3.1 NATIONALIZATION

The RBI was nationalized on January 1, 1949 in terms of the Reserve Bank of India (Transfer to Public Ownership) Act, 1948 (RBI, 2005b). By the 1960s, the Indian banking industry had become an important tool to facilitate the development of the Indian economy. At the same time, it had emerged as a large employer, and a debate was made about the possibility to nationalize the banking industry. Indira Gandhi, the Prime Minister of India expressed the intention of the GOI in the annual conference of the All India Congress Meeting in a paper entitled "Stray thoughts on Bank Nationalisation." The paper was received with positive enthusiasm. Thereafter, her move was swift and sudden, and the GOI issued an ordinance and nationalized the 14 largest commercial banks with effect from the midnight of July 19, 1969. Jayaprakash Narayan, a national leader of India, described the step as a "masterstroke of political sagacity." Within two weeks of the issue of the ordinance, the Parliament passed the Banking Companies (Acquisition and Transfer of Undertaking) Bill, and it received the president’s assent on 9 August 1969.

A second dose of nationalization of six more commercial banks followed in 1980. The stated reason for the nationalization was to give the government more control of credit delivery. With the second dose of nationalization, the GOI controlled around 91% of the banking business of India. Later on, in the year 1993, the government merged New Bank of India with Punjab National Bank. It was the only merger between nationalized banks and resulted in the reduction of the number of nationalized banks from twenty to
nineteen. After this, until the 1990s, the nationalized banks grew at a pace of around 4%, closer to the average growth rate of the Indian economy.

### 3.2 LIBERALIZATION

In the early 1990s, the then Narsimha Rao government embarked on a policy of liberalization, licensing a small number of private banks. These came to be known as *New Generation tech-savvy banks*, and included Global Trust Bank (the first of such new generation banks to be set up), which later amalgamated with Oriental Bank of Commerce, Axis Bank (earlier as UTI Bank), ICICI Bank and HDFC Bank. This move, along with the rapid growth in the economy of India, revitalized the banking sector in India, which has seen rapid growth with strong contribution from all the three sectors of banks, namely, government banks, private banks and foreign banks.

The next stage for the Indian banking has been set up with the proposed relaxation in the norms for Foreign Direct Investment, where all Foreign Investors in banks may be given voting rights which could exceed the present cap of 10%, at present it has gone up to 74% with some restrictions. The new policy shook the Banking sector in India completely. Bankers, till this time, were used to the 4-6-4 method (Borrow at 4%; Lend at 6%; Go home at 4) of functioning. The new wave ushered in a modern outlook and tech-savvy methods of working for traditional banks. All this led to the retail boom in India.

Presently, banking in India is generally fairly mature in terms of supply, product range and reach—though reach in rural India still remains a challenge for the private sector and foreign banks. In terms of quality of assets and capital adequacy, Indian banks are considered to have clean, strong and transparent balance sheets relative to other banks.
in comparable economies in its region. The Reserve Bank of India is an autonomous body, with minimal pressure from the government. The stated policy of the Bank on the Indian Rupee is to manage volatility but without any fixed exchange rate—and this has mostly been true. With the growth in the Indian economy expected to be strong for quite some time—especially in its services sector—the demand for banking services, especially retail banking, mortgages and investment services are expected to be strong. One may also expect M&As, takeovers, and asset sales. In March 2006, the Reserve Bank of India allowed Warburg Pincus to increase its stake in Kotak Mahindra Bank (a private sector bank) to 10%. This was the first time an investor has been allowed to hold more than 5% in a private sector bank since the RBI announced norms in 2005 that any stake exceeding 5% in the private sector banks required to be vetted by them. In recent years critics have charged that the non-government owned banks are too aggressive in their loan recovery efforts in connection with housing, vehicle and personal loans. There were press reports that the banks' loan recovery efforts have driven defaulting borrowers to suicide.

3.3 INTRODUCTION OF E-BANKING

E-banking in India is only at its primitive stage dominated by the Indian private and foreign banks. The use of e-banking is confined to a few client segments. The risks associated with e-banking are many, which the banks have to model using sophisticated systems and extensive use of technology. The legal framework as it exits requires an updating to streamline and handle the issues associated with e-banking. The functional model can be used to prioritize perceptual variable concerning client behavior so that value to the client can be maximized. The banks can focus on strategic client groups to maximize its revenues from Internet banking. The experiences of the global economies
suggest that banks cannot avoid the e-banking phenomenon, but to gain a competitive advantage, they must structure their business models to suit to Indian conditions.

Financial Services are generally complex and need a lot of trust for the consumer to use technology. Banks have changed from paper-based banking solutions provider to the latest of the technologies like online-banking, mobile-banking, etc. It is surprising to know as to why most of the Indian customers have not welcomed this upgradation. Customers across the world, even technologically optimists, have refrained from using technology aided solutions.

In the current scenario, the banks need a transformation which can be achieved through – a mindset to adopt technology, recognizing the core competencies, an initiative from the top management to convert the organization to outward looking and aligning roles and value propositions with the customer segments. The suitability of technology and a careful analysis of the needs of customers are equally important.

