bank branch. This helps customers in saving time by completing work at the click of the button. Although, Internet banking is very convenient and fast, it is mired with several security issues. Banking institutions have taken several measures to ensure safety measures for their customers while performing various transactions online. A number of authors and experts have defined e-banking services as a contemporary facility that provides conventional bank products and services through a new medium i.e. IT. It is entirely automated facility based on IT delivery mechanism to conventional banking users' products and services. It provides online medium of conducting and providing various banking services, such as, online accessibility of bank account, online fund transfer facility, online bills paying facility etc. The benefits provided by e-banking medium have resulted into swift growth of banking sector worldwide.

The internet facility has transformed the business world in terms of managing business. According to Abu Shanab (2010), internet has transformed the entire business pattern for people as well as for businesses. Although, technological advancements are happening everyday but not every advancement has been welcomed and adapted by financial sector; but financial sector that enjoying advantages of this new mode of service delivery, has adapted the e-banking phenomenon from its introduction only. Originally it was used for online banking promotional activities of their products and services; but as the e-banking concept developed, banks have started enjoying its various other advantages, such as, reduced per transaction cost, enhanced customer service, raised long term returns by providing 'anytime anywhere' banking to the banking customers.

Advancement in technology provides fast innovative changes in people's routine life. The most significant recent technical advancement that drastically transformed the entire scenario of providing services is the use of internet facility in service delivery. Number of people that are adapted this technological advancement for online transaction such as, online shopping, is increasing tremendously. Gradually, more business organizations realised that it can be utilized to facilitate growth through its advantages of easy accessibility to information and technology transfer. The cut throat competitive environment and demanding customers compelled banks to

adapt e- banking concept. Most of the business organizations have swiftly adapting the advancement in technology and internet facility. Adopting new internet applications have resulted in enhancement of efficiency and quality of service provided as well as attracting prospecting customers. Thus, evolution of internet facility had transformed entire business world around the globe and same happened in banking sector. Banking sector have always been on the top in using ICT in banking business. Challenges faced by banking sector such as, increase in competition, catering variety of demand of heterogeneous customers, decreasing revenue margin and advantages provided by technology , have compelled banks to process new human resource management system. To successfully face all these challenges banks have adapted new technological advancements as earliest possible. Other driving forces that worked for banks to adapt technological advancements are the challenges of meeting varied customer expectations, new regulation and entering into new geographical areas and requirement of new products and services.

Technological advancement specifically, in IT is always seen as the main source of changes taking place around the globe. The entire banking industry has entered into an unparalleled competitive form facilitated by new ICT infrastructure, because of universal and gradual development of ICT. The latest buzzword for corporate is e-commerce due to increase in awareness of utilization of computer and internet facility and increased use of these facility resulted into development of e-commerce. Today, internet facility has become the main medium of financial, commercial and banking transactions and advancement in ICT have become the top concern for banks. The growth of modern financial software applications has changed the business relationship and service provision with very fast pace. The development in ICT more or less impacted entire business world. Today, e- banking has been extensively used in developed nations and is swiftly escalating in the developing nations as well. Now, e-banking has become a global concept. Today, the Internet has infiltrated every aspect of life, as exemplified by online entertainment, online shopping, and Internet banking and these new technologies have affected and affected people's lives in a number of ways. The fast growth of e-banking may make life easier in some ways; however, it must be considered that there is another side to the issue--it also changes lives and habits in unpredictable ways.

The most recent technological advancement is the evolution of e-banking. Various alternative modes of providing banking products are evolved and gained popularity in recent past, such as, tele-banking, Automated Teller Machines, e-banking, credit & debit cards. The most recent one is e-banking that has major impact on the financial market. Banks got the sense that internet facility will open up new horizons for banks and will help them to adapt globalization effectively. According to Thulani 2009 and Henry,2000, "Internet banking refers to systems that enable bank customers to get access to their accounts and general information on bank products and services through the use of bank's website, without the intervention or inconvenience of sending letters, faxes, original signatures and telephone confirmations". In essence, e-banking is an electronic consumer interface and an alternative channel of distribution for banking services and products. E-banking is a process through which banking consumers manage their banking transaction without even visiting a bank branch.

Advancement in IT in banking industry resulted in increasing the processing speed of bank transactions and the communication system between bank and its customers. Today e-banking is the most popular delivery system in banking industry. It is the need of hour to extend e-banking services to banking customers so that bank can maximize the benefits for banks as well as for its customers also. The importance of e-banking is growing day by day as it maximizes the advantage



for banks and its clients. Even been a costly and risky affair, bank and financial institutions largely investing in latest information system. Other way round e-banking provides economies to the operations as it enables banks to reduce their branch network and number of banking staff. According to Kaleem & Ahmed, 2008, the primary advantage of e-banking is the reduction in inconvenience, transaction cost and time taken in performing an operation, whereas, major concerns are chances of government access and fraud and lack of information security. Banks started adopting more and more technological advancements and that resulted in enhancement of its efficiency. Nowadays internet banking is becoming integral part of banking system.

## 2. **Research Problem-**

In the present state of affairs, that the banking sector has been seen a mam-moth progress and the popularities with respect to the E-banking services and its products. This development has led to the larger number of e-banking transactions, which are faster and more convenient mode of transactions, for the bank customers. Banking industry is one of the businesses that have used the full potential of IT sector to help with banking transactions and increase banking services and opportunities to its customers. These facilities helped millions of people/customers to perform their transaction anytime and anywhere easily, quickly and smoothly with perfections. However to carry out banking transactions through the Internet, one needs to have some basic knowledge about computers and the Internet, which to some extent, limits the number of peoples willing to avail this facilities. Many more people who are not comfortable with computers and the Internet find it difficult to use this service's.

3. **Hypothesis –**

The major hypotheses of the study are as follows:

H01- Internet banking security has a significant effect on the customers.

H02- Quality of e-banking services has a significant impact on customer trust.

H03- Real situation of e-banking in India.

#### **4. Literature Review-**

Electronic bank has attracted interest from policy makers, researchers and bankers. Retail payments have assumed importance in the backdrop of rapid technological changes, influence of market forces and regulatory developments. Efforts are being made to make retail payments affordable and integrated. Both individual country and banks cope up with growing challenges and opportunities in the area of regulatory changes, increased competition, enhanced role of non-banks and technological advances. Retail payments contribute in improving relationship between bank and retail customers and remains anchor for banking services, which includes savings, credit and other services [Chakravorti S, Kobor E (2002), Furst K, Lang W, Nolle D (1998)]. Various advantages associate with development of efficient retail payments, such as geographical expansion [Berger AN, DeYoung R (2006)] reduction of labour cost for banks, curtailing in cost of handling cash [Hasan Iftekhar, Schmiedel Heiko, Song Liang (2011)]. DeYoung R (2005) argued in favor of internet-only banking model as high-volume, low-cost strategy for delivering basic banking services. Blount and Swatman (2005), based on case studies of two Australian banks, examined the relationship among e-commerce strategies, overall business and Human Resource Management (HRM). Acharya RN, Kagan A, Sobol MG, Kodepaka V (2006) concluded that even though national banks are leaders in many segments, the community banks were lately responding to the challenge by offering Internet based products and services which are transactional, informational and strategic to enhance the relationship building competitive advantage for community banks. Based on customer studies, researchers have placed considerable advantages for electronic banking in terms of convenience [Joseph M, McClure C, Joseph B (1999)], convenient and cost effective channel [Freed L, (2005)], and service quality [Wong DH, Rexha N, Phau I (2008)]. Joseph et al. [1999], based on a survey on 300 electronic bank customers, found that e-banking services did not match with the importance rating specified by the customers except of convenience/accuracy and efficiency. Customers experience some problems with electronic banking and want that some conditions should be met by the banks to make them satisfied. Freed [2005] offered the major key findings that-

(a) Online banking was beginning to fulfill its promise as a convenient and cost effective channel to serve customers along with improvement in customer satisfaction,  
(b) Use of more online features leads to satisfaction,  
(c) Highly satisfied online bankers were nearly 39% more likely to purchase additional products and services from their banks than very dissatisfied online banking customers, and  
(d) Customers who pay bills online showed higher level of satisfaction and loyalty. It was concluded that online banking is both a challenge and an opportunity. It was suggested that if banks continue to satisfy customers with the online experience while increasing usage, the end result should be a larger number of satisfied and loyal customers. It was also recommended that it will help banks to attract a higher share of wallet from existing customers. Besides, higher adoption of the online banking channel will reduce the cost required to service customers. The challenge remained with changing customer behavior to embrace the online channel.

Lichtenstein and Williamson (2006) reported that-

a. Convenience was the main factor for consumer adoption of internet banking,  
b. Australian Internet banking consumers continued to be affected by security concerns, and  
c. Some banking consumers remain unaware with existence, features, and relative advantage and benefits of Internet banking. Wong DH, Rexha N, Phau I (2008), based on a survey on 706, examined the role of traditional service quality in e-banking era in Australia and found that electronic delivery of services continuously increased the customers' expectations of service

quality and performance of traditional banking services was misaligned to their current expectations and caused dissatisfaction. Gupta PK (2008) found internet banking to be very easier and speedier than the conventional banking. The factor 'trust' was found as most important factor followed by 'accuracy' and 'confidentiality'.

Singhal and Padhmanabhan (2008) explored the major factors responsible for Internet banking based on respondent's perception on various Internet applications. Using factors analysis, the major five independent set of factors were utility request, security, utility, ticket booking and fund transfer. ANOVA results for assessing perception about internet banking with age and gender showed no difference. Various researchers have examined the service quality in the context of electronic banking. Ankrah (2013) assessed the level of satisfaction of bank customers using electronic products and services provided by the banks and found that males transact more than that of females and most of the customers had been transacting with the banks for a mean of 8 years. It was also found that most of the bank's customers spend 10 and 20 minutes for their bank transactions. Research shows that most of the bank customers were satisfied with the operation of the bank. Aghaei et al. explored the degree of customer satisfaction of e-banking services as well as factors influencing their satisfaction. Khan MS, Mahapatra SS, Sreekumar (2009) identified six quality dimensions viz. reliability, accessibility, user-friendliness, privacy/security, responsiveness and fulfillment. The study showed that customers were satisfied with quality of service on five dimensions such as reliability, accessibility, privacy/security, responsiveness and fulfillment. They were least satisfied with userfriendly dimension. The study also aimed at determining the service quality of banks operative in India with regards to internet banking. Sharma N (2012) found that rural customers were very satisfied with the provision of updating, accuracy of the transactions and convenience. It was observed that most of the surveyed persons were not aware of multi-language provision in e-banking. It was suggested to promote and publicize the use of regional languages during transactions. According to Global Consumer Banking Survey by Ernst and Young customers are becoming less loyal and increasing the number of banks they use. The survey has identified a significant increase in the overall proportion of customers planning to change their bank. The high competitiveness in the online retail environment has resulted in enhancing e-loyalty, which has become a key for the survival of online retailers, as competition is just 'a mouse click away' Reichheld FF, Schefer P (2000).

Various issues such as security problems have been identified Lichtenstein S, Williamson (2006). While comparing 'Internet only' banks and 'Click and mortar' banks between 1997-2001, Koskosas I (2008), investigated the information security aspects of internet banking. This study also presents socio-organizational issues and discusses the significance of trust, risk communication, setting efficiently internet banking goals within the broader context of information security management.

**Tarandeep Kaur (2015)** discussed that India has third largest reservoir of technical human resource, but it is not for medium of commerce for mass people, new models need to be developed and worked out with appropriate strategies to make electronic commerce and M-commerce as key policy for the development and progress in India. This current state will be further helpful to develop the new generation Ecommerce i.e. mobile commerce for mass in India. With the explosion of internet connectivity through mobile devices like Smartphone and tablets, millions of consumers are making decisions online and in this way enterprises can build the brand digitally and enhance productivity but government policies must ensure the cost effective methods/solutions. The advancements in technologies and innovative services shows that India is moving from E-commerce to M-commerce, and in future E-commerce and M-commerce will

became asset for commerce by the people to the people in India. **Unyathanakorn et al. (2014)** uncovered that ebanks must fixate on service quality to increment customer contentment and trust and to obtain customer staunchness. Implicative insinuations are discussed in cognation to e-bank management. The Cyber World has become a vital part of people's daily lives. It has transmuted consumer department in many ways, including financial transactions formerly requiring a visit to a bank branch to achieve. Commercial banks have been in the forefront in utilizing this to meet customer desiderata for on-demand financial services. **N. Jamaluddin (2013)** concluded that Information technology has played a vital role in the advancement of banking system. The reach of Indian banking to every individual is possible because of the computerization process adopted by banking sector. Information technology has not only simplified the operation but it has also given a great comfort an individual who does not have a good knowledge of IT but need to access banking in an optimum manner. **Roshan Lal (2012)** analyzed that development of e- banking in banking sector is due to advent of IT. Banks today operate in a highly globalized, liberalized, privatized and a competitive environment. In order to survive in this environment banks have to use IT. Indian banking industry has witnessed a tremendous developments due to sweeping changes that are taking place in the information technology. In the study conducted by **Mohammed and Shariq (2011)** examined the adoption of e-banking channels, particularly ATM, in the city of Lucknow, U.P. He found that ATM was the most adopted technology by banks. **Shukla and Shukla (2011)** stated that E-banking offers a higher level of convenience for managing one's finances even from one's bedroom. However, it continues to present challenges to the financial security and personal privacy. Customers are advised not to share sensitive personal information like PIN numbers, passwords, and OTP (One time password) etc. with anyone, including employees of the bank; change ATM PIN and online login and transaction passwords on a regular basis; ensure that the logged in session is properly signed out. **Mishra (2011)** provided useful tips to ensure safety of internet based transactions (IBT). IBT users are advised not to reply to any mail, phone call or letter, asking for the IB information like login id or password, and not to click on any link provided in any mail, claiming to be the link for the bank's website are the important tips, among others. Electronic banking has emerged from such an innovative development. **Uppal and Chawla (2009)** found that the customers of public sector, private sector and foreign banks in Ludhiana district of Punjab are interested in e-banking services, but at the same time they are facing problems like inadequate knowledge, poor network, lack of infrastructure, unsuitable location, misuse of ATM cards and difficulty to open an account. Indian customers' perception in the context of e-banking has been examined by **Reeti Aggarwal (2009)** and found that people in the age group of 31- 45 years using e-banking most frequently. Respondents opined that using e-banking for balance inquiry to be the most useful, closely followed by inter-account transfer of funds and they found e-banking least useful for lodging complaints. Slow transaction speed was found to be the most frequent problem faced, closely followed by non-availability of the server while using e-banking. **Sharma (2009)** opined that the trend towards electronic delivery of banking products and services is occurring partly as a result of consumer demand, and partly because of the increasing competitive environment in the global context. **Kumar and Sinha (2009)** cited various instances of hacking and phishing attacks reported throughout India. They remarked that cyber-crimes prove that e-banking has several loopholes that can be easily exploited and users need to be extra cautious while making online transactions. **Srinivas (2009)** discussed various e-banking channels and suggested security tips for customers which include changing password frequently, abstaining from revealing PIN either via mails or phone, avoiding cyber cafes for net banking etc. **Kamakodi et al. (2008)** found that a

wide gap exists in human service in Indian banking while technology based services are exceeding expectations. **Raghavan (2006)** opined that at present, over 85% of the finished payment transactions are electronic and traditional way of doing banking at the branch level has relatively little importance to electronic banking users. Many banks, including PSU banks, would have online ATMs, phone banking, virtual banking, e-banking, Internet banking, etc. by 2020. **Mohan (2006)** remarked that Indian banking is at the threshold of a paradigm shift and a significant development has been achieved by banks in offering a variety of new and innovative e-banking services to customers today, which was not thought of before. However, public sector banks have not been able to harness the benefits of computerization.

5. **Research Methodology-**

The primary source of the information in this research study is the secondary data. The available information on internet regarding the E: Banking has been extensively used to complete this paper. Beside this the study also completed by making the use of various sources related to the subject of study like research articles, scientific journals, websites, and some banking and e-banking books.



## **CHAPTER-2 DEFINITION, MEANING AND HISTORY OF THE E-BANKING**

### **1) Meaning of the e-banking:**

The term “Electronic Banking” or “Internet banking” is defined as a remote banking services provided by the authorized banks, or their representatives through devices operated either under the bank’s direct control or management or under the outsourcing agreement. In other words, e-banking is an umbrella term for the process by which a customer may perform banking transactions electronically without visiting a branch and also includes the systems that enable customers of banks, individuals or businesses, to access accounts, transact business, or obtain information on financial products and services through a public or private network, including the Internet. E-Banking definition would include situations where a foreign bank provides e-banking products or services to residents in a foreign country from:

- A. A location in the bank’s home country or
- B. An “onshore” physical establishment in another foreign country.

The terms which are used to describe the various forms of e-banking are ,personal computer (PC) banking; Internet banking; virtual banking; online banking; home banking and remote electronic-banking. E-banking also involves phone banking and the use of automated teller machines (ATMs).

Electronic banking can be defined as the use of electronic delivery channels for banking products and services, and is a subset of electronic finance<sup>1</sup> . The most important electronic delivery channels are the Internet, wireless communication networks, automatic teller machines (ATMs), and telephone banking. Internet banking is a subset of e-banking that is primarily carried out by means of the Internet. The term transactional e- banking is also used to distinguish the use of banking services from the mere provision of information<sup>2</sup>. Electronic banking services are offered in two main ways<sup>3</sup>. Either traditional brick and mortar banks combine traditional and electronic delivery channels (brick and click banks) or banks offer their products and services only- or predominantly- through electronic distribution channels without having a branch network (other than a physical presence as an administrative head office or non branch facilities such as kiosks or

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<sup>1</sup> BCBS (2001)...” Electronic banking, or e-banking, includes the provision of retail and small value banking products and services through electronic banking channels as well as large value electronic payments and other wholesale banking services delivered electronically.”

<sup>2</sup> Sometimes Internet banking is defined as a subset of PC banking, which also includes online banking. In contrast to Internet banking, online banking refers to bank transactions within closed networks (Deutsche Bundesbank, 2000).

<sup>3</sup> Most definitions and distinctions in the following two paragraphs are based on Furst, Lang and Nolle (2000).

ATMs). These banks are called “virtually banks”, “branchless” or “Internet- only” banks. Withdrawal and deposit of funds may be made through ATMs or other remote delivery channels owned by these virtual banks or other institutions. Setting up licensed virtual banks can, in principle, be done in three ways:

First, they can be established as a new independent virtual bank obtaining a license from the banking regulator. Second, existing banks can create virtual banks as separately capitalized banks within a bank holding company structure. And third, a conventional bank can be recast into a virtual bank under its existing charter. An alternative approach is establishing a virtual bank through the creation of trade name virtual banks. These are established as independently operating divisions of existing banks without a separate charter.

