3.1. Introduction:

Banking is a service-oriented industry. The peculiarity of this industry is that it has to implement various social objectives as well as commercial objectives. It is an instrument for the development of the economy of the country. Banks have two roles to play. It creates a runway for the free flow of capital necessary for the growth of the economy. At the same time it must attend to lending and deposit mobilisations in order to make profit for its survival and growth. But Banking as it is now is not a high profit service industry in most countries. In many countries including in India, banks are affected by loan losses and this has great impact on the health of the banks. This has resulted in the poor quality of services. Getting customer patronage and good will are becoming a great task and a challenge for Banks. Customer’s complaints are many, like long delays in handling transaction, long waits at the counters, delay in updating of pass books, late supply of statement of accounts, lack of communication between customer and bank, lack of efficiency of the bank employees, lack of commitment by the banks etc. All these factors have pushed the customer to refrain from traditional banking activities and get the better services etc. Time is an important factor for all of us. Customers don’t want to waste their precious time waiting in queues. A businessman or an individual entrepreneur cannot waste has time in the corridors for getting banking services. Many banks have modernized their services with the facilities of computers and electronic equipments. The electronics revolution has made it possible to provide ease and flexibility in banking operations to the benefit of the customer. The commercial banks have drastically changed from the traditional business to innovative banking with an aim to uplift the socioeconomic conditions of the masses. According to the traditional methods of banking, the customer has to visit the bank in person to perform the banking transactions like withdrawal of cash and fund transfer, whereas in the innovative or e-banking system, the customer need not go to the bank. These transactions are based on Internet and the customer can access the bank at any time from his office or home through PC or LAPTOP by
eliminating paper based transactions. The modern banking is tending to be more information speedy as an impact of e-revolution. Thus, the e-banking is use of technology in day-to-day transactions, by the customers to access their banking services electronically, whether it is for payment of bills, transfer of funds, retrieval of information and providing services. The electronic services that are made available to the customers are through phone, personal computers through Internet etc. There are four important elements i.e.

a) Transforming core business i.e. expandable e-banking applications.
b) Building flexible and expandable e-banking applications
c) Running scalable, available, safe environments by providing security and
d) Leveraging knowledge and information thorough e-banking

3.2. Meaning:
E-banking, “means any user with a personal computer and browser can get connected to his bank’s website to perform any of the virtual banking functions. In internet banking system the bank has permitted on the internet are displayed in menu. Any services can be selected and further interaction is dictated by the nature of service. The traditional branch model of bank now giving place to an alternative delivery channels with ATM network. Once the branch offices of bank are interconnected through terrestrial or satellite links, there would be no physical identity for any branch. It would a borderless entity permitting any time, any where and anyhow banking. The network which connects the various locations and gives connectivity to the central office within the organization is called intranet. These networks are limited to organization for which they are set up. SWIFT (Society for world-wide inter bank financial telecommunication) is a live example of intranet application”[1]

3.3. Definitions:
The banks are compelled the electronic technology to meet the ever increasing competition in banking which has converted the traditional brick and mortar banking into electronic banking. Following are the different definitions of given various authors from different angles:
1. E-banking is defined as: “delivery of bank’s services, including traditional services such as opening an account or transferring funds among different accounts, as well as new banking services, such as electronic bills presentment and payment, which allow the customers to pay and receive the bills on a bank’s website”[2]

2. “Internet banking as a new delivery channel to existing banking channels such as Automated teller Machines and telephone banking is receiving a great attention in the banking industry and regulatory community.”[3]

3. E-Banking is also defined as the “Automated delivery of new and traditional banking products and services directly to customer through electronic, interactive communication channels. E-banking includes the systems that enable financial institution customers, 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. Customers access e-banking services using an intelligent electronic device, such as a personal computer (PC), personal digital assistant (PDA), automated teller machine (ATM), kiosk, or touch Tone telephone”[4]

4. “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 phone banking. PC banking and Internet or online banking is the most frequently used designations”[5]

