CHAPTER III

E – BANKING AN OVERVIEW

3.1 Introduction

The information technology has revolutionaries various aspects of our life. The world at largely entering into the ‘Net Age’. Internet or simply Net is an inter connection with computers communication networks covering the whole world. In short the term electronic banking once referred to ATM’s, generally means banking on-line, through personal computer and over the internet or telephones. The bank –to customer relationship has changed significantly with open standards replacing proprietary front ends, many to many networks substituting for single links and traditional looking eroding. Two – third of the top 100 banks use the internet has their global expansion plat form, offering on increasing of financial services.

E-banking means providing banking services like loan application, account balance enquiry, fund transfer etc, through the internet. E-banking is more or less bringing the bank to your computer at place and time of your choice. It removes the traditional geographical barriers and makes possible the avoiding banking services even outside the banking hours.

According to the Bank for International Settlement (BIS) electronic banking refers to “the provision of retail and small value banking products and services through the internet or electronic channels”.

Internet banking is browse – based, where as PC home banking requires customers to install and software package assigned to their PC. No special software or hardware needed for e-banking. This is what makes the internet banking is different from PC home banking. The need of e-banking raised on account of growth in organizations, technological complexities, diversifications and fast expansion of business. This led to an extensive use of computers and information technology by service sector like, banking, insurance, medical and entertainment etc.
E-banking increasingly becoming a “need to have” than “nice to have” service. This is cheapest way providing banking services. E-banking has reduced the transaction costs and enhanced the productivity levels of banking services. It facilitates to retain the clientele base. No longer, customers need to leave their houses for banking services.

The battlefield of business has changed and e-commerce is potential war front industry of the millennium. Whatever is predicted on the e-commerce boom, that are likely to top up revenues. Many banks outside the country are in the front curve in developing customer friendly on line presence.

E-banking is one of the e-commerce facilitating segments. The application of information technology in banking sector is an excellent opportunity for the industry. But the technology should not seen as mere aid to speed up processing and crumple costs but as an additional avenue for delivering services to on-line clients.

Today’s banking is virtual banking. Virtual banking denotes the provision of banking and other related services through the extensive use of information technology. The salient features of virtual banking are over helming reliance on IT and the absence of physical bank branches to deliver banking services to customers. The principle types of virtual banking includes ATM’s, shared ATM networks, Electronic Fund Transfer point of sale(EFTPOS), smart card ,Stored value card, phone banking, home banking, internet and intranet banking. Thus practice of banking had undergone a significant transformation due to adoption of e- banking. The fast advancing global information infrastructure (including information technology and computer networks such as the Internet and telecommunications systems) enable the development of electronic commerce at a global level. The nearly universal connectivity which the Internet offers has made it an invaluable business tool. These developments have created a new type of economy, which many call the ‘digital economy’. This fast emerging economy is bringing with it
rapidly changing technologies, increasing knowledge intensity in all areas of business, and creating virtual supply chains and new forms of businesses and service delivery channels such as e-banking.

3.2 FEATURES OF E-BANKING

1. It removes the traditional geographical barriers as it could reach out to customers of different countries legal jurisdiction.

2. It has added a new dimension to different kinds of risks traditionally associated with banking, heightening some of them and throwing new risk control challenges.

3. Security of banking transactions, validly of internet contract, customer privacy etc. that have all along been concerns of both bankers and supervisors.

4. It poses a strategic risk of losses of business to those banks who do not respond in time to this new technology (the efficient and cost effective delivery channels.

5. A new form of competition has emerged from both existing players and new players of the market who are not strictly banks.

3.3 INFORMATION TECHNOLOGY AND INDIAN BANKS

With development of information technology, the world has become a global village and has brought a revolution in the banking industry. The bank appears to be on fast track for IT based products and services. Deregulation and liberalization in financial sector have stimulated financial innovations. Breath taking developments in technology of telecommunication and electronic data processing has further accelerated these changes. Technology has become fuel for rapid change. IT is no longer considered as mere transaction processing of confined to Management Information System.

In its very basic form, e-banking can mean the provision of information about a bank and its services via a home page on the World Wide Web (WWW) More
sophisticated e-banking services provide customer access to accounts, the ability to move their money between different accounts, and making payments or applying for loans via e-Channels. The term e-banking will be used in this book to describe the latter type of provision of services by an organization to its customers. Such customers may be either an individual or another business. To understand the electronic distribution of goods and services, the work of Rayport and Sviokla (1994; 1995) is a good starting point. They highlight the differences between the physical market place and the virtual market place, which they describe as an information-defined arena. In the context of e-banking, electronic delivery of services means a customer conducting transactions using online electronic channels such as the Internet? The new technology has radically altered the traditional ways of doing banking business. Increasingly the customers in retail sectors are doing business. With their banks from comfortable confines to home or offices. Customers can view the accounts get the accounts statement, transfer of funds, purchase drafts by just making a few punches. Availability of ATM’s and plastic cards to large extent avoid customers going to branch premises. EDI is another development that has made its impact felt in the banking industry.

The first serious efforts computerization and mechanization has been was drawn up in 1983-84. But the process of introducing computerization in banking industry in India, particularly, in public sector banks is very slow. As culmination of the implementation and recommendations of (Saraf Committee, Shere committee and Vasudevan committee) today all the transactions of all branches have been fully computerized; banks have moved in direction of interbank connectivity. Electronic Fund Transfers and delivery versus payment system have been introduced, bank customers are becoming very demanding and it is extensive use of technology that will enable banks requirements of customers.
The four major objectives to computerization in banks are:

- Improvement of customer services
- Better house-keeping
- Faster decision making
- Increase in productivity and profitability

With coming into effect of the IT Act, on Oct 8th 2000, India reached another significant milestone on the information superhighway. The act provides legal sanctity to electronic commerce and lays down penalties for checking and other crimes. India will become 12th country in the world to have an IT bill in place for recognizing digital signature and facilitating e-commerce. The young age group customers are much more amenable to using electronic delivery channels rather than physical branches. Banks have been cautious in launching new services by using IT. Thus, the use of this technology has resulted in an increase in speed and accuracy and efficiency of operations, giving rise to productivity in the existing industry and also designing of new products like e-banking and instant banking services at lowest cost possible.

The tremendous advances in technology and aggressive infusion of information technology has brought in paradigm shift in banking operations for the banks, technology has emerged as a strategic resource for achieving higher efficiency, control of operations, productivity and profitability. For customers it is realization of their “Anywhere, Anytime, Anyway banking dream. This has prompted banks to embrace technology to meet the increasing customer expectations and face tough competition. The banks are using the electronic technology to meet the ever-increasing competition in banking which has converted the traditional brick and mortar banking into electronic banking. E-banking is the use of technology in day to day operations, by customer access their banking services electronically whether it is for payment of bills, transfer of funds, retrieve information and provide services.
3.3.1 Why is E-Banking Important?

Understanding e-banking is important for several stakeholders, not least of which is management of banking related organizations, since it helps them to derive benefits from it. The Internet as a channel for services delivery is fundamentally different from other channels such as branch networks, telephone banking or Automated Teller Machines (ATMs). Therefore, it brings up unique types of challenges and requires innovative solutions. Many banks and other organizations have already implemented or are planning to implement e-banking because of the numerous potential benefits associated with it. Some of these major benefits are briefly described below.

3.3.1.1 Choice and Convenience for Customers

In the fierce battle over customers, providing a unique experience is the compelling element that will retain customers. Customers hold the key to success and companies must find out what different customers want and provide it using the best available technology, ensuring that they are acting on the latest, most up-to-date information.

In modern business environments, customers want greater choice. They want the traditional range of banking services, augmented by the convenience of online capabilities and a stronger focus by banks on developing personal relationships with customers. A.V.Kiran (researcher) stressed the importance of the human touch in the customer services. Politeness and neatness, recognition in terms of greeting, willingness to provide prompt service, ability to apologise and express concern for a mistake are all important for bank customer. Most of these aspects of customer service cannot be automated. The adequacy of staff members serving customers can be expected to directly influence the customers’ satisfaction. However, e-banking backed up by data mining technologies can help in better understanding customers’ needs and customizing products/services according to those needs. Offering extra service delivery channels means wider choice and convenience for customers, which
itself is an improvement in customer service. E-banking can be made available 24 hours a day throughout the year, and a widespread availability of the Internet, even on mobile phones, means that customers can conduct many of their financial tasks virtually anywhere and anytime. This is especially true of developed countries, but increasingly in developing countries, the spread of wireless communications means that services such as e-banking are becoming accessible.

### 3.3.1.2 Attracting High Value Customers

E-banking often attracts high profit customers with higher than average income and education levels, which helps to increase the size of revenue streams. For a retail bank, e-banking customers are therefore of particular interest, and such customers are likely to have a higher demand for banking products. Most of them are using online channels regularly for a variety of purposes, and for some there is no need for regular personal contacts with the bank’s branch network, which is an expensive channel for banks to run. Some research suggests that adding the Internet delivery channel to an existing portfolio of service delivery channels results in nontrivial increases in bank profitability. These extra revenues mainly come from increases in noninterest income from service charges on deposit/current accounts. These customers also tend to be of high income earners with greater profit potential.

### 3.3.1.3 Enhanced Image

E-banking helps to enhance the image of the organization as a customer focused innovative organization. This was especially true in early days when only the most innovative organizations were implementing this channel. Despite its common availability today, an attractive banking website with a large portfolio of innovative products still enhances a bank’s image. This image also helps in becoming effective at e-marketing and attracting young/professional customer base.
3.3.1.4 Increased Revenues

Increased revenues as a result of offering e-channels are often reported, because of possible increases in the number of customers, retention of existing customers, and cross selling opportunities. Whether these revenues are enough for reasonable return on investment (ROI) from these channels is an ongoing debate. It has also allowed banks to diversify their value creation activities. E-banking has changed the traditional retail banking business model in many ways, for example by making it possible for banks to allow the production and delivery of financial services to be separated into different businesses. This means that banks can sell and manage services offered by other banks (often foreign banks) to increase their revenues. This is an especially attractive possibility for smaller banks with a limited product range. E-banking has also resulted in increased credit card lending as it is a sort of transactional loan that is most easily deliverable over the Internet. Electronic bill payment is also on rapid rise (Young, 2007) which suggests that electronic bill payment and other related capabilities of e-banking have a real impact on retail banking practices and rapidly expanded revenue streams.

3.3.1.5 Easier Expansion

Traditionally, when a bank wanted to expand geographically it had to open new branches, thereby incurring high start up and maintenance costs. E-channels, such as the Internet, have made this unnecessary in many circumstances. Now banks with a traditional customer base in one part of the country or world can attract customers from other parts, as most of the financial transaction do not require a physical presence near customers living/working place. In one case study presented in chapter VIII, a bank based in the southern part of the UK was attracting customers from northern England, where it had no branches. In many countries banks share their is prohibited resources such as ATMs or use post offices as their main interaction points, with customers for services such as cash and cheques deposits.
3.3.1.6 Load Reduction on Other Channels

E-Channels are largely automatic, and most of the routine activity such as account checking or bill payment may be carried out using these channels. This usually results in load reduction on other delivery channels, such as branches or call centers. This trend is likely to continue as more sophisticated services such as mortgages or asset finance are offered using e-Banking channels. In some countries, routine branch transactions such as cash/cheque deposit related activities are also being automated, further reducing the workload of branch staff, and enabling the time to be used for providing better quality customer services.

3.3.1.7 Cost Reduction

The main economic argument of e-banking so far has been reduction of overhead costs of other channels such as branches, which require expensive buildings and a staff presence. It also seems that the cost per transaction of e-banking often falls more rapidly than that of traditional banks once a critical mass of customers is achieved. The research in this area is still inconclusive, and often contradicting reports appear in different parts the world. The general consensus is that fixed costs of e-banking are much greater than variable costs, so the larger the customer base of a bank, the lower the cost per transaction would be. Whilst this implies that cost per transaction for smaller banks would in most cases be greater than those of larger banks, even in small banks it is seen as likely that the cost per transaction will be below that of other banking channels. Having said that some sources of research in this area suggest that banks so far have made little savings from introducing e-banking. It implies that, any efficiency related savings are offset by above average wages and benefits per worker due to the need for a more skilled labor force to run the more sophisticated delivery system. Other costs such as systems integration and extra security measures also take their toll.
3.3.1.7 Organizational Efficiency

To implement e-banking, organizations often have to re-engineer their business processes, integrate systems and promote agile working practices. These steps, which are often pushed to the top of the agenda by the desire to achieve e-banking, often result in greater efficiency and agility in organizations. Organizational changes are also often linked to risks such as low employee morale, or the collapse of traditional services or the customer base.

3.3.1.8 E-marketing

E-marketing in the financial services sector (which is covered later) was made possible by the arrival of e-banking. E-marketing builds on the e-channel’s ability to provide detailed data about customers’ financial profiles and purchasing behavior. Detailed understanding of customers enables customised advertising, customized products and enrichment of the relationship with customers through such activities as cross selling. Other potential benefits of e-banking to organizations may include: improved use of IT resources and business processes; better relationships with suppliers/ customers; quick delivery of products and services; and a reduction in data entry and customer services related errors. It is important to note that e-channels do not automatically bring these benefits, as other organizational issues also have been dealt with. There are only a few examples reported in the literature where e-banking is realising its promised potential. One such example is the Royal Bank of Canada, where its number of online relationships was 340,000 and was growing at a rate of almost 700 new enrolments a day during year 2002-2003. Another example of realisation of the above benefits is the Woolwich Building Society in the UK, which is described in Chapter VIII. The number of its online customer was growing so fast that it was cited as one of the 9 main reason for its takeover by a much bigger bank, Barclays. Not only did the number of its online customer grow very quickly, but the new customer base was also very profitable.
3.4 EVOLUTION OF E-BANKING

Finland was the first country in the world to have taken in E-banking. In India, it was ICICI Bank which E-banking as early as 1997 under the brand name ‘Infinity’ The induction of new technology is absolutely essential for the overall progress of in the banking sector, Indian banking industry, today is the midst of the IT revolution. Increasingly competitive banking environment led to total automation in the Indian banking industry. New private sector banks have an edge over the public sector banks have an edge over public sector banks as for as the implementation of technological solutions is concerned. How ever the public sector banks are in the process of making huge investments in technology.

The government of India enacted in the information technology act, 2000 with effect from 17th Oct 2000 to provide legal recognition to electronic transactions. RBI has also setup “working group on internet banking” to examine different aspects of e-banking. The group has focused major areas of e-banking.

➢ Technology and security issues
➢ Legal issues
➢ Regulatory and supervisory issues

In India, e-banking has developed and programmed in five different phases these are:

Phase 1

During the first phase of the e-banking, the banks are focused on automating the laborious accounting process and office functions like calculations of interest, maintenance of deposits accounts, ledgers etc. the banks are started Ledger Posting Machines(LPM’s) and advanced Ledger Posting Machines(ALPM’s) as first step to introduce technology.
Phase II

In the second phase of e-banking focused on improvement of customer service with reduction in the processing time. The Total Branch Mechanization (TBM) was introduced to capture the entire data/transaction of clients in a standing alone mode.

Phase III

With opening of new private banks, who had advantages of computerized environment from day to day of their operations, started in third phase of e-banking? The core banking solutions (CBS) was introduced aggressively. The problem of decentralization network like maintaining the stand-alone server, various applications, databases etc were avoided and banks were able to take full advantage of centralization by improving their efficiency from administrative cost prospective.

Phase IV

The centralized operations provided the option to the customers to carryout on their own required transactions through ATM’s mobile banking and internet banking. Operational costs for transacting through ATM’s are comparatively and also they provide flexible options to the customers. The AAA mantra of Anytime, Anywhere and Anyhow is implemented through ATM’s and internet banking.

Phase V

Indian banking industry in passing through the fifth phase of development where in ‘intrabank’ connectivity is effectively extended as ‘inter bank’ connectivity. The paperless on line banking interbank transactions remittances have been through Real Time Gross Settlement (RTGS). The concept of ‘bank customer’ has further improved to ‘banking industry-customer’. The cash tree consortium of networking ATM’s of various banks another customer – friendly development in E-banking.
In order to become hi-tech banks they will have to adopt the combination of bricks and clicks strategy exhaustively. Survey shows that

- 38 private banks
- 49 multi national banks
- 31 public sector banks in India

The public sector banks do the bulk of banking and financial service provider business. They have 84 percent of total deposits. 73 percent of Indian banks branches situated in rural and semi urban areas, only 10 percent of public sector banks are fully computerized. 22 percent partially computerized. Thus there is a huge automation of in banking industry, as 70-90 percent of public sector bank’s operations are to be computerized.

