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Technological Security Aspects for Internet Banking

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ABSTRACT

The present day banking business is, to a great extent, dependent on 'Electronic Banking'. The term 'Electronic Banking' means banking through internet i.e Internet Banking where the physical presence of the consumers in the bank is not mandatory. Electronic banking, also known as electronic fund transfer (EFT), uses computer and electronic technology as a substitute for the negotiable instruments like cheques, drafts etc and other paper transactions. EFTs are initiated through devices like cards or codes that let one or those one authorizes, access one's account. Because of the commercial failure of videotex these banking services never became popular except in France where the use of videotex (Minitel) was subsidised by the telecom provider and the UK, where the prestel system was used. As Internet Banking is a relatively new area of banking in India so people in India are still not very conversant with electronic banking. Further as it is directly related to money and fund, people are very hesitant about using it because of different farudulant activities. So as far Internet banking is concerned customers are very keen to safeguard them by consolidating the security aspects of Internet Banking.

KEYWORDS Electronic Banking, Electronic Fund Transfer(EFT), Electronic Technology, Prestel, Security

1.0. Introduction

The present day banking business is, to a great extent, dependent on 'Electronic Banking'. The term 'Electronic Banking' means banking through internet where the physical presence of the consumers in the bank is not mandatory. Electronic banking, also known as electronic fund transfer (EFT), uses computer and electronic technology as a substitute for the negotiable instruments like cheques, drafts etc and other paper transactions. EFTs are initiated through devices like cards or codes that let one or those one authorizes, access one's account. Many financial institutions use ATM or debit cards and Personal Identification Numbers (PINs) for this purpose. Some use other types of debit cards such as those that require, at the most, one's signature or a scan. For example, some use radio frequency identification (RFID) or other forms of "contactless" technology that scan one's information without direct contact. The federal Electronic Fund Transfer Act (EFT Act) covers some electronic consumer transactions. It includes both Debit and Credit Cards. For many consumers, electronic banking means 24-hour access to cash through an automated teller machine (ATM) or Direct Deposit of paychecks into checking or savings accounts. But electronic banking involves many different types of transactions. The world is changing at a staggering rate and technology is considered to be the key driver for these changes around us. An analysis of technology and its uses show that it has permeated in almost every aspect of our life. Many activities are handled electronically due to the acceptance of information technology at home as well as at workplace. Slowly but steadily, the Indian customer is moving towards the internet banking. The ATM and the Net transactions are becoming popular. But the customer is clear on one thing that he wants net-banking to be simple and the banking sector is matching its steps to the march of technology. E-banking or Online banking is a generic term for the delivery of banking services and products through the electronic channels such as the telephone, the internet, the cell phone etc. The concept and scope of e-banking is still evolving. It facilitates an effective payment and accounting system thereby enhancing the speed of delivery of banking services considerably. Several initiatives have been taken by the Government of India as well as the RBI (Reserve Bank of India); have facilitated the development of e-banking in India. The government of India enacted the IT Act, 2000, which provides legal recognition to electronic transactions and other means of electronic commerce. The RBI has been preparing to upgrade itself as regulator and supervisor of the technologically dominated financial system. It issued guidelines on the risks and controls in computer and telecommunication systems to all banks, advising them to evaluate the risks inherent in the systems and put in place adequate control mechanisms to address these risks. Electronic banking is one of the truly widespread avatars of E-commerce the world over.

E-Banking can be easily described by the following points:

1. E-Banking is a combination of two, Electronic Technology and Banking.
2. Electronic Banking is a process by which a customer performs banking transactions electronically without visiting brick-and-mortar institutions.
3. E-Banking denotes the provision of banking and related service through extensive use of information technology without direct recourse to the bank by the customer.

Banks have traditionally been in the forefront of harnessing technology to improve their products, services and efficiency. They have, over a long time, been using electronic and telecommunication networks for delivering a wide range of value added products and services. The delivery channels include direct dial – up connections, private networks, public networks etc and the devices include telephone, Personal Computers including the Automated Teller Machines, etc. With the popularity of PCs, easy access to Internet and World Wide Web (WWW), Internet is increasingly used by banks as a channel for receiving instructions and delivering their products and services to their customers. This form of banking is generally referred to as Internet Banking, although the range of products and services offered by different banks vary widely both in their content and sophistication.