5. “PC banking is a form of online banking that enables customers to execute bank transactions from a PC via a modem. In most PC banking ventures, the bank offers the customer a proprietary financial software program that allows the customer to perform financial transitions from his or her home computer. The customer then dials into the bank with his or her modem, downloads data, and runs the programs that are resident on the customer’s computer.”[6]

Presently, many banks offer PC banking systems that allow customers to obtain account balances and credit card statements, pay bills, and transfer funds between accounts.
6. “Internet banking, some times called online banking, is an outgrowth of PC banking. Internet banking uses the Internet as the delivery channel by which to conduct banking activity, for example, transferring funds, paying bills, viewing checking and savings account balances, paying mortgages, and purchasing financial instruments and certificates of deposit. An Internet banking customer accesses his or her accounts from browser- software that runs Internet banking programs resident on the bank’s World Wide Server, not on the user’s PC.”[7]

7. Net Banker defines a “true Internet bank – as one that provides account balance and some transactional capabilities to retail customers over the World Wide Web. Internet banks are also known as virtual, cyber, net interactive, or web banks.”[8].

8. E-banking or net banking are defined as “This is one of the management tools of e-business. It provides efficiency for banks and businesses and convenience for individual customers. All banking functions can be carried out via the Internet: checking the status of accounts, transferal of funds between accounts, carrying out financial transactions, even using the account for online purchases.”[9]

9. E-banking, “In simple terms it does not involve any physical exchange of money, that is, all money transactions take place electronically, from one account to another, using the Internet.”[10]

10. “E-bank is the electronic bank that provides the financial services for the individual client by means of Internet.”[11]

11. Bank Negara refers to it as “Banking products and services offered by banking institutions on the internet through access devices, including personal computers and other intelligent devices.”[12] The conclusion of this definition is: Banking institutions are legal entities licensed under the Banking and Financial Institutions Act 1989 (BAFIA). The license essentially allows the institution to accept deposits from and issue loans to the customers. Banking institutions can be categorized into domestic banking institutions and locally incorporated foreign banks. The more common banking products and services are savings, current accounts, fixed deposits, mortgage, loans, indexed trust funds, cash transfers and payments functionality, fixed income products and trade finance. There are also instances where retail transactions of equities and insurance are done over bank
counters. “Intelligent devices” may include interactive televisions, palm computers/organizer and mobile telephone etc.

12. The Basle Committee of Banking Supervision describes electronic banking as “the provision of retail and small value banking products and services through electronic channels”. [13]

13. Bank Negara’s general interpretation of Electronic Banking appears to be congruent with the US Federal Reserve’s scope of electronic Banking that states: “Systems that enables bank customers to access accounts and general information on bank products and services through a personal computer (PC) or other intelligent device”. [14]

14. Electronic banking refers to, “where in the entire operations are done by the customer through his computer system by using a code. Customer need not visit banks to carry out their banking transactions and can meet their requirement through means of electronic banking facility. Banking services rendered in the electronic forms are:

i) Electronic payment systems, it includes counting of cash, verifying the signature, updating the ledger and pass books etc.,

ii) Bank Teller Machines (BTMs) are installed with in the fully automated bank premises. BTMs make the job easier and customer friendly”. [15]

15. E-banking also known as ANYTIME & ANYWHERE BANKING refers, “Any time banking have surpassed the time limitation of only limited hours of customer services and offer a host of banking services including all functions. ATMs are currently becoming popular as these enable the customer to withdraw their money 24 hours of a day and 7 days of a week”. [16]

16. “Telephone Banking (Tele-Banking) which carries the concepts of 24 hour banking to the customer home of business place. Tele-Banking service function based on the voice processing facility available with the bank computers. The caller generally a customer of the bank will be able to call the bank any time and in quire balances or transaction history and to transfer funds between accounts” [17]
17. Online may be define as, “the direct linking of as operation of equipment to a computer system so that any stimulus provided by that operation or equipment is immediately by the computer system”[18]