Closely related to e- banking activities are products of electronic money. Definitions of e- money used by official bodies vary, mainly due to continuous technical innovations. The BIS (1998) defines e- money as “stored value or prepaid payment mechanisms for executing payments via point of sale terminals, direct transfers between two devices, or over open computer networks such as the Internet” (BIS, 1998)<sup>4</sup>. E-money therefore differs from e-banking, since balances are not kept in financial accounts with financial institutions (Bartholomew, Mason, and Shull, 1997). Issues for banking supervisor result from the different aspects on how banks can be involved in e- money activities. Banks can, for example, be the issuer or distributor of e-money. They can also be involved in maintaining records, processing, clearing, and settlement of e-money transactions.

Liberalization and de-regulation process, which started in 1991-92 has made a drastic change in the Indian banking system. From a totally regulated environment, we have gradually moved into a market driven competitive system. In today’s era, one cannot think about the success of any service industry including banking industry without information technology. It has increased the contribution of banking industry in the economy. Financial transactions and payments can now be processed quickly and easily in friction of seconds. Every second development in Information Technology (IT) and its acceptability by the commercial banks in India has enabled them to use IT extensively to offer their products and services to customers apart from just back office processes. Banks with latest information technology techniques are more successful in the cut throat competitive market in these days. Further, they can generate more and more business opportunities resulting in greater profitability. Information technology revolution in banking sector has not only provided improved service to the customers, but also reduced the operational cost (Talwar, 1999) .

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<sup>4</sup> In the 1998 report of the European Central Bank on electronic money, it is defined as an “electronic store of monetary value on a technical device that may be widely used for making payments to undertakings other than the issuer without necessarily involving bank accounts in the transaction, but acting as a prepaid bearer instrument.”

services to customers apart from just back office processes. Banks with latest information technology techniques are more successful in the cut throat competitive market in these days. Further, they can generate more and more business opportunities resulting in greater profitability. Information technology revolution in banking sector has not only provided improved service to the customers, but also reduced the operational cost (**Talwar, 1999**). A day simple and advance transaction without being physically present in the bank , to use the services like making queries for account balance, making different type of payments like bills, mobile recharge, money transfer, filing income tax return electronically. In simple words, e-banking is concerned with doing all these transactions from home or office without visiting the branch; 24 hours, 7 days in a week by using ATM's , telephones, internet and mobiles etc for doing banking services. E-banking technology is gaining all-round adoption in banking industry across developed and developing countries. The use of e-banking technologies that includes automated teller machines (ATM's) , telephone-banking, internet banking and mobile banking i.e. branchless banking in the delivery of banking products and services to their customers has become an essential aspect of modern banking system. Since banking services are informational (**Bradley and Stewart, 2002**) and can easily be automated and digitised (**Porter and Miller, 1985**), every bank these days is considering the adoption of information technology equipments as a means to improve the performance, service quality and efficiency in delivering the services. E-banking refers to the system that enables the banks to offer their customers access to their accounts, transact business and obtain information via electronic communication channels; these channels can be Automated Teller Machines (ATM's), tele-banking, home-banking and internet banking (**Turban, 1999**). Banks have now been able to provide single window system for quick delivery of services to their customers, where one can deposit cheque, receive payment, deposit cash etc all at one place. According to Nehmzow (1997), traditional banking methods (e.g.back office processes such as paper filling, paper work processing, sorting cheques and cash handling ) from both banks and customers perspective, has become most costly . Regular requests from customers for bill payment (telephone, mobile, electricity, insurance and credit card bills), cash withdrawals, loan applications, cheque clearings, money transfer were huge tasks for traditional banks, thus there was a clear need to adopt information technology equipments to automate back office work (**Keyes, 1999**). Despite the benefit of e-banking technology in improving service quality, productivity and efficiency, some banks have struggled to adopt and integrate information technology related services in their current banking system . This might be due to bank staff's resistance to new technologies (**Khalfan and Alshawaf, 2004**) or due to lack of fund that is needed to install and upgrade the current banking system. Private and foreign banks have added multiple technological up-gradation in their various branches. Even though public sector banks followed the private banks in their technological initiative and services but still they are far behind from their competitors due to constraint of financial resources required to upgrade e-banking services. E-banking system is growing its roots in developing countries like India. Private sector banks have been adopting e-banking since their birth, but for public sector banks, it is an uphill task. However, it is believed that e-banking will help banks to cut cost, increase revenue, cut time for delivering service and become more convenient for the valuable customers (**Halperin, 2001**). Cost of e-banking services is very low to traditional way of delivering the services. Rough estimates in India assume banking teller cost Re 1 per transaction, ATM transaction cost is only 0.45 Re , phone banking at 0.35 Re, debit card costs around 0.20 Re and internet banking cost only 10 paisa per transaction (**Sharma, 2005**) . Electronic delivery solutions would make flow of information

much faster, more accurate and enable quicker analysis of data received. This would make the decision making process faster and more efficient. Fundamental shift in the functioning of banks has been brought up by information technology. This not only helps the banks in improvement of their internal functioning but also enables them to provide better customer service. Information technology will break all the boundaries for using any services. The banking environment of today is rapidly changing and the rules of yesterday are no longer applicable. Most of the banks in India have adopted core-banking solutions (CBS) in a fully networked environment. Back office functions have been taken away from branches to a centralized place. While physical branches would continue to be relevant in the Indian scenario, the real growth driver for reducing the cost would be virtual branches i.e. Automated Teller Machines (ATMs), internet banking, mobile banking, kiosks, phone banking etc., which is made possible by few persons and run on 24 x 7 basis to exploit the real potential of these information technological utilities. New technologies cannot completely replace the branch network but it can support old methods of delivering the services to their customers. Information Technology has brought drastic change in the day to day functioning of banking operations. It not only brings improvements in their internal functioning and daily routine work but also enable them to provide better customer service efficiently and effectively. By directing various banking transactions through electronic channel and by providing customers direct access to their account without visiting the branch, banks now offer quick service along with transparency and incentives to their customers for using e-banking services. Because of all this, work load of banks' employees has reduced has consequently improved the quality of customer service in branches.

## 2) Definition of E-Banking:

Some of the important definitions of electronic banking are given as below:

**Singh, S. (1996)**, "Electronic banking refers to the use of technology which allows customers to access banking services electronically whether it is to pay bills, transfer funds, view accounts or to obtain information and advices. It refers to the electronic services that are made available to the customers through phone, personal computers, television and the internet."

**Rao, D. (1997)**, "Electronic banking includes all those banking facilities which includes the contribution of information technology."

**Bank for International Settlement (BIS) (1999)**, "Electronic Banking refers to the provision of retail and small value banking products and services through electronic channels."

**Kumar, Y. (2000)**, "Delivery of bank's services to a customer at his office or home by using Electronic Technology can be termed as Electronic Banking."

**According to Sathye (1999)**, internet facility transformed the financial sector in terms of packaging, delivery and consumption of products and services.

**Kamal, 2005 and Nath, Shrick & Parzinger, 2001** described internet banking as a valuable and influential tool to economic development and growth, to promoting innovations and to improving competitiveness. Banking and other financial institutions adapted e-banking technique to enhance their efficiency, service quality and customer base.

In recent years, customers of banking corporations increasingly use technology and direct channels to consume banking services. This phenomenon is also evident worldwide. Expanding E-Banking services and the types of services including banking via the Internet, telephone and using Automated Teller Machines (ATMs), makes it possible to reduce the prices of services to customers, and makes it easier for them to manage their activity independently and conveniently anywhere, at any time, through various channels, and regardless of the working hours of the branches of their banking corporation. Furthermore, the development and expansion of E-Banking services are expected to enable banking corporations to become more efficient over time.

In addition to the abovementioned benefits of E-Banking, increasing the scope of banking services through technology and allowing customers to conduct banking activity remotely potentially increase the unique risks inherent in such activity, including information security risks and cybersecurity risks, invasion of privacy risks, fraud and embezzlement risks, compliance risks, money laundering risks, legal risks and reputation risks.

To deal with these risks, banking corporations need to reinforce and adapt their risk management framework to the advanced technological operating environment and update it regularly and dynamically, due to the speed at which technology is evolving, while adhering, at all times, to information security principles, including, *inter alia*, maintaining confidentiality of customer information and privacy protection, data integrity and the availability of E-Banking services. It should be clarified that a banking corporation that is subject to the provisions of the Proper Conduct

of Banking Business Directives: Directive no. 310 on Risk Management, Directive no. 350 on Operational Risk Management, Directive no. 357 on Information Technology Management, and Directive no. 361 on Cyber Defense Management, is required to do so in accordance with these directives.

In addition, banking corporations are required to develop and improve methods for detecting fraud and embezzlement, for prevention of money laundering, and for handling failures in a swift and adequate manner, so as to minimize harm to the customer, legal risks and reputational risks associated with E-Banking activities and arising from the increase in the quantity and scope of the databases.

This directive regulates the activity of the banking corporations in providing E-Banking services to customers. The directive enables banking corporations to offer their customers banking services, from opening an account remotely without having to reach the banking corporation's branch, issuing a payment card subject to the provisions of any law or regulation (including the Debit Cards Law, 5746-1986, and the Electronic Signature Law, 5761-2001), signing up for E-Banking services online even for an existing account, through to conducting ongoing activity, without having to arrive at the branch. This directive thus enables customers and the banking corporations to expand their digital activities and enjoy its advantages as aforementioned, and makes it easier for new players, that do not have a network of branches, to engage in financial activity, thereby increasing competition. However, expanding the possibilities for remote banking activity is contingent on enhancing and improving risk management and the controls exercised by the banking corporations, such as controls for customer identification and authentication, initiating and sending alerts to customers and monitoring anomalies in this type of activity at the customer level and at the bank level.

To provide an end-to-end solution for full banking activity and reduce the customers' need to arrive at the branch, banking corporations are required to examine options to offer their customers complementary services, all within the limits prescribed by law and regulation.

### 3) History of the E-Banking:

The evolution process of latest service delivery mechanism through internet i.e. e-banking started from the early 1980s. In late 1980s, the term online got popularised and it was referred to a banking medium of using a terminal, keyboard and monitor to access the banking system through a phone line. Another term used for this was 'Home Banking' and in it, customers were using a numeric keypad to send tones down a phone line with instructions to the bank. In 1981, e-banking has started in New York with offering home banking service using videotex system by Citi Bank, Chase Manhattan Bank, Chemical bank and manufacturers Hanover bank. Although due to failure of videotex system, Home Banking was not able to gain popularity except in France and UK.

In 1983, Bank of Scotland provided UK's first home online banking service to the banking customers of Nottingham Building Society. This online banking service was based on Prestel system of UK and used a computer like BBC Micro or keyboard connected to the telephone and television system. This system was called Homelink and it enabled customers to view their bank statements online, online fund transfer and online bill payment. To pay bills or transfer funds, customers need to send a written instruction having details of intended transaction to Nottingham Building Society who set the details upon the Homelink system. The usual recipients of this service were electric company, Gas Company, telephone companies and other banks. The account holder has to provide details of the payment through Prestel into Nottingham Building Society system. Then, a cheque of payment amount has to be send by Nottingham Building Society to the payee and an instruction giving details of the payment was send to the account holder. Later, BACS was used to directly transfer the payment.

In Oct. 1994, Stanford Federal Credit Union was the first financial institution that provided internet banking facility to its all members.

Today, a number of banks are functioning as internet only banks. These internet only banks do not have a physical bank branches like their predecessors. They differentiate themselves by providing better rate of interest and internet banking facility. Online banking was first started in 80's. The term online became famous in the late '80s. Online banking during the formative years included usage at terminal, keyboard and TV (or monitor) with an intention to approach the banking system using a phone line. Online services started in New York in 1981 when four of the city's major banks (Citibank, Chase Manhattan, Chemical and Manufacturers Hanover) offered home banking services using the videotext system. Later on, the concept of videotext became popular in France. In UK, first home online banking services were set up by the Nottingham Building Society (NBS) in the year 1983. It was based on the UK's Prestel system and used a computer, such as the BBC Micro, or keyboard (Tandata) connected to the telephone system and television set. It provided customer an option to make bill payment for gas, electricity and telephone companies and accounts with other banks. It was Stanford Federal Credit Union which offered online internet banking services to all of its customers <sup>5</sup>. Major developments in electronic banking can be summarized with the help of following Table :

<b>Year</b>	<b>Major developments</b>
1981	Start of Home banking using videotext system
1983	Launch of Home online banking by Nottingham Building Society
1994	Online bank by Stanford Federal Credit Union

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<sup>5</sup> (1994) Stanford Federal Credit Union. Online Banking.

Internet banking refers to the use of Internet as a remote delivery channel for banking services such as opening a deposit account or transferring funds at different accounts etc. Further, it is a desirable opportunity for banks where the key to success is customer adoption<sup>6</sup>. There is evolution in development of internet banking. At the basic level, Internet banking includes the setting up of a web page by a bank to give information about its product and services<sup>7</sup>. At an advance level, it involves provision of facilities such as accessing accounts, funds transfer, enabling integrated sales of additional process and access to other financial services such as investment and insurance [5]. There is advantage for customers as it provides opportunity to handle their banking transactions without visiting bank tellers<sup>8</sup>. The services through Internet banking are e-tax payment; access the account to check balance, online trading of shares, online remittance of money, electronic bill payment system, railway reservation, transfer of funds from one customer's account to other, application of loan, etc. Internet banking channel is convenient compared to bank branch system because stakeholders can access their account at any time<sup>9</sup>. Banks leveraged the advantage of the Internet by offering online services in recent years . Thulani D, Tofara C, Langton R (2009) identified three functional levels of Internet banking which are informational, communicative and transactional. Under informational level, it has been identified that banks have the marketing information about the bank's products and services on a standalone server. The risk is very low as informational systems have no path between the server and the bank's internal network. Communicative level of Internet banking allows some interaction between the bank's systems and the customer. This level of interaction is limited to e-mail, account inquiry, loan application, static file updates and it permits no fund transfer. Transactional level Internet banking allows bank customers to electronically transfer funds to from their accounts, pay bills and conduct other banking transactions online. There are higher risk levels in transaction levels as compared to that of other two levels.

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<sup>6</sup> Nelson P, Richmond W (2007) Internet Banking: Gold Mine or Money Pit? Academy of Banking Studies Journal 6: 1-25.

<sup>7</sup> Jasimuddin SM (2000) Saudi Arabian Banks on the Web. Journal of Internet Banking and Commerce

<sup>8</sup> Chang YT (2003) Dynamics of Banking Technology Adoption: An Application to Internet Banking. Warwick Economics Research Papers, University of Warwick, UK.

<sup>9</sup> Siaw I, Yu A (2004) An analysis of the impact of the internet on competition in the banking industry, using porter's five forces model. International Journal of Management 21: 514-522.



#### **4) E-banking Services in India**

E-banking is a term that includes the entire information technology revolution that has taken place in the banking industry. E-banking simply refers to the use of electronic channels like phone, mobile, internet etc for delivery of their services to their valuable customers. It increases the efficiency in the area of effective payment by enhancing the delivery of banking services in quick time. E-banking has helped banks to retain the current customers, increase customer's satisfaction, acquire further share in the markets and reduce the costs of delivering service to the customers. Delivery of services has gained increasing popularity through electronic platform. It provides alternative way for delivery of services in a faster way to the customers. Various number of services are being offered by banks through electronic banking. It is quite difficult to measure the extent of such services, but an effort has been made by classifying these services into following categories.

In India, Reserve Bank of India outlined the mission to ensure that payment and settlement systems are safe, efficient, interoperable, authorized, accessible, inclusive and compliant with international standards. The Vision is to proactively encourage electronic payment system for ushering in a less cash society in India<sup>10</sup>. Regulation is keen to promote innovation and competition with an intention to help payment system achieve international standards. Various initiatives by Reserve Bank of India, in mid-eighties and early-nineties, resulted in offering technology based solutions. The need evolved to provide cost effective alternative system. Electronic Clearing Service (ECS) was launched in 1990s to cater to bulk and repetitive payments. By September 2008, a new avatar in the form of National Electronic Clearing cell was launched to handle multiple credits to beneficiary accounts. National Electronic Clearing Service (NECS) rides on core banking solution of member banks. The retail funds transfer system was introduced in 1990s to allow electronic transfer of fund for people to people payment. In November 2005, a robust system was launched to allow one to one funds transfer requirement of individuals and corporates. Prepaid instruments allow transaction for goods and services against the value stored on payment instrument. It may be in the form of smart cards, magnetic stripe cards, internet wallets, mobile accounts, mobile wallets and paper vouchers. Consequent to the guidelines in mobile banking, selected banks were permitted to offer the service after receipt of necessary permission from Reserve Bank of India. Indian Retail payments pose significant challenges and opportunities. Based on Payment system vision document released by Reserve Bank of India, the number of non-cash transactions, at 6 per person, is low in India. It is estimated that Government subsidies alone constitute more than Rs.2.93 trillion and electronification has a potential to translate 4.13 billion electronic transactions in a year. Based on the report of Internet and Mobile Association of India (IAMAI), internet commerce is expected to reach Rs.465 billion by the year 2012. To facilitate electronification, Reserve Bank of India established the umbrella organization, National Payment Corporation of India<sup>11</sup>. Many researches in the past have laid importance on the significant developments that are taking place in the banking industry due to the surge in information technology. Sahai and Machiraju<sup>12</sup> discussed how new technologies addressed different requirements and how these technologies fit together to provide a ubiquitous e-market place and e-service vision. While many new products are offered in the area of electronic payment products, banks need to track the usage

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<sup>10</sup> <http://www.rbi.org.in>

<sup>11</sup> [http://www.rbi.org.in/scripts/PaymentSystems\\_UM.aspx](http://www.rbi.org.in/scripts/PaymentSystems_UM.aspx)

<sup>12</sup> Sahai A, Machiraju V (2001) Enabling of the Ubiquitous e-Service Vision on the Internet. E-Service Journal 1:1-5

of these products<sup>13</sup>. Concerns have been raised over the great 'digital divide' between the rich and the poor on the demand side and different operational environments in the private and public sector banks at the supply side. Dutta and Roy<sup>14</sup> studied internet growth from a developing country's perspective and developed a causal model using System Dynamics (SD) method that will help a developing country like India to identify the pattern of Internet diffusion as a result of various policy alternatives taken up to nurture internet diffusion in the country.