Banks have now started with spending on I.T. in accordance with their capacities and future growth prospects in IT integration have a huge up front cost involved. Private sector banks have already moved the first step so the question before them is “future improvement”. These banks are already spending around Rs.40-50 lakh on IT integration. Hence public sector banks have to accelerate their more towards complete automation. Besides automation, digital cash, banks have also to provide various other financial services/products to its customers

3.5 TRADITIONAL BANKING V/S E-BANKING

Till 1990’s Indian banking system merely a monopoly of the government, which eroded the growth of banking in terms of profitability and productivity, however, with the process of economic liberalization in 1991, banking sector reforms were introduced with effective strategies to reduce governments monopoly and the improve the workings of banks. In 1993-94, RBI allowed the entire of private sector and foreign banks in terms of performance along with technology advancements. As these banks entered into market with attractive and innovative products and services, public sector
banks, having the huge branch network and large number of employees were forced to provide prompt and reliable customer services and offered a variety and hi tech banking products and services.

In the background of these recent developments, competition increased to a large extent and survival of public sector banks has become major issue, from various surveys, it is observed that customers prefer new private sectors why? because they are providing better customer services according to their requirements successfully with friendly behavior employees and especially through the new and attractive e-channels like debit/credit smart cards, internet banking, mobile banking and EFT’s etc.

The services through e-channels are assumed to be cost effective and time saving. However, in India even 20 percent of the population is using e-channels.

3.6 IMPACT ON TRADITIONAL BANKING:

The traditional functions of banking are limited to accept deposits and to give loans and advances. Today banking is known as innovative banking. Information technology has given rise to new innovations in the product designing and their delivery in the banking and finance industries, customer services and customer satisfaction are their prime work. Current banking sector has come up with many initiatives that oriented to providing a better customer services with the help of new technologies. Banking sector mirrors the larger economy its linkages to all sectors make it proxy for what is happening in the economy as a whole. Indian banking sector today has the same sense of excitement and opportunity that is evidence in the Indian Economy. The going developments in the global markets offer so many opportunities to the banking sector. In the competitive banking, word improvement day by day in customer services is the most useful tool for their better growth. Bank offers so many changes to access their banking and other services. Banking has traditionally
been built on the benchmarking model with two basic competitive advantages: brand names and customer relationships. Some perceptible changes are:

### 3.6.1 Changing Customer Profile:

Previously customers changed banks only in extreme circumstances. Now they can do so at the click of a mouse. A comparison by customers of products and services offered by different banks is facilitated by the easy availability of information on the internet. This enables customers to shop around for the best offer. Further, the costs of switching are lower in case of electronic banking, which could reduce customer loyalty and compel them to buy more attractive product from each bank.

### 3.6.2 Market Transparency:

The market has become more transparent due to easy availability of information. This means that banks are obtaining more information about product ranges of competitors as soon as they launched. New innovative products are being copied more rapidly, thereby accelerating product standardization and commoditization.

### 3.6.3 Cross-selling:

The availability of information about customer banking trends and preferences gives banks the potential cross-sell other financial products and services. Many major banks have for some time now recognized this and they are in fact no longer in business banking, defined to be the provision of loans and advances, deposits, and transaction payments services. Now banks are selling package services like general insurance, mutual funds, stock-broking, depository services, housing finance and the like.

### 3.6.4 Brand Names:

The importance of banking brand names is increasing. In an e-banking environment where personal contact is limited and where products and services
can be copied rapidly, the brand name is an instrument with which banks can distinguish themselves from competitors. A number of banks have already set up subsidiaries for providing e-banking services under new brand name or under the name of parent bank.

3.6.5 Transaction costs:

E-banking transactions are much cheaper than transactions conducted at branch. Recent estimates indicate direct costs of banking transactions effected through branch, ATM and internet to Rs.60, Rs.13 and Re 0.48 respectively.

3.6.6 Branches:

There were many dooms day prophecies about gradual demise of branches. But branches have again bounced back into the strategic plans of banks, through with decreased number and structural change. Some activities like personal banking services, direct enquiries, processing loan requests, and financial advice—require the individual attention of professional bank manager and better handled at the local branch level.

3.6.7 Internet only:

Pure internet banks created a lot of euphoria couple of years back. Their market share is still very small and many have been forced out of market. The main reason are online privacy and security fears of consumers, lack of human transaction and the lack of trust due to the dotcom debacle.

The advent of electronic banking era was set to be the most fundamental transformation ever faced by the industry. In days to come technology will be used to maximize the revenues rather than to minimize the costs, and electronic banking service will be complementary to, rather than a substitute for branches. In long run traditional elements such as branding, customer loyalty, physical locations, people and cultures will continue to matter in determining which banks succeed in the electronic age.
Traditional banking | E-banking
---|---
1. Physical visit | 1. On-line visit
2. Records are compulsory | 2. Paperless transactions
3. Delay in service | 3. Quick settlement of bills
4. High transaction cost | 4. Less cost of transactions
5. High manpower cost | 5. Low man power cost
6. Clerical errors like omissions, commission of entry, wrong entries in their accounts, | 6. Clerical errors are less due to accuracy is mantra of e-banking
7. Lack of attention and improper behavior of bank employees | 7. High attentive, friendly nature of approach
8. Practical training is less | 8. Practical training high quality

### 3.7 INTERNET BANKING

Advantages:

The advantages of Internet banking are obvious. Business people can access their personal and business account information while saving a trip to the bank. You can check your balance whenever you need to, even if the bank is closed. The advantages of using internet banking are listed below.

1. Available for 24 hours a day, 7 days a week.
2. No need to stand in queues.
3. The account can be operated from anywhere – all you need is a computer with internet access.
4. Integrated security.
5. You can apply for a majority of the services such as loans, savings accounts, mortgages, etc., on-line.
6. It can be used for paying bills through on-line which saves both time and money on postage.
7. Through internet banking we can easily compare services offered by different banks. We can buy financial products and apply for loans by choosing the best bank for us to apply by such comparison.

8. We can even buy insurance online through Internet banking services.

9. Stocks and bonds and other investments can be managed with online banking from our home or office independent of a financial intermediary like a stockbroker.

**Disadvantages**

1. The internet connection costs should be met by the customer while using the service.

2. The account cannot be accessed if there is a failure in the internet connection.

3. The bank and the account holder would not be having any personal interaction.

4. Working through the internet banking can be slow with a 56K modem.

5. You cannot deposit physical cash into your account, online. For that you still need to visit the bank.

6. For obtaining cash floats or to use an ATM machine to withdraw cash we will have to visit the bank personally. Internet banking works mostly like traditional banking. The basic difference is that all that you do with your bank account is through a computer – whether you’re accessing your account and information, making payments or reconciling statements. Instead of going to the banks nearest branch, you can do all this with a click on your mouse.

Online banking is rapidly gaining popularity, as more and more customers recognize its advantages. Most banks charge fewer fees if you use their online services. You could even avoid receiving paper statements if you like, and conduct 95% of your business online.
3.8 SWOT ANALYSIS OF E-BANKING

E- Banking has become the back bone of the banking industry. In the globally competitive world, it is not possible to survive for any bank without adopting the latest technology. With the more awareness of the customers and their changing preferences, e-banking is only choice for long-term survival and growth. The Strengths, Weakness, Opportunities and Threats (SWOT) were as follows,

STRENGTHS
1. Permits better, efficient and timely accurate management of funds and payments in real time
2. All financial data can be obtained at any time 24 hours a day and 7 days per week.
3. To eliminate endless paper –based bank statements, spreadsheets, bulky accounts ledgers including use of calculator.
4. With online presence banks can rebuild their brand in terms of service world wide at low costs.
5. Better fund management
6. Customers can get the details of accounts and transactional details instantly
7. Transfer of funds, submitting requests and intimidation like stop payments and activities are very simple
8. The account holder is armed with password, can use the Net to order a cheque book, stop payment of cheque and stop the balance and individual operations in the account and transfer of funds.
9. Encryption and digital certification provides customers the confidence that their financial information and the accounts are protected from unauthorized access.
10. Sites can be building up with multi–layer security architecture comprising of firewalls and filtering routers.
WEAKNESS

1. Banks have not launched the internet payment gateway for handling net transactions of their clients.

2. Lack of awareness is seen as one of the biggest roadblocks for successful online banking. The problem of awareness is more than acceptance, effective and wide media efforts in publishing internet banking need to emphasized.

3. Merchants, customers and general public do not have full idea of the issues involved in on-line banking.

4. A formal governmental paper on cyber laws and the legal framework for internet banking are not formulated.

5. RBI has so far not issued a policy paper covering the regulatory aspects and legal framework which are important to internet banking.

6. All banks are not behind the curve developing a customer friendly online presence.

7. The low base of PC users in India coupled with conventional mindset and fear of electronic fund transfer needs to be monitored and changed to be with the times.

8. Online banking and financial programmes face many hurdles. So, not all banks are prepared to access the Net for online and financial transactions.

9. Low density of telephone lines and computerization of banks in India is also bottlenecks for online banking. For instance, out of 65,000 bank branches 5,000 branches are computerized.

10. There are many banks who invest in cost-effective strategies to establish themselves in online banking- considering the risks involved in dealing with other’s money.
3.8.1 Opportunities

1. It offers a unique opportunity to register banking presence in a global market. A properly designed websites can convey accurate and focused image of the product or service rather than any other media.

2. Banks can enhance the quality of their service through e-banking. Replying to customer’s queries through e-mail, setting up FAQ (Frequently Asked Questions) pages for anticipated queries, acceptance of customer complaints on line 24 hours a day.

3. E- Banking enhances the market both in terms of number of potential customers and geographical coverage. The banking industry targeting final consumer cannot to offered to ignore the potential of internet.

4. Internet is accepted as cheaper source of delivering services as compared to traditional banking. Having substantial cost advantages offer another opportunity to the bankers to adopt e-banking

3.8.2 THREATS

1. Trust of customers in web venture is threat to the E-banking. Many customers are reluctant to deal with internet banking because they are not sure about the quality of the products or services they will receive from e-banking.

2. Security of transactions, authencity of a deal, identification of a customer etc are the major issues concern to internet banking.

3. Although information is encrypted and chances of customers account being hacked are slim, but this possibility can not be over-ruled.

4. Internet based transactions are generally not fully automated. They may require additional telephone calls, paper work, data entry etc.

5. Many banking products like with drawl of cash, loans and mortgages etc requires proper identification of the customers in physical form. This may drive the customer away from e-banking.
6. New players in this field have substantial cost advantages than the traditional banks. They can provide the services at low prices and thus create great competition for the existing banks.

7. Legal issues relating to the jurisdiction of law, validity of electronic contract, regulatory environment etc is the upcoming threat out of e-banking.

8. Reputational risks like system deficiencies, lack of innovations in products, network failure etc may drive customer away from internet banking.

3.9 ELECTRONIC SERVICES DELIVERY

E-commerce is about buying and selling information, products and services via computer networks such as the Internet and Electronic Data Interchange (EDI). E banking is one form of e-commerce. The term commerce is viewed rather narrowly by some as transactions conducted between business partners.

3.9.1 Communications:

E-commerce is the delivery of information, products/services, or payments over telephone lines, computer networks, or any other electronic means.

3.9.2 Business process:

E-commerce is the application of technology towards the automation of business transactions and workflow.

3.9.3 Service:

E-commerce is a tool that addresses the desire of firms, consumers, and management to cut service costs while improving the quality of goods and increasing the speed of service delivery.
3.9.4 Online:

E-commerce provides the capability of buying and selling products and information on the Internet and other electronic channels such as EDI. For firms e-commerce brings:

- Different and arguably lower barriers to entry;
- Opportunities for significant cost reduction;
- The capacity to rapidly re-engineer business processes;
- Greater opportunities to sell across borders.

Each and all of these potential benefits provides for increased competition and the ability to wrest market leadership from established players.

For consumers the potential benefits are:

- More choice;
- Better value for money obtained through greater competition;
- More information;
- Better tools to manage and compare information;
- Faster service.

The revolutionary growth of network technologies and especially the Internet has enabled us to conduct business electronically at a global level. For this reason, most of the literature in this field refers to technological issues and is mostly application driven. There is a significant stress on the technical infrastructure that supports e-commerce applications such as networks, multimedia contents, messaging and payments. E-commerce allows new products to be created and/or for existing products to be customised in innovative ways. In the long term, competitive advantage may only be achieved by providing innovative services, or services that are uniquely bundled using web capabilities. Banks should look beyond their own industry in benchmarking other facets of operations and examine other technologically advanced industries for innovative ideas.
E-commerce also allows suppliers to gather personalized data on customers. Building customers profiles, as well as data collection on certain groups of people can be used as a source of information for customizing existing products or designing new ones.

Customization enables manufacturers to create a specific product for each customer, based on his or her exact needs. For example, Motorola gathers customer needs for a pager or cellular phone, transmits them electronically to the manufacturing plant where they are manufactured, according to the customers’ specification, i.e. colours, features, and then sends the product to the customer within a day tools, customers can design or configure products for themselves. For example, customers can configure a PC to their exact needs (in case of Dell) or design their T-shirts, furniture, cars and even a Swatch watch. In the service sector, e-commerce is playing a major role and has changed organizations as varied as the travel industry and the banking industry. This covers some of the sectors, which have considerably changed as a result of the emergence of e-commerce, and helps our understanding of e-banking from these different perspectives.

3.9.5 Travel and Tourism Sector

The Internet is an ideal place to plan, explore and arrange almost any trip. People can make potential savings by buying on the Internet, eliminating travel agents and buying directly from the providers. Websites like CheapFlights.com and last minute.

3.9.6 Broker Based Services

Brokers usually work for a commission, acting as intermediaries between buyers and sellers of services. The buyers can be an individual or a company. Some of the most notable services are travel agencies, insurance agencies, and stock market brokerages. The agents role in an e-commerce
environment is changing, and increasingly they will need to put more emphasis on providing value added services like

- Assisting in comparison shopping from multiple sources;
- Providing total quality solutions by combining services from several vendors; Providing certifications and third party control and evaluation systems.

3.9.7 The Job Market

Thousands of employment agencies operate on the Internet, with companies advertising on their home pages. There are sites where one can assess market wages rate by entering skills sets. Similarly, it is possible to seek employment anywhere in the world as jobs are advertised on the Internet. Many recruitment agencies such as www.hays.com use the Internet as their main communication channel, both with employers and job-seekers.

3.9.8 The Property Market

One of the booming uses of the Internet is that of buying or renting property, through websites such as Yahoo, loot.com or Yourmove.com. Properties can be viewed on screen, sorted and organized according to customer criteria, and previewed. In short, e-commerce is creating fundamental changes in the ways business operate, their functions, and the way they compete. Engaging in e-commerce requires rethinking the very nature of the buyer/seller relationship. It requires the fundamental transformation of business, because all or most human interactions and paper-based processes within the value chain will need to be changed.

3.10 From E-commerce to E-banking

In its very basic form, e-banking can mean the provision of information about a bank and its services via a home page on the World Wide Web (WWW). A more sophisticated Internet based service provides the customer with access to their accounts, the ability to move money between different
accounts, make payment or apply for loans and other financial products. Delivery of services means a customer conducting his transactions from a remote location (e.g. home) rather than visiting a local branch.

Automated teller machines (ATMs) were the first means of providing electronic access to retail customers, made possible through the introduction of computer networks. Telephone banking arrived next, which was a revolutionary concept since it made banking possible from anywhere as long as telephones were available. In the mid eighties, online banking arrived. In its early form ‘online banking services’ requiring a computer, modem and software provided by the financial services vendors. Generally, these services failed to get widespread acceptance due to high call costs and unfriendly system interfaces, and were discontinued by most providers.

With the arrival and widespread adoption of The World Wide Web, banks renewed their interest in this area and started developing a web presence. The goal was for a bank’s website to provide many, if not all, of the services offered at a branch. This may include transactions as well as information, advice, administration, and even cross-selling. However, the interactive nature of the Web not only allows banks to enhance these core services, but also enables banks to communicate more effectively and expand customer relationships. When combined with the improving analytical capabilities of data mining and related technologies, the potential for enriching the relationship with customers is unlimited.