18. United Nations Conference on Trade and Development (UNCTAD) define as, “Internet banking refers to the development over the Internet retail and wholesale banking services. It involves individual and corporate clients, and includes bank transfers, payments and settlement, documentary collections and credits, corporate and household lending, card business and some others.”[19]

19. The term electronic banking as used here refers to, “any banking activity accessed by electronic means. It includes automated teller machines (ATMs), automated call centers, digital cash, Internet banking, screen telephones, and so on. These channels of delivery can be used for presenting and paying bills, buying and selling securities, transferring funds, and providing other financial products and services.”[20]

20. “The Internet includes all related web-enabling technologies and open telecommunication networks ranging from direct dial-up, the public World Wide Web, cable and virtual private networks.” [21]

21. Internet banking (e-banking) is defined “to include the provision of retail and small value banking products and services through electronic channels as well as large value electronic payments and other wholesale banking services delivered electronically.”[22]

3.4. Advantages/Benefits of E-Banking:

With the help of e-banking, one can overcome the drawbacks of manual systems, as computers are capable of storing, analyzing, consolidating, searching and presenting the data as per the user’s requirements with great speed and accuracy. A large increase in volume of work in banks can be handled by the computerization. The computerization of banking transactions has become imperative for the expeditious processing of growing volume of data for sustaining the rapid growth in business. Thus, the automation of existing banking system can eliminate the voluminous paper work and improve operational efficiency. Almost everything that
can be attended via traditional method can be transacted electronically for which different techniques are available at present for conducting e-banking.

The following are the important Advantages / Benefits of E-banking:

1. **Creates on-line customer**: - Internet is one of the element of E-banking. It is also called Net Banking. Through, On-line banking, customer can directly interact with bank for the purpose of opening the various types of account like saving, current, term deposits, recurring accounts etc. For this purpose, there is very simple procedure like, customer should visit on particular Website of Bank and for opening his/ her accounts some process has to follow. “There are several ways to open and fund an electronic banking account. Customers who have existing accounts at brick–and-mortar banks and want to begin using electronic banking services may simply ask their institution for the software needed for PC banking or obtain a password for Internet banking. Either approach requires minimal paperwork. Once they have joined the system, customers have electronic access to all of their accounts at the bank. New customer can establish an account either by completing PC banking application form and mailing it to an institution offering such a service or by accessing a bank’s web sit and applying on line for Internet banking. In either instance, the customer can fund a new online account with a check, wire transfer, or other form of remittance. No physical interface between the customer and the institution is required.”

2. **Account Information**: - The complete data base that the bank has about account holders or accounts of the firms can be retrieved or accessed at the PC terminal without visiting the bank premises. For Example verifying current balance of an account, days transactions of the accounts, like withdrawal, deposit etc. One can easily down load the statements from the home P.C. The statements can be integrated with your ERP (enterprises resource planning) system for auto-reconciliation.

“When banking is Internet-based, banking transactions such as deposits, remittances, credit card and banking products and services as well as all relevant banking information can be made available with easy access to its customers.
Basically, the system provides a link between customer and the bank, without having to go there physically.”[24]

The following steps are needed:

i) Log into Electronic Banking System of your bank
ii) Select the Specific function required
iii) Carry on the Specific transaction
iv) Exit from the Web-site

There are in built security features, which automatic check whether the use-Id is a valid one as well as other security and access level checks to ensure that the user-Id can access the features before allowing any transactions through. All transactions are logged and can be viewed easily.

3. One line Request: - E-banking provides the facility to customers for making a banking request through online. “Customers can submit the following request online: Registration for account statements by e-mails either daily/weekly/fortnightly/ monthly basis.

a) Stop payment of cheque
b) Cheque book replenishment
c) Demand Draft/pay-order
d) Opening of fixed deposit account
e) Opening of letter of credit”[25]

4. Fund Transfer: - Customer can easily transfer the fund from one account to another through Internet banking. It is called ‘electronic fund transfer’. “EFT facilitates transfer of funds from the bank accounts of one customer to the bank account of another customer. In this system, the sender and the receiver of funds may be located in different cities and may even bank with the different banks. Funds transfer within the same city are also permitted. The scheme has been in operation since February 7, 1996 in India. [26]