E-banking has been prevailing in India around sometime in the form of automated teller machine. Thereafter, it has been transformed by the internet and a new delivery channel has emerged that benefits both banks as well as customers. Internet banking or online banking, as it is sometimes called, simply is an extension to traditional banking, which uses internet both as a medium for receiving instructions from the customers and also delivering services to them. Internet banking, as a medium of delivering the banking services to customers and as a strategic tool for the development of banking business, has gained wide acceptability in all developed nations and is quickly spreading in developing nations like India with more and more banks entering the fray. Internet technology has totally transformed the design of banking business. The success of internet banking operation totally depends upon the well designed website of the bank. It should be informative, functional, user-friendly and most importantly, secured. Internet Banking lets clients handle many banking transactions via their personal computer. For instance, one may use his/her computer/laptop/smart-phone to view his/her account balance, request transfer between accounts and pay bills electronically.

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<sup>13</sup> Payment System Vision (2012-15) Reserve Bank of India.

<sup>14</sup> Dutta A, Roy R (2004) The Mechanics of Internet Growth: A Developing- Country Perspective. International Journal of Electronic Commerce 9: 143-165.

## CHAPTER-3 : TYPES OF E-BANKING AND INTERNET DISTRIBUTION CHANNELS

Aladwani (2001) categorized online banking in two types- first, web- based banking through internet and, second, dial-up banking consumer uses a modem to dial up to a bank's server to access bank account. There is a special type of dial-up banking operated by private banks between a banking institution and its corporate clients, known as Extranet.

Thulani (2009), Yibin (2003) and Diniz (1998) identify three functional kinds of e-banking that are currently employed in the market place and these are:

**Informational Websites** - Such services are known as first level of e-banking. Through such services bank provides marketing information regarding banking products and services on a standalone server. It has very low degree of risk as there is no connection between server and bank.

**Communicative Websites** – In this system there is very less scope of communication between banking system and e-banking users. This communication is only to the extent of e-mail, account balance enquiry, loan application or static file updates. This system is not having fund transfer facility.

**Advanced Transactional Websites** - This form of e-banking enables e-banking users to transfer their fund electronically, make payment of utility bills and conduct other banking transaction online.

Use of Information & Communication Technology (ICT) is the latest mode of managing data electronically. The advancement of ICT specifically in the utilization rate of internet facility resulted in enhancement of production capacity and increase in fund flow all over the globe. Subsequently, it created a cut throat competitive environment internationally and that lead to challenge of satisfying the customers who are now more aware and educated than earlier. Due to the globalization, the distance between customers and service providers is become irrelevant. It is well observed that ICT affected the entire financial industry through simplifying enquiry process, better operating speed and providing efficient delivery mechanism for financial services. Same way, banks soon sensed that through adaptation of technological advancements, they can gain competitive advantage.

As the use of computer increasing to improve the operating system in the various sectors of the society, it also provided a new medium to commit crimes for some people. With use of hacking to solve the internet problems in 1960's, computer crimes started and then in 1970s its pace was increased in way of crimes such as privacy violations, phone –tapping, trespassing and distribution of illicit materials. The list of crimes had increased in 1980s by experiencing crimes as, software piracy, copyright violation and introduction of viruses. The scenario became worse and the extent of loss occurred due to these computer crimes is enormous. The international market experienced the same with computers being used for surveillance and transnational organized crime and terrorism. Organizations and banks while starting the computerization phase were not aware about the fact that it would result in fastening the speed of computer crimes. Now, computer becomes a vital part of our life either personal or professional and its use is irrefutable. The working style of banking institutions has completely changed with the use of computer and internet facility. The large number of banking transactions compelled the banks to take the help of computer in

processing the transactions. Due to this, the use of computers and internet facility become ineluctable.

In essence, computer and the internet facility helps bank to facilitate customers' transactions records and transfer of funds. The computer and internet facility helps customers in various ways as they can directly communicate with the banks, pay their utility bills, transfer the fund, check their account balances and can perform all kind of services offered by their banks. But the use of computer and internet facility provide advantages not only to the banks or organizations but also to the criminally minded people as well.

The various modes of e-banking, such as, ATMs, Tele- banking, Mobile- banking, debit and credit cards etc.

**According to Hanson & Kalyanam (2007)**, e-banking has popularised with very fast pace and as people has started using ATMs, the customer visits to bank branches have reduced and it reduced the requirement of bank branches even more when internet banking have been introduced to the customers in late 1990s. The numbers of internet users are increasing tremendously.

**According to Internet World Stats 2013**, there were 3.2 billion internet users around the world in 2018. Therefore, internet facility has evolved as a global marketplace with global opportunities for financial services, as a challenge and as delivery mechanism also. It provides faster service delivery modes to the customers. Internet mode of service delivery has increased the business volume and business transactions through e-banking and e-commerce. As customers are relying more on online medium for business transactions, personal finance and investment, the number of internet frauds have also increased and it lead to internet fraud threats for both customers and for organizations. Increased popularity of e-banking resulted in to increased attention of lawful and unlawful e-banking practices. E-banking users are responsible for crimes, frauds and other threats of security risk. Criminals focus on acquiring customers' e- banking informations to commit financial frauds by using custmners' e-banking account. These frauds are taking various forms, like, fake products selling to scams that promise customer huge fund if assistance can be given to foreign financial transaction through bank account of customers. Usually, internet phishing fraud starts with receiving fake email by customers from a reputed trusted organization, such as, bank, Credit Card Company etc. and customer was directed to fake webpage that asks his personal specifically about bank account number and password. Now, banks are providing Security Indicators to their websites to tackle such threats.

E-banking is a term that includes the entire information technology revolution that has taken place in the banking industry .Ebanking simply refers to the use of electronic channels like phone, mobile, internet etc for delivery of their services to their valuable customers. It increases the efficiency in the area of effective payment by enhancing the delivery of banking services in quick time. E-banking has helped banks to retain the current customers, increase customer's satisfaction, acquire further share in the markets and reduce the costs of delivering service to the customers. Delivery of services has gained increasing popularity through electronic platform. It provides alternative way for delivery of services in a faster way to the customers. Various number of services are being offered by banks through electronic banking. It is quite difficult to measure the extent of such services, but an effort has been made by classifying these services into following categories:

### **A. AUTOMATED TELLER MACHINES (ATM's)**

Automatic teller machines have transformed the concept of banking in India. It has eliminated the requirement of to stand in long queue and filling of forms for routine banking transaction. Now customers of banks can access their money with the scratch of a ATM card. An automated teller machine (ATM) is an electronic computerized device that allows banks customers to directly use a secured method of communication to access their bank accounts. Entry of Automated teller machines (ATM's) has changed the office atmosphere of the branches of banks. There is no need for a customer to visit branches for their day to day banking transaction like cash deposits, cash withdrawals, balance enquiry, dropping cheque etc. Electronic channels have opened new avenues for banks. ATM's are electronic machines which are operated by customer himself to withdraw or deposit cash. If it takes ten seconds for an ATM transaction as compared to more than a minute for a counter transaction then it can be said that number of customer serviced in a day will be much more via ATM's. Flexible payment methods and user friendly banking services are now available for the customers. This has been possible due to introduction of information technology in banking industry. Internet banking , mobile banking, phone banking are the new development in banking industry and expected to result in more efficient banking system. However the pressure from private and foreign banks in India to public sector banks has posed a challenging environment. Latest advance banking technology brought up by private and foreign banks have great impact on Indian banking system. These alternative delivery channels includes ATM,,s (Automated teller machines), phone banking, internet banking, mobile banking. Out of all these e-banking services, automated teller machines are most heavily demanded and fulfil most of the needs of the customers without visiting the bank. ATM delivers multiple services 24x7, which is major cause of making it a success in the history of banking industry. In fact, e-banking services became profitable and successful due to various services delivered through ATM's. The management of ATM's involves loading of cash, arrangement of money with bank service of car that delivers cash, providing insurance for all areas such as theft of cash from ATM's. ATM's helps customers in withdrawing cash at anytime, from anyplace. Along with these services, many more services are also provided by ATM's that includes checking their account balances, recharging prepaid mobile phone credit, transfer of money, making bill payments. The customer is identified at ATM by inserting a plastic ATM/Debit card with a magnetic stripe or a plastic smart card with a chip that has a unique card number issued to the customer and some security information such as an expiration date or CVVC (CVV). Authentication is provided by the customer entering a personal identification number (PIN) for using any service at ATM's. The number of ATM machines has grown from 34789 in March 2008 to 238000 in march 2020(RBI working report, 2020) .

#### **Facilities provided to the ATM customers:**

- Anything, anywhere access to cash withdrawal of cash is available 24x7.
- Transfer of money from one account to another account is possible with the help of ATM's.
- A customer with the help of ATM's can check his/her last transactions and current balance. In addition to these, a mini statement can also be generated with the help of ATM's.

- Change of personal identification number of ATM/debit card can be made with ATM's.
- Cheque book request can be made by the customers through ATM's.
- Fixed deposits can be done with the help of ATM's.
- Utility bills can be paid by the customers with the help of ATM's.
- Customers can pay their credit card bill with ATM's.
- Mobiles can be recharged via ATM's.
- To get the latest updates on mobile, customers can change their mobile number through ATM's.
- Check drop facility can also be used by customers at ATM's.

**B. TELEPHONE BANKING/TELE BANKING/PHONE BANKING :**

Phone banking, tele banking or telephone banking are all the same. In phone banking, banking transaction is done over the telephone. Customers of banks can get information about their accounts, make banking transaction like fixed deposits, money transfer, demand draft, collection and payment of bills etc. by using telephones. As more and more people are using mobile phones, telephone banking is also possible with the help of mobile phones . Telephone banking satisfies the customer with fast, anytime transaction and account information via telephone access. With a simple push of a button, customers can check a deposit, account information, transfer fund as well as perform number of other functions. Telephone banking system uses technology that keeps the cost of delivering the service very low. On the other hand, customers can do the banking work directly from their homes or from their office desk, without being stuck in traffic and without standing in queue for hours and without the need to visit a bank branch or automated teller machine. Telephone banking allows the customers to access their account 24 hours a day, 7 days a week. They can dial in and get the current account information. For using telephone banking facilities, a customer must first register with the bank's branch for availing the service and a password is set for customer verification. Password may or may not be same as in internet banking. For using telephone banking, customer has to dial special phone number set up by the bank. Most telephone banking services use automated phone answering system with phone keypad response or voice recognition capability.

**Facilities provided to telephone/phone banking customers:**

- Customer can get the details of saving, current, fixed deposits available in their account balance.
- With phone banking facility, customers can get their cheque book and latest account statement delivered to them.

- Money transfer can be possible with the help of phone banking.
- Customers can request the bank to stop payment of a particular cheque by using phone banking service.
- Mobile banking request can be made with the help of phone banking.
- Customers can get the latest information about the interest rates prevailing along with the foreign exchange rates.
- Customer can use phone banking for blocking of Internet Banking User ID
- Blocking of ATM/debit card credit cards can be done by phone banking.
- Phone banking can be used by the customers for issuing ATM card.
- TDS certificate can also be received by the customers via phone banking.

### **C. INTERNET BANKING :**

E-banking has been prevailing in India around sometime in the form of automated teller machine. Thereafter, it has been transformed by the internet and a new delivery channel has emerged that benefits both banks as well as customers. Internet banking or online banking, as it is sometimes called, simply is an extension to traditional banking, which uses internet both as a medium for receiving instructions from the customers and also delivering services to them. Internet banking, as a medium of delivering the banking services to customers and as a strategic tool for the development of banking business, has gained wide acceptability in all developed nations and is quickly spreading in developing nations like India with more and more banks entering the fray. Internet technology has totally transformed the design of banking business. The success of internet banking operation totally depends upon the well designed website of the bank. It should be informative, functional, user-friendly and most importantly, secured. Internet Banking lets clients handle many banking transactions via their personal computer. For instance, one may use his/her computer/laptop/smart-phone to view his/her account balance, request transfer between accounts and pay bills electronically.

#### **Facilities provided to internet banking customers:**

Various services under Internet Banking Account are as follows:

- Customers can check the current balance in their account.
- All the past transactions from the date of opening the account can be checked by the customers.
- Money can be transferred to any bank account of that particular bank or any other bank.
- Transfer of Fund having visa/maestro, debit card holders or credit card holders

- Customers can recharge their prepaid mobile online anywhere, anytime in a few minutes.
- Mutual Fund schemes can be bought/sold online with the help of internet banking account.
- With the help of internet banking account, fixed deposits and recurring deposits can be applied for.
- Cheque book request can be made and, the same will be delivered on the said address.
- Customers can issue instruction to banks to stop payment of a particular cheque with the help of internet banking account.
- Internet banking account provides customer one point access to all accounts securely. With this facility, customers can view all his/her account like credit card, Demat, loan account through single user ID.
- Request of ATM/Debit cards can be made with the help of internet banking account.
- Re-issue and up-gradation of ATM/Debit Cards can be made with the help of internet banking.
- Statement of bank account can be received on emails.
- Customer can make request for a Demand Draft with Internet banking account.
- Renewal of current fixed deposit and recurring deposit and request of its premature closure can be made.
- A customer can change password whether it is log in or transaction password.
- Demat account detail and transaction can be provided.
- A customer can view detail related to loan account, type of loan, date of sanction, date of maturity, rate of interest.
- Customer can get information about the rate of interest on deposit and loan scheme.
- Payment of utility bills (electricity, telephone, house tax etc), bank credit, mobile bills, insurance premium.
- With internet banking account, customers can pay e-shopping bills
- Booking of railway and air ticket can be done with the help of Internet banking account.
- Share trading in security market can also be done.



- Customer can make online payment of service tax, income tax, house tax etc.
- Loans can be sanctioned online with help of internet banking account.
- Internet banking account allows the customers to send money anytime anywhere in India through money order. The fund will be delivered to the beneficiaries doorstep.
- All the donation of customers can be made from the convenience of your home or office with the help of internet banking account.
- Recharging of DTH connection from comfort of home or office, anytime, anywhere can be done.
- Customer can even buy gold and silver with the help of internet banking account.
- Forex can be bought and delivered to the doorstep of the customer with the help of internet banking account.
- Document storage facilities are also provided by the banks to their customers via internet banking account to store birth or marriage certificate, passbook statement, life insurance policy, PAN card copy or any other prized document etc.
- Account opening request can be made online. One can apply for a new account only in branches where he/she already has an account.

#### D. **MOBILE BANKING:**

Mobile technology is well accepted and widely available at an affordable price. It is also suitable for banking and payment services and provides huge opportunity to extend financial services to each and every individual irrespective of the place where one is residing. Internet banking has helped the customers by accessing their account anytime, anywhere, at any place. Customers can check their account details, get their banks statement, perform many transaction in the comfort of their home or office. However, biggest limitation of internet banking is the requirement of personal computer/laptop/smart phone with an internet connection. Mobile banking reduces this very limitation of internet banking. As mobile banking, reduces the customer's requirement to just having a mobile phone for using this service. Mobile phone usage has seen an explosive growth in India in the last decade. The main reason that mobile banking score over internet banking is that mobile banking enables anywhere, anytime banking. Customers do not need to have an access of internet connection to make a transaction from his account. Customers can use their account on the go while waiting at the bus stop, travelling, at home, at work place. Mobile Banking refers to provision and availability of banking and financial services with the help of mobile telecommunication devices. Barnes and Corbett (2004) suggest that recent innovations in telecommunications have enabled the launch of new access methods for banking services. One of these is mobile banking; whereby a customer interacts with a bank via a mobile device such as a mobile phone or personal digital assistant. Mobile banking concept is one of the biggest

innovation along with ATM's in the field of banking sector. Mobile banking services can be used by either short message service (SMS) or through an application installed on the cell phones.

### **Facilities provided to Mobile banking customers:**

1. Information about the updated account balance without using internet or phone banking can be gathered with the help of mobile banking that includes balance enquiry and mini statement.
2. Fund transfer can be made possible with the help of mobile banking.
3. Customer can request a cheque book with the help of mobile banking.
4. Mobile banking provides the facility of demat inquiry to the customers.
5. Making payment of all bills (utility bills, credit cards, insurance premium).
6. Customers can donate money via mobile banking account.
7. Mobile/DTH recharges can be done with the help of mobile banking account.
8. Online payments for shopping, movie etc can be done too.

### **RBI Guidelines for mobile banking**

Guidelines define mobile banking as, "doing any banking transaction by using mobile phones by the banks" customer that would include debit/credit of customers account". After the initial guidelines set by Reserve Bank of India , several relaxation policies have also been made to encourage the use of mobile banking due to continuous change in the environment and priorities of banking customers.

1. Any branch which offers mobile banking services should note that the mobile banking service should be available to customers on any network available. It should not be limited to few networks only.
2. In the long run, each bank would enable transaction between two accounts in different banks, irrespective of the network.

### **Regulatory and supervisory issue**

1. Only banks which are licensed, supervised and have physical presence in India are permitted to offer mobile banking services.
2. Mobile banking service will only be issued to the customers who have debit/credit cards issued as per the Reserve Bank of India guidelines.
3. Domestic services shall be provided i.e. only transaction of Indian rupee is permitted.

4. For extending this facility to their customers, banks can also use the services of Business Correspondent appointed in compliance with RBI guidelines etc.

**Various guidelines framed by Reserve Bank of India on different dates:**

From time to time, Central Bank of India has framed many guidelines:

**October 8, 2008**

Mobile banking transactions were defined as undertaking banking transactions using mobile phones by bank customers that involve credit/debit to their account. Some of the significant norms were as under:

1. Technology and security standards were laid down.
2. All transactions to be encrypted<sup>15</sup> irrespective of value limit.
3. Inter-operability was ensured.
4. Customer complaints and grievance mechanism were laid down.
5. Daily cap of Rs.5,000 per customer for funds transfer and Rs10,000 per customer for transactions involving purchase of goods and services were prescribed.
6. Banks to seek one-time prior approval of the Reserve Bank of India after obtaining their respective Board's approval.
7. Such services can also be offered through the BCs† (Business Correspondents).

**December 24, 2009**

1. Raise in the daily cap transaction limits for funds transfer and for purchase of goods and services to Rs. 50,000
2. Transactions upto Rs. 1,000 can be facilitated without end to end encryption of messages.
3. Permitted to provide cash-outs to the recipients through ATMs or BCs subject to a cap of Rs. 5,000 per transaction and a maximum of Rs. 25,000 per month per customer.

**May 4, 2011**

1. Transaction upto Rs 5,000 can be facilitated without end to end encryption of messages.

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<sup>15</sup> Encryption is the conversion of data into a form, called a cipher text, that cannot be easily understood by unauthorized people.

**December 22, 2011**

1. Transaction cap limits for funds transfer and for purchase of goods and services of Rs.50,000 per customer per day removed.
2. Banks may place their own limits based on their risk perception with the approval of their Board.
3. Ceiling on cash-outs to the recipients through ATMs or BCs raised to Rs.10,000 per transaction subject to the existing cap of Rs. 25,000 per month.