Most banks and other financial institutions in the developed world have established an Internet presence with various objectives. Some banks are there because their competitors have done it. Others prefer a ‘wait and see’ practice. Some are using it as a banking channel being part of their distribution /delivery management.

E-banking largely came into being as a result of technological developments in the field of computing and communications but there have
been a number of other factors or challenges which played an important part in its development. First, they need to satisfy customer requirements that are complex and ever changing. Second, they need to deal with increased competition from old as well as new entrants coming into the market. Third, they need to address the pressures on the supply chain to deliver their services quickly. Finally, they must continually develop new and innovative services to differentiate themselves from the competition, as having a large branch network is no longer seen as a main source of competitive advantage. E-banking is seen by many banks as a key tool to address these challenges. Other reasons for the adoption of e-banking by banks may include achieving competitive advantage (at least in short term), creating new distribution channels, improving image, and reducing costs.

3.11 E-banking at Indian experience:

India is still at early stages of e-banking growth and development. Competition and changes in technology and lifestyle in the last five years has changed the face of e-banking. The changes that have taken place to impose on banks tough standards of competition and compliance. The issue is ‘where does India stand in the scheme of e-banking.’ E-banking is likely to bring a host of opportunities as well as unperfected risks to fundamental nature of banking in India.

Various measures are taken to introduce IT at Indian banks although the pace of developments was not the same as developed countries. The technology adoption in the Indian banks was process which was stemmed out of the recommendations of three committees formed. The first two committees in 1983 and 1988 respectively were formed under the chairmanship of Dr. Rangarajan, then Deputy Governor of RBI. The third committees were setup in 1994 under the chairmanship of Sri. Saraf, the executive Director of RBI. In mean time technology adoption issue was also examined by a high powered committee setup the government of India in 1992 and 1997 on restructuring of banking industry in India under chairman ship of Narasimham.
The financial reforms that were initiated in the early 90’s and globalization and liberalisation measures brought in completely brought in completely new operating environment to banks. Services and products like anywhere banking, tele banking, internet banking, a web banking, e-banking etc. have become the buzzwords of the day and the banks are trying to cope with the competition offering innovative and attractively packaged technology based services to their customers.

The impact of e-banking in India is not yet apparent. Many global research companies believe that e-banking adoption in India in the near future would be slow compared to other Asian countries (e-business ,2002) Nair (1999) Observes that Indian e-banking is still nascent, although it is fast becoming a strategic necessity for most commercial banks and Non- Banking Financial Institutions (NBFC’s)

According to NASSCOM’s internet survey 2001 on the internet usage trends, the number of active internet subscribers in India is expected to increases from 18 Millions and the over 30 millions by 2004-05. It is found that more than 200 cities and towns in India have internet connectivity.

According to IWS, internet subscribers in India stood at 42 millions in 2007. The Nasscom – Mckinsay study in 2002 revealed in the despite the global economic challenges facing the IT software and services sectors, the outlook for the Indian banking industry remains optimistic.

The RBI has also setup a working group on e-banking to examine different aspects of e-banking. i.e.

- Technology and security issues
- Legal issues
- Regulatory and supervisory issues
RBI has accepted the guidelines of group and they provide a good insight into the security requirements of e-banking.

The importance of impact technology and information security cannot be doubted. Technological developments have been one of the key drivers of the global economy and represent an instrument that if I exploited well can boost the efficiency and competitiveness of the banking sector. However, the rapid growth of new level of security related problems.

From the legal prospective, security procedure adopted by banks for authenticating users needs to be recognized by laws as substitute signature. In India, the information technology act 2000, in section 3(2) provides a particular technology viz., the asymmetric crypto and hash function as a means of authenticating electronic record.

Regarding the regulatory and supervisors issue only such banks which are licensed and supervised and have a physical presence in India will be permitted to offer e-banking products to resident of India, with institutions becoming more and more global and complex, the nature of risks in the international financial system changed. The regulations themselves who will now be paying much more attention to the qualitative aspects of risk management have recognized this.

Though Indian government has announced cyber laws most corporate are clear about them, and the feel they are sufficient for the growth of e-commerce. Lack of consumer protection laws is another issue that needs to be tackled, if people have to feel more comfortable about transacting online.

Taxation of e-commerce transaction has been one of the most debated issues that are yet to be resolved by India and most other countries. The explosive growth of e-commerce has led many executives to question how their companies can properly administer taxes on internet sales. Without sales tax, online sellers get a price advantage over brick or mortar companies.
Nasscom survey 2001 has suggested that India should support a permanent ban on taxes on internet access, a permanent ban on customs duties on electronic transmissions, interventions tax rules are neutral, simple certain and simplification of state and local taxes. The CBDT which submitted the report in September 2001, recommended that e-commerce transactions should be taxed just like traditional commerce.

RBI is about become first government owned Digital Signature Certifying Authority) in India. The more is expected to initiate the electronic transactions process in the banking sector and will have far-reaching of cost and speed of transactions between Governments owned banks. Thus, efficiency, growth and the need to satisfy a growing tech savvy customer bases are three clear rational for implementing e-banking in India. The four faces – Customers, Technology, convergence and globalization have the most important effect on the Indian financial sector and these changes are forcing banks to redefine their business models and integrate technology into all aspects of operations.

E-banking has become a necessary survival of weapon and is fundamentally changing the banking industry world wide. Today the click of mouse offer customers banking services at a much lower costs and empowers them into unprecedented freedom in choosing vendors for their financial service needs.

3.12 FACILITIES OFFERED BY E- BANKING

The bank follows the concept of being where the wants is to be that it follows anywhere banking rules. The facilities being offered are as follows.

1. **Account balance enquiry:** internet banking can be used find out the balance in the saving or current account. When this option is selected the following information can be viewed.
- Available balance
- Unclear funds
- Ledger balance
- Overdraft

2. **Account enquiry statement:** one can view the statement of transactions that have been on the account for the current period or for specific period determined. The statement of current period will display all the transactions performed across all the delivery channels from the date of the last statement mailed.

3. **Cheque status inquiry:** internet banking can be used to view the status of a specific cheque that has been issued on any one of the matter.

4. **Stop payment request:** one can give stop payment request a cheque or cheque series of cheques online. All has to be done to enter the starting cheque number and reason for stopping.

5. **Demand draft banker’s cheques request:** one can have a banker’s cheque or demand draft issued from the account.

6. **Fund transfer:** internet banking makes it easy to transfer the funds between any of the accounts of the customer even if they are at different locations.

7. **Fixed deposit enquiry:** internet banking can be used to access the principal balance, term deposit, rate of interest, maturity value, etc of the fixed deposit account.

8. **TDS enquiry:** customer can access information on the tax deducted at source for all the FDs held at an of the banks branches for the current or previous year.
3.13 ISSUES IN E-BANKING

Financial institutions, their card associations, and vendors are working to develop an internet payment infrastructure to help make electronic secure. Many in banking industry expect significant growth in use of the internet for the purchase of goods and services and electronic data interchange. The banking industry also recognizes that internet must be secure to achieve the high level of confidence with both customers and businesses. Sound management of banking products and services, especially, these provided over the internet, is fundamental to maintaining a high level of public confidence not only in the individual bank and its brand name but also in the banking system as whole. Key components that will help maintain a high level of public confidence in an open network environment include:

1. **Security**: Security is an issue in internet banking systems. The breach of security in e-banking related application such as internet banking could result in the siphoning off a large sum of money by perpetrators of computer crime. Therefore banks need to put in place computer security related software and hardware such as firewalls, encryption programmes and virus protection software. Although publicly accessible internet programme generally may be less secure, both types of connections vulnerable to inception and alteration.

2. **Authentication**: Authentication is another issue in a internet banking system. Transactions are on the internet or on telecommunication network must be secure to achieve a high level of public confidence. In cyberspace, as in physical world, customers, banks, and merchants need assurances that they will receive the service as ordered or the merchandise as requested, and that they know the identity of the person they are dealing with. In this banks use the personal identification number (PIN) and distinct customer identity number which enables customers to access their accounts with ease and send payment instructions. When the customers is required to connect to the bank, he has necessarily enter the PIN each time. The PIN is an authority and only the authorized persons use it. A connection to the bank is not possible unless request is coming from an authorized customer.
3. **Privacy**: Privacy in relation to bank transactions applies to an individual customer. It is the right of every account holder to access all financial information. The internet based banking must ensure that only the right person can access this information in order to ensure online privacy. National banks that recognize and respond to privacy issues in proactive way make this positive attribute for bank and benefit for its customers. Public concerns over the proper versus improper accumulation and the use of personal information are likely to increase with continued growth of electronic commerce and the internet.

4. **Integrity**: Integrity with reference to internet banking on the security of data and message involves the quality of being honest and appreciating positive work ethics and sincerity in electronic transactions. These ethics include financial, legal and procedural integrity. The whole transaction must satisfy the condition of being whole and authentic. A financial message through the Net is on electronic transmission - the requires integrity for successful e-commerce. It means that the message received cannot alter after it is put online by the sender to the destination.

5. **Identification and password**: assigning a correct password ensures the only authorization for success for data access. Password is the first step on which the whole process of security is involved. The existence of password indicates an object with unique identity assigned to it. Further, cross checks may be imposed, if the some additional measures of security are desired to ensure security of information put online by customers.

6. **Adoption of technology**: The new generation private banks and foreign banks talk of e-banking by virtue of a lean network and absence of legacy systems; but the public sector banks with vast network have put their strenuous efforts to adopt technology for bringing electronic banking to their customers. Transaction automation at branch levels being the fundamental pre-requisite for electronic banking, the magnitude of the problem is very obvious.
7. **Non repudiation**: Non repudiation is the undeniable proof of the participation by both sender and receiver in a transaction. It is the reason public key encryption was developed, i.e. to authenticate electronic messages and prevent denial or repudiation by the sender or receiver. Although technology has provided an answer to non-repudiation state laws are not uniform in the treatment of electronic authentication and digital signatures. The application of state laws to those activities is new and emerging area of the law.

8. **Cost of technology**: The cost of acquiring of PC and other equipment for enabling oneself to do online banking is still not within reach of middle class customer. Unless the cost comes down further, proliferation of the internet is bound to be slow.

9. **Availability**: Availability is another component in maintaining a high level of public confidence in network environment. All of the previous components are of little value if the network is not available and convenient to customers. Users of the network expect access to systems 24 hours per day, seven days in week.

   Among the considerations associated with system availability are capacity, performance monitoring, redundancy, and business resumption. National banks and their vendors who provide internet banking products and services need to make certain they have the capacity in terms of hardware and software to consistently deliver a high level of service.

3.14 **RISKS ASSOCIATED WITH E-BANKING**:

   Even though a major driving force behind 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 risks and
even new forms of risks to which banks conducting E-banking expose themselves. Regulators and supervisors all over the world

Are concerned that while banks should remain efficient and cost effective, they must be conscious of different types of risks this form of banking entails and have systems in place to manage the same. An important and distinctive feature is that technology plays a significant part as both source and tool for control of risks. Because of rapid changes in information technology, there is no finality either in the types of risks or their control measures. Both evolve continuously. The thrust of regulatory action in risk control has been to identify risks in broad terms and to ensure that banks have minimum systems in place to address the same and that such systems are reviewed on a continuous basis in keeping with changes in technology. In the following paragraphs a generic set of risks are discussed as the basis for formulating general risk control guidelines, which this group will address.

1. **Operational risk:**

Operational risk, also referred to as transactional risk is the most common form of risk associated with E-banking. It takes the form 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 transactions etc. Such risks can arise out of weaknesses in design, implementation and monitoring of banks’ information system. Besides 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. Often there is thin line of difference between operational risk and security risk and both terminologies are used interchangeably.
Operational (Technology) | Risk Elements
---|---
1) Management processes | ○ Management oversight  
○ Inadequate audit coverage  
○ New products process
2) Architecture | ○ Poor development standards  
○ Mis-configuration of hardware/software  
○ Datacenter burns
3) Integrity | ○ Back officer mistake  
○ Errors of judgment
4) Security | ○ Inadequate password administration  
○ Breach of policy  
○ Viruses, malware, phishing,
5) Availability | ○ Natural disaster  
○ Failure to backup

2. Security risk:

Internet is a public network of computers which facilitates flow of data / information and to which there is unrestricted access. Banks using this medium for financial transactions must, therefore, have proper technology and systems in place to build a secured environment for such transactions.

Security risk arises on account of unauthorized access to a 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 bank. 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. Other related risks are loss of reputation, infringing customers’ privacy and its legal implications etc.
3.14.1 Basic Security Safeguards

To protect against breaches, the basic security architecture in e-banking should include passwords, along with appropriate firewalls and encryption. Since breaches may result in serious reputation damage or financial loss, the bank should seek as quickly as possible to allay the fears of customers; who should also be directly informed of any substantial breach in an attempt to negate any potential repercussions and knock on effects. These are highlighted below:

**A. Passwords:** Banks should assign passwords or PINs (personal identification numbers) to users to control access to e-banking systems, and to ensure the integrity of passwords. Banks should also assist by providing instruction on their proper use and protection. Specifically, management should consider the following password protection practices:

(i) Minimum character length for passwords;
(ii) Use of alphanumeric passwords;
(iii) Periodic changes in passwords through automatic expiration;
(iv) Procedures for resetting user passwords and identification;
(v) Session controls that ensure automatic log-off during inactivity or after a set number of failed access attempts;
(vi) Prohibition of unencrypted password storage;
(vii) Encryption of passwords or PINs during transmission; and
(viii) Disallowance of automatic password save features.

**B. Firewalls:** Firewalls need to be based on the desired level of security as dictated by the bank's risk assessment and data classification efforts. Firewalls are a combination of hardware and software to block unwanted communications flowing through a bank's network, while still allowing bona fide communications to pass.
C. Encryption: Agreements between the bank and its customers should define the procedures for valid and authentic electronic communications between parties. The levels and types of encryption should be based on the sensitivity of data or information being transmitted. The strength of current encryption techniques depends on a combination of three elements: a mathematical algorithm, key length, and the confidentiality of the key used to encode the message. These agreements should specify that the parties’ intend to be bound by communications that comply with these procedures. Encryption transforms data into an unreadable format.

3. 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 an IP 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 communication 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.

4. Reputational risk:

Reputational risk is the risk 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. It may be due to banks’ own action or due to third party action.
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. Solicitation, collection and reporting of government monitoring information on applications and loans (e.g. AML requirements)
- Delivery of privacy and opt-out notices
- Record retention requirements

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 a transaction are not well established. Given the relatively new nature of Internet banking, rights and obligations in some cases are uncertain and applicability of laws and rules is uncertain or ambiguous, thus causing Legal risk. Other reasons for legal risks are uncertainty about the validity of some agreements formed via electronic media and law regarding customer disclosures and privacy protection. A customer inadequately informed about his rights and obligations, may not take proper precautions in using Internet banking products or services, leading to disputed transactions, unwanted suits against the bank or other regulatory sanctions.

- Solicitation, collection and reporting of government monitoring information on applications and loans (e.g. AML requirements)
- Delivery of privacy and opt-out notices
- Record retention requirements
6. 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. It includes 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 considerations 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.

7. Strategic Risk

This risk is associated with the introduction of a new product or service. Degree of 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 (if outsourced) and level of the technology used in comparison to the available technology etc.

For reducing such risk, banks need to conduct proper survey, consult experts from various fields, establish achievable goals and monitor performance. Also they need to analyze the availability and cost of additional resources, provision of adequate supporting staff, proper training of staff and adequate insurance coverage. Due diligence needs to be observed in selection of vendors, audit of their performance and establishing alternative arrangements for possible inability of a vendor to fulfill its obligation. Besides this, periodic evaluations of new technologies and appropriate consideration for the costs of technological upgradation are required.

- Risk management costs against the potential return on investment
- MIS to track e-banking costs, usage and profitability
○ Generation of sufficient customer demand
○ Adequacy of technical, operational, compliance or marketing support
○ Competition

8. Other risks

Traditional banking risks such as credit risk, liquidity risk, interest rate risk and market risk are also present in Internet banking. These risks are intensified due to the very nature of Internet banking because of use of electronic channels as well as absence of geographical limits. However, their practical consequences may be of a different magnitude for banks and supervisors than operational, reputational and legal risks. This may be particularly true for banks that engage in a variety of banking activities, as compared to banks or bank subsidiaries that specialize in Internet banking.