5. Bill Payment through electronic Banking: - The concept of anytime and anywhere banking is the gift of Internet. To the individual the onerous task of visiting several places to settle his service bills like telephone, water, electricity, etc., can be overcome through the electronic Bill Pay service provided by the bank.
Customer can pay his regular monthly bills (telephone, electricity, mobile phone, insurance premium etc.) right from his desktop. Customer can schedule his bills in advance, and thus avoid missing the bill deadlines as well as earn extra interest on his money.

5. The Electronic Shopping Mall: The customer can also make his shopping payment through the Bank’s secure website so that he can shop online without any security worries, as the bank can provide online real time shopping mall services through partner shopping sites.

6. Effective Personal Investments: The bank’s website can also allow the customer to invest in shares, mutual funds and other financial products.

Trading in shares - Customer can perform different type of trading in shares through e-banking. “These trading are as follows:

i) Cash Trading: This is a delivery based trading system, which is generally done with the intention of taking delivery of shares or monies.

ii) Margin Trading: Customer can also do an intra-settlement trading normally up to 4 times his available funds, where in he can take long buy/ short sell positions in stocks with the intention of squaring off the position within the same settlement cycle.

Spot Trading: When looking at an immediate liquidity, ‘cash on spot’ may work the best for him. On selling shares through ‘cash on spot’, money is credited to his bank a/c the same evening and not on the exchange payout date. This money can then be withdrawn from any of the Bank’s ATM’s. The customer can also trade directly at the recognized stock exchanges of the country through his bank”[27]

“Investing in Mutual funds – Electronic banking also brings the customer the same convenience while investing in Mutual funds, Hassle free and Paperless Investing. Customer can invest in mutual funds without the hassle of filling application forms or any other paper work. He needs to provide no signatures or proof of identity for investing. Once he places a request for investing in a particular fund, there are no manual processes involved. His bank funds are automatically debited or credited while simultaneously crediting or debiting his unit holdings”[28]
There can be no end to the variety of services that can be provided through the electronic channel by banks and financial institutions. Every Institution is trying constantly to innovate and offer new products to the customer. The benefit to the customer on account of the Internet is that he is able to know at a time the types of facilities being provided by different Institutions and he is able to make the best choice suited for his needs. Despite the convenience, cost savings and high security of online banking, some of the benefits of online banking include 24 hour a day access, a monthly cost savings of roughly Rs.300 a month and security that matches the security of banking in person.

Therefore, some of the other benefits on e-banking are as follows:

i) **Convenience:** Unlike our corner bank, Online banking sites never close; they are available 24 hours a day, seven days a week, and they are only a mouse click away.

ii) **Ubiquity:** If you are out of state or even out of the country when a money problem arises, you can log on instantly to your online bank and take care of business, 24/7.

iii) **Transaction speed:** Online bank sites generally execute and confirm transactions at or quicker than ATM processing speeds.

iv) **Efficiency:** You can access and manage all of your banks accounts, including IRAs, CDs, even securities, from one secure site.

v) **Effectiveness:** many online banking sites now offer sophisticated tools, including account aggregation; stock quotes, rate alerts and portfolio managing programs to help you manage all of your assets more effectively most are also compatible with money managing programs such as Quicken and Microsoft Money.

### 3.5. Disadvantages/Limitations of E-Banking:

The following points will be highlights that Electronic banking is having some disadvantages or limitations:

1. **Adoption of Technology:** The early stage of e-banking (Particularly under developing countries like India also) banking employees were not ready to accept it, because of its complicated technology. The most important example was: “During the transition phase, there was pruning of staff in the form of a voluntary
retirement scheme of the year 2000, wherein, over a lakh of employees in the public sector banks, predominantly in the age group of 45 to 54 have been retired, due to their in adeptness to an automated environment.”\[29\] The new generation private banks and the foreign banks talk of e-banking by virtue of a lean network and absence of legacy systems but the public sector banks with a vast network have to put in great efforts to adopt technology for bringing electronic banking to their customers. But the statistics reveal that “out of 46,000 bank branches in India only about 5,000 are computerized with a local area network.”\[30\] Transaction automation at branch level being the fundamental pre-requisite for electronic banking. This low level rate of computerization is because of advanced complicated technology. Due to this people are not immediately accepted to e-banking concept.