Telecom Regulatory Authority of India (TRAI) has issued regulation for mobile banking in 2012, prescribing quality of service standards for mobile banking for ensuring the customer for faster and reliable communication through the mobile phones. Some of the important regulations are as under:

1. Access service providers shall facilitate banks to use SMS, USSD and IVR to provide banking services.
2. The response time for delivery of message for mobile banking services generated by the customer or the bank shall be within the prescribed time frame.
3. If the SMS sent by the bank is not delivered to the customer due to network or handset related problems, an USSD communication to the customer confirming the completion of the transaction should be sent.
4. Service providers have to maintain complete and accurate record of transactions, using mobile banking services through mobile phones.

#### **NETBANKING FEATURES:**

1. **Credit card Payment-** Customers can pay their Credit card dues through this option.
2. **Statement Download** - The customers can download their account statement onto their PC for the period of 5 months from the given date.
3. **Change Customer profile-** The customers can update their mailing address and all their communication from bank will go to this new address.
4. **Funds Transfer** - The customers cant transfer funds between their accounts, even if they are in different branches/cities. The customer can also transfer funds to any person having a Bank account anytime, anywhere, using Third **Party Funds Transfer** option. To avail of TPT facility, customer will have to sign the declaration form, which is available on the Net or at any of the bank's branches.

**5. New Fixed Deposit Request-** The customer can open a Fixed Deposit Account on the Internet. He will just have to give details regarding the account from which he/she wants to transfer funds, the amount and terms for the Fixed Deposit, the branch and the relevant maturity instructions.

**6. Fixed Deposit Inquiry-** The customers can access details of their Fixed Deposit Account such as Principal Balance, Term of Deposit, Rate of Interest, Maturity Date, Maturity Amount and Instructions for Payment.

**7. Demand Draft Request** - The customers can issue a DD from their account at special rates. They will just have to select the account to be debited from and give the bank details of the amount, location and beneficiary. The bank will even have the Demand Draft couriered to the customer's mailing address. (DDs will be issued only where the bank has a branch or has an arrangement with a local bank).

**8. Demand Draft Request at Beneficiary's address** - Net Banking offers a new facility to all its customers. The customer can issue a Demand Draft on the Beneficiary's name and address of his/her choice. He/she will just have to just select the account to be debited from and give the bank the details of the amount and beneficiary's name & address where the customer want the Demand Draft to be delivered. The Demand Drafts would only be delivered within India. (DDs will be issued only where the Bank has a branch or has an arrangement with a local Bank)<sup>16</sup>.

**9. TDS Inquiry-**The customer can access information on Tax Deducted at Source for all their deposits for the current or previous financial year.

**10. Stop Payment Request** - The customer can request Stop Payment on a cheque or series of cheques online by just entering the cheque number and the reason for stopping payment.

**11. Cheque Status Inquiry** - The customer can view the status of a specific cheque issued on any of his/her accounts.

**12. Cheque Book Request** - The customer can request for a new cheque book online. His/Her cheque book will be couriered to the address on the bank's records.

**13. Account Balance Inquiry** - The customer can check his/her savings or current account balance, including information regarding Unclear Funds, Ledger Balances, Overdraft Limits and Sweep-In Amounts.

**14. Account Statement Inquiry** - The customer can view all the transactions on his/her account for either the current period (i.e. from date of last statement mailed to him/her), or a specific period determined by him/her/. The customer can also request his/her statement via mail (mailing address will be as per bank

**15. Customer Support-** The customer can use this option to communicate with the Bank for requests, instructions and queries.

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<sup>16</sup> This facility is only open to users who have registered for Third Party Transfer (TPT).

**16. Demat on the NET** - If the customer also holds a Demat Account with the bank, he/she can now access his/her account online. Through Demat on the Internet, he/she can see his/her holdings as on the close of the last business day. He/She can view his/her your transactions for the last 7 days. Check the status of the shares submitted for Demat in the last one month. The bank will also provide the customer with an ISIN search and a calendar to know the various settlement details on various exchanges.

**17. Direct Pay** - An option exclusively for Bank Net Banking customers, which allows online purchases in a safe and secure environment. Shop online at websites, which offer our Direct Pay facility, such as Sify.com, Fabmart.com, VSNL.com and many more. Through Direct Pay, the customer's account would be debited and the merchant's/ website's account gets credited instantaneously.

**18. BillPay** - The customer can pay his/her mobile phone, electricity and telephone bills through the Internet using the Bill Pay facility.

**19. Security** - With Net Banking, the customer can carry out all his/her banking and shopping transactions safely and with total confidentiality. The entire system is secured, using the whole gamut of security architecture including firewalls, filtering routers, 128-bit encryption and digital certification. So the customer is absolutely sure that all his/her online transactions are safe and protected.

**GOVT. BUSINESS-** Software has been developed and rolled out at 7785 fully computerized branches. Electronic generation of all reports for reporting, settlement and reconciliation of Govt. funds, is available.

**STEPS-** Under STEPS, the bank's electronic funds transfer system, the Products offered are eTransfer (eT), eRealisation (eR), eDebit (CMP) and ATM reconciliation. STEPS handle payment messages and reconciliation simultaneously.

**SEFT-** SBI has launched the Special Electronic Fund Transfer (SEFT) Scheme of RBI, to facilitate efficient and expeditious Inter-bank transfer of funds. 241 branches of our Bank in various LHO Centres are participating in the scheme. Security of message transmission has been enhanced.

**MICR Centres-** MICR Cheque Processing systems are operational at 16 centers viz. Mumbai, New Delhi, Chennai, Kolkata, Vadodara, Surat, Patna, Jabalpur, Gwalior, Jodhpur, Trichur, Calicut, Nasik, Raipur, Bhubaneswar and Dehradun.

**Core Banking-** The Core Banking Solution provides the state-of-the-art anywhere anytime banking for our customers. The facility is available at 574 branches.

**Trade Finance-** The solution has been implemented, providing efficiency in handling Trade Finance transactions with Internet access to customers and greatly enhances the bank's services to Corporate and Commercial Network branches. This new Trade Finance solution, EXIMBILLS, will be implemented at all domestic branches as well as at Foreign offices engaged in trade finance business during the year.

**WAN-** The bank has set up a Wide Area Network, known as SBI connect, which provides connectivity to 4819 branches/offices of SB Group across 306 cities. This network provides across the board benefits by providing nationwide connectivity for its business applications.

### **Internet Banking: Distribution Channels**

Today, internet has evolved as the prime medium of service delivery for various financial institutions. Earlier to this, customers were not able to perform their personal and commercial banking transactions with such fast speed as they can perform with internet banking. The internet facility enables banks to perform their traditional activities on a virtual medium, which they use to perform earlier in their branches. Initially, financial institutions were enthusiastic on identifying advantages of internet and were one of the initiators to adapt e-commerce. After few years down the line, they transformed their websites from only informational websites to dynamic transaction-oriented websites that are providing 'anytime anywhere' banking services. Besides having a large internet user population, most of banks are still having a wide branch network that delivers same products and services that are provided online as well. Therefore, there must be few opportunities to address this service overlap existed between two kind of distributional channels.

### **Modes of Distribution**

The banking institutions were quick to imbibe the technological innovations taking place in the industry; so much so that it can be said that the banking industry is completely revolutionised post 1991. The need for change had been experienced for quite some time but the initiative of technological upgradation was taken by the private sector banks that can be said to have revived the industry. New modes of providing banking services can be summarised as under:

**1. Internet Banking:** It is also known as Web Banking or PC Banking or e-Banking. The easy accessibility to internet facility and availability of computer lead the banks to provide their products and services through new delivery medium i.e. internet. Today, all private and public sector banks are providing e-banking services to their clients.

**2. Phone Banking:** It is also known as Tele-Banking or Mobile-Banking or M-Banking. India has experienced tremendous increase in the number of mobile phone users. The rate of penetration of mobiles and landlines has risen significantly and this leads to encourage banks to grab this opportunity and thus offered mobile-banking services. Through this service customers can avail information regarding the bank account by sending a SMS.

**3. Plastic Money:** It is referred to ATM cards, debit cards and credit cards etc. Banks have provided ATM facility to their customers and it is connected via V-SAT. Through using ATM, customers can avail a numerous services, such as, withdrawal of funds, account balance enquiry, order a cheque book, deposit fund, have information regarding banking products etc. Even through ATM banks are offering value added services also.

Recharge of prepaid mobile card is offered by Punjab National Bank who has tie ups to use ATM of banks as:

\* HDFC and SBI;

\* PNB, UTI and Global Trust Bank.

Banks have concentrated on improving their "Point of Cash Delivery". In addition to credit and debit cards being commonly used as a mode of payment, some other easy channels of delivery

have been devised for the customers. The utilisation of IT is important in the banking industry. All banking transactions can be transacted through the use of the internet. A customer can access his account by logging in the website of the particular bank; he can make all enquiries, transfer funds and pay bills through the use of the internet. According to an investigation conducted by Booz & Allen, it was found that the Net Banking was the cheapest mode of banking. E- Banking has following stages:

**I. Information Kiosk:** The conventional information and data are available on the bank's website regarding products and services offered by the bank.

**II. Basic I- Banking:** Through this internet – banking infrastructure has been set by the bank to access basic banking services, as, online opening of a bank account, online payment of bills, access account statement and enquire bank account balance online.

**III. Virtual Medium:** This mode of e-banking uses internet facility as a mode of conducting banking transactions. Customers can buy and sell products and services offered through payment gateway service of bank.

More or less, every bank is having its website, by logging in these sites the clients can have access to a variety of services offered by the banks. E- Banking is the commonly used method of banking nowadays.



## CHAPTER-4 ADVANTAGES & DISADVANTAGES OF E-BANKING

The benefits discussed below are from the bank's customer's point of view .By the use of e-banking services a customer can save its significant time and money. These kinds of services also bring efficiency in customer relationship management (CRM).

### **ADVANTAGES OF E-BANKING:**

#### **Benefits to Consumers:**

General consumers have been significantly affected in a positive manner by E-banking. Many of the ordinary tasks have now been fully automated resulting in greater ease and comfort.

- Customer's account is extremely accesses able with an online account.
- Customer can withdraw can at any time through ATMs that are now widely available throughout the country.
- Besides withdrawing cash customers can also have mini banks statements, balance inquiry at these ATM.
- Through Internet Banking customer can operate his account while sitting in his office or home. There is no need to go to the bank in person for such matter.
- E-banking has also greatly helped in payment of utility bill. Now there is no need to stand in long queues outside banks for his purpose.
- All services that are usually available from the local bank can be found on a single website.
- The Growth of credit card usage also owes greatly to E-banking. Now a customer can shop worldwide without any need of carrying paper money with him.
- Banks are available 24 hours a day, seven days a week and they are only a mouse click away.

#### **Benefits to Banking Industry:**

Banking industry has also received numerous benefits due to growth of E-Banking infrastructure. There are highlighted below:

- The growth of E-banking has greatly helped the banks in controlling their overheads and operating cost.
- Many repetitive and tedious tasks have now been fully automated resulting in greater efficiency, better time usage and enhanced control.
  
- The rise of E-banking has made banks more competitive. It has also led to expansion of the banking industry, opening of new avenues for banking operations.
- Electronic banking has greatly helped the banking industry to reduce paper work, thus helping them to move the paper less environment.
- Electronic banking has also helped bank in proper documentation of their records and transactions.
- The reach and delivery capabilities of computer networks, such as the Internet, are far better than any branch network.

## **Benefits to General Economy:**

Electronic Banking as already stated has greatly serviced both the general public and the banking industry. This has resulted in creation of a better enabling environment that supports growth, productivity and prosperity. Besides many tangible benefit in form of reduction if cost, reduced delivery time, increased efficiency, reduced wastage, e-banking electronically controlled and thoroughly monitored environment discourage many illegal and illegitimate practices associated with banking industry like money laundering, frauds and embezzlements. Further E-banking has helped banks in better monitoring of their customer base. This it is a useful tool in the hand of the bank to device suitable commercial packages that are in conformity with customer needs. As e banking provide opportunity to banking sector to enlarge their customer base, a consequence to increase the of volume of credit creation which results in better economic condition, Besides all this E-banking has also helped in documentation of the economic activity of the masses.

Potentially lower margins:

- (i) Lower cost of entry
- (ii) Expanded financing reach
- (iii) Increased transparency.

Expand reached through self-service:

- (i) Lower transaction cost
- (ii) Make some corporate services economically feasible for society
- (iii) Make anytime access to accounts and loan information possible.

## **Services**

Technology has made it extremely convenient for the bank and for the customer to access easily by simply logging in on the banks website. e-services include vast services such as financial planning capabilities, functional budgeting and forecasting tools, loan calculators, investment analysis tools and equity trading platforms .Beside this most banks also provide the facility of online tax forms and tax preparation.

## **Convenience**

This is the single most important benefits that outweigh any shortcoming of internet banking. Making transactions and payments right from the comfort of home or office at the click of a button without even having to step out is a facility none would like to forego. Keeping a track of accounts through the internet is much faster and convenient as compared to going to the bank for the same. Even non transactional facilities like ordering check books online; updating accounts, enquiring about interest rates of various financial products etc is much simpler by it. You can conveniently handle your account transactions without all the hassle of being in the queue on a sultry afternoon. E-banking is extremely convenient if you have a decent internet connection (wifi or 3G/4G data). You can access the website from anywhere without actually having to visit the bank.

If your banking needs don't involve the assistance of any staff member or a manager, online banking is the best option for you.

### **Benefits and Rewards**

A lot of online banks offer more benefits and rewards to their customers that not only benefit the bank but also benefit their customers. Online banks are willing to offer higher interest rates and better transfer services to their customers who regularly use online banking. This happens partly due to the fact that the banks have to bear reduced costs when serving online customers. Therefore, the overall banking experience is obviously better than that of visiting a physical bank branch and handling the same transaction.

### **Notifications and Alerts**

Customers are instantly alerted or notified about new changes in the system. From changes in the policy to logins from new devices, customers get instant notifications and alerts. However, if you're associated with a real bank, you would probably get a text alert or a customer service agent will call you to notify about major changes. Chances are, you're missing out on a lot of changes. Banks also endorse new products, services and schemes like new investment options, changes in the loan policies, etc. to online customers first.

### **Faster Transactions**

You don't have to wait for your turn to transfer funds – you can do that with a single tap of your finger or a single click of your mouse. Funds from one account will be transferred to another in a matter of a few seconds. Anything that requires quick payments can be done with the help of e-banking. For instance, you are required to immediately pay your child's school fees. You can do it via the bank's app or website or you can physically go to the bank to withdraw cash and then going to the school to deposit the fees. You'll probably end up wasting half the day to perform this transaction which with the app's help could've been performed in a matter of minutes.

### **Easy Access**

Customers can enjoy easy access with online accounts by simply typing in the log-in credentials. In addition to that, customers can also handle several accounts at a time. Since the internet remains the medium of connection, users can also access different accounts in different banks from a single device.

### **Speed and Efficiency**

In a hurry to apply for an educational loan? Or quickly need to pay bills? Or perform any banking transaction without having to waste half your day? Do it via the internet. There's no waiting nor do you have to rush through anything – you can take your time and perform all banking transactions with patience and it will be done in nearly 1/10th the time spent on actually driving down to the bank and getting it done.

### **Lesser Limitations**

Traditional banks have several constraints like operating hours, the physical location of the bank branch, holidays, etc. You don't have to wonder if it's a holiday with online banking, or what time is it to perform a transaction. Be it Sunday or the middle of the night and you will still be able to do everything (and even more) through their app or website as it's available twenty-four hours a day, throughout the year.

### **Better Rates**

This means that a portion of savings accrued by the bank can be passed on to the customers in by paying them higher rates on deposits and charging lower rates on loans. To encourage e- banking among customers most banks offer minimum or no deposit accounts and also charges lower penalties on early withdrawal of Fixed Deposits. This type of banking implies lesser physical efforts and higher benefits. The need to acquire larger spaces for offices and employ more staff to deal with the customers is significantly reduced making it financially beneficial to the banks.

### **Mobility**

E- banking has a step further in the last few years in the form of mobile internet banking which accords unlimited mobility to the customer who can now handle financial transactions even while on the move.

### **Increased comfort and timesaving**

E-Banking transactions can be made 24\*7, without requiring the physical interaction with the bank.

### **Quick and continuous access to information**

Corporations will have easier access to information as, they can check on multiple accounts at the click of a button.

### **Better cash management**

E-banking facilities speed up cash cycle and increases efficiency of business processes as large variety of cash management instruments are available on Internet sites of Estonian banks.

### **Speed**

The response of this medium of transaction is very fast; therefore customers can actually wait till the last minute before transferring the funds.

### **Funds management**

Customers can download their transactions history of different accounts and do a "what-if" analysis on their own, before affecting any transaction on the web. This leads to better funds management. Beside the above benefits discussed E-banking also helps to view and print balance enquiry, view transaction history, transfer of funds, payment of online utility bills, online purchases etc. With the use of E-banking customer can also apply for various types of auto, mortgage, home, equity, students or personal loans.

**Security**

With internet banking, you can always monitor your account activities. This not only serves as a history of all the transactions but also helps you identify threats and suspicious activities before any severe damage can be done to your account. Online accounts are protected with encryption software that ensures complete safety to the user. Alerts related to passwords and digital signatures are sent periodically to maintain the security of the account.

**Better Customer Service**

Banking websites and apps come with customized web pages to solve customer queries and often have a dedicated 'Frequently Asked Question' (FAQs) section that helps in answering common customer queries. You can chat with a customer service agent or call them if you need more help. This not only saves the time of the customers but also that of the bank employees who can shift their focus to more important things.

## **DISADVANTAGES OF E-BANKING:**

*"Every bean has its black"*

Besides providing enormous benefits to its customers in terms of the ease of cost transactions, e-banking also possess certain issues in regulating, supervising, designing and implementing the macroeconomic policies by creating problems for bank management, regulatory and supervisory authorities. They originate not only for potential or cross border transactions but also for domestic transactions which are based upon technology applications which causes many security related issues. Although e-banking system provides a numerous advantages to the customers but still prospecting e-banking users should identify its few disadvantages as well. Even after investing heavily in e-banking awareness campaign and offering so many benefits through e-banking system, still it lacks in gaining trust factor among its customers.

The disadvantages of e-banking system are as follows:

### **Relationships**

Online transactions take a toll on the relationship with the banker which the traditional visit to the branch office used to foster. Personal relationship with the staff at the banks helps a customer when requesting for faster loan approval or any special service which may not be available easily to the public. Additionally by personal contact a banker would provide essential financial advices which are beneficial to the customer.

### **Complex Transactions**

Certain services such as notarization and bank's signature cannot be accomplished online. Solving specific issues and complaints requires physical visit to the bank and cannot be achieved through the internet.