The financial reforms that were initiated in the early 1990s and the globalisation and liberalization measures brought in a completely new operating environment to the banks. The bankers are now offering innovative and attractive technology-based services and products such as ‘Anywhere Anytime Banking’, ‘Tele-Banking’, ‘Internet Banking’, ‘Web Banking’, ‘Mobile Banking’, etc., to their customers to cope with the competition. The process started in the early 1980s when Reserve Bank of India (RBI) set up two committees in quick succession to accelerate the pace of automation of operations in the banking sector. A high-level committee was formed under the chairmanship of Dr. C. Rangarajan, then Deputy Governor of RBI, to draw up a phased plan for computerization
and mechanization in the banking industry over a five-year time frame of 1985–1989. Having gained experience in the earlier mode of computerization, the second Rangarajan committee constituted in 1988 drew a detailed perspective plan for computerization of banks and for extension of automation to other areas such as funds transfer, e-mail, BANKNET, SWIFT, ATMs, i-banking, etc. The Government of India enacted the Information Technology Act, 2000 (generally known as IT Act, 2000), with effect from 17 October 2000 to provide legal recognition to electronic transactions and other means of electronic commerce.

ICICI bank is the first one to have introduced i-banking during the nineties for a limited range of services such as access to account information, correspondence and, recently, funds transfer between its branches. ICICI is also into e-trading, thus offering a broader range of integrated services to the customer. Utility Bill Payment Services (UBPS) has revolutionized how electricity and telephone bills are paid and virtually removed the need for waiting in long queues for paying these bills every month. This has a greater impact than the retail applications. The corporate sector is adequately computerized and has already recognized the importance of e-commerce in future. Also, companies are setting up websites even where there are no immediate tangible benefits to them from doing so just to be in the race and attract customers to their fold.

a.) OPTIMISM

Many people do not feel the need to use E-banking as they are very content with the way they currently source their banking services. Most consumers also consider themselves to be very active users of banking services, implying that, by becoming an E-
banking user, there would be few, if any, benefits for them. This leads them to perceive the range of services offered over the internet was much narrower than the range which could be sourced in traditional ways – in other words, the range of services was perceived to be limited. Some consumers associate risks, especially security risks, with using the internet. Privacy and the concern that internet-delivered instructions might not yield a similar reaction from the bank when compared to that of the reaction evicted by the human interaction makes them stay away. The interaction is one way and hence the level of optimism is very low. What happened in the case of mobile is that the shift was from a traditional telephone to a wireless one and the speed with which this was picked up was high as the younger generation rode the wave of ‘mobilization. If this can be applied to E-banking services what needs to be done is that the risk associated should be reduced, cost should be made visibly lower and use different strategies for the middle age consumers to switch. Also there is a need to explain to each of these consumers that using E-banking would not only save time and cost but also make them more efficient and capable.

b.) INNOVATIVENESS

Any new technology is usually picked up by the early adapters who use them and put in efforts to find out about the technology, review it and gain satisfaction from being the first one in the shift. There need not be an incentive for these ‘Early Adopters’ to use the technology. The innovative spirit is inherent in them and keeps them going. The same applies to Internet banking. Here the early adopters are the one who have Internet access and knowledge about the facilities provided by the banking on the Internet as they put in extra efforts to be ahead of the race of ‘Idea Diffusion.’ The young earners of the IT buzz and the ITES industry have already moved on to the E-banking platform as they found it
amusing and understood the nittigritties of the facility and latched on to it. Once they understood the power of technology and the amazing comfort E-banking offers, they were lured to it. But there seems to be a huge gap when it comes to the early majority and this should be addressed. There is a huge inertia when it comes to this group of consumers. The reason might be lack of incentive and innovativeness is masked by other concerns.

Most consumers don’t know how to become an E-banking user, how to use it and hence feel vary of this facility. Some consumers do not have even the required PC skills and facilities needed to operate as an E-banking customer. Banks should realize that this group which should have picked up the innovation is not doing so and devise ways how they would make this shift possible. Innovativeness is something that cannot be pushed on a person so easily and faces the resistance. Hence the strategy should be to make the person realize how his life would be different, how it would be better once technology is adopted.

c.) INSECURITY

This is a two-pronged situation. Both should be cautious and responsible for the security to be intact: Bank and Consumer. The bank should ensure that the facility is fool proof and the technology is easy to use.

The key components of security concerns are,

- **Authentication**: The assurance of identity of the person in a deal
- **Authorization**: A party doing a transaction is authorized to do so
- **Privacy**: The confidentiality of data and information relating to any deal
• **Data integrity**: Assurance that the data has not been altered

• **Non-repudiation**: A party to the deal cannot deny that it originated the communication or data

d.) **ISSUES**

The main issue is that the penetration of technology in terms of Internet in India is very low. It is just 7.1% (as mentioned in the below table) in India with just 81 million people hooking to the online facility.

**INTERNET PENETRATION IN INDIA**

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Users</th>
<th>Percentage of penetration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>1,094,870,677</td>
<td>1,400,000</td>
<td>0.10%</td>
</tr>
<tr>
<td>1999</td>
<td>1,094,870,677</td>
<td>2,800,000</td>
<td>0.30%</td>
</tr>
<tr>
<td>2000</td>
<td>1,094,870,677</td>
<td>5,500,000</td>
<td>0.50%</td>
</tr>
<tr>
<td>2001</td>
<td>1,094,870,677</td>
<td>7,000,000</td>
<td>0.70%</td>
</tr>
<tr>
<td>2002</td>
<td>1,094,870,677</td>
<td>16,500,000</td>
<td>1.60%</td>
</tr>
<tr>
<td>2003</td>
<td>1,094,870,677</td>
<td>22,500,000</td>
<td>2.10%</td>
</tr>
<tr>
<td>2004</td>
<td>1,094,870,677</td>
<td>39,200,000</td>
<td>3.60%</td>
</tr>
<tr>
<td>2005</td>
<td>1,112,225,812</td>
<td>50,600,000</td>
<td>4.50%</td>
</tr>
<tr>
<td>2006</td>
<td>1,112,225,812</td>
<td>40,000,000</td>
<td>3.60%</td>
</tr>
<tr>
<td>2007</td>
<td>1,129,667,528</td>
<td>42,000,000</td>
<td>3.70%</td>
</tr>
<tr>
<td>2008</td>
<td>1,147,995,898</td>
<td>81,000,000</td>
<td>7.10%</td>
</tr>
</tbody>
</table>

(Source: [http://www.internetworldstats.com](http://www.internetworldstats.com))
A minor part of this segment knows and uses the E-banking facility. Even in this small segment there is a resistance towards adopting the technology based services like banking on the Internet. The reason is based on few concerns.