The precursor for the modern home online banking services were the distance banking services over electronic media from the early '80s. The term online became popular in the

late '80s and refers to the use of a terminal, keyboard and TV (or monitor) to access the banking system using a phone line. 'Home banking' can also refer to the use of a numeric keypad to send tones down a phone line with instructions to the bank. 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 videotex system. Because of the commercial failure of videotex these banking services never became popular except in France where the use of videotex (Minitel) was subsidised by the telecom provider and the UK, where the prestel system was used.

As Internet Banking is a relatively new area of banking in India so people in India are still not very conversant with electronic banking. Further as it is directly related to money and fund, people are very hesitant about using it because of different farudulant activities. So as far Internet banking is concerned customers are very keen to safeguard them by consolidating the security aspects of Internet Banking

1.1. Brief Review of the Available Literature

Various studies on some aspects of e-banking appeared in various journals and magazines, but they are restrictive in nature and do not show a comprehensive picture. A brief review of some of the relevant literature is as under:

Rajiv D. Banker, Robert J Kauffman, (1991), illustrated "business value linkage impact analysis", a new method for measuring the business value of information technology (IT), in the context of a case study of electronic banking operations at Meridian Bancorp, a large commercial bank.
In the study made by James McAndrews, Robert J Kauffman, (1993), a unique data set was used to examine the determinants of membership in the Yankee 24 shared Automated Teller Machine (ATM) network.

Myron L. Kwast, Arthur B. Kennickell, (1997), in their study, used the 1995 Survey of Consumer Finances to examine households' use of technologies, including electronic means to transact at a financial institution and to gain information for making saving and borrowing decisions.

Karen Furst, William W. Lang, Daniel E. Nolle, (1998), opined in their study, that, In recent years, technology has become increasingly important to the evolution of bank retail delivery systems and the development of new electronic retail products.

John Wenninger, (2000), in his study, answered the question that How is the banking industry responding to the rapid development of on-line commerce?

Rhys Bollen, (2001), in his study, dealt with the regulation of Internet Banking. In this arena the law is in a period of rapid development and change. As in similar situations, the legal system has struggled to keep pace with the technology involved.

Kenneth N. Kuttner, James McAndrews, (2001), in his study, opined that the swift growth of e-commerce and the Internet has led to the development of a new form of electronic funds transfer.

Olga Lustsik, (2003), concluded in his study that the new information technology is becoming an important factor in the future development of financial services industry, and especially banking industry.

Ronald J. Mann, (2003), in his study, examined legal and policy issues raised by changes in payment methods related to the rise of the Internet.

Hans H. Bauer, Maik Hammerschmidt, Tomas Falk, (2005), concluded in his study that, in the internet economy, the business model of web portals has spread rapidly over the last few years.

Rajnish Tiwari, Stephan Buse, Cornelius Herstatt, (2006), "From Electronic to Mobile Commerce: Opportunities Through Technology Convergence for Business Services", Asia Pacific Tech Monitor, Vol. 23, No. 5, pp. 38-45, opined in their study that Mobile commerce is gaining increasing acceptance.

Satish Kumar Balasubramanian, (2009), concluded in his study that Banking system of a country is the back-bone of its financial system. The major challenging task of the bank is clearing customers' cheques. In a developing country like India, the volumes of cheques sent for clearance are growing fast. So an effective and efficient system of handling clearance process has to be developed.

Erwin Alampay, Gemma Bala, (2009), opined that the potential of electronic banking (e-banking) and electronic money (e-money) to improve efficiencies, reduce transactional costs and bring new opportunities has long been recognized (Basel, 1998).

Shan Turnbull, (2010), showed in his study, how the emergence of cloud banking in developing economies from billions of cell phones transacting both legal tender and informal units of accounts has created a need to reconsider habits of thinking about the nature of money and banking in advanced societies.

Mahmud Hematfar, Mohsen Khotanlu and Ali Reza Nosrati, (2010), through their study, analyzed relationship between performance management and service quality because of develop the E-banks service quality by means of improve specific sides of the performance management.

According to A. H. M. Saidul Hasan, Md. Azizul Baten, Anton Abdulbasah Kamil and Sanjida Parveen, (2010), nowadays e-commerce, e-business and financial services industry have increasingly become a necessary component of business strategy and a strong catalyst for economic development.

Nofie Iman, (2011), concluded, in his study, that in developing countries, electronic banking (e-banking), received relatively little attention although has been deployed for years.

Jean-Michel Sahut, (2011), opined that the influence of ICT in banking sector began in the 70's. ICT has already caused two changes within banks. Initially, it was the logistical support to internal processing of information and relationships within the profession. In a second step, it has become the fastest way to access capital markets, and enabled creation of global electronic markets, as well as the modernization of stock exchanges.