### **Security issue**

This is the biggest pitfall of the internet banking scheme which needs to be guarded against by the common customer. Despite the host of sophisticated encryption software is designed to protect your account there is always a scope of hacking by smart elements in the cyber world. Hacker attacks, phishing, malware and other unauthorized activity are common on the net. Sure, most banks are well-reputed and established, there are times when you face security issues. There's always a risk of actual and/or identity theft. It's also possible to get unauthorized access to your account via a stolen or hacked log-in credentials.

### **The ability to adopt global technology to local requirements**

An adequate level of infrastructure and human capacity building are required before developing countries can adopt the global technology for their local requirements.

### **The ability to strengthen public support for e-finance**

Historically, most e-finance initiatives in developing countries have been the result of cooperative efforts between the private and public sectors.

**Impersonal:** Absence of face to face interaction makes it very impersonal. Thus, customers who are more comfortable in dealing with people in physical bank setting that provide those personalised services rather than mechanical interaction; e-banking is not a good option for them.

**Lack of trust:** Still many customers do not trust online mode of service especially for money related transactions. Users who are not seasoned in e-banking feel very uncomfortable as they have doubt regarding the correctness of the transaction done by them online. As they require some kind of proof of transaction as receipt, to verify their transactions.

**Difficult for first timers:** For the beginners, it appears as a complex mode of service as customer find it complicated to navigate through bank's website. While opening an account online, bank's website requires a number of information and that seems time taking and inconvenient process to the first time users.

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### **Inconvenience**

Sure, online banks are open throughout the year but they are a serious cause of inconvenience in certain instances. For example, if you get locked out of your account you will be unable to perform any banking transactions. However, in a real bank, you establish relationships with the staff, who know you on a personal level and will be willing to assist you in such cases. You wouldn't have to be on the phone explaining your situation to an unknown customer service agent which by the way, might also take several days. Also, a few online banks don't allow cash deposits. To deposit cash, you will be required to email a check and transfer money from another account or bank, or use their e-check deposit service.

### **Inability to Handle Complex Transactions**

While you can easily pay bills and transfer funds, you can't perform complex transactions online. When a large sum of money is involved, it is advisable to visit a real bank and sort it out in-person rather than doing it online. Some financial transactions also need a document verification (like buying a house) so it is better to submit them physically than digitally.

### **Financial Jargon**

Financial jargon can often get between you and your money. Knowledge is power-or, in this case, knowledge is money. Though financial literacy can't be achieved overnight, it can be helped along by a grasp of the basic terms that are commonly used by advisors, analysts, economists, and commentators.

### **Technology Issues**

If you don't have a decent connection or there are bugs in the software, or say, there is a power cut or maybe the servers have gone down – websites are bound to crash and you will undoubtedly face a lot of technological issues. While you may get various types of customer service at the moment but sooner or later, you will get frustrated. However, someone is always around to help you in a real bank.

### **Virtual Assistance**

When you need assistance during e-banking, your concern is generally assigned to an anonymous customer service agent who is unlikely to know you. Wouldn't you rather talk to a personal banker when you're in a fix than an unknown agent? A personal banker will also know your transaction history, your personal details and will be in a better position to assist you.

### **Complicated Websites**

Some websites look like a page straight from a super complex scientific experiment. Written in a secret code language with bizarre fonts and colors. I mean, sure some websites are simple and you can get all the things done in a jiffy. But some websites are downright complicated and confusing. With pop-ups, errors, links, and interlinks, redirections to probably a million pages, it gets really difficult to understand.

### **Other disadvantages of E-Banking**

- (a) If the bank's server is down, customer can't use it.
- (b) To use internet banking, customer is compelled to have computer with internet access.
- (c) There is always the possibility of a cracker gaining access to customer's account.
- (d) Many banks don't show customer how to use online banking very well and those are usually the ones with the non- intuitive interface & cluttered design, which makes it pretty easy for customer to screw up something.
- (e) Banks bears heavy costs to install high firewall.
- (f) It leads to missing of personal services.
- (g) E-banking promotes lack of socializing or social contacts



## **CHAPTER-5 : CHALLENGES & RISK OF E-BANKING**

### **CHALLENGES OF E-BANKING:**

Indian internet banking sector is still prevailing in its primary level of growth. Only some banks are providing certain basic services only. Only limited number of private sector banks like HDFC, ICICI & SBI Bank is fully computerised and they are providing all services through the use of internet. One of the major factors responsible other Indian banks upgrading technology and competing with other competitors is liberalisation of the economy.

Challenges of E- Banking are as follows:

1. Demand side pressure due to increasing access to low cost electronic services.
2. Emergence of open standards for banking functionality
3. Global players in the fray
4. Dual responsibility, to protect customer's privacy and protect against fraud.

(A) *Proper understanding of customer*: Bank should adequately and properly identify customers' requirements and wants. To identify the customers exact needs bank should conduct a research survey.

(B) Due to significant increase in customers' awareness, the need of maintaining transparency has increased significantly.

(C) *Breach of privacy*: While customers conducting banking transactions online, it directly enters into banking records that reveal the identity of customers. Therefore, no one can easily transfer black money.

(D) *Bandwidth*: Although, internet facility providers claim to provide speedy and high bandwidth, still the problem of high speed internet prevails. E-Banking can popularize more only with adequate infrastructure comprising telecommunication and bandwidth.

(E) The level of *computer literacy* is still very low in India and it works as a bottleneck in the fast acceptance of e-banking.

(F) The attitude of customers is required to be transformed in India.

(G) Bank should have proper security measures to protect its customers against "net – jacked" or from frauds.

The threats of e-banking are as follows:

1. The most common way of hoaxing with the information is the cracking login and passwords of e- banking users.
2. *Denial of services*: high trafficking of queries result into jamming computer network.
3. *Data Diddling*: Information and data can change in an unauthorized way. It can result in receiving higher amount bill rather than actual amount to be paid by customers.

4. *Session Hijacking*: Hijacker becomes unauthorized intermediary between the customer and the server. Then hijacker can hijack the data and restricts it to reach the relevant destination. Most online transactions involve disclosing up of the credit or debit card number. Hackers can very easily track down these numbers. They can thus enjoy the full benefits of the card without being an actual cardholder. Reserve Bank of India provided some guidelines on e-banking to protect interest of customers as well as of banks.

The guidelines are as following:

1. It instructed that although banks can accept application of account opening online, but the bank account should be opened after adequate physical verification & introduction of the client.
2. It guided that security measures adopted by bank, for users authentication, must be recognized or approved as a substitute for sign, for legal perspective. As per the IT Act 2000 Sec.3 (2), asymmetric crypto system and hash function tech. should be used as a medium of authentication of electronic records. If bank uses any other medium, it would be taken as a source of legal risk.
3. Banks should maintain secrecy and confidentiality of their customer's bank account.
4. IT Act 2000 & Consumer Protection Act is applicable to the banking business and they provided legal guidelines to generate, conduct & preserve electronic data that can be treated as a proof in the court whenever required, other than the areas that continue to be regulated by the provisions of Negotiable Instrument Act, 1881.

## **RISK OF E-BANKING:**

As we cannot deny the advantages offered through e-banking, same way we cannot ignore the risks involved in e-banking. Bank should maintain adequate leverage between the advantages and risks of e-banking. Although, marketing and advertising campaign initiated by banks are encouraging a number of customers to adapt e-banking, but for managing such a huge customer base banks need to prepare their internal system on prior basis. To have a deep understanding about the risks of e-banking system, it is categorized in various categories, so that bank can effectively design risk management strategies for e-banking. As now e-banking enabled banking beyond the geographical boundaries, banks have local as well as international customers to process their requests or solve their problems. Complexity of e-banking system has increased due to its close network that involves various service delivery mode offered by a bank and open network, such as internet facility that is subject to security and reputational risks. It also includes operational risk, legal & regulatory risks, systematic risks, credit risks, market risks and liquidity risks. To achieve efficiency in e-banking, banks should properly identify, manage and control the risks involved in it.

The dependence on information technology is such that the banking business cannot be thought of in isolation without it. Such has been the spread of information technology footprints across the Indian commercial banking sector. Developments in IT have also brought along a whole set of challenges to deal with. The development of ebanking will not proceed without conflict, as those who are likely to be worse off under this scenario will try to slow down the process and delay the introduction of the distribution channels (Mols, 1999)<sup>17</sup>. Reserve Bank of India defines fraud in the Report of RBI Working Group on Information Security, Electronic Banking, Technology Risk Management and Cyber Frauds which reads as under:

*“A deliberate act of omission or commission by any person, carried out in the course of a banking transaction or in the books of accounts maintained manually or under computer system in banks, resulting into wrongful gain to any person for a temporary period or otherwise, with or without any monetary loss to the bank.”*

### **Strategic Risk -**

As e-banking is very new phenomenon, for strategic risk, there is possibility that senior management people would not be known about its prospects & challenges. People, who are good in technological skills not necessarily good in banking skills, take the initiative toward e-banking adoption. Initiative taken by internet users originated in unclear pattern and in various stages. E-initiatives can be expensive and non recoverable. Even more to it, they are mostly viewed as the loss- leaders to increase market share even it may not encourage those clients that a bank expects and may have unknown impact on existing business lines.

To face this risk, bank should have a definite strategy at the top level and that should comprise the effects of e-banking at the relevant areas. This strategy should be properly communicated across the business and should have a proper and adequate business plan with a performance review system.

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<sup>17</sup> (Mols, 1999).

### **Business Risk-**

These risks have great importance in any business. As e-banking is a contemporary issue, people are unaware about the fact that whether e-banking users are having same features as conventional consumers or not. E-banking users do not have same features as traditional banking customers. For example, Customers who are requested some services to be conducted immediately, lead to inappropriate existing score card model, therefore it resulted into either high rejection rate or incur inadequate risk covering charges. Furthermore, banks could not assure the effective credit quality at a distance comparatively to they provide serving in branch in person. As well as analysing the quality and nature of collateral security from a distance, specifically if it is of area not familiar to bank. The exact forecast of cash inflow & outflow is very difficult so it pose a challenge to maintain an adequate level of liquidity. Although, these risks are not new and banking staff have significant experience in facing them but still need to be addressed properly.

### **Operations risk**

Operation risks faced by banking institution may be categorised in 3 ways:

- (A) Volume forecasts
- (B) Management information systems and
- (C) Outsourcing.

Exact anticipation of banking transactions is very difficult. Main risk in e-banking service environment is the uncertainty to predict the volume and number of banking transactions. When a bank is not able to manage the demand, bank has to face reputational risk which resulted in financial loss and sometimes compromising in security if additional system configured to manage it properly.

To overcome these risks bank should:

1. undertake market research,
2. adopt systems with adequate capacity and scalability,
3. undertake proportionate advertising campaigns and
4. Ensure that they have adequate staff coverage and develop a suitable business continuity plan.

In other words, this is new unknown area and banks require operating cautiously.

The 2nd kind of operational risk is to manage proper information system. Although, it is not only available to e-banking, it is common for all service delivery system. Generally, bank faces problem in generating proper information to analyze its e-banking services due to the difficulty in configuring new information system which can generate adequate, clear and meaningful data. FSA provided guidelines to the banks to obtain information needed by them in proper format as to get an understanding and to differentiate between important and unessential information. Eventually, most of the banks providing internet banking have outsourced the related business functions, such as, security. The primary reasons of it are to reduce operating cost and lack of expertise in home. Although, outsourcing can also pose a challenge i.e. material risk due to reduction in bank's control

over that particular function that has been outsourced. However, risk created by outsourcing is manageable but bank should consider FSA's guidelines regarding outsourcing that helps in reducing such risk.

### **Security Risks**

Another major problem which is attracting attention in recent years is the security of information collected by banks. With the advent of e-banking the risk of leaking information has increased considerably. In the past the banks functioned in an environment which was secluded where there were no security issues but with interconnected banking operations the banks are exposed to security risks as they function in an open environment. They have to consciously monitor these risks constantly and manage them whenever necessary.

There are majorly three kinds of security breaches, (i) those breaches which have a prior criminal motive (eg. fraud, having access to financial information which can be used for commercial purposes), (ii) breaches undertaken by casual hackers (these breaches may lead to a website not working properly, giving false information or not providing any service at all, may even ultimately lead to a crash of website) and (iii) there may be some defect in the design of the website which may lead to leak of information). All these type of breaches lead to serious financial, legal or reputational repercussions.

Many banks are finding that these systems are hacked several times a day but the losses are minor in the nature. However the banks should develop some kind of Burglar Alarm to trace the number of and the frequency of these unsuccessful attempts to hack the security of inform.

Those computer systems that contain details of high valued payments or which contains highly sensitive confidential information must be properly guarded. An adequate security system must protect such information. Generally, therefore the greater is the risk of loss the greater the possibility that such a loss may occur. Although the banks are trying to secure overall systems but more attention needs to be paid to the separation of internal systems and poor internal security. One possibility which may lead to hacking of website is gaining entry through a less guarded less valued website and then it gaining entry into a high value system through banks' internal network. It is being contemplated that banks erect firewalls (i.e. software that prevents an unauthorised person from gaining entry into the system) among their different systems. This would ensure minimisation of damage even if an external breach does occur. The greatest risk to security however is from internal sources that are the employees of the organisation and the contractors.

Even though there are security risks involved in e-banking, it could also eliminate some of the mistakes of manual processing of information (customers are directly contacted through the bank's system rather than customers contacting the bank first and then bank eliciting information from them). With the development of e-banking practices and management of security risks, large gains could be achieved.

The banks should proactively concentrate on addressing the risks involved effectively. They must devise a strategic approach toward safety of data establishing correct working procedures and security controls into systems and networks. A focused approach on information security needs to be developed which should include testing of systems' security controls (i.e. penetration testing), monitoring of new competitors and keeping an eye on the weak spots, reviewing market developments and recruiting adequate staff with expertise to manage information security and its security control system. The above mentioned concerns would be taken up by line managers when they supervise banking operations, they should used reassurances as these accounts.

### **Reputational risks**

The reputational risks of banks have increased a great deal with increased use of internet by them. Through the internet everybody has knowledge of all good or bad incidents that take place in a quick span of time. Rumours on the net can be exaggerated as forecasts. The communication with the help of the internet is undertaken at an alarming speed, this give perhaps no time for anyone to respond or for managers to control such rumours. The crisis management of the banks must be in place and the PR department should be able to handle such occurrences (whether they are real or hoax).

Last reputational risk involves that the products which are sold with the help of the net are properly marketed in such a way that the bank may not be charged with using wrong marketing practices, exactly in the same manner as in the physical world. Banks need to ensure that the rights of the consumers are adequately protected.

### **International developments**

E-banking exposes the banks to certain peculiar risks. Supervision of banking activities has to be conducted at a global level if it has to be done effectively. This is essential because e-banking is by nature non- territorial customers can very easily access the site and not only elicit the required information but can also purchase the products of their choice. The regulators have to understand and efficiently deal with the regulatory problems of global e-banking. Cross border supervision mechanisms have been established agreements over home or host responsibilities (within the members), bilateral agreements for sharing of information and setting benchmarks which all domestic as well as bankers abroad are expected to fulfil. The ultimate purpose is that a common mechanism of supervision, strong enough is to be developed which matches the physical banking environment.

Spoofing has both legitimate uses (setting the company name from which the message is being sent, setting your own mobile number or a product name) and illegitimate uses (such as impersonating another person, company, or product).

### **Money laundering risk**

Since internet banking can be done remotely, banks may find it difficult to apply traditional methods for preventing and detecting undesirable criminal activities like money laundering. Application of money laundering rules may not be adequate for some forms of epayments.

### **International boundary risk**

Internet banking is totally based on information technology. So it can be operated from any place in any country. Since it is difficult to check the application for a loan from a customer abroad as compared to familiar customer base. Acceptance of foreign currencies in payment of electronic money may be subject to market risk due to ups and down in forex rates.

### **Cyber fraud**

Banks are asking their customers to adopt newer service delivery electronic platforms like mobile, internet, ATM's for delivering service efficiently and further it helps in cost cutting. While the customers are becoming more tech-savvy and had started using electronic channels, the fraudsters are using newer ways of doing frauds by exploiting the loopholes in information technology

systems and processes. There have been many frauds of low value where the fraudster has used software programs, malware attacks, phishing, emailing and through SMS etc.

### **Holes**

Hole is any defect in hardware, software or privacy policy that allows hackers to have unauthorised access to personal computers/ laptops/smart phones. The network tools that can be affected by holes are routers, server software, operating system, firewalls and client.

### **Mindset of employees**

Information technology revolution changes are creating challenges for banks and employees have to adapt to changing conditions. The employees resist to change and the seller market mindset is yet to be born . These problems, in addition to fear of uncertainty and control orientation is adding more problems for the banks. In addition to that, banking industry is adopting the latest technology but its utilisation is far below satisfactory level.

### **Language and literacy barrier**

Unfamiliar language and illiteracy could be barriers in using ebanking service. Currently, all the websites of banks providing internet banking service are mostly in English language. It is difficult to be operated by those individuals who are residing in rural areas, especially those who do not know English language.

### **Fraud by human resource of the bank**

Apart from fraud from outside, banks are also exposed to risk from their respective employees. Various employees of the banks are familiar with different systems and their loopholes and their weaknesses. Thus they become possible threat to valuable customers and bank also. Some employees can manage to acquire the private and confidential data of customers to access their accounts causing losses to customers as well as to the bank.

### **Skimming**

Skim the information off the cards is another method of accessing customers private information. It is a most commonly used method to obtain illegally any consumer's card information. Skimmers are electronic device that is used by the criminals to capture the data stored on the magnetic strip of the ATM card.

### **Cyber squatting**

Cyber squatting is the act of registering a famous domain name and then selling it for a fortune. Cyber Squatters register domain names identical to popular service providers' domains so as to attract their users and benefit from it. This is an issue that has not been covered in the IT Act, 2000.

### **Phishing**

Phishing is just one of the many frauds on the Internet, trying to fool people into parting with their money. Phishing refers to the receipt of unsolicited emails by customers of financial institutions, requesting them to enter their username, password or other personal information to access their account for some reason. Customers are directed to a lookalike replica of the original institution's website. They click on the links to enter their information and remain unaware that fraud has

occurred. The fraudster then can access the customer's online bank account and to the funds contained in that account.

### **SMS spoofing**

It is a relatively new technology which uses the short message service (SMS), available on most mobile phones and personal digital assistants, to set who the message appears to come from by replacing the originating mobile number (Sender ID) with alphanumeric text.

### **Credit risk**

Generally, a financial institution's credit risk is not increased by the mere fact that a loan is originated through an e-banking channel. However, management should consider additional precautions when originating and approving loans electronically, including assuring management information systems effectively track the performance of portfolios originated through e-banking channels. The following aspects of on-line loan origination and approval tend to make risk management of the lending process more challenging. If not properly managed, these aspects can significantly increase credit risk.