The internet banking cannot operate properly unless it is in conformity with information technology act 2000. A holistic approach should be adopted, the purpose of which should be to bring uniformity and harmony between the provisions of the act on the one hand and the guidelines issued by the RBI on the other. It must be appreciated that in case of conflict between the provisions of the Act and guidelines, the formers would prevail. The following provisions of the act have direct bearing on the functioning of internet banking in India.

1. The authentication of electronic records for the purpose of internet banking should be in accordance with the provisions of the act.
2. The electronic records duly maintained for the purposes of internet banking would be recognized as largely valid and admissible.
3. The digital signature affixed in a proper would satisfy the requirement of signing for the purpose internet banking.
4. Any kind of paper work, which is required to be filled in the Government offices or its agencies, would be deemed to be duly filed if it is filed in the prescribed electronic form.

5. The banking business requires certain documents or records to be retained for a fixed period. In the internet banking such documents or records can be retained in an electronic form.

6. The rules, regulations, order, bye-law, notification or any other matter pertaining to internet can be published in the official Gazette or electronic Gazette, as the case may be.

7. The internet banking presupposes the existence of attribution and certainty. If any electronic record is sent by the originator himself, by this agent, or by an information system programmed by or on behalf of the originator to operate automatically, then the electronic shall be attributed to the originator.

8. The requirement of acknowledgement of documents sent for the purpose of internet banking is adequately safeguarded by the act.

9. The internet banking would require determine the time and place of dispatch and receipt of electronic records. This problem can be easily solved by applying the provisions of the Act.

10. Internet banking would require the secured electronic records for its paper working. Where any security procedure has been applied to an electronic record at a specific point of time, then such records shall be deemed to be a secure electronic record from such point of time of verification.

11. A Digital signature meeting the specified requirements would be deemed to be a secured digital signature for carrying out internet banking transactions.

**There are primary drivers of change of internet banking.**

1. Virtual banking having an advantage of a lower cost of handling cost.
2. Improved customer access
3. Increase and enhance the customer satisfaction and higher profits for the bank.
4. To retain the existing customers and attract many newer customers.
5. It reduces the staff cost in operating branch networks which leads cost efficiency.
6. Virtual banking provides round-the-clock, anywhere, speedy and more reliable service to its customers than branch banking.

3.16 FROM PHYSICAL TO VIRTUAL BANKING

The growing universalisation and internationalization of banking operations, driven by combination of factors, such as continuing deregulation, heightened competition and technological advancements, have altered the face of banks from one mere inter mediator to one of provider of quick, efficient and consumer friendly services.

The practice of banking was subjected to a significant transformation in nineties. Banks and other financial entities in India entered the world of information technology and computer networking only very recently. The introduction of liberalization measures in banking sector and emergence of new private sector and foreign banks equipped with latest technology, led to increased competition in the banking sector. With introduction of a new technology in banking sector, customers are fast moving away from the traditional branch banking system to the convenience and comfort of remote electronic services or Virtual banking. With e-banking the brick and mortar structure of the traditional banking gets converted into click and portal model theory giving real shape and form to the concept of virtual banking. In virtual banking, brick and mortar structure or physical bank branch is no more required for rendering services. Virtual banking denotes the rendering of banking and related services through extensive use of information technology without direct physical recourse to bank customers. Internet has leveled the playing field and offered open access to customers in the global market place. Internet banking is cost-effective delivery channel for financial institutions. Consumers are embracing many benefits of internet banking. Access to
accounts at any time and from location to location via World Wide Web is a convince which was not available in the past. Thus, the presence of internet and networking transforms in the banking from branch banking to internet banking, in short form ‘physical to Virtual banking’ and enables the customer access information about his or her specific account from anywhere and any time.

3.17 SECURITY AND PRIVACY ISSUES

1. Security: Security in Internet banking comprises both the computer and Communication security. The aim of computer security is to preserve computing resources against abuse and unauthorized use, and to protect data from accidental and deliberate damage, disclosure and modification. The communication security aims to protect data during the transmission in computer network and distributed system.

E- Bank Security Highlights: Security is a very important part in an Internet application. In e-Bank, security features are applied throughout the whole system. It can be divided into five main areas:

- System Level Security
- Administration Control
- Application Access Control
- Transaction Processing
- Public Key Infrastructure (PKI)

**System Level Security** – The security applied on system level like 128-bit Secure Socket Layer (SSL), multiple firewalls, hardening of operating systems, application of Virtual Private Network (VPN), and database hash code for data integrity checking etc.

**Administration Control** – The security applied on administration control like limited function access for administrators, dual approval applied to all administrative functions, and detailed audit logs.
Application Access Control – The security applied on logon authentication with end-to-end password encryption, session control, time-out handling, and function and data access control.

Transaction Processing – The security applied during transactions processing. It includes multiple level transaction approval, end-to-end integrity checking on transaction data, individual transaction limit and daily limit checking.

Public Key Infrastructure (PKI) – PKI technique is applied on user authentication and transaction approval. It supports digital certificates issued by local Certificate Authorities like Hong Kong Post, Trade link and JETCO.

2. Authentication:

It is a process of verifying claimed identity of an individual user, machine, software component or any other entity. For example, an IP Address identifies a computer system on the Internet, much like a phone number identifies a telephone. It may be to ensure that unauthorized users do not enter, or for verifying the sources from where the data are received. It is important because it ensures authorization and accountability. Authorization means control over the activity of user, whereas accountability allows us to trace uniquely the action to a specific user. Authentication can be based on password or network address or on Cryptographic techniques.

3. Access Control:

It is a mechanism to control the access to the system and its facilities by a given user up to the extent necessary to perform his job function. It provides for the protection of the system resources against unauthorized access. An access control mechanism uses the authenticated identities of principals and the information about these principals to determine and enforce access rights. It goes hand in hand with authentication. In establishing a link between a bank’s internal network and the Internet, we may create a number of additional access points into the internal operational system. In this situation, unauthorized
access attempts might be initiated from anywhere. Unauthorized access causes destruction, alterations, theft of data or funds, compromising data confidentiality, denial of service etc. Access control may be of discretionary and mandatory types.

4. Data Confidentiality:

The concept of providing for protection of data from unauthorized disclosure is called data confidentiality. Due to the open nature of Internet, unless otherwise protected, all data transfer can be monitored or read by others. Although it is difficult to monitor a transmission at random, because of numerous paths available, special programs such as “Sniffers”, set up at an opportune location like Web server, can collect vital information. This may include credit card number, deposits, loans or password etc. Confidentiality extends beyond data transfer and includes any connected data storage system including network storage systems. Password and other access control methods help in ensuring data confidentiality.

5. Data Integrity:

It ensures that information cannot be modified in unexpected way. Loss of data integrity could result from human error, intentional tampering, or even catastrophic events. Failure to protect the correctness of data may render data useless, or worse, dangerous. Efforts must be made to ensure the accuracy and soundness of data at all times. Access control, encryption and digital signatures are the methods to ensure data integrity.

6. Non-Repudiation:

Non-Repudiation involves creating proof of the origin or delivery of data to protect the sender against false denial by the recipient that data has been received or to protect the recipient against false denial by the sender that the data has been sent. To ensure that a transaction is enforceable, steps must be taken to prohibit parties from disputing the validity of, or refusing to acknowledge, legitimate communication or transaction.
7. Security Audit Trail:

A security audit refers to an independent review and Examination of system's records and activities, in order to test for adequacy of system controls. It ensures compliance with established policy and operational procedures, to detect breaches in security, and to recommend any indicated changes in the control, policy and procedures. Audit Trail refers to data generated by the system, which facilitates a security audit at a future date.

3.18 THE GROWTH OF INTERNET BANKING

Economic integration with in and across countries, deregulation, advances in telecommunications and the growth of the internet and Wireless communication technologies are changing dramatically the structure and content of financial services. Internet Banking is a product of e-commerce in the field of banking and financial services. Internet Banking offers different online services like balance enquiry, requests for cheque books, recording stop-payment instructions, balance transfer instructions, account opening and other forms of traditional banking services. Mostly, these are traditional services offered through Internet as a new delivery channel. Banks are also offering payment services on behalf of their customers who shop in different e-shops, e-malls etc. Further, different banks have different levels of such services offered, starting from level-1 where only information is disseminated through Internet to level-3 where online transactions are put through. Considering the volume of business e-commerce, particularly in B2B domain, has been generating, it is natural that banking would position itself in an intermediary role in settling the transactions and offering other trade related services. Besides, the traditional role of financial intermediary and settlement agents, banks have also exploited new opportunities offered by Internet in the fields of integrated service providers, payment gateway services, etc. However, the process is still evolving and banks are repositioning themselves based on new emerging e-commerce business models. The banking industry in India is facing
unprecedented competition from non-traditional banking institutions, which now offer banking and financial services over the Internet. The deregulation of the banking industry coupled with the emergence of new technologies, are enabling new competitors to enter the financial services market quickly and efficiently. Indian banks are going for the retail banking in a big way. However, much is still to be achieved. This study which was conducted by students of IIML shows some interesting facts: Throughout the country, the Internet Banking is in the nascent stage of development (only 50 banks are offering varied kind of Internet banking services.) In general, these Internet sites offer only the most basic services. 55% are so called 'entry level' sites, offering little more than company information and basic marketing materials. Only 8% offer 'advanced transactions' such as online funds transfer, transactions & cash management services management services.

A new form of e-commerce market place is emerging where various players in the production and distribution chain are positioning themselves and are achieving a kind of integration in business information flow and processing leading to efficiencies in the entire supply chain and across industries. Banks are positioning themselves in such a market in order to be a part of the financial settlements arising out of transactions of this market and providing wholesale financial services. This needs integration of business information flow not only across the players in the supply chain, but with the banks as well. With the integration of business information flow and higher degree of transparency, the banks and other financial services institutions have lost some of the information advantage they used to enjoy and factor in to pricing of their products. However, such institutions have the advantage of long standing relationships, goodwill and brand, which are important sources of assurance in a virtual market. Banks are in fact, converting this goodwill into a business component in e-commerce scenario in providing settlement and other financial services. Some banks have also moved to providing digital certificates for transactions through e-markets. Different banks have different levels of such
services offered, starting from level-1 where only information is disseminated through internet to level -3 where on-line transactions are put through.

A number of banks have to setup banking portals, which enables their customers to access their facilities like eliciting information, querying on their accounts etc. banks now view with their customers. Broadly the levels of banking services offered through internet can be categorized at three levels.

**Level 1: Basic level service:**

Under this system of internet banking the websites of banks bulge with information about many products and services offered to customers and members of the public in general. It also receives and replies to customer’s queries through e-mail.

**Level 2: Sample Transactional Websites:**

The second level of simple transactional websites, allow customers to submit their instructions, applications for different services, queries on their account balances etc. they do not permit any fund based transactions on their accounts.

**Level 3: Fully Transactional Websites:**

Internet banking services offered by fully transactional websites which allow the customer are operate on their accounts for transfer of funds, payment of different bills, subscribing to other products of the bank and transact purchase and sale of securities, etc. these forms of internet banking services offered by traditional banks, as an additional method of serving the customer or by new banks which deliver banking services primarily through the internet or other electronic delivery channels as value added services.
3.19 MAIN CONCERNS OF E-BANKING

Although a lot of reforms have been made in banking sector, still there is need to modify the policies of public sector banks. At present they facing many internal and external challenges which are hindering their performance, but these banks convert these challenges into opportunities with care and some modifications. With Globalization and changes in the technology, financial markets, world over have closely integrated customers can access their accounts anywhere and banks’ customer base is also spread across the world. Deregulation and liberalisation has opened up new opportunities for banks but at the same time the pressure of competition have led to narrowing spreads, shrinking margins, consolidation and restructuring.

Increasingly banks are focusing on core competencies, synchronizing strengths and shedding activities that are not remunerative. The winds of change sweeping across the global markets will impact India also, and the Indian financial sector is set to see tremendous transformation in the coming millennium.

3.19.1 Competition:

Due to LPG banks are facing a severe competition. To stay ahead in the race, therefore, banks will have to leverage technology for innovative product development including developed a sophisticated financial products to beat the competition, also the public sector banks in particular will have to speed up their efforts in this area.

3.19.2 Greater customer orientation:

Greater customer orientation is the only way to retain customer loyalty and stay ahead of competition. In the market driven strategy of development, consumer preference is paramount. Gone are the days when customers used to come to the doors of the banks and now banks are required to chase customers.
Thus only banks that are customer-centric and extremely succeed and there is need to change the mindset of banks at all levels on this issue.

3.19.3 Technology:

In the deregulated environment, managing a wide range of products shrinking margins in a fiercely competitive environment and offering top class customer services will create new challenges. In this context, technology will be the key to reduce transaction cost, offering customized products and managing risks. Growing consumer acceptance of E-channels is compelling banks to provide internet banking facilities and increasingly, consumer are demanding fast, convenient and glitch-free banking services.

However, as banks expand into virtual banking. They will need to pay greater attention to foolproof security arrangements and systems to safeguard against frauds. Supervision and audit of systems to safeguard against e-banking will have to be strengthened and vigilance against hackers stepped up. Our public sector banks are lagging behind in technology when we compare them with their counterparts.

3.19.4 Management of NPA’s:

The level of NPA’s in the Indian banking industry is greater concern and thus urgent cleaning up of banks balance that has become crucial issue. NPA’s will have to reduce drastically and adequate provisioning for bad and doubtful debts will have to be made.

This is needed to have long-term solutions for overcoming this challenge. The internal control systems, risk management systems and systems of catch early warning signals for timely detection of NPA’s have to be strengthened by banks. In addition to the role of legal reforms bring down the level of NPA’s is crucial for speedy settlement of disputes and realization of bank’s dues. Also strengthening the debt recovery tribunals and empowering
banks to enforce their changer without court intervention will result in expedition recovery of bad debts.

3.19.5 WTO and Indian banking:

As WTO provisions came into force, countries including India have to provide greater access to other countries by eliminating quantitative restrictions regarding tariff barriers and liberalising the market for financial services. The impact of these developments on various sectors of Indian economy would be critical.

The banks will have to keep themselves up dated on sector specific developments taking in place in the world, particularly in countries that are India’s major trading partners and advise their corporate clients to help them to prepare competition with multi national companies.

3.19.6 Corporate Governance:

Deregulation and self regulation go hand-in hand. RBI has also asked banks to setup specialized committees like Risk Management Committee, Audit committee Compensation committee etc. to ensure the uppermost standards of corporate governance and development best practices.

A good fiscal management and clear cut policies affecting various sectors of economy, can promote corporate governance. The public sector banks, new private banks and foreign banks should ensure corporate governance in all activities and win the heart of shareholders.

3.19.7 Issue of HRM:

Training, development and retaining talented and committed staff is major emerging challenge before the public sector banks. Today, our employee performance review systems are neither objective nor transparent. They do not differentiate high performers, risk takers and innovators lot from amongst the
total staff. Time has come to measure the value of human capital and take urgent steps to ensure it to its optimum level.

3.19.8 Lack of Risk Management:

Today instead of banks managing the risk, risk is managing the banks. A clear understanding of the risk return profile of each activity of the bank is crucial to ensure the soundness and solvency of the organization, skill up gradation and preparing a cadre for the risk organization is major challenge for public sector banks particularly in the wake of high labour turnover.

3.19.9 Lack of actionable planning:

Lack of planning or ineffective planning is very relevant to public sector banks. Though all the banks have established elaborate performance and budgeting system and created MIS, it does not meet the management’s present requirements. The entire planning process is credit oriented. That too, without any cost and yield leakage.

To tackle this challenge an actionable strategic plans which are systematically broken up into annual plans and performance is strictly reviewed in terms of targets and accountability is fixed for non–performances.

3.19.10 Non-accountability:

In case of public sector banks, there is non-accountability of profits. No one is responsible. Every bank should fix the responsibility and good performer employees should be honored.

3.19.11 Public perceptions:

In the ultimate analysis it is public perception that will decide the further of public sector banks. The perception of customers regarding public sector banks should improve their perception to remain competitive in the market.
3.19.12 Customer expectations.

In the era of e-banking and severe competition, the expectations of bank customers have increased. Due to this, banks should offer a broad range of deposits, investments and credit products through diverse distribution channels including upgraded branches ATM’s telephone and internet. For he banks should become more customer centric, offering a wide range of products through multiple delivery channels, become proficient in managing the assets and liabilities according to profitability including cost reduction and increasing fee based income.