*The Technology Readiness Index (TRI) of Parasuraman contains four factors:*

- **Optimism:** the degree to which people with a positive view of technology believe it offers increased control, flexibility and efficiency in their lives

- **Innovativeness:** the degree to which people are technological pioneers and thought leaders

- **Discomfort:** the degree to which people perceive a lack of control over technology and feel overwhelmed by it, and

- **Insecurity:** the degree to which people distrust technology and are skeptical of its ability to work properly

e.) **DISCOMFORT**

Consumers perceive a lack of control over technology, not only in the case of E-banking but even with other technologies like WIFI, high end mobiles, etc., and feel overwhelmed by it. *What happens once I press this button? Once the request is given? Once the mail is sent?* These are the questions in many technology-repellant situations. The reason is lack of communication as to what happens after the command is executed and the request is placed online. Banks should ensure that the communication is clear and loud to the consumer that E-banking is only a change in the mode of communication and the basic process of banking is the same as the human interaction model involved in the branch banking. This communication of operations should be communicated to the
consumer and ensure that the consumer is in track of his request more prominently than in the case of branch banking. ICICI Bank does this by providing a request number which gets generated once the request is placed. The request number is given with a specific Turn Around Time (TAT) which the consumer can keep tack of on his own online or by calling to the phone banking service department. This leaves the cue in the consumer’s control which increases the trust and reduces the discomfort levels. This goes a long way to increase the acceptance level.

If these areas are not addressed, the bank may suffer operational risk, reputational risk, legal risk, money laundering risk, and strategic risk. Technology and security standards for E-banking talk about TCP/IP, the OSI Layers, and application architectures. There are guidelines for backup and recovery, list of the different types of attacks and the ways in which they can compromise a system, like sniffer attacks, DoS, and e-mail bombs. Authentication techniques like tokens, biometrics, and smart cards are described. The concepts of firewalls, proxy servers, cryptography, digital signatures, certification, SSL, and PKI are explained in detail. Security tools like scanners, sniffers, and IDSs are also described. Physical security is talked about and followed by guidelines of a security policy and a number of recommendations. The recommendations talk about access control, isolation of application servers, security logs (audit trails), penetration testing, backup and recovery practices, monitoring against threats, and education. ICICI Bank keeps on communicating to the customer and general public through various advertisements and the Internet about different types of frauds and how the user needs to be cautious. All banks should follow this and RBI should also come out with stringent policies and rules to prevent frauds from taking place.
The RBI guidelines are very exhaustive and extremely comprehensive. But are Indian banks following the guidelines accordingly? Experts at Global E-Secure Limited, a security solutions company say that none of the Indian banks which offer E-banking facilities have an IT security policy as stipulated by the RBI. While banks have been asked to file monthly reports to show compliance to the guidelines, most of them have sought time to satisfy the security policy criterion. RBI is insisting on a written document, signed by the Board of Directors to make the banks aware that IT security is not just an IT concern, but something that could affect overall business as well. The company also says that while these banks do have security measures, there is no clear-cut program which incorporates all the aspects of a comprehensive security policy. Also, some banks do not have straight-through processing. There is manual intervention, which poses a great security risk for the customer. In order to fill such gaps, the security policy guidelines clearly lay out the areas which should be looked into. To provide a further check, RBI is also empowered to audit the compliance to the policy.

3.3.1 DEFINITION OF E-BANKING

It is one of the truly widespread avatars of E-commerce the world over. Various authors define E-Banking differently but the most definition depicting the meaning of E-Banking are as follows:

- Banking is a combination of two, Electronic technology and Banking.

- Electronic Banking is a process by which a customer performs banking transactions electronically without visiting brick-and-mortar institutions.
o E-Banking denotes the provision of banking and related service through Extensive
use of information technology without direct recourse to the bank by the
customer.

3.3.2 NEED FOR E-BANKING

One has to approach the branch in person, to withdraw cash or deposit a cheque or
request a statement of accounts. In true Internet banking, any inquiry or transaction is
processed online without any reference to the branch (anywhere banking) at any time.
Providing Internet banking is increasingly becoming a "need to have" than a "nice to
have" service. The net banking, thus, now is more of a norm rather than an exception in
many developed countries due to the fact that it is the cheapest way of providing banking
services.

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

For the modern home online banking services were the distances banking services over electronic media from the early '80s. The term online became popular in the late '80s and refers to the use of a terminal, keyboard and TV (or monitor) to access the banking system using a phone line. ‘Home banking’ can also refer to the use of a numeric keypad to send tones down a phone line with instructions to the bank. Online services started in New York in 1981 when four of the city’s major banks (Citibank, Chase Manhattan, Chemical and Manufacturers Hanover) offered home banking services using the videotex system. Because of the commercial failure of videotex these banking services never became popular except in France where the use of videotex (Minitel) was subsidized by the telecom provider and the UK, where the prestel system was used.