Dominance of private and foreign banks in number of technological related frauds is expected as they lead the technologically enabled service delivery in Indian banking sector. It is evident from the above table that though cyber fraud incidents are extremely high but the actual amount involved is generally very low ( RBI Working Report, 2018) . Even though the amount involved may be low for banks but these are significant from the point of view of customers who are victims of such frauds. It is therefore in banks' own interest to ensure that they are on guard and are ready for the challenges of providing a secure atmosphere for customers to conduct electronic transaction.

Around 65% of the total fraud cases reported by the banks were information technology related frauds that were reported (covering frauds committed via internet banking channel, Automatic Teller Machines and other alternate payment channels like credit/ debit/prepaid cards and mobile banking frauds ) stated in RBI Working Committee Report 2018<sup>18</sup>.

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<sup>18</sup> RBI working committee report 2018



## **CHAPTER-6: LEGAL ISSUE IN INTERNET BANKING**

The legal framework for banking in India is provided by a set of enactments, viz., the Banking Regulations Act, 1949, the Reserve Bank of India Act, 1934, and the Foreign Exchange Management Act, 1999. Broadly, no entity can function as a bank in India without obtaining a license from Reserve Bank of India under Banking Regulations Act, 1949. Different types of activities which a bank may undertake and other prudential requirements are provided under this Act. Accepting of deposit from public by a non-bank attracts regulatory provisions under Reserve Bank of India Act 1934. Under the Foreign Exchange Management Act 1999, no Indian resident can lend, open a foreign currency account or borrow from a non resident, including non-resident banks, except under certain circumstances provided in law. Besides these, banking activity is also influenced by various enactments governing trade and commerce, such as, Indian Contract Act, 1872, the Negotiable Instruments Act, 1881, Indian Evidence Act, 1872, etc.

As discussed earlier, Internet banking is an extension of the traditional banking, which uses Internet both as a medium for receiving instructions from the customers and also delivering banking services. Hence, conceptually, various provisions of law, which are applicable to traditional banking activities, are also applicable to Internet banking. However, use of electronic medium in general and Internet in particular in banking transactions, has put to question the legality of certain types of transactions in the context of existing statute. The validity of an electronic message / document, authentication, validity of contract entered into electronically, non-repudiation etc. are important legal questions having a bearing on electronic commerce and Internet banking. It has also raised the issue of ability of banks to comply with legal requirements / practices like secrecy of customers account, privacy, consumer protection etc. given the vulnerability of data / information passing through Internet. There is also the question of adequacy of law to deal with situations which are technology driven like denial of service / data corruption because of technological failure, infrastructure failure, hacking, etc. Cross border transactions carried through Internet pose the issue of jurisdiction and conflict of laws of different nations. This dichotomy between integration of trade and finance over the globe through ecommerce and divergence of national laws is perceived as a major obstacle for ecommerce / e-banking and has set in motion the process of harmonization and standardization of laws relating to money, banking and financial services. A major initiative in this direction is the United Nations Commission on International Trade Law (UNCITRAL)'s Model law, which was adopted by the General Assembly of United Nations and has been recommended to the member nations for consideration while revising / adopting their laws of electronic trade.

Government of India has enacted The Information Technology Act, 2000, in order *to provide legal recognition for transactions carried out by means of electronic data interchange and other means of electronic communication, commonly referred to as 'electronic commerce'...* The Act, which has also drawn upon the Model Law, came into force with effect from October 17, 2000. The Act has also amended certain provisions of the Indian Penal Code, the Indian Evidence Act, 1872, The Bankers Book of Evidence Act, 1891 and Reserve Bank of India Act 1934 in order to facilitate ecommerce in India. However, this Act will not apply to:-

1. A negotiable instrument as defined in section 13 of the Negotiable Instruments Act, 1881;

2. A power-of-attorney as defined in section 1A of the Power-of-Attorney Act, 1882;
3. A trust as defined in section 3 of the Indian Trusts Act, 1882;
4. A will as defined in clause (h) of section 2 of the Indian Succession Act, 1925;
5. Any contract for the sale or conveyance of immovable property or any interest in such property;
6. Any such class of documents or transactions as may be notified by the Central Government in the official Gazette.

In the course of providing Internet banking services the banks in India are facing new challenges relating to online opening of accounts, authentication, secrecy of customers accounts, non-repudiation, liability standards and consumer protection, etc., each of which has been examined in the context of existing legal framework. In the course of providing Internet banking services the banks in India are facing new challenges relating to online opening of accounts, authentication, secrecy of customers accounts, non-repudiation, liability standards and consumer protection, etc., each of which has been examined in the context of existing legal framework.

**Online opening of account:** The banks providing Internet banking service, at present are only willing to accept the request for opening of accounts. The accounts are opened only after proper physical introduction and verification. This is primarily for the purpose of proper identification of the customer and also to avoid benami accounts as also money laundering activities that might be undertaken by the customer. Supervisors world over, expect the Internet banks also to follow the practice of ‘know your customer’ As per Section 131 of the Negotiable Instruments Act, 1881 (the Act) a banker who has in good faith and without negligence received payment for a customer of a cheque crossed generally or specially to himself shall not, in case the title to the cheque proves defective, incur any liability to the true owner of the cheque by reason only of having received such payment. The banker’s action in good faith and without negligence have been discussed in various case laws and one of the relevant passages from the judgment of Justice Chagla in the case of *Bapulal Premchand Vs Nath Bank Ltd.* (AIR 1946 Bom.482) is as follows:

*“Primarily, inquiry as to negligence must be directed in order to find out whether there is negligence in collecting the cheque and not in opening the account, but if there is any antecedent or present circumstance which aroused the suspicion of the banker then it would be his duty before he collects the cheque to make the necessary enquiry and undoubtedly one of the antecedent circumstances would be the opening of the account. In certain cases failure to make enquiries as to the integrity of the proposed customer would constitute negligence”.*<sup>19</sup>

Further the Supreme Court of India in *Indian Overseas Bank Ltd. Vs. Industrial Chain Concern* [JT1989(4)SC 334] has stated that as a general rule, before accepting a customer, the bank must take reasonable care to satisfy himself that the person in question is in good reputation and if he fails to do so, he will run the risk of forfeiting the protection given by Section 131 of Negotiable Instruments Act, 1881 but reasonable care depends upon the facts and circumstances of the case.<sup>20</sup> Similarly, the Delhi High Court was also of the view that the modern banking practice requires that a constituent should either be known to the bank or should be properly introduced. The underlying object of the bank insisting on producing reliable references is only to find out if

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<sup>19</sup> *Bapu Lal Prem Chand Vs Nath bank Ltd.* (AIR 1946)

<sup>20</sup> *Indian Overseas Bank Ltd. Vs. Industrial Chain Concern* [JT1989(4)SC 334]

possible whether the new constituent is a genuine party or an imposter or a fraudulent rogue [Union of India Vs National Overseas Grindlays Bank Ltd. (1978) 48 Com.Cases 277 (Del)].

Thus, the introduction of a new customer by a third party reference is a well-recognized practice followed by the banks before opening new accounts in order to prove the reasonable care and absence of any negligence in permitting the new customer to open the account. Further, in order to establish the reasonable care the banks have to make enquiries about the integrity/reputation of the prospective customer. It is not a mere enquiry about the identity of the person. The Group, therefore, endorses the practice presently followed by the banks in seeking proper introduction before allowing the operations of the customers' accounts. In the context of Internet banking and after the coming into force of the Information Technology Act, 2000, it may be possible for the banks to rely on the electronic signatures of the introducer. But this may have to await till the certification machinery as specified in the Information Technology Act, 2000 comes into operation.

*Authentication:* One of the major challenges faced by banks involved in Internet banking is the issue relating to authentication and the concerns arising in solving problems unique to electronic authentication such as issues of data integrity, nonrepudiation, evidentiary standards, privacy, confidentiality issues and the consumer protection. The present legal regime does not set out the parameters as to the extent to which a person can be bound in respect of an electronic instruction purported to have been issued by him. Generally, authentication is achieved by what is known as security procedure. Methods and devices like the personal identification numbers (PIN), code numbers, telephone-PIN numbers, relationship numbers, passwords, account numbers and encryption are evolved to establish authenticity of an instruction. From a legal perspective, the security procedure requires to be recognized by law as a substitute for signature. Different countries have addressed these issues through specific laws dealing with digital signatures. In India, the Information Technology Act, 2000 (the "Act") in Section 3 (2) provides that any subscriber may authenticate an electronic record by affixing his digital signature. However the Act only recognizes one particular technology as a means of authenticating the electronic records (viz, the asymmetric crypto system and hash function which envelop and transform the initial electronic record into another electronic record). This might lead to the doubt of whether the law would recognize the existing methods used by the banks as a valid method of authenticating the transactions. The approach in the other countries has been to keep the legislation technology neutral. The Group is of the view that the law should be technology neutral so that it can keep pace with the technological developments without requiring frequent amendments to the law as there exists a lot of uncertainty about future technological and market developments in Internet banking. This however would not imply that the security risks associated with Internet banking should go unregulated.

Hence, Section 3 (2) of the Information Technology Act 2000 may need to be amended to provide that the authentication of an electronic record may be effected either by the use of the asymmetric crypto system and hash function, or a system as may be mutually determined by the parties or by such other system as may be prescribed or approved by the Central Government. If the agreed procedure is followed by the parties concerned it should be deemed as being an authenticated transaction. A clarification to this effect by way of an amendment of the aforesaid Act will facilitate

the Internet banking transactions. Further, the banks may be allowed to apply for a license to issue digital signature\ certificate under Section 21 of the Information Technology Act, 2000 and become a certifying authority for facilitating Internet banking. The certifying authority acts like a trusted notary for authenticating the person, transaction and information transmitted electronically. Using a digital certificate from trusted certificate authority like a bank shall provide a level of comfort to the parties of an Internet banking transaction. Hence, it is recommended by the Committee that the Reserve Bank of India may recommend to the Central Government to notify the business of the certifying authority under Clause (o) of Section 6(1) of the Banking Regulation Act, 1949, to permit the banks to act as such trusted third parties in e-commerce transactions.

Mode of Payment under the Income Tax Act, 1961: Section 40A(3) of the Income tax Act, 1961, dealing with deductible expenses, provides that in cases where the amount exceeds Rs. 20,000/-, the benefit of the said section will be available only if the payment is made by a crossed cheque or a crossed bank draft. One of the services provided by the banks offering Internet banking service is the online transfer of funds between accounts where cheques are not used, in which the above benefit will not be available to the customers.

The primary intention behind the enactment of Section 40 A of the Income tax Act, 1961 is to check tax evasion by requiring payment to designated accounts. In the case of a funds transfer, the transfer of funds takes place only between identified accounts, which serves the same purpose as a crossed cheque or a crossed bank draft. Hence, the Committee recommends that Section 40A of the Income Tax Act, 1961, may be amended to recognise even electronic funds transfer.

Secrecy of Customer's Account: The existing regime imposes a legal obligation on the bankers to maintain secrecy and confidentiality about the customer's account. The law at present requires the banker to take scrupulous care not to disclose the state of his customer's account except on reasonable and proper occasions.<sup>21</sup>

While availing the Internet banking services the customers are allotted proper User ID, passwords and/or personal identification numbers and/or the other agreed authentication procedure to access the Internet banking service and only users with such access methodology and in accordance with the agreed procedure are authorized to access the Internet banking services. In other words a third party would not be able to withdraw money from an account or access the account of the customer unless the customer had divulged his/her password in the first place.

However, if the password or the identification number is misplaced or lost or gets into the hands of the wrong person and such person procures details about the customers account then the banker may be faced with legal proceedings on the grounds of violation of the obligation to maintain secrecy of the customer's accounts. This concern of the bankers is very high especially in the case of joint accounts where both the parties share one personal identification numbers or relationship numbers and operate the account jointly. Further, by the very nature of Internet the account of a customer availing Internet banking services would be exposed to the risk of being accessed by hackers and inadvertent finders.

The Internet banking services at present are being provided by most of the banks by systems which are only accessible through "secure zones" or SSL (Secure Sockets Layer) to secure and

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<sup>21</sup> *Tournier v. National Provincial and Union Bank of England*, (1924) 1 K.B. 461

authenticate the user through a secure browser. Most of the banks have adopted 128 Bit strong encryption which is widely accepted worldwide as a standard for securing financial transaction. To reduce the risk of the customers' account information being accessed by third parties, it is very important that the banks continue to be obliged to protect the customer account. However, it is equally important to note that the banks may still be exposed to the risk of liability to customers and hence they should adopt all reasonable safety controls and detection measures like establishment of firewalls, net security devices, etc. Further, banks should put in place adequate risk control measures in order to minimize possible risk arising out of breach of secrecy due to loss/ misplacement/ theft of customers' ID/PIN, etc.

*Revocation and Amendment of Instructions:* The general revocation and amendment instructions to the banks are intended to correct errors, including the sending of an instruction more than once. Occasionally, a revocation or amendment may be intended to stop a fraud. Under the existing law, banks are responsible for making and stopping payment in good faith and without negligence. In an Internet banking scenario there is very limited or no stop-payment privileges since it becomes impossible for the banks to stop payment in spite of receipt of a stop payment instruction as the transactions are completed instantaneously and are incapable of being reversed. Hence the banks offering Internet banking services may clearly notify the customers the time frame and the circumstances in which any stop payment instructions could be accepted.

*Rights and Liabilities of the Parties:* Typically, the banker-customer relationship is embodied in a contract entered into by them. The banks providing the Internet banking services currently enter into agreements with their customers stipulating their respective rights and responsibilities including the disclosure requirements in the case of Internet banking transactions, contractually. A Standard format/minimum consent requirement to be adopted by the banks offering Internet banking facility, could be designed by the Indian Banks' Association capturing, inter alia, access requirements, duties and responsibilities of the banks as well as customers and any limitations on the liabilities of the banks in case of negligence and non-adherence to the terms of agreement by customers.

*Internet Banking and Money Laundering:* One of the major concerns associated with Internet Banking has been that the Internet banking transactions may become untraceable and are incredibly mobile and may easily be anonymous and may not leave a traditional audit trail by allowing instantaneous transfer of funds. It is pertinent to note that money-laundering transactions are cash transactions leaving no paper trail. Such an apprehension will be more in the case of use of electronic money or e-cash. In the case of Internet Banking the transactions are initiated and concluded between designated accounts. Further Section 11 of the proposed Prevention of Money Laundering Bill, 1999 imposes an obligation on every Banking Company, Financial Institution and intermediary to maintain a record of all the transactions or series of transactions taking place within a month, the nature and value of which may be prescribed by the Central Government. These records are to be maintained for a period of five years from the date of cessation of the transaction between the client and the banking company or the financial institution or the intermediary. This would apply to banks offering physical or Internet banking services. This will adequately guard against any misuse of the Internet banking services for the purpose of money laundering. Further the requirement of the banking companies to preserve specified ledgers, registers and other records for a period of 5 to 8 years, as per the Banking Companies (Period of

Preservation of Records) Rules, 1985 promulgated by the Central Government also adequately takes care of this concern.

*Maintenance of Records:* Section 4 of the Bankers' Books Evidence Act, 1891, provides that a certified copy of any entry in a banker's book shall in all legal proceedings be received as a prima facie evidence of the existence of such an entry. The Banking Companies (Period of Preservation of Records) Rules, 1985 promulgated by the Central Government requires banking companies to maintain ledgers, records, books and other documents for a period of 5 to 8 years. A fear has been expressed as to whether the above details of the transactions if maintained in an electronic form will also serve the above purpose. The Group is of the considered opinion that that this has been adequately taken care of by Section 7 and Third Schedule of the Information Technology Act, 2000.

*Inter-Bank Electronic Funds Transfer:* The Electronic Funds Transfer via the Internet, in its present form is provided only between accounts with the same bank. The transaction is effected by the originator who gives the electronic payment order to one branch of a bank offering the Internet banking facility ("the Sending Branch"). The electronic instruction is processed by the backend software of the branch to confirm the account number and the person's identification and instruction is issued by the Sending Branch to the branch having the account of the beneficiary ("Beneficiary Branch") to credit the account of the beneficiary. The Sending Branch debits the account of the originator at its end. At present there is no clearing mechanism in place for settlement of inter-bank electronic funds transfer. The entire gamut of electronic funds transfer and the legal issues and risks involved in the same are currently being examined by a committee set up by the Reserve Bank of India. The 4th Schedule to the Information Technology Act, 2000 has amended the Reserve Bank of India Act, 1934 empowering the Reserve Bank of India to regulate electronic funds transfer between banks and banks\ and other financial institutions.

*Miscellaneous:* During the course of deliberations, the Group discussed certain issues where the legal position is not clear but have a bearing on Internet banking. Certain issues have also not been addressed by the Information Technology Act, 2000. Such issues are briefly discussed below. The Consumer Protection Act 1986 defines the rights of consumers in India and is applicable to banking services as well. The issues of privacy, secrecy of consumers' accounts and the rights and liabilities of customers and banks, etc. in the context of Internet banking have been discussed in earlier paragraphs. In cases where bilateral agreements defining customers rights and liabilities are adverse to consumers than what are enjoyed by them in the traditional banking scenario, it is debatable whether such agreements are legally tenable. For example, whether a bank can claim immunity if money is transferred unauthorizedly by a hacker from a customers account, on the pretext that it had taken all reasonable and agreed network security measures. In a traditional banking scenario, a bank has normally no protection against payment of a forged cheque. If the same logic is extended, the bank providing I-banking may not absolve itself from liability to the customers on account of unauthorized transfer through hacking. Similar position may obtain in case of denial of service. Even though, The Information Technology Act, 2000 has provided for penalty for denial of access to a computer system (Section-43) and hacking (Section – 66), the liability of banks in such situations is not clear. The Group was of the view that the banks providing Internet banking may assess the risk and insure themselves against such risks.

There was no specific enactment in India which protects privacy of customers. Bankers' secrecy obligation mostly followed from different case laws. In UK, the Data Protection Act 1984 specifically prohibits personal data from being disclosed for purposes other than for which the data is held. This prohibits use of customer data relating to their spending habits, preferences etc., for any commercial purpose. The Office of the Comptroller of Currency have also issued directions to US banks enforcing customers' privacy. The Information Technology Act, 2000, in Section 72 has provided for penalty for breach of privacy and confidentiality. Further, Section 79 of the Act has also provided for exclusion of liability of a network service provider for data travelling through their network subject to certain conditions. Thus, the liability of banks for breach of privacy when data is travelling through network is not clear. This aspect needs detailed legal examination. The issue of ownership of transactional data stored in banks' computer systems also needs further examination.

The applicability of various existing laws and banking practices to e-banking is not tested and is still in the process of evolving, both in India and abroad. With rapid changes in technology and innovation in the field of e-banking, there is a need for constant review of different laws relating to banking and commerce. The Group, therefore, recommends that the Reserve Bank of India may constitute a multi disciplinary high level standing committee to review the legal and technological requirements of e-banking on continual basis and recommend appropriate measures as and when necessary.