3.19.13 Mergers and acquisitions:

Today ‘size’ has become an important issue in financial market world over. Merger on commercial considerations and strategic mergers are in order of the day. One of the possible ways to remain in competition would be mergers and acquisitions.

3.20 INTERNET BANKING IN INDIA – RBI GUIDELINES

Reserve Bank of India had set up a ‘Working Group on Internet Banking’ to examine different aspects of Internet Banking (I-banking). The Group had focused on three major areas of I-banking, i.e., (I) technology and security issues, (ii) legal issues and (iii) regulatory and supervisory issues. A copy of the Group’s report is enclosed. RBI has accepted the recommendations of the Group to be implemented in a phased manner. Accordingly, the following guidelines are issued for implementation by banks. Banks are also advised that they may be guided by the original report, for a detailed guidance on different issues.

I. Technology and Security Standards:
a. Banks should designate a network and database administrator with clearly defined roles as indicated in the Group’s report.
b. Banks should have a security policy duly approved by the Board of Directors. There should be a segregation of duty of Security Officer / Group dealing exclusively with information systems security and Information Technology Division which actually implements the computer systems. Further, Information Systems Auditor will audit the information systems.

c. Banks should introduce logical access controls to 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.

d. 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 state full inspection firewall is recommended which thoroughly inspect all packets of information, and past and present transactions are compared. These generally include a real time security alert.

e. 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.

f. PKI (Public Key Infrastructure) is the most favored technology for secure Internet banking services. However, as it is not yet a commonly available, bank should use the following alternative system during the transition, until the PKI is put in place:

1. Usage of SSL (Secured Socket Layer), which ensures server authentication and 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.
E-Banking an Overview

g. It is also recommended that all unnecessary services on the application server such as FTP (File Transfer Protocol), telnet should be disabled. The application server should be isolated from the e-mail server.

h. All computer accesses, including messages received, should be logged. Security violations (suspected or attempted) should be reported and follow up action taken should be kept in mind while framing future policy. Banks should acquire tools for monitoring systems and the networks against intrusions and attacks. These tools should be used regularly to avoid security breaches. 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 their security personnel and also the end-users on a continuous basis.

i. 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 e-mail software exist.

   The penetration testing may also be carried out by engaging outside experts (often called ‘Ethical Hackers’).

j. Physical access controls should be strictly enforced. Physical security should cover all the information systems and sites where they are housed, both against internal and external threats.

k. Banks should have 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 setting up disaster recovery sites. These facilities should also be tested periodically.
I. All applications of banks 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.

m. Security infrastructure should be properly tested before using the systems and applications for normal operations. Banks 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.

II. Legal Issues

a. Considering the legal position prevalent, there is an obligation on the part of banks not only to establish the identity but also to make enquiries about integrity and reputation of the prospective customer. Therefore, even though request for opening account can be accepted over Internet, accounts should be opened only after proper introduction and physical verification of the identity of the customer.

b. From a legal perspective, security procedure adopted by banks for authenticating users 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. Any other method used by banks for authentication should be recognized as a source of legal risk.

c. Under the present regime there is an obligation on banks to maintain secrecy and confidentiality of customers' accounts. In the Internet banking scenario, the risk of banks not meeting the above obligation is high on account of several factors. Despite all reasonable precautions, banks may 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 risks.
d. In Internet banking scenario there is very little scope for the banks to act on stop payment 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.

e. 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. Considering the banking practice and rights enjoyed by customers in traditional banking, banks’ liability to the customers on account of unauthorized transfer through hacking, denial of service on account of technological failure etc. needs to be assessed and banks providing Internet banking should insure themselves against such risks.

III. Regulatory and Supervisory Issues:

As recommended by the Group, the existing regulatory framework over banks will be extended to Internet banking also. In this regard, it is advised that:

1. Only such banks which are licensed and supervised in India and have a physical presence in India will be permitted to offer Internet banking products to residents of India. Thus, both banks and virtual banks incorporated outside the country and having no physical presence in India will not, for the present, be permitted to offer Internet banking services to Indian residents.

2. The products should be restricted to account holders only and should not be offered in other jurisdictions.

3. The services should only include local currency products.

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 ‘out-in’ scenario where Indian residents are offered banking services by banks operating in cross-border jurisdictions are generally not
permitted and this approach will apply to Internet banking also. 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. will, however, are permitted.

5. Overseas branches of Indian banks will be permitted to offer Internet banking services to their overseas customers subject to their satisfying, in addition to the host supervisor, the home supervisor. Given the regulatory approach as above, banks are advised to follow the following instructions:

a. All banks, who propose to offer transactional services on the Internet, should obtain prior approval from RBI. Bank’s application for such permission should indicate its business plan, analysis of cost and benefit, operational arrangements like technology adopted, business partners, third party service providers and systems and control procedures the bank proposes to adopt for managing risks.

The bank should also submit a security policy covering recommendations made in this circular and a certificate from an independent auditor that the minimum requirements prescribed 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.

b. 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.

c. The guidelines issued by RBI on ‘Risks and Controls in Computers and Telecommunications’ vide circular DBS.CO.ITC.BC. 10/ 31.09.001/ 97-98 dated 4th February 1998 will equally apply to Internet banking. The RBI as supervisor will cover the entire risks associated with electronic banking as a part of its regular inspections of banks.

d. Banks should develop outsourcing guidelines to manage risks arising out of third party service providers, such as, disruption in service, defective
services and personnel of service providers gaining intimate knowledge of banks’ systems and mis utilizing the same, etc., effectively.

e. With the increasing popularity of e-commerce, it has become necessary to set up ‘Inter-bank Payment Gateways’ for settlement of such transactions. The protocol for transactions between the customer, the bank and the portal and the framework for setting up of payment gateways as recommended by the Group should be adopted.

f. Only institutions who are members of the cheque clearing system in the country will 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. Payments affected 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.

g. 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.

h. 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.

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. Reserve Bank may get the security of the entire infrastructure both at the payment gateway’s end and the participating institutions’ end certified prior to making the facility available for customers use.

i. Bilateral contracts between the payee and payee’s bank, the participating banks and service provider and the banks themselves will form the legal
basis for such transactions. The rights and obligations of each party must be clearly defined and should be valid in a court of law.

j. Banks must make mandatory disclosures of risks, responsibilities and liabilities of the customers in doing business through Internet through a disclosure template. The banks should also provide their latest published financial results over the net.

k. Hyperlinks from banks’ websites often raise the issue of reputational risk. Such links should not mislead the customers into believing that banks sponsor any particular product or any business unrelated to banking. Hyperlinks from 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’ websites from other portals are normally meant for passing on information relating to purchases made by banks’ customers in the portal. Banks must follow the minimum recommended security precautions while dealing with request received from other websites, relating to customers’ purchases.

2. The Reserve Bank of India has decided that the Group’s recommendations as detailed in this circular should be adopted by all banks offering Internet banking services, with immediate effect. Even though the recommendations have been made in the context of Internet banking, these are applicable, in general, to all forms of electronic banking and banks offering any form of electronic banking should adopt the same to the extent relevant.

3. All banks offering Internet banking are advised to make a review of their systems in the light of this circular and report to Reserve Bank the types of services offered, extent of their compliance with the recommendations, deviations and their proposal indicating a time frame for compliance. The first such report must reach us within one month from the date of this circular. Banks not offering any kind of I-banking may submit a ‘nil’ report.
4. Banks who are already offering any kind of transactional service are advised to report, in addition to those mentioned in paragraph above, their business models with projections of cost / benefits etc. and seek our post-facto approval.

3.21 CHALLENGES IN E-BANKING:

“One of the biggest challenges the banking industry faces today is connectivity” says V. P. Gulati, director of the Hyderabad-based Institute of Development and Research in Banking Technology (IDRBT), which was set up by the Reserve Bank of India (RBI) for promotion of technology solutions to improve the functioning of banks.

The challenge for these banks is to offer a payment backbone system that will be open enough to support multiple payment instruments — credit cards, debit cards, direct debit to accounts, e-checks and digital money.

True e-banking on the Internet is plagued by the lack of a critical mass of Internet subscribers, low PC penetration, poor IT infrastructure and slow Internet growth. Another stumbling block for total acceptance by domestic customers is online security. “A lot needs to be done as awareness about IS security is very low in Indian banks. Lack of standardization makes it very difficult to implement any security solution,” Gulati explains.

Public sector banks are struggling to protect their automated environments. The level of security is restricted to employee passwords, and there are no proper security guidelines or policies in most of these banks. A Reserve Bank of India (RBI) committee has come out with the road map for electronic banking and has sought legislation on electronic funds transfer (EFT) systems to facilitate multiple payment systems for banks and financial institutions.
There are fewer buzzwords now, and there is a focus on serious business. But there is still a long way to go before most domestic customers start using technology for day-to-day transactions in India. One will still find long queues at the cash counters of the so-called “e-banks.”

The challenges are not limited to regulators. As the advent of e-banking quickly changes the financial landscape and increases the potential for quick cross border capital movements, Information technology analyst firm, the meta group, recently reported that “financial institutions who do not offer home banking by the year 2000 will become marginalized”. By the year of 2002, a large sophisticated and highly competitive internet banking market will develop which will be driven by the following.

- Need for standardization of hardware, operating system, system software to facilitate interconnectivity of systems across branches.
- Need high level security
- Communication and network- use the networks which would facilitate centralized databases and disturbed processing.
- Need for a technology plan and periodical up gradation
- Need for business process re-engineering
- Need to address the issue of human relations in a computerized environment.
- Need for sharing technology experiences
- Need of payment which uses information technology tools. The reserve bank of India has played a lead role in this spare of activity- with the introduction of cheque clearing by using MICR technology in the late eighties.
- Demand side pressure due to increasing access to low cost of electronic services.
- Emergence of open standards for banking functionality
- Growing customer awareness and need of transparency
Global prayers in the fray

Close integration of bank services with web based e-banking or even disintermediation of services through direct electronic payments (E-Cash)

More convenient international transactions due to fact that the internet along with deregulation trends eliminates geographic boundaries.

Move from one stop shopping to ‘banking portfolio’ i.e. unbundled product purchases.

Foreign & Private banks are much advanced in terms of the number of sites & their level of development.

3.21.1 The other challenges bring to sharp focus on e-banking;

1. Augmenting profitability:

The most direct result of the above changes increasing competition and narrowing of spreads and its impact on the profitability of the banks. The challenge for banks is how to manage with running margins while at the same time working to improve productivity, which remains low relation to global standards. This is particularly important because with dilution in banks equity, analysts and share holders now closely track their performance.

2. Technology is key:

Technology is now become a strategic and integral part of banking, driving banks to acquire and implement world class systems that enables to provide them products and services in large volumes at a competitive cost with better risk management practices. The pressure undertakes extensive computerization is very real as banks that adopt the latest in technology have an edge over others. Customers have become highly demanding and banks have to deliver customised products through the multiple channels, allowing customer access to the bank on 24*7 basis.
3. HR-IT mix:

The far-reaching changes in banking and financial sector entail a fundamental shift in the set of skills required in banking to meet increased competition and manage risks, the demand for specialized banking functions, using IT as a competitive tool is to set to go up. Special skills in retail banking, treasury, risk management, foreign exchange, development banking etc.

4. Innovation and Customer Orientation:

In today’s competitive environment, banks will have to strive to attract and to retain customers by introducing innovative products, enhancing the quality of customer service and a variety of products through diverse channels targeted at a specific customer groups.

5. Responsibilities towards Corporate Governance:

Besides using their strengths and strategic initiative for creating shareholder value, banks have to conscious of their responsibilities towards corporate governance. Following financial liberalization, as the ownership of banks gets broad based the importance of institutional and individual shareholders will increase. In such a scenario, banks will need to put in code for corporate governance for benefiting all share holders of corporate entity.

6. Maintaining internationally followed best practices:

Introducing internationally best practices and observing universally acceptable standards and codes is necessary for strengthening the domestic financial architecture. This includes best practices in the area of corporate governance along with full transparency in disclosures. in today’s globalised world, focusing on observance of standards will help smooth integration with world financial markets.
7. Risk management challenges

The deregulation environment brings in its wake risks along with profitable opportunities and technology plays crucial role in managing these risks. In addition being exposed to credit risk, market risk and operational risk, the business of banks would be susceptible to country risk which will be heightened as controls on the movements of capital are eased. In this context, banks are upgrading their credit assessment and risk management skills and retaining staff, developing cadre of specialists and introducing technology driven the management information systems.

The EBG noted that the fundamental characteristics of e-banking posed a number of risk management challenges:

➢ The speed of change relating to technological and customer service innovation in e–banking is unprecedented. Historically, new banking applications were implemented over relatively long periods of time and only after in-depth testing. Today, however, banks are experiencing competitive pressure to roll out new business applications in very compressed time frames – often only a few months from concept to production. This competition intensifies the management challenge to ensure that adequate

Strategic assessment, risk analysis and security reviews are conducted prior to implementing new e-banking applications. Transactional e-banking web sites and associated retail and wholesale business applications are typically integrated as much as possible with legacy computer systems to allow more straight-through processing of electronic transactions. Such straight-through automated processing reduces opportunities for human error and fraud inherent in manual processes, but it also increases dependence on sound systems design and architecture as well as system interoperability and operational scalability.
E-banking increases banks’ dependence on information technology, thereby increasing the technical complexity of many operational and security issues and furthering a trend towards more partnerships, alliances and outsourcing arrangements with third parties, many of whom are unregulated. This development has been leading to the creation of new business models involving banks and nonbank entities, such as Internet service providers, telecommunication companies and other technology firms.

The Internet is ubiquitous and global by nature. It is an open network accessible from anywhere in the world by unknown parties, with routing of messages through unknown locations and via fast evolving wireless devices.

8. Management Challenges

Many authors have outlined the impact of new technologies on organizations. For example, CRM systems can force a general realignment of business processes, which in turn can cause major changes in a firm’s activities. Similarly it is widely recognised that new technologies like the Internet may have a deep influence on firm’s organization structure.

Implementation of e-banking often results in significant changes in the organization, giving rise to new and complex challenges for managers. The Internet also impacts market structure, and affects competitive advantage in the banking sector.

Some organizations implement changes required to respond to the above challenges before they implement e-banking technologies, some do so while implementing them, and others respond to the need as and when it is forced upon them. Which of these managerial strategies should be adopted is another managerial challenge.
9. Increased Customers Expectations

Arrival of online services has increased customer expectations, leading them to expect better value products delivered more quickly. E-banking has the potential to be a rich experience for customers, with the foremost goal being to increase the depth of the relationship between the customer and the bank. As technology evolves, the opportunities to extend and enrich the relationship with customers also grow. The goal of e-banking should be to provide many, if not all, of the services offered at a branch. This may include transactions as well as information, advice, administration, and even cross-selling. However, the interactive nature of the Web not only allows banks to enhance these core services, but also enables them to communicate more effectively and expand customer relationships. When combined with the improving analytical capabilities of data mining and related technologies, the potential for innovative product and services development can go well beyond our current limits.

10. Security Problems

Internet security is still one of the major issues hindering the growth of Internet related trade. Owing to the structure and intention of the Internet to be an open network, financial transactions may involve high security risks. Internet frauds are common, and related stories get immediate media attention, making people hesitant to bank online. Different security methods (for both hardware and software) are being tested and employed continuously but there is still some way to go to win the trust of many customers. E-banking managers need to be aware of new security threats as well as new methods of combating those threats to stay on top of this challenge.

Managing information security is a very complex issue. Clarke (2007) argues that the domain is dominated by a set of practical controls which are seen as rigid, unclear and largely irrelevant to the business needs of most organizations. Even within some recent developments that have sought to
provide a more accessible model for managing information security, most current practice is based around the needs of the technology and of information rather than the needs of people in general and users in particular. Where human issues are considered, it is to confer responsibilities and education on people to conform to the needs of the system with an aim to regulate their behavior.