The UK’s first home online banking services were set up by the Nottingham Building Society (NBS) in 1983 ("History of the Nottingham" Retrieved on 2007-12-14.). The system used was based on the UK's prestel system and used a computer, such as the BBC Micro, or keyboard (Tandata Td1400) connected to the telephone system and television set. The system (known as 'Homelink') allowed on-line viewing of statements, bank transfers and bill payments. In order to make bank transfers and bill payments, a written instruction giving details of the intended recipient had to be sent to the NBS who set the details up on the Home link system. Typical recipients were gas, electricity and telephone companies and accounts with other banks. Details of payments to be made were input into the NBS system by the account holder via prestel. A cheque was then sent by NBS to the payee and an advice giving details of the payment was sent to the account holder. BACS was later used to transfer the payment directly. Stanford Federal
Credit Union was the first financial institution to offer online internet banking services to all of its members in Oct, 1994.

The story of technology in banking started with the use of punched card machines like Accounting Machines or Ledger Posting Machines. The use of technology, at that time, was limited to keeping books of the bank. It further developed with the birth of online real time system and vast improvement in telecommunications during late 1970’s and 1980’s. It resulted in a revolution in the field of banking with “convenience banking” as a buzzword. Through Convenience banking, the bank is carried to the doorstep of the customer. The 1990’s saw the birth of distributed computing technologies and Relational Data Base Management System. The banking industry was simply waiting for these technologies. Now with distribution technologies, one could configure dedicated machines called front-end machines for customer service and risk control while communication in the batch mode without hampering the response time on the front-end machine. Intense competition has forced banks to rethink the way they operated their business. They had to reinvent and improve their products and services to make them more beneficial and cost effective. Technology in the form of E-banking has made it possible to find alternate banking practices at lower costs.

More and more people are using electronic banking products and services because large section of the banks future customer base will be made up of computer literate customer, the banks must be able to offer these customer products and services that allow them to do their banking by electronic means. If they fail to do this will, simply, not
survive. New products and services are emerging that are set to change the way we look at money and the monetary system.

### 3.3.4 USAGE OF E-BANKING

The rise in the e-commerce and the use of internet in its facilitation along with the enhanced online security of transactions and sensitive information has been the core reason for the penetration of online banking in everyday life. According to the latest official figures from the office of National Statistics (ONS 2007) indicate that subscriptions to the internet has grown more than 50% from 25 million in 2005 to 45 million in 2007 in India. It has also been estimated that 60% of the population in India use internet in their daily lives. The fundamental shift towards the involvement of the customer in the financial service provision with the help of the technology especially internet has helped to reduce the costs of financial institutions as well as helped client to use the service at anytime and from virtually anywhere with access to an internet connection. The use of electronic banking has removed personnel that facilitate the transactions and has placed additional responsibilities on the customers to transact with the service.

The computerization of the banking operations has made maximum impact on:-

- Internal Accounting System
- Customer service
- Diversification of system
### 3.3.5 E-BANKING Vs TRADITIONAL BANKING

<table>
<thead>
<tr>
<th>S.NO.</th>
<th>E-BANKING</th>
<th>TRADITIONAL BANKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>It enables the customers to perform the basic banking transactions by sitting at their homes or at offices through a desktop or laptop round the clock globally through electronic media.</td>
<td>The customer has to visit the branch of the bank in person to perform the basic banking operations. viz., account enquiry, funds transfer, cash withdrawing etc.,</td>
</tr>
<tr>
<td>2.</td>
<td>Customers can make use of these services with no restricted banking hours, no queues, no tellers and no waiting.</td>
<td>Restricted banking hours and procedures.</td>
</tr>
<tr>
<td>3.</td>
<td>The customers can access the banks' website for viewing their account details and perform the transactions as per their requirements.</td>
<td>Restricted banking hours and procedures.</td>
</tr>
<tr>
<td>4.</td>
<td>It is also called as, “Any time, Any where banking.”</td>
<td>Restricted banking hours and procedures.</td>
</tr>
</tbody>
</table>
3.3.6 ADVANTAGES OF E-BANKING

(i) Round the clock banking

E-banking facilitates performing basic banking transactions by customers round the clock globally. In fact there is no restricted office hours for E-banking.

(ii) Convenient Banking

Customers can perform basic banking transactions by simply sitting at their office or at home through PC or LAPTOP. No personal visit to the branch is required for routine basic transactions.

(iii) Low Cost Banking

The operational costs have come down due to technology adoption. The cost of transactions through internet banking is much less than any other traditional mode. There is also much saving on the cost of infrastructure as the banks can have access to a greater number of potential customers without the commitment costs of physically opening branches. Moreover, requirements of staff at the banks get reduced to a greater extent.

(iv) Profitable Banking

The increased speed of response to customer requirements, can enhance customer satisfaction and consequently can lead to higher profits as a result of handling more number of customer accounts.

(v) Quality Banking

Internet banking allows the possibility of improved quality and an enlarged range of services being made available to customers.
(vi) *Speed Banking*

The increased speed of response to customer requirements will lead to greater customer satisfaction and handling a large number of transactions at a lesser time. Thus, it increases the customers' convenience to a greater extent and facilitates better customer retention.

(vii) *Service Banking*

Banks can also offer many cash management products. Instant credit, one day credit, immediate payment of utility bills, instant transfer of funds etc., is possible under E-banking.

### 3.3.7 CONSTRAINTS IN E-BANKING

Although there are obvious benefits in e-banking, there are some hurdles in the smooth implementation of e-banking.

(i) *Start-up cost*

The initial start-up cost for venturing into e-banking is on the higher side and it includes the following:

- Connection cost to the Internet or any other mode of electronic communication
- Cost of sophisticated hardware, software and other related components like Modem, Router, Bridges, network management system
- Cost of maintenance of all equipment, web sites, skill level of employees
- Cost of setting up organizational activities
(ii) Training and Maintenance

The introduction of Internet banking involves 24 hours support environment, quality service to end users and other partners which would necessitate a well qualified and robust group of skilled people to meet external and internal commitments. Hence the bank has to spend a lot on training.