## **CHAPTER-7: REGULARITY & SUPERVISORY CONCERN**

Banking on the Internet provides benefits to the consumer in terms of convenience, and to the provider in terms of cost reduction and greater reach. The Internet itself however is not a secure medium, and thus poses a number of risks of concern to regulators and supervisors of banks and financial institutions. World over, regulators and supervisors are still evolving their approach towards the regulation and supervision of Internet banking.

Regulations and guidelines issued by some countries include the following.

1. Requirement to notify about web site content
2. Prior authorization based on risk assessment made by external auditors
3. On-site examination of third party service providers
4. Off-site policing the perimeters to look for infringement.
5. Prohibition on hyper links to non bank business sites
6. Specification of the architecture

In some countries supervisors have followed a 'hands-off' approach to regulation of such activities, while others have adopted a wait and watch attitude. This chapter suggests approaches to supervision of Internet banking activities, drawing upon the best international practices in this area as relevant to the Indian context.

### **Major supervisory concerns**

These concerns can be clubbed into the following:

1. Operational risk issues
2. Cross border issues
3. Customer protection and confidentiality issues
4. Competitiveness and profitability issues

### ***Operational risk issues***

The open architecture of the Internet exposes the banks' systems to decide access through the easy availability of technology. The dependence of banks on third party providers places knowledge of banks' systems in a public domain and leaves the banks dependent upon relatively small firms which have high turnover of personnel. Further, there is absence of conventional audit trails as also relative anonymity of transactions due to remote access. It is imperative that security and integrity of the transactions are protected so that the potentiality for loss arising out of criminal



activities, such as fraud, money laundering, tax evasion etc. and a disruption in delivery systems either by accident or by design, are mitigated. The supervisory responses to manage operational risk matters include issue of appropriate guidance on the risk (including outsourcing risk) control and record maintenance, issue of minimum standards of technology and security appropriate to the conduct of transactional business, extension of 'know your customer' rules for transactions on the Internet, and insistence on appropriate and visible disclosure to inform customers of the risks that they face on doing business on the Internet.

### ***Cross border issues***

The Internet knows no frontiers, and banks can source deposits from jurisdiction where they are not licensed or supervised or have access to payment systems. Customers can Potentially Park their funds in jurisdictions where their national authorities have no access to records. The issues of jurisdiction, territoriality and recourse become even more blurred in the case of virtual banks. Cross border issues would also come into play where banks choose to locate their processing centres, records or back up centres in different jurisdictions. While country - specific approaches are being adopted at the national level, the 'Group on e-banking' set up by the Basle Committee on Banking Supervision (BCBS) is engaged in bringing about harmonization in approaches at an international level.

### ***Customer protection and confidentiality issues:***

The loss of customer confidentiality may pose a reputation risk to banks and the banking system as a whole. Transacting business on the Internet exposes data being sent across the Internet to interception by unauthorized agents, who may then use the data without the approval of the customers. There has also been incidence where glitches have developed in web sites permitting customers to access each other's accounts. To address these risks, customers need to be educated through adequate disclosures of such risks.

### ***Competitiveness and profitability issues:***

While Internet banking is expected to substantially reduce the cost of doing transactions the long run, the limited business being done on the Internet has yet to pay for the infrastructure in which banks have invested. This includes the tie up with technology companies in setting up payment gateways, portals and Internet solutions and the alliance with other businesses for cross-selling products. The coming years may however see a scenario where the margins of conventional banks come under pressure because of competition from Internet banking, including virtual banks, which need no infrastructure expenses. These issues have to be kept in mind by supervisors while deciding their approach to e-banking.

### **Broad regulatory framework**

It would be necessary to extend the existing regulatory framework over banks to Internet banking also. Such an approach would need to take into account the provisions of both the Banking Regulation Act 1949 and the Foreign Exchange Management Act, 1999.

1. Only such banks which are licensed and supervised in India and have a physical presence here should be permitted to offer Internet banking products to residents of India.

2. These products should be restricted to account holders only and should not be offered in other jurisdictions.
3. The services should only offer local currency products and that too by entities who are part of the local currency payment systems.
4. The 'in-out' scenario where customers in cross border jurisdictions are offered banking services by Indian banks (or branches of foreign banks in India) and the 'outin' scenario where Indian residents are offered banking services by banks operating in cross-border jurisdictions are generally not permitted and this approach should be carried over to Internet banking also.
5. The existing exceptions for limited purposes under FEMA i.e. where resident Indians have been permitted to continue to maintain their accounts with overseas banks etc., would however be permitted transactions.
6. Overseas branches of Indian banks would be permitted to offer Internet banking services to their overseas customers subject to their satisfying, in addition to the host supervisor, the home supervisor in keeping with the supervisory approach outlined in the next section.
7. This extension of approach would apply to virtual banks as well. Thus, both banks and virtual banks incorporated outside the country and having no physical presence here would not, for the present, be permitted to offer Internet services to Indian depositors.

### **Recommendations**

With the above approach in mind, the Group recommends that the regulatory and supervisory concerns relating to Internet banking can be met in the manner outlined in the following paragraphs.

All banks which propose to offer transactional services on the Internet should obtain an in-principle approval from RBI prior to commencing these services. The application should be accompanied by a note put up to the Board of the bank along with Board resolution passed. The Board note should cover the reasons for the bank choosing to enter into such business, the potential penetration it seeks to achieve, a cost-benefit analysis, a listing of products it seeks to offer, the technology and business partners for the products, and all third party support services and service providers with their track record and agreements with them, and the systems and the skills and capabilities it has in this regard and most materially the systems, controls and procedures it has put or intends to put in place to identify and manage the risks arising out of the proposed ventures. The bank should also enclose a security policy framed in this regard which should cover all the recommendations made in Chapter 6 of this report and produce a certification from a reputed external auditor who is CISA or otherwise appropriately qualified that the security measures taken by the bank are adequate and meet the requirements and that risk management systems are in place to identify and mitigate the risks arising out of the entire gamut of Internet banking operations.

The RBI could require the bank together with the auditor to hold discussions with the RBI in this regard before granting such approval. After this initial approval is given, the bank would be obliged to inform the RBI of any material changes in web-site content and launch of new products.

The assurance about security controls and procedures, which is sought from the specialist external auditors, should be periodically obtained, with the periodicity depending on the risk assessment of the supervisor. Further, banks would also be required to report every breach or failure of the security systems and procedures to RBI, who may decide to subject the failure to an on-site examination or even commission an auditor to do so.

The RBI as supervisor would cover the entire risks associated with electronic banking as part of its annual inspections. For this purpose, a checklist could be developed along the lines of those covering general computerized banking featured in the manual developed for inspection of computerized branches. Till such time as the RBI builds up sufficient capability to do this in-house, it is recommended that this function be outsourced to qualified EDP auditors.

The focus of the supervisory approach would mainly be the transactional Internet banking services offered by existing banks as an alternative channel. To some extent the concerns in this regard are the same as those arising out of electronic banking in general. The RBI has issued guidelines in the recent past on the "Risks and Controls in Computers and Telecommunications" which would be applicable equally to Internet banking. Another supervisory focus would be on Record Maintenance and their availability for inspection and audit. Again, RBI has issued guidelines for these "Preservation and Record Maintenance" which need to be updated to include the risks heightened by banking on the net. Broadly, the record preservation and maintenance policy must encompass record keeping, record retention, record media and record location.

The key features of this enhancement would be as follows:

1. The cornerstone of this policy should be security. Access to all bank-related electronic data should be restricted to authorized individuals.
2. All transactional, financial and managerial data pertaining to the previous financial year must be archived before 1 July of the subsequent financial year.
3. A senior officer / executive of the Bank possessing appropriate qualifications, education and/or background should be designated in-charge of the archived data. A possible designation could be Archived Data Security Officer.
4. All access to archived data should be with the authentic (written or by e-mail) approval of this Archived Data Security Officer (ADSO).
5. The role and responsibilities of the ADSO should be clearly delineated and well publicized within the bank.
6. Data so archived should be on such a platform and using such a technology that future alteration / modification / deletion of the data is not possible, once the data is archived.
7. If the technology and/or platform used for data storage involves compression and/or dis-aggregation of data, banks should have in place adequate software/hardware which will ensure

easy restoration of the data as and when required by the bank's own departments and also by RBI as well as other statutory authorities.

8. All transactional, financial and managerial data should be available on-line. If, for reasons of paucity of on-line storage, such data (of the current financial year) has been backed-up and removed from on-line storage, it must be available in a format and at a location which ensures that the data can be restored on-line within a maximum of 24 hours from the date and time at which the demand for such data is made by users from within the bank or from RBI or other statutory authorities.

9. Similarly, transactional, financial and managerial data of the previous financial year should be made available within a maximum of 48 hours of the date and time at which such request is made by the bank's own users or by the RBI and other statutory authorities.

A vulnerability which is accentuated in Internet banking is the reliance upon third party providers and support services and this requires banks to effectively manage the risks of all outsourced activities. In turn the supervisors should have the ability to assess the risks arising out of such liaisons. **Direct supervision of the third party by the supervisor is not envisaged. Accordingly, as part of the Internet policy, banks should develop outsourcing guidelines, which mitigate the risks of disruption and defective service. Alternatively, the IBA (Indian Banks Association) or IDRBT (Institute for Development and Research in Banking Technology) could be asked to develop broad guidelines for the use of the banking community.**

*Payment Gateway:*

An externally shared service, which will develop, as the pivot of the Internet banking would be the payment gateway. With the increasing popularity of "e-Commerce" i.e., buying and selling over the Internet, electronic payments and settlements for such purchases, is a natural and expected requirement. Banks, which are the vital segment of the payment system in the country, will therefore be required to equip themselves to meet this emerging challenge. In its basic form, the 'Inter-Bank Payment Gateway' for payments and settlements of e-Commerce transactions is not very different from the traditional cheque clearing system, which is perhaps the most widely prevalent form of Inter-Bank settlement of funds, or the net settlement system of the international card agencies like Visa, Master Cards and American Express, for the credit card payments.

With the emergence of the Internet and the ability to buy and sell over the Internet, it has become imperative to deploy a similar Inter-Bank Payment Gateway to facilitate authorization for payments and settlement between participating institutions for commercial transactions carried out over the Internet. No one particular model for setting up an Inter-Bank Payment Gateway for such payments has been established as yet and we are, therefore, in a situation where the regulatory and supervisory framework itself needs to be evolved.

Given the above considerations, the following framework for setting up Inter-Bank Payment Gateways for Internet payments in India is suggested:

1. Only institutions that are members of the cheque clearing system in the country may be permitted to participate in the Inter-Bank Payment Gateway initiatives for Internet payments.

2. Both 'net-settlement' and 'gross-settlement' capabilities might be necessary, net settlement being the settlement mode for transaction below a certain pre-specified threshold value and gross settlement for transactions higher than the pre-specified value.
3. The Inter-Bank Payment Gateway should have one nominated bank as the clearing bank to settle all transactions.
4. The approval for setting up the Inter-Bank Payment Gateway should be granted only by the Reserve Bank of India, in their capacity as the Regulator of banks and Payment Systems in the country. The norms to become eligible to set up the Inter- Bank Payment Gateway should be specified by the Reserve Bank of India, on the basis of which institutions may seek formal approval to set up the Inter-Bank Payment Gateway.
5. It is expected that there will not be more than two or three Inter Bank Payment Gateways in the Country and all banks who wish to participate in the payment and settlement for e-Commerce transactions originated over the Internet could become a member of one or more of these Inter-Bank Payment Gateways.
6. All payments routed through the Inter-Bank Gateways should only cover direct debits and direct credits to the accounts maintained with the participating Banks by the parties involved in the e-Commerce transaction.
7. Payments effected using credit cards should not be routed through the Inter-Bank Payment Gateway. These should be authorized by the payer bank (i.e., acquiring bank) directly through its credit card authorization capability.
8. It should be obligatory on the part of the Inter-Bank Payments Gateway to establish, at any time, the complete trace of any payment transactions routed through it. The trace should cover date and time stamp when the transaction was originated and authorized, the payee details (account number and name of the payee bank), the payers details (account number and name of the payer bank), as well as a unique Transactional Reference Number (TRN) provided by both the Payee Bank and Payer Bank for each transaction.
9. Connectivity between the Inter-Bank Payment Gateway and the computer system of the member Banks should be achieved using a leased line network (not over the Internet), with appropriate data encryption standards.
10. All settlements over the Inter-Bank Payment Gateway should be intra-day, as far as possible in real time.
11. Until the exchange control aspects with regard to cross-border issues of e- Commerce transactions are fully discussed and documented, payment and settlement of such transactions should not be permitted over the Inter-Bank Payment Gateway.

12. Only Inter Bank Payments and Settlements (i.e. transactions involving more than one Bank) should be routed through the Inter-Bank Payment Gateway. Intra-bank payments (i.e., transactions involving only one Bank) should be handled by the bank's own internal system.

13. The responsibility for the credit risk associated with every payment transaction routed over the Inter Bank Payment Gateway will rest with the appropriate Payee Bank.

14. The mandate and the related documentation (that would form the basis for effecting payments for transactions carried out over the Internet) should be bilateral in nature i.e.,

(a) between the Payee and the Payee's bank

(b) the Payer and Payer's bank,

(c) between the participating banks and the service provider who is responsible for the operations of the Inter Bank Payment Gateway, and (d) between the banks themselves who are participating in the Inter Bank Payment Gateway Initiative. The rights and obligations of each party should be clearly stated in the mandate and should be valid in a court of law.

15. All transactions must be authenticated using a user ID and password. SSL/128 bit encryption must be used as the minimum level of security. As and when the regulatory framework is in place, all such transactions should be digitally certified by one of the licensed Certification Authorities.

16. The Service Provider who is responsible for the operations of the Inter-Bank Payment Gateway must ensure adequate firewalls and related security measure to ensure privacy to the participating institution, i.e., every institution can access data pertaining to only itself and its customer transactions.

17. Internationally accepted standards such as ISO8583 must be used for transmitting payment and settlement messages over the Network.

18. It may also be appropriate to have a panel of approved Auditors who will be required to certify the security of the entire infrastructure both at the Inter-Bank Payment Gateway as well as the participating institution's end prior to making the facility available for customer use. A process of perpetual audit must also be instituted.

It is not enough for the risk identification and assessment exercise to be between the bank and the supervisor alone. The customer too needs to be enlightened of the risks inherent in doing business on the net, and this would be served by having a mandatory disclosure template which would list the risks to the customer and the responsibilities and possible liability of the banks and the customer. Banks should also provide their most recent published financial results on their web-site.

The issue of reputation risk due to customers misunderstanding the hyper-links on the web-sites of banks also needs to be addressed.

Fundamentally there are two scenarios where hyperlinks are necessary between non-bank business sites and bank-sites:

1. Where the Bank is required to inform visitors to its own Web Site about the Portals

with whom they have a payment arrangement or Portals that the bank would want its customers to visit. These out-bound hyperlinks are unlikely to have any major security implications to the bank. In order to reflect the stability of the banking system, banks should not be seen as sponsors of or promoters of the products of unrelated businesses or of any businesses, which they are not licensed to run. The hyperlinks should hence be confined to only those portals with which they have a payment arrangement or the sites of their subsidiaries or principals.

2. The second type of hyperlink is where the Portal sites link to the bank site to pass information pertaining to a payment by one of their Internet Shoppers. This usually involves making a URL (Universal Resource Locator) link to the bank site to request authorization for payment. Such links deliver to the bank site information regarding the customer (typically his registration no) and the value of the payment to be authorized. Unless the bank exercises the right level of authentication and security, this type of URL links can be the source of a number of security breaches. It is therefore imperative that every bank ensures at least the following minimum-security precautions in order that the bank's as well as its customer's interests are protected.

Upon receiving the URL request from the Portal site, the bank should authenticate the customer who has originated the transaction by asking him to key in, on the browser screen, his user ID and password which the bank would have provided him to facilitate access to his accounts with the bank.

Upon such authentication and due verification, the bank should re-submit the transaction information on the customer's browser terminal i.e., the name of the Portal site to whom the payment is to be effected as well as the value of the transactions and seek the explicit approval of the customer to authorize the payment.

Depending on the nature of the payment, the payment authorization request should be routed either to the credit card authorizing system if payment is requested using credit card, or to the banks' host system in case of a direct debit or to the Inter-Bank Payment Gateway in case of debit to customer account in another bank.

Upon receiving the payment authorization, the bank should return the URL request to the originating Portal, with a unique reference number for the transaction, as a conformation to pay as per the settlement cycle agreed with the Portal.

All interactions with the Portal sites as well as the customers browser terminal should be secured using SSL/128 bit encryption as a minimum requirement and should in due course be also augmented with the digital certification requirement as and when digital certificate deployment is enabled in the country.

It was deliberated whether banks undertaking Internet banking should be subject to any additional capital charge because of the potentially higher proneness to unexpected losses. As yet standards have not been developed for measuring additional capital charge on account of operational risks. However, this will be covered in a way once the banks move towards risk-based supervision where supervisory intervention will be linked to the risk profile of individual institutions. In such a

scenario, an enhanced supervisory risk assessment on this account could warrant an additional capital charge, which would also be consistent with the second pillar approach of the new capital accord.

The Basle Committee for Banking Supervision (BCBS) has constituted an Electronic Banking Group (EBG) to develop guiding principles for the prudent risk management of e-banking activities as an extension of the existing Basel Committee Risk Management Principles. The Group will identify the areas of concern for supervision of cross border e-banking activities and will promote cooperative international efforts within the banking industry. It will evolve sound practices and will encourage and facilitate exchange of information, training material, guidance etc., developed by other members and supervisors around the world. Therefore, there is a need for continued interaction among the central banks and supervisors with a view to enhancing the abilities of the supervisory community to keep pace with the dynamic e-banking activities. This Working Group, therefore, recommends that the Reserve Bank of India should maintain close contact with regulating / supervisory authorities of different countries as well as with the Electronic Banking Group of BCBS and review its regulatory framework in keeping with developments elsewhere in the world.



## CHAPTER-8: RECOMMENDATIONS

Keeping in view the terms of reference, the Group has made a number of recommendations in preceding chapters.

A summary of these recommendations is given below.

### **Technology and Security Standards:**

The role of the network and database administrator is pivotal in securing the information system of any organization. Some of the important functions of the administrator via-a-vis system security are to ensure that only the latest versions of the licensed software with latest patches are installed in the system, proper user groups with access privileges are created and users are assigned to appropriate groups as per their business roles, a proper system of back up of data and software is in place and is strictly adhered to, business continuity plan is in place and frequently tested and there is a robust system of keeping log of all network activity and analyzing the same.