11. Technological Challenges

There are numerous technological issues with regard to e-banking. Lack of unified messaging standards is one of them. While internet messaging standards are fast evolving towards unification, the problem of legacy systems still remains one of the main obstacles to e-banking. Many banks still operate on large mainframe-based legacy systems for their core processing functions. While for some isolated functions this is fine, e-banking will require capabilities such as the ability to integrate with other systems, that legacy systems are ill equipped to provide. Being at the forefront of technology adoption for many years, the financial services industry faces cutting-edge technological issues before other industries (Dewan & Seidmann, 2001). E-banking systems are complex, large-scale systems with demanding requirements for performance, scalability, and availability, and even the most technologically sophisticated organizations are struggling to manage them. Success in e-banking requires far more than a Web server, a storefront and transaction processor or a database. It requires a comprehensive approach to address integration and scalability, and dynamic responses to changes in requirements and technologies. E-banking, like other electronic business systems is complex, large-scale, and mission-critical. Organizations should start with new Web technologies and e-commerce functionality and combine them with the design, development and implementation of management practices that have been proven successful for other types of large-scale, complex, mission-critical systems.
E-commerce is about how an organization has to re-shape itself to enable commerce online. An organization needs to have process oriented and fully integrated systems to achieve the desired benefits from e-commerce. Even in cases of disparate applications, or where the company does not abandon existing applications (e.g., legacy systems), there are solutions to the problem. Several alternatives are available for increasing the level of systems integration. Data warehousing, a bundle of technologies that integrate data from multiple source systems for query and analysis, provide a cheap alternative for data integration. Other technologies, such as Enterprise Applications Integration (EAI) or Service Oriented Architecture (SOA), may turn legacy systems (as well as other business applications) into strategic assets at a relatively low cost. EAI is a new class of software that aims to provide an integration infrastructure for all business applications. A similar approach is the development of middleware software for systems integration.

One key technology management challenge is that systems must scale to accommodate business growth. Maintaining excellent performance across growing workloads is imperative. There is no greater customer inconvenience than a poor, unpredictable response, and in e-banking competitors are only a few clicks away. The requirement for scalability goes beyond the ability to use more powerful servers, to distribute workload across a few server platforms, or to balance communications traffic across multiple Web servers. Approaches to system architecture, software structure, and workload distribution are needed to ensure scalability.

12. E-Channels Specific Marketing

Electronic distribution channels such as the Internet are shifting the balance of power from financial services providers to customers. This is largely due to the increasing number of choices available to customers and to declining switching barriers. For these reasons, the enrichment of relationships with customers has become an important issue. Greenland (1994) was one of the
earliest to suggest this in his work about rationalisation and restructuring in the U.K. Financial sector. He argued that personal relationship building is highly desirable for financial services institutions, as relationships can be actively cultivated to promote the company’s image and stimulate cross selling. Greenland’s (1994) work was focused on using branch banking for this purpose. Modern data mining and customer relationship management software has added another dimension to this proposition, which may. As the Internet is a relatively new delivery channel, customers need a lot of persuasion to switch to it. Offering incentives, such as higher interest rates or low cost services (for example insurance) is often used for this purpose. This can be costly and success may be uncertain. Any decision regarding this must be backed up by concrete marketing information. Promotion of e-banking to employees is also important. Change resulting from e-commerce implementation affects many people in organizations. Uncertainties resulting from changes are usually addressed by getting as many employees involved as possible at all stages of a project life cycle.

This may lengthen the project duration but the benefit can be immense. It is also important to keep communication going and keep all stakeholders, including users, informed of the progress for the entire duration of the project. Some organizations such as the Woolwich also use incentives such as free WAP phones and bonuses for e-banking promotion within the organization.

13. Change Management

When considering the implementation of e-banking, a question to think about is the structure as well as the organizational culture (Jayewardene & Foley, 2000). This requires focusing on an organization’s business structure and business processes with the existing IT systems, as well as examining new processes designed specifically for e-commerce. Existing processes often have to be re-engineered in order to align them with the new processes. Therefore, companies should be ready to face this challenge (Kalakota & Robinson, 1999)
and strategic planning is required to manage ongoing changes. Change management is the process of planning, controlling, co-coordinating, executing and monitoring changes that affect the business (IBM Global Services, 2001). It requires considerable emphasis on management of change skills and responsibilities (Morton & Chester, 1997). Morton and hester proposed three main steps in managing change: Use of the initial, vision-creating phase to unfreeze the organization and to make employees ‘change prone’. At the same time, attention should be paid to the potential causes of resistance and dissent, and to ensure that these are eliminated or minimised. The importance of change management when implementing e-banking cannot be over emphasized and it may dramatically influence the outcome of the project.

14. Project Management

Project management is a vital part of an e-commerce implementation strategy. Such projects must be carefully planned and executed. Appleton (1997) recognizes that the key skills needed for a systems implementation are team building and communication skills, which she refers to as ‘soft skills’. Projects need to be business driven with a cross-functional project team, and rapid decision making processes have to be in place to help ensure that the project delivers desired outcomes. E-banking projects pose similar challenges as other new technology implementation projects and have to be managed accordingly. Most of the factors discussed in this section require careful management of organizational issues, and the next section outlines some methods of managing change in organizations.

15. Treading the Organizational Maze

A considerable portion of an e-banking implementation project involves dealing with organizational change management related issues. The previous section outlined some of the most pressing issues faced by management. This section suggests and discusses some of the ways in which required changes can be implemented and managed. The process of effective change management
starts with quick recognition of a need for change in response to a new threat, changes in the market place, or simply the implementation of new business plans or technologies. For example, when a ‘brick and mortar’ bank decides to take part in online trade it is not just a matter of buying new hardware or software; this kind of initiative has a profound effect on organizations and needs a strategic managerial response. Adopting new technologies requires a degree of interaction between technical and managerial staff and both have to work together to manage the process of change effectively. The following issues will have to be managed throughout any new technology implementation project.

16. User Resistance to Change

An e-banking system will be used by a number of different types of people including customers, executives, management staff as well as other interested parties such as trade partners and even competitors. Many systems fail simply because one or more type of user refuses to use a system or uses stealth tactics to undermine the new system. This phenomenon is often referred to as user resistance. Resistance to change can be defined as implicit or explicit negative reactions against change, or restrictive forces opposed to any reorganization of work process and new competences acquisition (Bareil, 2002). To minimise user resistance it is important to understand what are the main causes of user’s resistance. Generally speaking, user acceptance is often linked to two outcome variables: system quality and system acceptance.

But underlying these are the more complex issues of cognitive and motivational factors which give rise to improved quality or improved acceptance. The first step in dealing with user resistance is to ensure that users from all hierarchical levels are involved in consultations about the need for the new technologies.
17. Channel Integration

Services distribution channels for banks have evolved over a long time driven primarily by need, changes in regulations, market environment and technological advances. Before the arrival of e-banking, the need for channel integration was rarely on top of the management agenda. But now that financial institutions are juggling numerous channels and ways in which they communicate with customers, banks need to integrate these channels in more pro-active ways. Furthermore, banks need to invest in a consistent and seamless customer experience across all channels, which requires integration of real-time cross-channel communications. Usage of the major delivery channels is split and changes with time. Branches and ATMs remain the most heavily used channels but e-banking is also gaining ground, although many online customers still also use other channels. All channels are useful to customers for the specific purpose each serves. For example, banking may be good for checking balance or transferring funds between different accounts, ATMs for withdrawing cash and branches for discussing mortgages and so on. The demographic details of different channel users is also changing as more and more older customers also begin to use multiple channels, following the lead from younger counterparts.

18. Creating Flexibility in Organizations

Organizational flexibility has long been considered, in the literature, as a precondition to enhanced productivity and profitability of ICT (Soh et al, 1997). For example, one of the reasons for the success of First Direct, the fully online British bank, is based on its flexible organization (Zollinger, 1999). Flexibility in this context may be defined as an organization’s ability to rapidly re-organise itself when needed. Flexibility in an organization can be created by using a number of the change management tactics discussed above. In general, organizations with flatter structures show more flexibility than those with a large number of hierarchies. Similarly organizations with modern computer systems can respond to change faster than those organizations still using legacy systems.
19. Managing Internal Adoption

A number of factors contribute to success or failure of e-banking adoption within an organization. These factors include a company’s commitment to e-banking leadership of this initiative and involvement of stakeholders in the full process, from planning to actual implementation. Executives need to have a good understanding of the fast changing capabilities for related technologies and adjust their e-banking functionalities according to the business need, and communicate the value of e-banking throughout the organization. E-banking also requires systematic attention to organizational learning processes, organizational structure/culture, and technology infrastructure.

20. Managing Relationships with Customers

Managers responsible for managing relationships with customers in an e-banking context often walk on a UN chartered territory with little to guide them on how to manage relationships with a customer whom you may never see or speak to. This section discusses some of the ways this can be managed. To start with, managers need to know that it is not just the technologically sophisticated or affluent consumers who are using e-banking and there is link between the consumer’s technological sophistication and their financial sophistication.

Therefore managers need to understand and cater for a wide variety of customers’ segments. Time and experience is needed for customers to adjust to new types of risks and word-of-mouth recommendations are still a powerful influence on people’s behavior towards risks associated with e-banking. Some people need extra counseling before buying an online product due to their inability to understand complex financial products or technology.
21. Winning Customer Trust

One of the biggest obstacles in the growth of e-commerce is the lack of trust many people feel when they conduct transactions online. Developing a trustworthy online brand is a strategic as well as a managerial challenge. This section will discuss what managers can do to win customer trust. Trust in e-banking is much more important than in some other areas of e-commerce simply because of the potential for greater damage if a customer is subject to an online fraud. Traditionally, trust in an online environment generally meant a secure website, but according to Chankar et al (2002) perceptions of online trust have steadily evolved from being a construct involving security and privacy issues on the Internet, to a multidimensional, complex construct that includes reliability/credibility, emotional comfort and quality for multiple stakeholders such as employees, suppliers, distributors and regulators, in addition to customers. Different stakeholders have different perspectives of online trust. From a customer viewpoint, a Web site may need to be trustworthy for doing business and getting a reliable product or service.

22. Human Resources Management

Human resources management is a key factor of in the success in e-banking. Ebanking HR requires special skills because HR functions such as (HR) planning, job analysis and job design, recruitment and selection, job progression, appraisalprocess, training, and compensation would be different than for other traditional business areas. Often, e-banking professionals need special skills and as a result they are still in short supply and nature of e-banking operations also changes much quicker than other business functions so e-banking brings special set of challenges for HR as well as other managers. To succeed in this, managers much recognize the inherent differences between e-business and traditional bricks-and-mortar business and adapt to these changes.

The most obvious changes for human resources may include the need to identify employees with skills different from those found in more traditional
organizations. People working in e-banking often are doing jobs that did not exist before and are working in an organization or division that did not exist before. Therefore, basic human resource problems are exaggerated for e-banking environments. For a typical e-banking project, HR need to recruit employees with a wide range of skills, such as:

- Technical staff like Web architects and designers, infrastructure specialists, Web developers, Web site managers, Internet security experts, and a team administrator.
- Business-focused staff like content experts for marketing or sales and specialists like Web graphics designers.
- IT-related staff such as programmers and analysts.
- Managerial staff for strategic planning, relationship management, project management, content creation/management, and process integration.

In addition to above specific skills, knowledge, aptitudes, and other characteristics (KSAO’s) are desirable and combined in a proper way so they can work together to accomplish the desired goals. Since e-banking staff are in short supply, skills that are in short supply must be used most efficiently (Mitchell, 2001). For example, Some non-IT tasks (such as report writing, routine coding, and systems administration) can be shifted to non-IT staff so that the IT staff can have more time to use their skills efficiently. A good understanding of these job roles, skills and issues would be required to recruit, retain, organize and develop an e-banking department or team.

Another reason for change in HR functions is that E-banking expertise are and employees with relevant skills are aware that they easily can find an attractive job in an active job market where their skills are highly valued. Problems in HR could mean that organizations loose these valuable employees.
3.22 TYPES OF INTERNET BANKING FRAUDS

3.22.1 Phishing

Phishing operates by sending forged e-mail, impersonating an online bank that request personal banking or financial information. The e-mail thus sent will direct the user to a forged web site which is designed to look exactly like the original banking site. This site will ask the user to update their personal information. The information thus stolen is then used in other frauds as well as executing transactions.

The best way to avoid this type of internet banking fraud is to never provide personal banking information over the internet when it is requested through email. If you believe that you may have provided information over the internet to an illegitimate source, immediately contact your financial institution to have your password changed. It should be noted that because of same reason banks never request your personal information through email. if you receive a message claiming from a bank, it would probably be from a fraudster.

3.22.2 Identity Theft

Identity theft is another prominent type of web banking fraud that can be extremely troublesome to consumers. Identity theft in internet banking occurs when a criminal use specialized software (Trojans & key loggers) to record keystrokes on a victim’s computer in order to decipher personal financial information about the person. These internet banking fraud criminals then use the stolen data to access the victim’s bank account to commit fraud. You can be safe from this type of fraud by periodically checking your computer for spy wares, Trojans and viruses. It is also suggested to use a personal firewall to prevent any un-wanted program from accessing internet.
3.22.3 Un-Protected Online Transactions

Internet banking fraud can also occur when consumers make online purchases over an unprotected website. If your privacy remains un-protected, criminals can use the stolen data to commit banking frauds. This type of fraud is becoming a rarity by the introduction on new generation browsers like Firefox 3, IE 7 & Google Chrome. These browsers will warn you if you are visiting an un-protected website. In older browsers, you can view the digital SSL certificates of these websites. If these digital certificates are not from a reliable authority, you can be sure that the website you are visiting is an un-secured website.

Nowadays we have several counter measures which help to avoid attacks. The use of class-3 card readers is a measure to avoid manipulation of transactions by the software in signature based online banking variants. Digital certificates are used against phishing and pharming. Users should use virus scanners and should be careful with downloaded software or e-mail attachments to protect the system from Trojan horses.

The days are past, when the only way to deal with a bank was by queuing up in front of the counters. Thanks to the internet, banks have reached out right into our homes, and online banking has become a way of life. Internet banking takes normal banking one step further. It helps customers to access their accounts online. They can make transactions and make changes in their personal details in the account sitting right at home. Every major bank also offers information online, on the services provided by them.

Every major bank offers an internet banking service through which we can register. Charges for registration depend on the bank: there may or may not be charges for registering. Usually for personal internet banking the registration is free, but there may be a fee for business internet banking.
The security procedures would also vary from bank to bank. The security set up usually consists of a unique number or password issued by the bank and a 6-10 digit number which is to be set up by you. You can also transfer money online, from one account to another. If the other account is within the same bank, the amount will be transferred overnight. If the transfer is to an account in another bank, it may take over three working days.

3.22.4 Controlling measures for internet frauds

1. Digital Signatures and Certificate Authorities (CA)

   a) Determine whether management requires use of digital signatures to authenticate the bank, users, and transactions.

   b) Determine whether digital signatures are issued, managed, and/or certified by an external vendor.

   c) If the bank is acting as its own certificate authority note: Whether the digital signature system is open or closed. Whether the bank has written policies and procedures for issuance, renewal, and revocation of certificates.

       How the institution establishes and verifies credentials of subscribers. Whether administrative reporting systems are adequate to provide for directory lookup and auditing (i.e., time stamping). Whether the CA facility or area is adequately secured including whether:

2. Biometric Devices

   a) Determine whether the institution uses biometric devices for authentication purposes.

   b) Determine whether a risk assessment, audit, or cost/benefit analysis has been performed of biometric devices used for authentication purposes.

   c) Determine whether acceptable biometric tolerances and policies have been established for authenticating the transaction to be processed.

   d) Obtain and review management reports that address statistical performance of the biometric authentication devices in service.
3. Monitoring
   a) Discuss with management the techniques used to monitor the security of Internet banking systems. Obtain and review sample reports such as:
   b) Determine whether security analysis software is used and note its Capabilities.
   c) Determine whether management conducts or has employed outside Vendors to conduct penetration testing.
   d) Determine how management monitors and detects internal or external network intrusion including whether: Monitoring software is used to track real-time network traffic. A qualified individual is responsible for regularly monitoring network traffic.
   e) Determine through review of reports or inquiries of management whether the bank has experienced any of the following occurrences. If so, document in work papers:
      1. Any alteration of the bank’s home page.
      2. Any unauthorized access from external or internal sources.
   f) Determine whether management has emergency response procedures and evaluate whether they are effective in handling an unauthorized intrusion.

4. Performance Monitoring
   1. Determine how management monitors system performance e.g., transaction volume, response times, availability/downtime, capacity reports, and customer service logs and complaint summaries).
   2. Determine how management projects future systems needs to ensure continued availability of the network to meet customer demands.