(iii) Lack of skilled personnel

It is a well known fact that there is an acute scarcity of web developers, content providers and knowledgeable professionals to route banking transactions through internet.

(iv) Security

A security threat is defined as a circumstance decision or event with potential to cause economic hardship to data or network resources in the form of destruction, disclosure, modification of data, denial of services, fraud, waste and abuse. There are chances that the documents such as cheque, passbook etc., can be modified without leaving any visible trace. Distortions of information are also possible. Providing appropriate security may require a major initial investments in the form of application encryption require a major investments in the form of application encryption techniques, implementation of firewalls etc.

(v) Legal Issues

Legal framework for recognizing the validity of banking transactions conducted through the 'NET' is still being put in place. Though initial legal framework has been
devised for E-banking activities, it is uncertain as to what possible legal issues may pop up in future as banking on Internet progresses.

(vi) Restricted clientele and technical problems

The user of E-Banking needs a computer and time to log on to the site, which means that the target clientele is restricted to those who have a home PC or can access the 'Net' through the office or cyber cafe. Moreover technical constraints due to telephone connectivity, modem connections etc., may cause constraints.

3.3.8 SECURITY MEASURES ON E-BANKING

However, for venturing into E-Banking, the following major controls must be ensured:

# Authenticity controls

To verify identity to individuals like password, PIN etc.,

# Accuracy control

To ensure the correctness of the data, flowing across the network.

# Completeness control

To make sure that no data is missing

# Redundancy controls

To see that data is traveled and processed only once and there is no repetitive sending of data.

# Privacy controls

To protect the data from inadvertent or unauthorized access
# Audit Trail Controls

To ensure keeping chronological role of events that are occurred in the system.

# Existence controls

To make sure that on going availability of all the system resources with the same throughout.

# Efficient

To ensure that the system uses minimum resources, to achieve the desired goal.

# Firewall controls

To prevent unauthorized users accessing the private network, which are connected to Internet.

# Encryption controls

To enable only those who possess secret key to decrypt the cyber text.

3.3.9 PRODUCTS/SERVICES OF E-BANKING

a.) Automated Teller Machine (ATM)

These are cash dispensing machine, which are frequently seen at banks and other locations such as shopping centers and building societies. Their main purpose is to allow customer to draw cash at any time and to provide banking services where it would not have been viable to open another branch e.g. on university campus.

An automated teller machine (ATM) is a computerized telecommunications device that provides a financial institution's customers a method of financial\ transactions in a public space without the need for a human clerk or bank teller. On most modern ATMs, the customer identifies him or herself by inserting a plastic ATM card with a
magnetic stripe or a plastic smartcard with a chip that contains his or her card number and some security information, such as an expiration date or CVC (CVV). Security is provided by the customer entering a personal identification number (PIN).

Using an ATM, customers can access their bank accounts in order to make cash withdrawals (or credit card cash advances) and check their account balances. Many ATMs also allow people to deposit cash or checks, transfer money between their bank accounts, pay bills, or purchase goods and services.

*Some of the advantages of ATM to customers are:*

- Ability to draw cash after normal banking hours
- Quicker than normal cashier service
- Complete security as only the card holder knows the PIN
- Does not just operate as a medium of obtaining cash.
- Customer can sometimes use the services of other bank ATM’s.

**b.) Internet Banking**

The advent of the Internet and the popularity of personal computers presented both an opportunity and a challenge for the banking industry. For years, financial institutions have used powerful computer networks to automate million of daily transactions; today, often the only paper record is the customer’s receipt at the point of sale. Now that their customers are connected to the Internet via personal computers, banks envision similar advantages by adopting those same internal electronic processes to home use. Banks view online banking as a powerful “value added” tool to attract and retain new customers while helping to eliminate costly paper handling and teller
interactions in an increasingly competitive banking environment. In India first one to moveed into this area was ICICI Bank. They started web based banking as early as august 1997.

c.) Tele banking (or) Phone Banking

Telephone banking is relatively new Electronic Banking Product. However, it is fastly becoming one of the most popular products. Customer can perform a number of transactions from the convenience of their own home or office; in fact from anywhere they have access to phone. Customers can do following:-

- Check balances and statement information
- Transfer funds from one account to another
- Pay certain bills
- Order statements or cheque books
- Demand draft request

This facility is available with the help of Voice Response System (VRS). This system basically, accepts only TONE dialed input. Like the ATM customer has to follow particular process, initially account number and telephone PIN are fed for the process to start. Also the VRS system provides the users within additional facilities such as changing existing password with the new desired, information about new products, current interest rates etc.
d.) Mobile Banking

Mobile banking comes in as a part of the banks initiative to offer multiple channels banking providing convenience for its customer. A versatile multifunctional, free service that is accessible and viewable on the monitor of mobile phone. Mobile phones are playing great role in Indian banking- both directly and indirectly. They are being used both as banking and other channels.