2. Public Acceptance: - In coming future Brick and Mortar bank branch would soon be the phenomenon of the past, with electronic banking branches taking over. But even though, many customers are not ready to accept the e-banking concept. For example, as per the Mckinsey’s proprietary personal financial services 2000 survey, “The problem in Asia and throughout emerging market is security, which more than half of the respondents reported as their main reason for declining to open online banking or investment accounts. Respondents also said that they preferred to have personal contact with their banks.”\[31\] It is further expressed that “the average Indian customer would like to handover his cash at a bank counter rather than drop it into ATM. Also, fear of technology puts the average customer away from electronic channel.”\[32\] Therefore, the conclusion is that, even today many customers are not frequently ready to accept the e-banking services.

3. Expensive technology: - The Cost of acquiring a PC and other equipment for enabling one-self to do on-line banking is still not within the reach of the middle class or even the upper middle class. Proliferation of internet is bound to slow. However, the evolving technology of connecting Internet through a cable operator to home television would address this issue adequately.

4. Chances of failure of machine & technology: - E-Banking is machine-oriented, there are chances of machines failure and problems in technology, which will effect or stop the regular task of the Bank.
5. **Lack of Preparedness:** - The banks are not only behind the bend in developing a customer friendly on-line presence, but most of them are woefully unprepared or blissfully unaware of the underlying changes in banking and personal finance being heralded in by Internet development.

6. **Restrictions on Usage of Technology:** - In the Indian context “The agreement signed between the IBA (Indian Banking Association) and Bank Union does not provide any elbow room more than enabling computerization of 70 per cent of business. On the contrary, it speaks of a monitoring committee consisting of Unions representatives and Bank officials for reviewing strict implementation of the provisions of the agreement”[33]

Some other Disadvantages of e-banking (on-line Banking) are:-

i) **Start-up may take time:** In order to register for bank’s on-line program, Bank can provide ID and sign a form at a bank branch. For getting actual services form e-banking it will take some time for register and starting e-banking facilities. Therefore, starting and taking the e-banking services will take a time.

ii) **Learning curve:** Banking sites can be difficult to navigate at first. Plan to invest some time/or read the tutorials in order to become comfortable in your virtual lobby.

iii) **Bank site changes:** Even the largest banks periodically upgrade their online programs, adding new features in unfamiliar places. In some cases, there is re-enter account information.

iv) **The trust things:** For many people, the biggest hurdle to online banking is leaning to trust it. Lake of trust and belief is the major problem of e-banking.

**3.6. Traditional Vs. E-Banking:**

The financial sector is undergoing the process of radical transformation as a result of a significant increase in competition, of changes in the purchasing habits of customers, in the perception which these customers have of the products and services offered by financial institutions and of the value they place on them. The effect of these determining factors on banking business is basically a realization of the urgent need to improve the performance of basic procedures and ensure that organizations are customer driven. The traditional view of the bank, which is that
“the right product and services available in the right place at the right time” is being replaced by a more dynamic and flexible, concept: “any product should be available at any time anywhere”. In line with this new vision, there are tremendous changes between traditional banking and modern banking i.e. is called e-banking. Therefore the following points will be highlighted this difference:

1. **Concept:**

   **Traditional Banking:** Bank is an institution which attracts deposits from public and makes loans and advances on the basis of these deposits to the public. Thus banks are the institution dealing in money Banking is an activity or services which are performed by bank manually like account opening & closing forms, pay slip, deposit slip, withdraw slip, ledgers, accounts books, pass books, term deposit certificates, loan etc. All these operations are done by paper work.