5. Customer Support
   1. Evaluate the role and quality of customer service and support for Internet banking products and services.
2. Review the organization and responsibilities of the customer support function.
3. Determine whether the customer support service is outsourced. If so, note the responsibilities of the vendor and determine how management monitors customer problems, demands, or complaints.
4. Determine whether customer service levels have been established. If so, determine how management monitors adherence to service levels.
5. Determine how management assesses the adequacy of customer service.
6. Through reviews of problem logs or customer service reports and discussion with management, determine whether deficiencies exist in the process.
7. Determine whether customer service is considered in Internet banking growth projections and resource planning.

3.23 STRATEGIES TO BE ADOPTED BY INDIAN E-BANKS

Internet banking would drive us into an age of creative destruction due to non-physical exchange, complete transparency giving rise to perfectly electronic market place and customer supremacy. The question to be asked right now is "What the Indian Banks should do" Whatever is the strategy chosen and options adopted, certain key parameters would determine the bank's soul.

1. For long term success, a bank may follow:

• Adopting a webs mindset
• Catching on the first mover's advantage
• Recognizing the core competencies
• Ability to deal multiplicity with simplicity
• Senior Management initiative to transform the organisation from inward to outward looking
• Aligning roles and value propositions with the customer segments
• Redesigning optimal channel portfolio
• Acquiring new capabilities through strategic alliances.

2. The above can be implemented in four steps:

In first phase familiarizing the customer to new environment by demo version of software on bank's web site. This should contain tour through the features which are to be included. It will enable users to give suggestions for improvements, which can be incorporated in later versions wherever feasible.

• Second phase provides services such as account information and balances, statement of account, transaction tracking, mail box, check book issue, stop payment, financial and customized information.

• The third phase may include additional services such as fund transfers, DD issue, standing instructions, opening fixed deposits, intimation of loss of ATM cards.

• The last step should include advanced corporate banking services like third party payments, utility bill payments, establishment of L/Cs, Cash Management Services etc. Enhanced plan for the customers in future can include requests for demand drafts and pay orders and many more to bring in the ultimate in banking convenience. All the above strategies will help banks in translating their traditional business model into an Internet one, falling into three main categories

• One stop shop
• Virtual one-stop-shop
• Best of breed supplier
3. Banking Software:

Information system in a bank supported either by different application software. In multiple application software deployment, integration will be consuming and may not provide required level of support for the bank. The banking software can be categorized into the following groups:

1. Retail banking software relating to deposits and advances.
2. Core banking software relating to treasury, money market, foreign exchange, etc
3. Bank’s administration software, payroll, personal information system, pension, provident fund
4. MIS related software viz., ALM, NPA credit risk management, balance sheet, audit, share accounting etc
5. Reconciliation and settlement software viz., Inter Branch Reconciliation (IBR), Real Time Gross Settlement(RTGS) electronic clearance system(ECS)
6. Non-Banking Financial Institutions software relating to mutual fund and capital management, refinance management etc.,

4. Integrated Banking System

In the architecture of an integrated banking system (IBS), a clear focus should be maintained to ensure that system is robust, expandable and responsive to change and isolated from the underlying platform issues that will change over the usable life of the system. With in this structure attention may be kept on ability of the user to respond the market trends, ensuring the ability to maintain a competitive edge in the changing industry. The core of an IBS is generally based on a rational system. The database consists of various rational bases tables like, deposits, loans, forex, customer information etc. these based tables make use of the standard codes stored in different master tables like, position, gaps, ALM codes etc., the base tables are populated by programme modules of different functions viz loans., deposits., payments etc. The IBS
will have delivery channel management and security management, and communication interface systems. The general architecture is shown in the figure below

*a) Architecture of an integrated banking system*: A commercial banking system that fully integrates retail, commercial, e-commerce, treasury, trade and MIS components in an homogeneous system that enables international deployment. This system must be of platform independence and the use of API in the delivery channel management. The general characteristics of the system that used for international operations are:

*b) Multi currency*: The system support multi currency operations. Where appropriate, the system should permit amounts to be entered in the base currency or foreign currency and calculate, display and record the required values. The system should allow for currency revaluation at any time and extraction of figures set in all levels, be they branch, department or corporate.

c) *Multi lingual*: Provision for multiple language control should be an integral part of the system.

d) *Multi entity*: The system should support for multiple entities, which enables an institution to profile regional, country and subsidiary entities, each running its own base currency and local reporting and product profiles. Each of the entities may be defined with multiple branches.

e) *Multi branch*: Each defined institution or processing entity may have large number of branches / locations identified through an ID structure that is unique and separate from any part of account or customer ID structure. Inter location and inter bank activity should fully supported within the system including different time zones, SWIFT addresses, base currencies and other country requirements.

f) *High availability of operation*: System should be designed around the fault tolerant hardware platforms, and have inbuilt fault tolerant features which can take advantage of the latest hardware architectures that are moving clustered or symmetrical multi processing architectures.
3.24 CENTRAL BANKING SOLUTION:

Today’s banks customer is sophisticated, demanding one compared to his counterpart 10 years ago. The internet has led to the increase in the number of channels for customer interaction and with suppliers. The complexity demands better solutions such as centralized solution that can give banks holistic perspective of customers. In centralized solutions banks can constantly and efficiently keep track of customers.

In India, the centralized banking solution is so called as core banking solution. The core banking solutions are generally based on an open system, multi tier architecture and will be able to streamlessly integrate with the existing branch banking software there by ensuring that investments made are protected. The core banking solution consists of a central server of high capacity and computer processing computer system and branches have low-end computer servers which are connected to the central server and the branch server will have a local database for storing the intermediate transactions. The solution will have feature of store and forward facility, where branches continue to function without any hindrance in case of a breakdown of connectivity. On resumption of connectivity, the central and branch data bases are automatically synchronized.

The centralized solution can be facilitates to introduce multiple delivery channels within short span of time frame, so that banks can offer a gamut of a new generation services to the customer such as ATM, e-banking, tele banking, mobile banking etc. the Indian banking sector realized that centralized banking the key driver for growth in the current scenario for providing enhanced value to customers. The functionalities of core banking solution offers generally include: deposits products and services, customer orientation facility, loan products and services, general ledgers, branch automation subsystem and card management.
The benefits of centralized banking are enhanced customer service levels, much lower transaction costs, simplified administration and business intelligence support such as customer behavior patterns. The other gains are low cost ownership, rapid product development for the bank’s specific customer offering, high scalable, ease of managing and hardware independence. Since all customer data is in one server, a range of software can be integrated to core banking software which include customer analytics and marketing automation, risk management solution and financial management solution.

3.25 ELECTRONIC DELIVERY CHANNELS:

Banking activities through the traditional delivery channels of branch networks are on the decline and the customers can now do banking business from the comfortable confines of their homes using most modern electronic delivery channels. Banks are able deliver their products more cheaply than traditional branch networks loaded with expensive staff. The information technology has enabled banks to increase the range of their products also and market them more effectively. Banks at present play an important role in the settlement of the financial transactions with the emergence of technology, which is cost effective to the banks, provide better services to the customers. The emergence of e-commerce facilitated the growth and expansion of the information technology, banking sector and financial activity remarkably. Further the popular electronic channels are the following.
1. Automated Teller Machines (ATM)
2. Tele Banking
3. Personal Banking or Home Banking
4. Internet banking
5. Electronic Fund Transfer (EFT)
6. Electronic clearing Services
7. Corporate Banking Terminal
8. Point of sale Terminal
9. Electronic Data Interchange (EDI)
10. Credit/Debit cards
11. Real Time Gross Settlement (RTGS)
12. Electronic or digital cash or digital money
13. **SMS banking:**

**1. Automated Teller Machines:**

The ATM is a device used by bank customers to process account transactions. The customers inserts into the ATM, a plastic card that is encoded with information on a magnetic strip. The strip contains an identification code that on transmitted to bank’s central computer by modem. Every cardholder would be given a PIN (Personal Identification Number) that should enter and after verifying the same with records, the ATM would allow operations.

**2. Tele banking:**

Many customers of the banks want to make necessary queries about their account position. Tele banking is an automated banking solution for handling such queries speedily. Customers can perform any number of transactions from the convenience of their own home or office, in fact from anywhere they have access to phone. In tele banking, automated Voice Recorder can be used for simpler queries and transactions and use of manned terminals for complicated queries and transactions. It is services provided by a bank that allows its customers to perform transactions over the telephone. Most
telephone banking use an interactive voice response (IVR). To guarantee security, the customer must first authenticate through a numeric or verbal password or through security questions asked by live representatives. With the obvious exception of cash withdrawals and deposits, it offers virtually all the features of automated teller machines. Besides, banking representatives are usually trained to do what was traditionally available only at the branch: Loan application, investment purchases and redemptions, change of address etc., HDFC bank’s customer over the 120 locations are serviced through telephone banking. Banks which operate mostly or exclusively by telephone are known as phone banks.

3. Personal banking or home banking:

PC banking lets customers’ access information on their accounts through dial – up connection with their bank. They can check balances and statements information pay certain bills, order statements or cheque books. PC home banking requires customers install software a software packages assigned by banks on their PC. They also have ability, in some cases to download information and process it in their own financial management software.

4. Internet banking:

Internet Banking is an improvement over the PC banking. It is browser based and removes the traditional geographical barriers as it could reach out to customers of different countries. It is accessible to any one using the internet, not just the bank’s customers.

Internet banking means that banking services such as services and products introduction, opening account balances, brokerage, online trading, cash management, requests and intimations, credit and debit cards, tax services, standing instructions, foreign exchange trading, Demat holding, loan application, account balance inquiry, fund transfer and so forth are provided by a bank through the internet.
More and more banks are coming to realize that internet is a part of banks' alternative delivery channel strategies activities concentrated in the business-to-consumer segment, focused on retaining clients.

In Internet banking, security is a primary concern. Security concerns have been addressed from every angle within the architecture of the Internet banking application.

5. Electronic Fund Transfer (EFT):

It is a scheme introduced by Reserve Bank of India to help banks offering their customers’ money transfer services from account to account of any bank branch to any other branch in places where EFT services offered. In this system, the sender and receiver of funds may be located in different cities and may even bank with different banks. Funds transfer within the same city is also permitted i.e., it enables transfers of funds within cities or between cities and between branches of a bank and across banks.

6. Electronic clearing Services - (Credit clearing)

Electronic clearing Service is mode of payment where by an institution makes a large number of payment like interest, dividend, salary, pension to a
large number of investor/shareholders/employees/ex-employees can make the payments electronically instead of issuing paper warrants. The scheme is operational in 46 cities in India. The transactions are settled on the second day of submission of data to the clearing house.

Electronic clearing Services - (Debit clearing):

A mode of payment where by an institution receives payments from a large number of customers/consumers. ECS(debit clearing) scheme helps utility institutions insurance companies, credit card companies and finance companies to collect the proceeds of telephone/ electricity bills, insurance premia or periodical installment etc., on due date based on the mandate received from consumers/subscribers.

7. Corporate banking terminal:

Large corporate customers can log into the banks database and have access to their accounts/transactions from their business houses. It would still take some more time for the Indian banks extend this facility to their customers.

8. Point of sale terminal:

It consists of two key components- a computer terminal that is linked online to computerized customer information files in a bank and a plastic magnetically encoded transactions card that identifies the customer to computer. During a transaction, the customer’s account is debited and the computer for purchase credits retailers account. State bank ATM cum debit cards is acceptable at more than 1, 23,000 point of sale/merchant establishments, which display master logo.

9. Electronic Data Interchange (EDI):

EDI is the electronic exchange of business documents like purchase order, invoices, shipping notices, receiving advices etc., in standard, computer
process able universally accepted format between trading partners. EDI can also be use to transmit financial information and payments in electronic form. EDI has resulted in huge savings in costs of exchanging trading information.

10. Credit cards /Debit cards:

A credit card is an instrument, which provides instantaneous credit facilities to its holder avail a variety of goods and services at merchant outlets. Credit card facilities and make it possible to “use First and pay later” the specified amount of credit as per the agreed terms of sanction.

Debit card is prepaid card with some stored value. Every time a person uses account from the bank of the buyer, debits an exact amount of purchase from the card. The customer can never overspend because the system will reject any transaction that exceeds the balance in his account and the bank will never face the default because the amount spent is debited immediately from the customer point of view.

11. Real Time Gross Settlement:

Real Time Gross Settlement (RTGS) is a payment system, in which processing and settlement take a place in real time, in which inter bank payments are processed and settled continuously. It provides immediate finality of transactions. Gross settlement refers to the settlement of each transfer individually rather than netting. The other inter bank funds transfer system prevailing is the batch –processing mode where netting of all transactions is done. It is also an electronic remittance or clearing system, which facilitates transfer of funds between two branches of same or different banks with in couple of hours.

RTGS present has a membership of 97 banks and primary dealers and covers 15000 bank branches in 510 clearing houses spread across 868 town cities. The average daily transactions in RTGS are in excess of Rs.50, 000 crores, most of which are accounted by inter-bank transactions.
12. Digital cash or digital money:

Digital money is a form of electronic payment which functions like debit card. Customers transfer their money from their account to an online cash account, from which they withdraw to make purchases over the internet. It is suitable for small value transactions. It gives anonymity to the transaction like real cash.

13. SMS banking:

It is technology enabled service offering from banks to its customers, permitting them to operate selected banking services are operates over their mobile phones using SMS messaging. SMS banking services are operated using both push and pull messages: push messages are those that bank chooses to send out to a customer mobile phone, without the customer initiating a request for the messages alerting an event which happens in the customer’s bank account. Such as large payments using the credit cards etc in India first Centurion bank have introduced SMS banking for their customers. Pull messages are those that initiated by the customer , using mobile phone, for obtaining information or performing a transaction in the bank account.

3.26 WAP Banking

- Wireless application protocol (WAP) is an application environment and set of communication protocols for wireless devices designed to enable manufacturer-, vendor-, and technology-independent access to the Internet and advanced telephony services.
- WAP is a global standard and is not controlled by any single company
- Various banking transactions offered in WAP environment by banks.
- Similar architecture with SMS banking
1. **E-tax**: Banks like IDBI have eased the process of tax payment by implementing the e tax project. Payment of excise and custom duty over the internet is also possible. SBI e tax is on line payment facility. This facility saves the time is convenient, hassle free and paper less. It is available on a 24*7 basis and enables user to pay the taxes on line with ease and simplicity.

2. **Online-trading**: India’s largest bank, State Bank of India (SBI) in alliance with Motilal Oswal Securities Limited now introduced eZ-Trade@sbi; a state of the art on line trading platform predominantly to cater to every trading need and offers online investing -any place ,any time. This service provides user 3- in-1 account which integrated platform of bank account, Demat Account and online trading to give user a convenient and paper free trading experience under one roof. Buying and selling of shares is now just a click away! Also ICICI bank lets you invest online in mutual funds, initial public offers (IPO’s) of the companies and postal office savings scheme through “www.icicidirect.com. The distinguished expertise, State- of -the Art technology and operational ease that these banks offer will redefine the way India trades.

3. **On line Banc assurance**: Another such service that has given a tremendous boom to financial sector is banc assurance. It is package of financial services involving distribution of insurance products through bank’s branch network. Many insurance companies have tied up with banks to explore the potential of this channel, like ‘prudential’ has tied up with ICICI bank. Online banc assurance facilitates customer to pay insurance premium, at low cost, by visiting the concerned bank’s website. This has, therefore, led to the migration of customers from high- cost branch transaction to low-cost online interfaces, bringing down the down the cost per transaction.

4. **Shop- online**: Now user can choose product and pay using internet banking facility. Banks like ICICI bank facilitate the customer to buy variety of
products online from partner shopping websites. Payment can made conveniently using customer’s ICICI bank account.

5. **Other value added services:** Some banks also offer other value added services such as:

- Some banks like online SBI also offer value added services in the areas of Railway reservation. The facility has been launched w.e.f September 1, 2003 in association with IRCTC. The scheme facilitates booking of railways ticket online. ICICI bank also provides facility to book train/air tickets online. Thus, customer doesn’t have to stand in queues.

- Some online banks like online SBI maintain user’s personal details and security preferences as ‘User’s profile’. User can also define settings: third party information, limits for DD and third party transactions and save it in user’s own profile.

- Now user can recharge prepaid mobile anytime, anywhere in just a few minutes by logging into internet banking. ICICI bank also offers this feature through ICICIbank.com or by sending a simple SMS. This is fastest and earliest way to recharge prepaid mobile.