3.3.10 TYPES OF E-BANKING

Currently, the following three basic types of e-banking are being employed in the marketplace.

a.) Informational

This is the basic level of Internet banking. Typically, the bank has marketing information about the bank’s products and services on a stand-alone server. The risk is relatively low, as informational systems typically have no path between the server and the bank’s internal network. This level of e-banking can be provided by the banks or outsourced. While the risk to a bank is relatively low, the server or web site may be vulnerable to alteration.

b.) Communicative

This type of e-banking systems and the customer. The interaction between the bank’s system and the customer. The interaction may be limited to electronic mail, account enquiry, loan applications, or static file updates (name and address change). Because these servers may have a path to the bank’s internal networks, the risk is higher with this configuration than with informational systems. Appropriate controls need to be in the place
to prevent, monitor, and alert management of any unauthorized attempt to access the bank’s internal networks and computer systems. Virus controls also become much more critical in this environment.

c.) Transactional

This level of e-banking allows customers to execute transactions. Since a path typically exists between the server and the bank or outsourcer’s internal network, this is the highest risk architecture and must have the strongest controls. Customer transactions can include accessing accounts, paying bills and transferring funds.

3.3.11 FEATURES OF E-BANKING

a.) Transactional

(e.g. performing a financial transaction such as an account to account transfer, paying a bill or applications like applying for a loan, new account, etc.)

- Electronic Bill Presentment and Payment (EBPP)
- Funds transfer between customers own checking and savings accounts, or to another customers account.
- Investment purchase or sale.
- Loan application and transactions such as repayments.

b.) Non-transactional

(e.g. online statements, Check links, Chat, Co-browsing etc.)

Financial Institution Administration- features allowing financial institutions to manage the online experience of their end users. ASP/ Hosting Administration – features allowing the hosting company to administer the solution across financial institution.
Following services are available through internet banking

1.) Bill payment service

Each bank has tie-ups with various utility companies, service providers and insurance companies, across the country. It facilitates the payment of electricity and telephone bills, mobile phone, credit card and insurance premium bills. To pay bills, a simple one-time registration for each biller is to be completed. Standing instructions can be set, online to pay recurring bills, automatically. One-time standing instruction will ensure that bill payments do not get delayed due to lack of time. Most interestingly, the bank does not charge customers for online bill payment.

2.) Fund transfer

Any amount can be transferred from one account to another of the same or any another bank. Customers can send money anywhere in India. Payee’s account number, his bank and the branch is needed to be mentioned after logging in the account. The transfer will take place in a day or so, whereas in a traditional method, it takes about three working days. ICICI Bank says that online bill payment service and fund transfer facility have been their most popular online services.

3.) Credit card customers

Credit card users have a lot in store. With Internet banking, customers can not only pay their credit card bills online but also get a loan on their cards. Not just this, they can also apply for an additional card, request a credit line increase and God forbid if you lose your credit card, you can report lost card online.
4.) Railway pass

This is something that would interest all the aam janta. Indian Railways has tied up with ICICI bank and you can now make your railway pass for local trains online. The pass will be delivered to you at your doorstep. But the facility is limited to Mumbai, Thane, Nasik, Surat and Pune. The bank would just charge Rs 10 + 12.24 percent of service tax.

5.) Investing through Internet banking

Opening a fixed deposit account cannot get easier than this. An FD can be opened online through funds transfer. Online banking can also be a great friend for lazy investors. Now investors with interlinked demat account and bank account can easily trade in the stock market and the amount will be automatically debited from their respective bank accounts and the shares will be credited in their demat account. Moreover, some banks even give the facility to purchase mutual funds directly from the online banking system. So it removes the worry about filling those big forms for mutual funds, they will now be just a few clicks away. Nowadays, most leading banks offer both online banking and demat account.

6.) Recharging prepaid phone

Now there is no need to rush to the vendor to recharge the prepaid phone, every time the talk time runs out. Just top-up the prepaid mobile cards by logging in to Internet banking. By just selecting the operator's name, entering the mobile number and the amount for recharge, the phone is again back in action within few minutes.
7.) **Online Shopping**

Leading banks have tie ups with various shopping websites. With a range of all kinds of products, one can shop online and the payment is also made conveniently through the account. One can also buy railway and air tickets through Internet banking.

3.3.12 **WORKING GROUPS OF E-BANKING**

The Reserve Bank of India constituted a working group of e-banking. The group divided the e-banking products in India into three types based on the levels of access granted. They are:

**a.) Information Only System**

General purpose information like interest rates, branch location, bank products and their features, loan and deposit calculations are provided in the bank's website. There exist facilities for downloading various types of application forms. The communication is normally done through e-mail. There is no interaction between the customer and bank's application system. No identification of the customer is done. In this system, there is no possibility of any unauthorized person getting into production systems of the bank through internet.

**b.) Electronic Information Transfer System**

The system provides customer-specific information in the form of account balances, transaction details, and statement of accounts. The information is still largely of the 'read only' format. Identification and authentication of the customer is through password. The information is fetched from the bank's application system either in batch mode or off-line. The application systems cannot directly access through the internet.
c.) Fully Electronic Transactional System

This system allows bi-directional capabilities. Transactions can be submitted by the customer for online update. This system requires high degree of security and control. In this environment, web server and application systems are linked over secure infrastructure. It comprises technology covering computerization, networking and security, inter-bank payment gateway and legal infrastructure. It includes ATM, debit cards, smart cards, mobile banking etc.