   **E-Banking:** Customers access e-banking services using intelligent electronic devices, such as a personal computer (PC), personal digital assistant (PDA), automated teller machine (ATM), touch tone telephone etc.

2. **Functions/ Services:**

   **Traditional Banking:** Traditional banking system not only deals in money and credit but it also performs various functions and services to their customers. These functions are accepting deposits, providing loans and advances, collection of payments of cheques, transfer of money, security of wealth and assets, foreign trade management, credit creation and functions of share market etc.

   **E-Banking:** Electronic Banking (e-banking) is a range of banking services like create online customer, accessing account details, balance enquiry, electronic payment system, electronic fund transfer, e-cheque, e-request, credit/debit card services, online share trading etc., that utilizes electronic equipment like telephone banking, Net Bank, ATM, keycard(debit/credit), AFT(automated funds transfer) etc.

3. **Physical site:**

   **Traditional Banking:** Bank is an institution or financial organization or brick-and-mortar bank, where people visited for a specific time boundary (i.e. 10 a.m. morning to 5 p.m. evening) and getting banking services.
**E-Banking:** E-banking is an electronic or net banking, where customer should just switch on his/her PC at their home and visited to any bank site through Internet and accessing services.

4. **Banking advertising:**

**Traditional Banking:** There was lack of knowledge about the bank and its various services to the common people. No source of advertising about Banks, its locations, product and services was available to customer to know about it. Traditional banking was only for transactional operations.

**E-Banking:** The banks have established an advertising presence of the Internet—primarily in the form of informational or interactive websites. Informational websites provides customers access to general information about financial institution and its products and services and secondly transactional websites provide customers with the ability to conduct transactions through the financial institution’s website by initiating banking transactions or buying products and services.

5. **Cost & extra fees:**

**Traditional Banking:** In traditional banking system, for ‘stop payment’, the bank may charge Rs. 50 per cheque plus the service tax.

**E-Banking:** ‘Stop payment’ done through internet banking will not cost any extra fees.

6. **Time Limitation:**

**Traditional Banking:** In a traditional method, customer gets quarterly statements from bank and if request for a statement at customer required in time it may turn out to be an expensive affair. The branch may charge Rs. 25 per page, which include only 30 transactions. Moreover, the bank branch would take eight days to deliver it at customer’s doorstep.

**E-Banking:** Online banking offers conveniences that can be beneficial for business use and personal use. No longer do private citizens or businesses have to request information in person and then wait several weeks for the information to be processed and mailed out. The convenience of online banking can not be matched for business or personal use.
7. Fund Transfer:

**Traditional Banking:** Bank transfer funds (money) from one place to another as directed by their customers. Bank draft, postal and telegraphic transfers are the methods through which such transfers take place or if the fund has made outstation, where the bank does not have a branch, the bank would demand outstation charges or commission for this purpose.

**E-Banking:** A major source of electronic and wonderful benefit of e-banking is the electronic fund transfer followed in banks. Bank customers can use their telephones as their terminals to make electronic payment of bills. Similarly, wide area network may be used to connect terminals in retail stores to bank electronic fund transfer. Similarly, small-scale payments are also made through automated teller machines. E-banking also makes possible payments for credit cards, private label cards, charge card etc. EFT services are absolutely free of cost.

8. Resources:

**Traditional Banking:** Customers will spend lot of time to accessing banking services and banks are investing lot of fund for banking activities like stationery, envelopes, passbooks, printing deposit, withdraw slips, various types of account forms etc. There is wastage of resources.

**E-Banking:** E-banking offers savings of both time and money. It will save the time resources, financial resources etc. It also saves the stationery etc.

9. Security & Safety:

**Traditional Banking:** In traditional banking system their is lack of security & safety. All the activities are performed manually using paper and pen. All details are entered into accounts books, ledges etc. Therefore, in this way there are chances of leakage of important information.