Organizations should make explicit security plan and document it. There should be a separate Security Officer / Group dealing exclusively with information systems security. The Information Technology Division will actually implement the computer systems while the Computer Security Officer will deal with its security. The Information Systems Auditor will audit the information systems.

Access Control: Logical access controls should be implemented on data, systems, application software, utilities, telecommunication lines, libraries, system software, etc. Logical access control techniques may include user-ids, passwords, smart cards or other biometric technologies.

Firewalls: At the minimum, banks should use the proxy server type of firewall so that there is no direct connection between the Internet and the bank's system. It facilitates a high level of control and in-depth monitoring using logging and auditing tools. For sensitive systems, a stateful inspection firewall is recommended which thoroughly inspects all packets of information, and past and present transactions are compared.

These generally include a real-time security alert.

Isolation of Dial Up Services: All the systems supporting dial up services through modem on the same LAN as the application server should be isolated to prevent intrusions into the network as this may bypass the proxy server.

Security Infrastructure: PKI is the most favoured technology for secure Internet banking services. However, it is not yet commonly available. While PKI infrastructure is strongly recommended, during the transition period, until IDRBT or Government puts in place the PKI infrastructure, the following options are recommended

1. Usage of SSL, which ensures server authentication and the use of client side certificates issued by the banks themselves using a Certificate Server.

2. The use of at least 128-bit SSL for securing browser to web server communications and, in addition, encryption of sensitive data like passwords in transit within the enterprise itself.

Isolation of Application Servers: It is also recommended that all unnecessary services on the application server such as ftp, telnet should be disabled. The application server should be isolated from the e-mail server.

Security Log (audit Trail): All computer accesses, including messages received, should be logged. All computer access and security violations (suspected or attempted) should be reported and follow up action taken as the organization's escalation policy.

Penetration Testing: The information security officer and the information system auditor should undertake periodic penetration tests of the system, which should include:

1. Attempting to guess passwords using password-cracking tools.
2. Search for back door traps in the programs.
3. Attempt to overload the system using DdoS (Distributed Denial of Service) & DoS (Denial of Service) attacks.
4. Check if commonly known holes in the software, especially the browser and the e97 mail software exist.
5. The penetration testing may also be carried out by engaging outside experts (often called 'Ethical Hackers').

Physical Access Controls: Though generally overlooked, physical access controls should be strictly enforced. The physical security should cover all the information systems and sites where they are housed both against internal and external threats.

Back up & Recovery: The bank should have a proper infrastructure and schedules for backing up data. The backed-up data should be periodically tested to ensure recovery without loss of transactions in a time frame as given out in the bank's security policy. Business continuity should be ensured by having disaster recovery sites, where backed-up data is stored. These facilities should also be tested periodically.

Monitoring against threats: The banks should acquire tools for monitoring systems and the networks against intrusions and attacks. These tools should be used regularly to avoid security breaches.

Education & Review: The banks should review their security infrastructure and security policies regularly and optimize them in the light of their own experiences and changing technologies. They should educate on a continuous basis their security personnel and also the end-users. (Para 6.4.12)

Log of Messages: The banking applications run by the bank should have proper record keeping facilities for legal purposes. It may be necessary to keep all received and sent messages both in encrypted and decrypted form. (When stored in encrypted form, it should be possible to decrypt the information for legal purpose by obtaining keys with owners' consent.)

Certified Products: The banks should use only those security solutions/products which are properly certified for security and for record keeping by independent agencies (such as IDRBT).

Maintenance of Infrastructure: Security infrastructure should be properly tested before using the systems and applications for normal operations. The bank should upgrade the systems by installing patches released by developers to remove bugs and loopholes, and upgrade to newer versions which give better security and control.

Approval for E-banking: All banks having operations in India and intending to offer Internet banking services to public must obtain an approval for the same from RBI. The application for approval should clearly cover the systems and products that the bank plans to use as well as the security plans and infrastructure. It should include sufficient details for RBI to evaluate security, reliability, availability, auditability, recoverability, and other important aspects of the services. RBI may provide model documents for Security Policy, Security Architecture, and Operations Manual.

### **Legal Issues**

The banks providing Internet banking service, at present are only accepting the request for opening of accounts. The accounts are opened only after proper physical introduction and verification. Considering the legal position prevalent, particularly of Section 131 of the Negotiable Instruments Act, 1881 and different case laws, the Group holds the view that there is an obligation on the banks not only to establish the identity but also to make enquiries about integrity and reputation of the prospective customer. The Group, therefore, endorses the present practice but has suggested that after coming in to force of the Information Technology Act, 2000 and digital certification machinery being in place, it may be possible for the banks to rely on digital signature of the introducer.

The present legal regime does not set out the parameters as to the extent to which a person can be bound in respect of an electronic instruction purported to have been issued by him. Generally authentication is achieved by security procedure, which involves methods and devices like user-id, password, personal identification number (PIN), code numbers and encryption etc., used to establish authenticity of an instruction. However, from a legal perspective a security procedure needs to be recognized by law as a substitute for signature. In India, the Information Technology Act, 2000, in Section 3(2) provides for a particular technology (viz., the asymmetric crypto system and hash function) as a means of authenticating electronic record. This has raised the doubt whether the law would recognize the existing methods used by banks as valid methods of authentication. The Group holds the view that as in case of other countries, the law should be technology neutral.

In keeping with the view that law should be technology neutral, the Group has recommended that Section 3(2) of the Information Technology Act, 2000 needs to be amended to provide that in addition to the procedure prescribed there in or that may be prescribed by the Central government, a security procedure mutually agreed to by the concerned parties should be recognized as a valid method of authentication of an electronic document / transaction during the transition period.

Banks may be allowed to apply for a license to issue digital signature certificate under Section 21 of the Information Technology Act, 2000 and function as certifying authority for facilitating Internet banking. Reserve Bank of India may recommend to Central Government for notifying the business of certifying authority as an approved activity under clause (o) of Section 6(1) of the Banking Regulations Act, 1949.

Section 40A(3) of the Income Tax Act, 1961 recognizes only payments through a crossed cheque or crossed bank draft, where such payment exceeds Rs. 20000/-, for the purpose of deductible expenses. Since the primary intention of the above provision, which is to prevent tax evasion by ensuring transfer of funds through identified accounts, is also satisfied in case of electronic transfer of funds between accounts, such transfers should also be recognized under the above provision. The Income Tax Act, 1961 should be amended suitably.

Under the present regime there is an obligation on banks to maintain secrecy and confidentiality of customer's account. In the Internet banking scenario, the risk of banks not meeting the above obligation is high on account of several factors like customers not being careful about their passwords, PIN and other personal identification details and divulging the same to others, banks' sites being hacked despite all precautions and information accessed by inadvertent finders. Banks offering Internet banking are taking all reasonable security measures like SSL access, 128 bit encryption, firewalls and other net security devices, etc. The Group is of the view that despite all reasonable precautions, banks will be exposed to enhanced risk of liability to customers on account of breach of secrecy, denial of service etc., because of hacking other technological failures. The banks should, therefore, institute adequate risk control measures to manage such risk.

In Internet banking scenario there is very little scope for the banks to act on stoppayment instructions from the customers. Hence, banks should clearly notify to the customers the timeframe and the circumstances in which any stop-payment instructions could be accepted.

The banks providing Internet banking service and customers availing of the same are currently entering into agreements defining respective rights and liabilities in respect of Internet banking transactions. A standard format minimum consent requirement to be adopted by banks may be designed by the Indian Banks' Association, which should capture all essential conditions to be fulfilled by the banks, the customers and relative rights and liabilities arising there from. This will help in standardizing documentation as also develop standard practice among bankers offering Internet banking facility.

The concern that Internet banking transactions may become a conduit for money laundering, has been addressed by the Group. Such transactions are initiated and concluded between designated accounts. Further, the proposed Prevention of Money Laundering Bill 1999 imposes obligation on every banking company to maintain

records of transactions for certain prescribed period. The Banking Companies (Period of Preservation of Records) Rules, 1985 also require banks to preserve certain records for a period ranging between 5 to 8 years. The Group is of the view that these legal provisions which are applicable to all banking transactions, whether Internet banking or traditional banking, will adequately take care of this concern and no specific measures for Internet banking is necessary.

The Consumer Protection Act, 1986 defines the rights of consumers in India and is applicable to banking services as well. Currently, the rights and liabilities of customers availing of Internet banking services are being determined by bilateral agreements between the banks and customers. It is open to debate whether any bilateral agreement defining customers rights and liabilities, which are adverse to consumers than what is enjoyed by them in the traditional banking scenario will be legally tenable. Considering the banking practice and rights enjoyed by customers in traditional banking, it appears the banks providing I-banking may not absolve themselves from liability to the customers on account of unauthorized transfer through hacking. Similar position may obtain in case of denial of service. Even though, The Information Technology Act, 2000 has provided for penalty for denial of access to a computer system (Section-43) and hacking (Section – 66), the liability of banks in such situations is not clear. The Group was of the view that the banks providing Internet banking may assess the risk and insure themselves against such risks.

The Information Technology Act, 2000, in Section 72 has provided for penalty for breach of privacy and confidentiality. Further, Section 79 of the Act has also provided for exclusion of liability of a network service provider for data traveling through their network subject to certain conditions. Thus, the liability of banks for breach of privacy when data is traveling through network is not clear. This aspect needs detailed legal examination. The issue of ownership of transactional data stored in banks' computer systems also needs further examination.

### **Regulatory and Supervisory Issues**

All banks, which propose to offer transactional services on the Internet should obtain approval from RBI prior to commencing these services. Bank's application for such permission should indicate its business plan, analysis of cost and benefit, operational arrangements like technology adopted, business partners and third party service providers and systems and control procedures the bank proposes to adopt for managing risks, etc. The bank should also submit a security policy covering recommendations made in chapter-6 of this report and a certificate from an independent auditor that the minimum requirements prescribed there have been met. After the initial approval the banks will be obliged to inform RBI any material changes in the services / products offered by them. RBI may require banks to periodically obtain certificates from specialist external auditors certifying their security control and procedures. The banks will report to RBI every breach or failure of security systems and procedure and the latter, at its discretion, may decide to commission special audit / inspection of such banks.

To a large extent the supervisory concerns on Internet banking are the same as those of electronic banking in general. The guidelines issued by RBI on 'Risks and Controls in Computers and Telecommunications' will equally apply to Internet banking. The RBI as supervisor would cover the entire risks associated with electronic banking as a part of its regular inspections of banks and develop the requisite expertise for such inspections. Till such capability is built up, RBI may outsource this function to qualified EDP auditors.

Record maintenance and their availability for inspection and audit is a major supervisory focus. RBI's guidelines on 'Preservation and Record Maintenance' will need to be updated to include risks heightened by banking on the net. The enhancements will include access to electronic record only by authorized officials, regular archiving of data, a sufficiently senior officer to be in charge of archived data with well defined responsibilities, use of proper software platform and tools to prevent unauthorized alteration of archived data, availability of data on-line, etc. If not available on-line, the system should be capable of making available the data for the same financial year within 24 hours and past data within a period of maximum 48 hours.

Banks should develop outsourcing guidelines to manage effectively, risks arising out of third party service providers such as risks of disruption in service, defective services and personnel of service providers gaining intimate knowledge of banks' systems and misutilizing the same, etc. Alternatively, IBA or IDBRT may develop broad guidelines for use of the banking community.

With the increasing popularity of e-commerce, i.e, buying and selling over the Internet, it has become imperative to set up 'Inter-bank Payment Gateways' for settlement of such transactions. The Group have suggested a protocol for transactions between the customer, the bank and the portal and have recommended a framework for setting up of payment gateways. In their capacity as regulator of banks and payment systems of the country, the RBI should formulate norms for eligibility of an institution to set up a payment gateway and the eligible institution should seek RBI's approval for setting up the same.

Only institutions who are members of the cheque clearing system in the country may be permitted to participate in Inter-bank payment gateways for Internet payment. Each gateway must nominate a bank as the clearing bank to settle all transactions. Only direct debits and credits to accounts maintained with the participating banks by parties to an e-commerce transaction may be routed through a payment gateway. Payments effected using credit cards, payments arising out of cross border e-commerce transactions and all intra-bank payments (i.e., transactions involving only one bank) should be excluded for settlement through an inter-bank payment gateway.

Inter-bank payment gateways must have capabilities for both net and gross settlement. All settlement should be intra-day and as far as possible, in real time. It must be obligatory for payment gateways to maintain complete trace of any payment transaction covering such details like date and time of origin of transaction, payee, payer and a unique transaction reference number (TRN).

Connectivity between the gateway and the computer system of the member bank should be achieved using a leased line network (not through Internet) with appropriate data encryption standard. All transactions must be authenticated using user-id and password. Once, the regulatory framework is in place, the transactions should be digitally certified by any licensed certifying agency. SSL / 128 bit encryption must be used as minimum level of security. Adequate firewalls and related security measures must be taken to ensure privacy to the participating institutions in a payment gateway. Internationally accepted standards such as ISO8583 must be used for transmitting payment and settlement messages over the network.

The RBI may have a panel of auditors who will be required to certify the security of the entire infrastructure both at the payment gateway end and the participating institutions end prior to making the facility available for customers use.

The credit risk associated with each payment transaction will be on the payee bank. The legal basis for such transactions and settlement will be the bilateral contracts between the payee and payee's bank, the participating banks and service provider and the banks themselves. The rights and obligations of each party must be clearly stated in the mandate and should be valid in a court of law.

It will be necessary to make customers aware of risks inherent in doing business over the Internet. This requirement will be met by making mandatory disclosures of risks, responsibilities and liabilities to the customers through a disclosure template. The banks should also provide their latest published financial results over the net.

Hyperlinks from banks' websites, often raise the issue of reputational risk. Such links should not mislead the customers in to believing that they sponsor any particular product or any business unrelated to banking. Hence, hyperlinks from a banks' websites should be confined to only those portals with which they have a payment arrangement or sites of their subsidiaries or principals. Hyperlinks to banks' website from different portals are normally meant to pass information pertaining to purchases made by banks' customers in the portal. Banks must follow the minimum recommended security precautions while dealing with such request, which includes customer authentication through user-id and password, independent confirmation of transaction by the customer and authorizing payment, use of SSL and 128 bit encryption for all communication both with the portal and customer browser terminal, etc.

On the question of additional capital charge on banks, which undertake Internet banking, the group held the view that standards have not yet been developed for measuring additional capital charge for operational risk. However, this requirement could be covered as the RBI moves towards risk based supervision.

The applicability of various existing laws and banking practices to e-banking is not tested and is still in the process of evolving, both in India and abroad. With rapid changes in technology and innovation in the field of e-banking, there is a need for constant review of different laws relating to banking and commerce. The Group, therefore, recommends that the Reserve Bank of India may constitute a multi-disciplinary high level standing committee to review the legal and technological requirements of e-banking on continual basis and recommend appropriate measures as and when necessary.

The regulatory and supervisory framework for e-banking is continuing to evolve and the regulatory authorities all over the world recognize the need for cooperative approach in this area. The Basle Committee for Banking Supervision (BCBS) has constituted an Electronic Banking Group (EBG) to develop guiding principles for the prudent risk management of e-banking activities. This Working Group, therefore, recommends that the Reserve Bank of India should maintain close contact with regulating / supervisory authorities of different countries as well as with the Electronic

Banking Group of BCBS and review its regulatory framework in keeping with developments elsewhere in the world.



## CONCLUSION

The present Study concludes that e-banking has fundamentally changed the business of banking by providing immense opportunities to its customers. E-banking is delivery of banking services through electronic channels. ATM's, internet banking, mobile banking, phone banking are all such e-banking services. All the commercial banks these days are delivering these services to their valuable customers. It is a border less entity permitting anytime, anywhere and anyhow banking to its customers. On the other hand it also aggravates the use of traditional banking risk. In the present scenario majority of the customers are accepting online banking transactions because of its many favorable factors. There is a significant relationship between e- banking and customer satisfaction .The customers are committed to using the service, as well as banks is able to retain the major interest of its users. Beside the enormous benefits e-banking is a difficult business and face a lot of challenges like usefulness, security and privacy. Many customers think that it is not easy to use online banking system as people want their money to be safe and secure. To overcome with the issues, the banks should provide more facilities and convenience to the customers by taking all steps and measures to make online transactions safer and secure for the customers. Banks are making earnest efforts to popularize the e-banking services and products.

Younger generation is commencing to optically discern the convenience and benefits of e-banking. In years to come, e-banking will not only be customary mode of banking but will be chosen mode of banking. No doubt Indian banks are making sincere efforts for the adoption of advanced technology and for installation of e-delivery channels but still masses are wary of the concept and still there are many challenges cognate to the safety and security of the money and information so some special arrangements should be made by banks to ensure full security of customers' funds. Technical defaults should be evaded by employing well trained and expert technicians in field of computers, so that loss of data can be avoided. Seminars and workshops should be organised by the banking professionals on the salubrious utilization of e-banking services especially for those who are ATMs or computer illiterate. E-banking services should be customised on basis of age, gender, vocation etc. so that needs and requisites of people can be rewarded accordingly. Government should magnify investments for the construction of well-furnished building and infrastructure.

The e- banking, therefore taken as a mandate by the banks rather than just an additional feature in most of the developed nations, as it is the economical medium to cater the banking customers. Today banking is not restricted to the traditional physical branch system, where banking staff need to be there personally for enabling banking transactions. But still there is strong requirement of customer- awareness regarding e- banking facility prevails in India and it can served through proper scanning and analysis of the market. Through e- banking, customers can process any banking transaction without even visiting bank branch at any time anywhere and this is known as "anywhere banking". Providing e- banking is no more considered as an additional feature of a banking institution, but now it is became an essential feature of a bank.

E-Banking has brought a paradigm shift in banking industry. With the use of internet one can easily access their accounts anytime around the clock through e-banking. It enables growth and development of trade and commerce globally as it eases transfer of funds instantly anywhere around the world. It has brought new dimensions to the business. The banking industry in India has come up with tremendous developments because development in Information Technology and

e-banking is the outcome of such changes in IT. With the advent of e-banking, the banks have benefitted with less operating cost, less staff requirement and more profit. Consumers are also benefitted with dynamic services, ease of banking anywhere, anytime around the clock. However, it offers challenges as to privacy, security risks, infrastructure drawbacks and many more. If proper policies and procedures are carefully taken to consideration by the banks, e-banking will flourish further.

## SUGGESTION

In the light of above discussion over the matter, following suggestions can be made:

- Customization of e-banking services based on age, occupation and gender.
- E-Banking websites and apps should be in diglot language, one English and another regional language.
- Investing on security and safety of customers data.
- Banking staff should also include technical experts in computers to ensure safety.
- Awareness programmes about e-banking products and services and its usage have to be organized frequently.
- Special awareness programmes for rural population have to be conducted to make them literate.
- Government should also adapt stringent policies towards defaulters.

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