3.3.13 RISKS INVOLVED IN E-BANKING

E-banking creates new risk control challenges for national banks. From a supervisory perspective, risk is the potential that events, expected or unexpected, may have an adverse impact on the bank’s earnings or capital. The OCC has defined nine categories of risk for bank supervision purposes. The risks are credit, interest rate, liquidity, price, foreign exchange, transaction, compliance, strategic, and reputation. These categories are not mutually exclusive and all of these risks are associated with Internet banking.

i.) Credit Risk

Credit risk is the risk to earnings or capital arising from an obligor’s failure to meet the terms of any contract with the bank or otherwise to perform as agreed. Credit risk is found in all activities where success depends on counterparty, issuer, or borrower performance. It arises any time bank funds are extended, committed, invested, or otherwise exposed through actual or implied contractual agreements, whether on or off the banks balance sheet. E-banking provides the opportunity for banks to expand their geographic range. Customers can reach a given institution from literally anywhere in the
world. In dealing with customers over the Internet, absent any personal contact, it is challenging for institutions to verify the bonafides of their customers, which is an important element in making sound credit decisions. Verifying collateral and perfecting security agreements also can be challenging with out-of-area borrowers. Unless properly managed, E-banking could lead to a concentration in out-of-area credits or credits within a single industry. Moreover, the question of which state’s or country’s laws control an Internet relationship is still developing. Effective management of a portfolio of loans obtained through the Internet requires that the board and management understand and control the bank’s lending risk profile and credit culture. They must assure that effective policies, processes, and practices are in place to control the risk associated with such loans.

ii.) Interest Rate Risk

Interest rate risk is the risk to earnings or capital arising from movements in interest rates. From an economic perspective, a bank focuses on the sensitivity of the value of its assets, liabilities and revenues to changes in interest rates. Interest rate risk arises from differences between the timing of rate changes and the timing of cash flows (re-pricing risk); from changing rate relationships among different yield curves affecting bank activities (basis risk); from changing rate relationships across the spectrum of maturities (yield curve risk); and from interest-related options embedded in bank products (options risk). Evaluation of interest rate risk must consider the impact of complex, illiquid hedging strategies or products, and also the potential impact that changes in interest rates will have on fee income. In those situations where trading is separately managed, this refers to structural positions and not trading portfolios. E-
banking can attract deposits, loans, and other relationships from a larger pool of possible customers than other forms of marketing. Greater access to customers who primarily seek the best rate or term reinforces the need for managers to maintain appropriate asset/liability management systems, including the ability to react quickly to changing market conditions.

iii.) Liquidity Risk

Liquidity risk is the risk to earnings or capital arising from a bank’s inability to meet its obligations when they come due, without incurring unacceptable losses. Liquidity risk includes the inability to manage unplanned changes in funding sources. Liquidity risk also arises from the failure to recognize or address changes in market conditions affecting the ability of the bank to liquidate assets quickly and with minimal loss in value. E-banking can increase deposit volatility from customers who maintain accounts solely on the basis of rate or terms. Asset/liability and loan portfolio management systems should be appropriate for products offered through Internet banking. Increased monitoring of liquidity and changes in deposits and loans may be warranted depending on the volume and nature of Internet account activities.

iv.) Price Risk

Price risk is the risk to earnings or capital arising from changes in the value of traded portfolios of financial instruments. This risk arises from market making, dealing, and position taking in interest rate, foreign exchange, equity, and commodities markets. Banks may be exposed to price risk if they create or expand deposit brokering, loan sales, or securitization programs as a result of E-banking activities. Appropriate management
systems should be maintained to monitor, measure, and manage price risk if assets are actively traded.

v.) Foreign Exchange Risk

Foreign exchange risk is present when a loan or portfolio of loans is denominated in a foreign currency or is funded by borrowings in another currency. In some cases, banks will enter into multi-currency credit commitments that permit borrowers to select the currency they prefer to use in each rollover period. Foreign exchange risk can be intensified by political, social, or economic developments. The consequences can be unfavorable if one of the currencies involved becomes subject to stringent exchange controls or is subject to wide exchange-rate fluctuations. Banks may be exposed to foreign exchange risk if they accept deposits from non-U.S. residents or create accounts denominated in currencies other than U.S. dollars. Appropriate systems should be developed if banks engage in these activities.

vi.) Transaction Risk

Transaction risk is the current and prospective risk to earnings and capital arising from fraud, error, and the inability to deliver products or services, maintain a competitive position, and manage information. Transaction risk is evident in each product and service offered and encompasses product development and delivery, transaction processing, systems development, computing systems, complexity of products and services, and the internal control environment. A high level of transaction risk may exist with E-banking products, particularly if those lines of business are not adequately planned, implemented, and monitored. Banks that offer financial products and services through the Internet must
be able to meet their customers’ expectations. Banks must also ensure they have the right product mix and capacity to deliver accurate, timely, and reliable services to develop a high level of confidence in their brand name. Customers who do business over the internet are likely to have little tolerance for errors or omissions from financial institutions that do not have sophisticated internal controls to manage their E-banking business. Likewise, customers will expect continuous availability of the product and Web pages that are easy to navigate.

Software to support various E-banking functions is provided to the customer from a variety of sources. Banks may support customers using customer-acquired or bank-supplied browsers or personal financial manager (PFM) software. Good communications between banks and their customers will help manage expectations on the compatibility of various PFM software products. Attacks or intrusion attempts on banks’ computer and network systems are a major concern. Studies show that systems are more vulnerable to internal attacks than external, because internal system users have knowledge of the system and access. Banks should have sound preventive and detective controls to protect their E-banking systems from exploitation both internally and externally. Contingency and business resumption planning is necessary for banks to be sure that they can deliver products and services in the event of adverse circumstances. E-banking products connected to a robust network may actually make this easier because back up capabilities can be spread over a wide geographic area. For example, if the main server is inoperable, the network could automatically reroute traffic to a back up server in a different geographical location.
Security issues should be considered when the institution develops its contingency and business resumption plans. In such situations, security and internal controls at the back-up location should be available. Availability will be a key expectation of customers and will likely differentiate success levels among financial institutions on the Internet. National banks that offer bill presentment and payment will need a process to settle transactions between the bank, its customers, and external parties. In addition to transaction risk, settlement failures could adversely affect reputation, liquidity, and credit risk.

vii.) Compliance Risk

Compliance risk is the risk to earnings or capital arising from violations of or non-conformance with, laws, rules, regulations, prescribed practices, or ethical standards. Compliance risk also arises in situations where the laws or rules governing certain bank products or activities of the bank’s clients may be ambiguous or untested. Compliance risk exposes the institution to fines, civil money penalties, payment of damages, and the voiding of contracts. It can lead to a diminished reputation, reduced franchise value, limited business opportunities, reduced expansion potential, and lack of contract enforceability.