6. **Online remittances:** another example of how well IT has been aligned with banking, and is providing value to customers, is better online remittances from around the world. Beneficiaries in India are credited with remittance money with in hours. Banks like ICICI arrange to receive and credit the remittances received to your account from anywhere in the world, fast.

3.27 **E-PAYMENTS, SETTLEMENTS TECHNIQUES AND DATA COMMUNICATION:**

    Important sophisticated or Hi-technology (high tech) for improving customer services, productivity and operational efficiency of banks is well recognized. As a strategy, banks in India having introduced many new techniques and a considerable degree of mechanization and computerization in their operations. Many banks had installed advance ledger posting mechanisms.
(ALPM), mini computers, and main frame computers. Banks have introduced mechanised cheque clearance, using magnetic ink character recognition (MICR) technology. They are in the process of setting up exclusive data communication network for banks for banks known as BANK NET. For this purpose members of the society for worldwide inter bank financial Tele communications (SWIFT) regional processes at Mumbai. Through the network, any bank will be able to establish connection with any bank will be to establish connection with its own offices and with any other bank offices/computers in the national or international network.

Banks are now switching personal computer (PC’s) and LAN/WAN systems. Many banks have these facilities. WAN as the signatures storage and retrieval systems and on-line terminals. The RBI has put in place electronic funds transfer (EFT) system, delivery versus payments (DVP) system, electronic clearing services (ECS), RBINET.

It has also steps to setup a very small aperture terminal (VSAT) network which will cover all the banks and financial institutions to serve number of tasks LIKE MIS, data warehousing, transaction processing, currency chest account, ATM’s, EFT, EDT, smart/credit cards and the like. So for the many of the public sector banks have crossed 100 percent computerization, many have crossed 70 percent computerization of their business of their business. As a part of Indian financial network (INFINET) the number of the number of VSATs has increased phenomenally. Banks are sharing ATMs by forming alliances as it was done by UTI bank, City bank, IDBI bank and standard charted bank, which formed “cash net” alliance in 2003. At present there are 31cities where cheque clearing is performed using mechanized technology of reader sorter which process more than 2000 cheques per minute. The currency verification and processing systems have been made operational at various offices of the RBI which has resulted in the “clean note policy”.
In the very near future, the banking systems in India and the payments mechanism which it operates would witness rapid technological innovation, which are already a reality in a country like USA. The place of physical transfer in the form of cash or cheques is being taken there by “online electronic payments method” comprising fed wire, CHIPS and ACHs, the fed wire is a communication system that allows banks to transfer deposits and government securities. It has an electronically equivalent of payment by cheque is the CHIPS. Then there is ACHs involves involve an exchange of magnetic tapes rather than pieces of papers (Automated Clearing House).

Inter bank transfer funds systems can be classified as net settlement and gross settlement system. In a net settlement system, the settlement of funds transfer occurs on net basis according to rules and procedures of the system. A participating bank’s net position is calculated; on either a bilateral or multilateral basis, as sum of the value of all the transfer it has sent.

A) Structured Financial Messaging System (SFMS): SFMS like SWIFT is an EDI system for banks. It allows exchange of structured messages prepared in conformity with published standards. The working group on INFINET message standards published the standard messages. The SFMS system consists of four main entities: Hub, Gateway, Branch Server and online terminals and off-line terminals. The Hub system is a Compaq server located, Hyderabad. The Hub system switches interbank messages from the sending bank’s gateway to the receiving bank’s gateway. A message received from the sending branch, server to the receiving branch server and far words all interbank messages addressee to other banks to the Hub-system.

Interbank messages interbank transactions involving receipt/payment of funds necessarily involve settlement of funds between the contra-party banks. RBI's RGGS system provides the solution for settlement of large value transactions. Until the arrangements for settlements have been put in place,
only those inter bank messages, which do not involve receipt and payment can be relayed over SFMS.

Messages involving net or gross settlement

a) Customer TT’s
b) Draft related messages
c) Transfer of funds to another bank
d) Information relating funds expected from another bank.

Society for World Wide Interbank Financial Tele- Communication (SWIFT): swift was founded in 1973 at Brussels by 239 banks spread in 15 countries are its members. Swift is basically message transmission system. All the transactions are processed without the exchange of paper, bank notes, cheques drafts etc. as such are true epitome of paperless banking in India. In India all nationalized banks are members of swift. Banks are locates are connected with the SWIFT regional processor at Mumbai. The messages provided by SWIFT pertain to customer transfers, bank transfers advice to receive, foreign exchange, fixed loan/deposits interest payments, confirmation of debit and credit and statements.

Main features:

1. It is operational throughout the year, 24 hours a day
2. Transmission of messages to any part of the world is almost immediate.
3. All messages are acknowledged
4. Information is confidential and is protected against unauthorized disclosure and tempering.
5. Method of transmission is cost effective.
3.28 MEASURES TAKEN BY RBI

A Reserve Bank of India (RBI) committee has come out with the roadmap for electronic banking and has sought legislation on EFT systems to facilitate multiple payment systems for banks and financial institutions.

The RBI has been gearing up to upgrading itself as a regulator and supervisor of the technologically dominated financial system. Several initiatives taken by the Government of India as well as the RBI have facilitated the development of E-banking in India. The Govt. of India enacted the IT Act, 2000 with effect from Oct. 17, 2000, which provides recognition to electronic transactions and other means of electronic commerce. 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

3.28.1 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.
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.

3.28.2 Competitiveness and profitability issues:

While Internet banking is expected to substantially reduce the cost of doing transactions in 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.

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 that 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 ‘out in’ 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.

Internet banking is the latest in the series of technological wonders of the recent past. ATMs, Tele-Banking, Internet Banking, Credit Cards and Debit Cards have emerged as effective delivery channels for traditional banking products. Internet or Electronic or online banking is the newest delivery channel to be offered by retail banks in many developed countries, and there is a wide agreement that this channel will have a significant impact on the market. Banks know that the Internet opens up new horizons for them and moves them from local to global frontiers. 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 its simplest form, electronic banking may mean the provision of information about the bank and its products via a page on the internet. It is the types of services through which bank customers can request information and carry out most retail banking services such as balance reporting, inter-account transfers, bill-payment, etc., via a telecommunication network without leaving their homes or organizations. It provides universal
connection from any location worldwide and is universally accessible from any internet linked computer. It is a process of innovation whereby customers handle their own banking transactions without visiting bank tellers.

Information technology developments in the banking sector have sped up communication and transactions for clients. Online banking is also one of the technologies, which are fastest growing banking practices nowadays. It is vital to extend this new banking feature to clients for maximizing the advantages for both clients and service providers. The Internet has an ever-growing importance in the banking sector because of the advantages it brings to both the entities and their customers.

3.28.3 There are various trends in e-banking are:

Security: It is the major importance to online consumers. This is understandable but also a very general insight. Firms with online activities will therefore have to deal with the matter in a more differentiated way. Those who are concerned about security have identified as the most dangerous threats, first, the lack of staff awareness and, second, viruses, Trojan horses, and worms. This holds for all sectors. The financial industry, however, is particularly sensitive to the topic. The fear of a lack of security is a higher hurdle to those internet users who do not use online banking than missing monetary incentives or insufficient comfort or functionality.

2. Customer retention becomes ever more important. Research shows that the more services of his or her bank the customer uses, the higher the real and psychological switching costs will be. Also: the more services the customer uses, the greater are the bank’s expected profits. Customer loyalty, therefore, gains importance over customer acquisition, and the value of customer relationship management becomes apparent.

3. Technological progress will give a boost to existing online banking services and devices. Their quality will improve. Ever faster and more powerful chips
and the widespread use of broadband internet access make online banking more comfortable for more and more people without necessarily triggering the emergence of completely new devices and inventions.

4. **Mobile banking.** Some players will take a second stab at Increasingly faster transmission via GPRS or UMTS feed the vision that mobile banking merits another attempt – in spite of the GSM failure. Indeed, many advantages can be thought of. SMS alerts can disburden more expensive channels (e.g. contact centers). Also, useful information can be transmitted to the client, and increase customer loyalty at low cost. Still, a comprehensive business case in transaction banking and brokerage with cost covering revenues is currently not in sight.

5. **Online research grows.** An increasing number of visitors of bank websites do considerable research before making financial decisions. They shop around for financial products, and make their own investment decisions – in part without consultants. Though the chart shown here refers to US customers, we observe a similar trend in Europe: Researching via the internet is gaining importance in online banking.

The implementation of a successful e-banking strategy is far from being straightforward, as there are numerous inherent difficulties/barriers. The Internet as a channel for services delivery is fundamentally different from other channels such as branch networks or telephone banking. Therefore, it brings up its own unique challenges that require innovative solutions. Thus, a logical step for the management of banking related organizations may be to fully understand the organizational barriers inherent in e-banking. The Internet has not only created previously non-existent opportunities or cost-effective, all time available financial services, it has also increased the significance of a number of risks which did not exist or were not significant in the past. Furthermore, a number of change management issues usually associated with any new technology implementation are compounded simply because some applications
such as e-banking have a greater and more immediate impact on the organization. Building on the previous chapters, this chapter will discuss some of the most common problematic issues in e-banking implementation and management. The main focus will be on those issues which pose considerable risks to e-banking projects and may prevent banks from achieving their desired e-banking related goals. These include: traditional structures which some banks still have and which are unable to respond to agility required for e-banking, resistance from employees, legacy systems which are an obstacle to the integration of systems, security issues, new and complex regulatory issues, and project management problems.

3.29 TECHNOLOGY RELATED PROBLEMS

1. IT and Telecommunication Infrastructure Issues

At present, the availability of e-banking is substantially greater in developed countries than in developing economies. Many developing countries do not have the necessary telecommunications, banking, commercial, bureaucratic and legal infrastructures to support the widespread introduction of e-banking (Simpson, 2002). Access to the Internet is a major problem in the developing world, and presents an obstacle to the growth of e-banking.

2. Capacity/Scalability Problems

It is difficult to predict the usage of e-banking on an hourly or daily basis. These ‘scalability problems’ can give rise to a slowing down of the website, or even a website crash (temporary unavailability). This can cause many reputation problems and financial damage. This was the case at Northern Rock Bank in UK. This bank ran into credit problem when news spread that this bank was in trouble, thousands of people rushed to the bank website to transfer their money elsewhere high resulted in numerous technical problems in their e-banking system for many days. Some of the ways of addressing this problem according to Sergeant (2000) are:
• Undertake market research to predict demand,

• Adopt systems with adequate capacity and scalability,

• Undertake proportionate advertising campaigns, and

• Ensure adequate staff coverage and develop a suitable business continuity plan which not only helps coping with scalability problems but with other causes of systems failure. A number of other technical solutions are also available to address this problem but owing to the high cost associated with them, some banks do not implement them.

3. Availability and Systems Integration

One of the basic requirements of e-banking services is their 24-hour availability. This often requires e-banking applications’ integration with legacy systems, which were designed to provide services during only specified periods, often with suspension of services at other times for various reasons such as data backups and end-of-day processing (Mohamed & Al-Jaroodi, 2003). Usual legacy systems are accounting, banking, payroll, customer information, product management (such as current accounts or savings accounts), and inventory systems. The new business applications are often not built from scratch and they normally rely on the functionality of the existing legacy applications. Incompatibility between e-banking applications and legacy systems means that most banks require middleware to integrate these systems, which can be expensive and may bring its own set of problems. Systems integration has been and is still, to some extent, a key barrier in e-banking. As pointed out in (Shah et al, 2007; Shah & Siddiqui, 2006), shortcomings in technological infrastructure are often the biggest hurdle in the implementation of e-business channels and their integration with other parts of a business. This type of integration is essential for the success of e-banking, as an electronic request for a typical financial transaction passes through a number of different systems before an action is complete.
4. Web Site Design and Operational Functionality

There is considerable weight attached to the appropriate design of e-banking websites. Poor design of website has been estimated to result in the loss of up to 50 percent of potential repeat visits (Cunliffe, 2000). Poor design may include use of inappropriate colors, contrast, font or navigation functions. Lack of proper functionality, excessive use of graphics or other similar factors can also deter customers from coming back to that website. Web usage barriers can also be attributed to vision, cognition, and physical impairments associated with the normal aging process. Vision changes include a decline in visual acuity resulting in inability to see objects on a screen clearly, decreased capacity to focus at close range, or increased sensitivity to glare from light reflecting or shining into the eye. These physiological changes, and many others, impact the users ability to see Web objects and read online content (Becker, 2005). These factors need to be taken into account when designing a website as aging population in most industrialized counties means that this segment is increasing in size. These are the people who might need the online services most due to mobility issues. Several software tools, including Dottie and Usability Enforcer, are available for senior-friendly web sites. Numerous organizations, such as National Institute on Aging (http://www.nia.nih.gov) provide guidelines for making senior-friendly web sites.

Poor website design can also result in decreased trust in using online financial services as look and feel often creates a lasting impression. This issue is further covered in greater detail below in the section on trust issues.

5. Management Problems Regulatory Issues

As the Internet is a global medium, it creates opportunities for trading on an international basis, but every country has its own laws and regulations concerning the provision of financial services. The issue of preventing money laundering, which is considered to be the main source of finance for terrorism and other related criminal activities, has further complicated the situation. This
is one of the major problems in expansion of e-banking services on a global basis.

The Internet is also a major source of consumer intelligence (personal information, buying patterns and behavior) which raises a number of privacy, security and data protection issues which regulators must address effectively. To do this new regulations must be put in place more quickly than in the past, leading to constant changes in laws and regulations, and complicating compliance; again a major obstacle to the growth of e-banking.

6. Information Management

Good information management enables organizations to become more effective in their operations as it provides the information employees need to analyze and conceptualize information, thereby adding to the firm’s store of knowledge and making their jobs more meaningful and efficient. This gives employees an opportunity to add value to the organization’s products and services (Blount et al. 2005). In online services operations, good information can be a vital difference between success and failure. However managing information has been a problem for organizations across many industries.

This problem is not unique to e-banking but information management requirements for e-banking are usually much greater. Therefore if a bank is not good at managing information, their participation in e-banking simply increases the scale of the problem. Effective e-banking requires that management has up-to-date and timely information in an understandable format. Any improvements in this area can lead to significant benefits in operations and the marketing of e-services.

7. Outsourcing Problems

Development or implementation of e-banking systems and other technical tasks such as upgrading and integrating existing legacy systems are very complex. They require very high levels of technical and project
management competence to carry out without outside help. Even the best companies need to recognise the limitations of their expertise and when to outsource certain e-Commerce functions.

Many banks outsource all or part of e-banking related operations owing to a lack of in-house expertise or simply to cut costs. Some aspects of outsourcing, for example the type and number of partners, can present particular management challenges. Outsourcing works in some cases but can create a risk of the bank losing control of its critical functions. For this reason, if a bank needs to outsource its e-banking operations, it should do so with due consideration to outsourcing risks.

General good practice in planning, negotiating and actual outsourcing is applicable here. Many banks such as Credit Suisse outsource their entire or part of e-banking for the reasons outlined above with mixed results. McDougall (2007) reported the case of Credit Suisse which is summarized here to demonstrate how things generally work when e-banking operations are outsourced:

8. Security

Security related issues are a major source of concern for everyone both inside and outside the banking industry. E-banking increases security risks, potentially exposing traditionally isolated systems to the open and risky world of Internet. According to McDougall (2007) security problems can mainly be categorized as; hacking with criminal intent (e.g. fraud), hacking by ‘casual hackers’ (e.g. defacement of web sites or ‘denial of service’ - causing web sites to slow or crash), and flaws in systems providing opportunities for security breaches (e.g. a users is able to transact on other users’ accounts). These threats have potentially serious financial, legal and reputation risks associated with them. Luckily actual financial losses from these breaches have been very low in comparison to (say) credit card frauds. Financial regulators also demand a very high standard of security from banks.
Information is a valuable asset and to fully utilise it needs wide availability at least within an organization. However security requirements might hinder wider information sharing. Therefore organizational objectives of security and of availability may be seen to pull against each other: the more confidential a set of information, the less available it would be.

9. Login detail disclosure:

This is most basic threat to the financial system. Using a number of means, criminals acquire login details, such as a customer number, pin, and use it to access the account and steal money from it. This threat could be mitigated through promotion of good practice amongst consumers to keep their login details safe.
Chapter IV

Data analysis and Interpretation