**E-Banking:** security hazards are also present in e-banking. Banks take careful measures such as encryption to safeguard customer’s sensitive information when accessing e-banking services. Banks are responsible for customer’s money where they do their banking online or in person. PIN or password mailers should not be stored, the PIN and/or passwords should be changed immediately and memorized before destroying the mailers. Take simple precautions like changing the ATM PIN
and online login and transaction passwords on a regular basis. Also ensure that the 
logged in session is properly signed out.

10. Other Services:

**Traditional Banking:** Traditional banking provide only the banks services. Like 
deposit, withdraw, loan, bills of exchanges etc. The other services like e-banking 
are not a part of banks.

**E-Banking:** A part from banking services, e-banking provide some other services 
also. For example customer can make railway pass for local trains online, Customer 
can recharging prepaid phone through e-banking, customer can do online shopping, 
online airline reservation, electricity bill payments etc.

3.7. Risk factors in e-banking:

The main reason for the rapid spread of e-banking all over the world is its 
acceptance as an extremely cost effective delivery channel of banking services as 
compared to other existing channels. However, Internet is not an unmixed blessing 
to the banking sector. Along with reduction in cost of transactions, it has also 
brought about a new orientation to risk and even new forms of risks to which banks 
conducting e-banking expose themselves. The Reserve Bank of India has cautioned 
Indian banks about the inherent risk factors that accompany the introduction of 
high-tech electronic delivery system in the banking sector. Elaborating the various 
facets of e-banking, the RBI’s report on ‘Trend and progress of Banking in India 
for the year 2001-02’, said that the innovations in information technology and 
telecommunications had significant by transformed banking services relating to 
new product development, speed of transaction processing and reduction in 
transaction costs. It compels banks to offer a broad range of deposits, expand the 
geographical reach through new market penetration, and introduce credit and 
investment products through diverse distribution channels. However, despite its 
advantages, the report said, reliance on such technology often exacerbates 
traditional risks such as operational hazards, reputation and legal risks besides other 
risks related to business and credit offerings.

1. **Operational risk:** Operational risk, also called as transactional risk is the most 
common form of risk associated with e-banking. The risk is because of inaccurate
processing of transactions, non-enforceability of contracts, compromises in data integrity, data privacy and confidentiality, unauthorized access/ intrusion to bank’s systems and transaction, etc. Such risks can arise out of weaknesses in design, implementation and monitoring of banks information system. Inadequacies in technology, human factors like negligence by customers and employees, fraudulent activity of employees and crackers/hackers etc. can become potential source of operational risk.

2. **Security risk:** Internet is a public network of computers which facilitates flow of data / information and to which there is unrestricted access. Security risk arises on account of unauthorized access to bank’s critical information stores like accounting system, risk management system, portfolio management system etc. A breach of security could result in direct financial loss to the banks. For example, hackers operating via the Internet could access, retrieve and use confidential customer information and also can implant virus. This may result in loss of data, theft of or tampering with customer information, disabling of a significant portion of bank’s internal computer system thus denying service, cost of repairing these, etc.

3. **Improper system architecture and design:** Appropriate system architecture and control is an important factor in managing various kinds of operational and security risks. Banks face the risk of wrong choice of technology, improper system design and inadequate control processes. For example, if access to a system is based on only IP (Internet protocol) address, any user can gain access by masquerading as a legitimate user by spoofing IP address of a genuine user. Numerous protocols are used for communication across internet. Each Protocol is designed for specific types of data transfer. A system allowing communications with all protocols, says HTTP (Hyper Text Transfer Protocol), FTP (File Transfer Protocol), telnet, etc. is more prone to attack than one designed to permit say, only HTTP. Choice of appropriate technology is a potential risk banks face.