Nishant Joshi, Dr. R.K. Sharma, Neha Joshi, (2011), concluded in his study that In the dawn of information technology, Indian banking sector is transforming in its structure, work culture, systems and procedure.

Ignacio Mas, (2011), commented that Building a successful mobile money system requires a complex ecosystem of players handling a large volume of transactions.

Nidal Rashid Sabri, Diama Khaled Abu Laban, Dima Walid Hanyia, (2012), aim to point out to what extent internet-banking, ATMs and other electronic money instruments are used in the Palestinian economy based on multi currencies.

Gargi Rajvanshi, Tapas K. Bandyopadhyay and Rajeev Gupta, (2012), stated in their study that in electronic transactions lots of issues such as jurisdictional issues in case of disputes, identification of true identity, spoofing, privacy protection so one and so forth are involved at par. This study is all about analyzing the issue of data protection and privacy.

1.2 Research Methodology

This study is basically exploratory in nature and henceforth the study is basically done mainly with the help of secondary data available from different websites of Reserve Bank of India, Annual Report of Reserve bank of India, Report on Trends and

Progress of Banking in INDIA and also from different research papers related to Electronic Banking

1.3 Technology and Security Aspects
The Internet has provided a new and inexpensive channel for banks to reach out to their customers. It allows customers to access banks' facilities round the clock and 7 days a week. It also allows customers to access these facilities from remote sites/home etc. However, all these capabilities come with a price. The highly unregulated Internet provides a less than secure environment for the banks to interface. The diversity in computer, communication and software technologies used by the banks vastly increases the challenges facing the online bankers. In this part, an effort has been made to give an overview of the technologies commonly used in Internet banking. An attempt has been made to describe concepts, techniques and technologies related to privacy and security including the physical security. The banks planning to offer Internet banking should have explicit policies on security. An outline for a possible framework for security policy and planning has also been given. Finally, recommendations have been made for ensuring security in Internet banking.

1.4 Technology: Computer Networking & Internet
The purpose of computer networking is mainly the sharing of computing resources and data across the whole organization and the outside world. Computer Networks can be primarily divided into two categories based on speed of data transfers and geographical reach. A Local area network (LAN) connects many servers and workstations within a small geographical area, such as a floor or a building. Some of the common LAN technologies are 10 MB Ethernet, 100 MB Ethernet, 1GB Ethernet, Fiber Distributed Data Interface (FDDI) and Asynchronous Transfer Mode (ATM). The data transfer rates here are very high. They commonly use broadcast mode of data transfer. The Wide Area Network (WAN), on the other hand, is designed to carry data over great distances and is generally point-to-point. Connectivity in WAN set-up is provided by using dial-up modems on the Public Switched Telephone Network (PSTN) or leased lines, VSAT networks, an Integrated Services Digital Network (ISDN) or T1 lines, Frame Relay/X.25 (Permanent Virtual Circuits), Synchronous Optical Network 51(SONET), or by using Virtual Private Networks (VPN) which are software-defined dedicated and customized services used to carry traffic over the Internet. The different topologies, technologies and data communication protocols have different implications on safety and security of services.

To standardize on communications between systems, the International Organization of Standards developed the OSI model (the Open System Interconnection Reference Model) in 1977. The OSI breaks up the communication process into 7 layers and describe the functions and interfaces of each layer.

Application Layer:
Network Management, File Transfer Protocol, Information validation, Application-level access security checking.

Session Layer:
establishing, managing and terminating connections (sessions) between applications.

Transport Layer:
Reliable transparent transfer of data between end points, end to end recovery & flow control.

Network Layer:
Routing, switching, traffic monitoring and congestion control, control of network connections, logical channels and data flow.

Data Link Layer:
Reliable transfer of data across physical link and control of flow of data from one machine to another.

With the popularity of web, organizations find it beneficial to provide access to their services through the Internet to its employees and the public. In a typical situation, a component of the application runs (as an 'applet') within the browser on user's workstation. The applet connects to the application (directly using TCP/IP or through web server using HTTP protocols) on the organization's application and database servers. These servers may be on different computer systems. The web-based applications provide flexible access from anywhere using the familiar browsers that support graphics and multimedia. The solutions are also scalable and easy to extend.

1.5 Banking Products
Internet banking applications run on diversified platforms, operating systems and use different architectures. The product may support centralized (bankwide) operations or branch level automation. It may have a distributed, client server or three runs on the local machine and the server software, called the web server, runs on a possibly remote machine. Some of the popular browsers part tier architecture based on a file system or a DBMS package. Moreover, the product may run on computer systems of various types ranging from PCs, open (Unix based) systems, to proprietary main frames. These products allow different levels of access to the customers and different range of facilities. The products accessible through Internet can be classified into three types based on the levels of access granted:

1. Information only systems:
General-purpose information like interest rates, branch locations, product features, FAQs, loan and deposit calculators are provided on the bank's web (WWW) site. The sites also allow downloading of application forms. Interactivity is limited to a simple form of 'e-mail'. No identification or authentication of customers is done and there is no interaction between the bank's production system (where current data of accounts are kept and transactions are processed) and the customer.

2. Electronic Information Transfer System:
These systems provide customer specific information in the form of account balances, transaction details, statement of account etc. The information is still largely 'read only'. Identification and authentication of customer takes place using relatively simple techniques (like passwords). Information is fetched from the Bank's production system in either the batch mode or offline. Thus, the bank's main application system is not directly accessed.

3. Fully Transactional System:
These systems provide bi-directional transaction capabilities. The bank allows customers to submit transactions on its systems and these directly update customer accounts. Therefore, security & control system need to be strongest here.

1.6 Application architecture
A computer-based application may be built as a monolithic software, or may be structured to run on a client–server environment, or even have three or multi-tiered architecture. A computer application typically separates its 3 main tasks: interactions with the user, processing of transactions as per the business rules, and the storage of business data. The three tasks can be viewed as three layers, which may run on the same system (possibly a large, proprietary computer system), or may be separated on to multiple computers (across the Internet), leading to three-tier or multi-tier architecture.

These layers can be briefly described as follows:
1. Presentation Layer:
This layer is responsible for managing the front-end devices, which include browsers on personal computers, Personal Digital Assistants (PDAs), mobile phones, Internet kiosks, Web TV etc. The presentation layer takes care of user interface related issues like display details, colour, layout, image etc. It also has important responsibilities in user authentication and session management activity.

2. Application layer:

It contains the business logic (for processing of data and transactions) and necessary interfaces to the data layer. It processes requests from the presentation layer, connects to the data layer, receives and processes the information and passes results back to the presentation layer. It is responsible for ensuring that all the business rules are incorporated in the software. The issues of scalability, reliability and performance of the services to a great extent depend upon the application layer architecture.

3. Data Layer:
The data layer uses a database package to store, retrieve and update application data. The database may be maintained on one or multiple servers. A database package also supports back-up and recovery of data, as well as logging of all transactions.

1.7 Technological Challenges in Internet Banking
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.

1.7.1 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 has 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".

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. 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 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 wait till the certification machinery as specified in the Information Technology Act, 2000 comes into operation.

1.7.2 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, non-repudiation, 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 authenticate 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.

1.7.3 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.

1.7.4 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. 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 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.

1.7.5 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 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.

1.7.6 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.

1.7.7 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.

1.7.8 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.

1.7.9 Inter-Bank Electronic Fund 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, has empowered the Reserve Bank of India to regulate electronic funds transfer between banks and banks and other financial institutions.

1.8 Conclusion

From the above discussions, it becomes crystal clear that electronic banking is an umbrella term for the process by which a customer may perform banking transactions electronically without visiting a brick-and-mortar institution. The following terms all refer to one form or another of electronic banking - personal computer (PC) banking, Internet banking, virtual banking, online banking, home banking, remote electronic banking, and mobile banking. PC banking and Internet or online banking are the most frequently used designations.

The main objective of the "e-banking Rules" is to provide guidance to banks on implementation of security controls in their e-banking products and services and effective management of risks associated therewith. The Rules are not aimed at discouraging banks from innovation and creativity in e-banking provided they remain within the regulatory framework and ensure customers' facilitation.

The e-banking rules and regulations are basically designed to make e-banking and mobile banking a success story. The rules are primarily derived from PSS Act 2007. The Information and Communication Technology also play a very vital and significant role in determining the rules and regulations in e-banking. Still many people are very much sceptical about the use of e-banking and mobile banking out of the fear of becoming the victim of different fraudulent attacks. With the help of the rules and regulations of e-banking and mobile banking it became possible to come up with the solutions of safeguards against different fraudulent attacks generated in the system of e-banking and mobile banking.

In spite of the technological development still there is scope of ample improvement to get a more developed and robust system of internet banking and mobile banking. In this regard of safety and security in case of electronic banking, the infrastructural development is also of extremely high importance.

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