4. **Reputational risk:** Reputational risk is the risks of getting significant negative public opinion, which may result in a critical loss of funding or customers. Such risks arise from actions which cause major loss of the public
confidence in the banks ability to perform critical functions or impair bank-customer relationship. The main reasons for this risk may be system or product not working to the expectations of the customers, significant system deficiencies, significant security breach (both due to internal and external attack), inadequate information to customers about product use and problem resolution procedures, significant problems with communication networks that impair customers access to their funds or account information especially if, there are no alternative means of account access. Such situation may cause customer-discontinuing use of product or the service. Directly affected customers may leave the bank and others may follow, if the problem is publicized

5. Legal risk: Legal risk arises from violation of, or non-conformance with laws, rules, regulations or prescribed practices, or when the legal rights and obligations of parties to transition are not well established. New nature of Internet banking, rights and obligations in some cases are uncertain and applicability of laws and rules in uncertain or ambiguous, thus causing legal risk. Other reasons for legal risks are uncertainty about validity of some agreements formed via electronic media and law regarding customer disclosures and privacy protection.

6. Money laundering risk: As internet banking transactions are conducted remotely, banks may find it difficult to apply traditional method for detecting and preventing undesirable criminal activities. Application of money laundering rules may also be inappropriate for some forms of electronic payments. Thus, banks expose themselves to the money laundering risk.

7. Cross-border risks: Internet banking is based on technology that, by its very nature, is designed to extend the geographic reach of banks and customers. Such market expansion can extend beyond national borders. This causes various risks. i.e. Legal and regulatory risks, as there may be uncertainty about legal requirements in some countries and jurisdiction ambiguities with respect to the responsibilities of different national authorities. Such consideration may expose banks to legal risks associated with non-compliance of different national laws and regulations, including consumer protection laws, record keeping and reporting requirements, privacy rules and money laundering laws.
8. **Strategic risk:** This risk is associated with the introduction of new product or services. This risk depends upon how well the institution has addressed the various issues related to development of a business plan, availability of sufficient resources to support this plan, credibility of the vendor and level of the technology etc. For reducing such risk, banks need to conduct proper survey, consult experts from various fields, establish achievable goal and monitor performance.

3.8. **Risk Management:**

Operational, reputational, and legal risks are risk categories mostly affected by the specific nature of e-banking activities. The BCBS (Basel Committee for Banking Supervision) stresses that the management of these risks should become an integral part of the banking institution’s overall risk management framework. In respect to this “BCBS has given the 14 principles of risk management for e-banking that provide guidance to promote safe and sound e-banking activities”[34]

3.8.1. **Principles of Risk Management:**

1. The Board of Directors and senior management should establish effective management oversight over the risk associated with e-banking activities, including the establishment of specific accountability, policies and controls to manage these risks.

2. The Board of Directors and senior management should review and approve the key aspects of the bank’s security and control process.

3. The Board of Directors and senior management should establish a comprehensive and ongoing due diligence and oversight process for managing the bank’s outsourcing relationships and other third-party dependencies supporting e-banking.

4. Banks should take appropriate measures to authenticate the identity and authorization of customers with whom it conducts business over the Internet.

5. Banks should use transaction authenticated methods that promote non-repudiation and establish accountability for e-banking transactions.

6. Banks should ensure that appropriate measures are in place to promote adequate segregation of duties within e-banking systems, database and applications.
7. Banks should ensure that proper authorization controls and access privileges are in place for e-banking systems, databases and applications.
8. Banks should ensure that appropriate measures are in place to protect the data integrity of e-banking transactions, records and information.
9. Banks should ensure that clear audit trails exist for all e-banking transactions.
10. Banks should take appropriate measures to preserve the confidentiality of key e-banking information. Measures taken to preserve confidentiality should be commensurate with the sensitivity of the information being transmitted and/or stored in database.
11. Banks should ensure that adequate information is provided on their websites to all potential customers to make an informed conclusion about the bank’s identity and regulatory status of the bank prior to entering into e-banking transactions.
12. Banks should take appropriate measures to ensure adherence to customer privacy requirements applicable to the jurisdictions to which the bank is providing e-banking products and services.
13. Banks should have effective capacity, business continuity and contingency planning processes to help ensure the availability of e-banking systems and services.
14. Banks should develop appropriate incident response plans to manage, contain and minimize problems arising from unexpected events, including internal and external attacks that may hamper the provision of e-banking system and services.”
References


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