Most E-banking customers will continue to use other bank delivery channels. Accordingly, national banks will need to make certain that their disclosures on E-banking channels, including Web sites, remain synchronized with other delivery channels to ensure the delivery of a consistent and accurate message to customers. Federal consumer protection laws and regulations, including CRA and Fair Lending, are applicable to electronic financial services operations including Internet banking. Moreover, it is
important for national banks to be familiar with the regulations that permit electronic delivery of disclosures/notices versus those that require traditional hard copy notification. National banks should carefully review and monitor all requirements applicable to electronic products and services and ensure they comply with evolving statutory and regulatory requirements. Advertising and record-keeping requirements also apply to banks’ Web sites and to the products and services offered. Advertisements should clearly and conspicuously display the FDIC insurance notice, where applicable, so customers can readily determine whether a product or service is insured.

Regular monitoring of bank Web sites will help ensure compliance with applicable laws, rules, and regulations. Application of Bank Secrecy Act (BSA) requirements to cyber banking products and services is critical. The anonymity of banking over the Internet poses a challenge in adhering to BSA standards. Banks planning to allow the establishment of new accounts over the Internet should have rigorous account opening standards. Also, the bank should set up a control system to identify unusual or suspicious activities and, when appropriate, file suspicious activity reports (SAR’s). The BSA funds transfer rules also apply to funds transfers or transmittals performed over the Internet when transactions exceed and do not meet one of the exceptions. The rules require banks to ensure that customers provide all the required information before accepting transfer instructions. The record keeping requirements imposed by the rules allow banks to retain written or electronic records of the information.
The Office of Foreign Asset Control (OFAC) administers laws that impose economic sanctions against foreign nations and individuals. This includes blocking accounts and other assets and prohibiting financial transactions. E-banking businesses must comply with OFAC requirements. A bank needs to collect enough information to identify customers and determine whether a particular transaction is prohibited under OFAC rules.

**viii.) Strategic Risk**

Strategic risk is the current and prospective impact on earnings or capital arising from adverse business decisions, improper implementation of decisions, or lack of responsiveness to industry changes. This risk is a function of the compatibility of an organization’s strategic goals, the business strategies developed to achieve those goals, the resources deployed against these goals, and the quality of implementation. The resources needed to carry out business strategies are both tangible and intangible. They include communication channels, operating systems, delivery networks, and managerial capacities and capabilities. The organization’s internal characteristics must be evaluated against the impact of economic, technological, competitive, regulatory, and other environmental changes. Management must understand the risks associated with E-banking before they make a decision to develop a particular class of business. In some cases, banks may offer new products and services via the Internet. It is important that management understand the risks and ramifications of these decisions. Sufficient levels of technology and MIS are necessary to support such a business venture. Because many banks will compete with financial institutions beyond their existing trade area, those engaging in E-banking must
have a strong link between the technology employed and the bank’s strategic planning process.

Before introducing a E-banking product, management should consider whether the product and technology are consistent with tangible business objectives in the bank’s strategic plan. The bank also should consider whether adequate expertise and resources are available to identify, monitor, and control risk in the E-banking business. The planning and decision making process should focus on how a specific business need is met by the E-banking product, rather than focusing on the product as an independent objective. The bank’s technology experts, along with its marketing and operational executives, should contribute to the decision making and planning process. They should ensure that the plan is consistent with the overall business objectives of the bank and is within the bank’s risk tolerance. New technologies, especially the Internet, could bring about rapid changes in competitive forces. Accordingly, the strategic vision should determine the way the E-banking product line is designed, implemented, and monitored.

ix.) Reputation Risk

Reputation risk is the current and prospective impact on earnings and capital arising from negative public opinion. This affects the institution’s ability to establish new relationships or services or continue servicing existing relationships. This risk may expose the institution to litigation, financial loss, or a decline in its customer base.

Reputation risk exposure is present throughout the organization and includes the responsibility to exercise an abundance of caution in dealing with customers and the community. A bank’s reputation can suffer if it fails to deliver on marketing claims or to
provide accurate, timely services. This can include failing to adequately meet customer credit needs, providing unreliable or inefficient delivery systems, untimely responses to customer inquiries, or violations of customer privacy expectations. A bank’s reputation can be damaged by E-banking services that are poorly executed or otherwise alienate customers and the public. Well designed marketing, including disclosures, is one way to educate potential customers and help limit reputation risk. Customers must understand what they can reasonably expect from a product or service and what special risks and benefits they incur when using the system. A national bank should not market the bank’s E-banking system based on features or attributes the system does not have. The marketing program must present the product fairly and accurately.

National banks should carefully consider how connections to third parties are presented on their Web sites. Hypertext links are often used to enable a customer to link to a third party. Such links may reflect an endorsement of the third party’s products or services in the eyes of the customer. It should be clear to the customer when they have left the bank’s Web site so that there is no confusion about the provider of the specific products and services offered or the security and privacy standards that apply. Similarly, adequate disclosures must be made so that customers can distinguish between insured and noninsured products. National banks need to be sure that their business continuity plans include the E-banking business. Regular testing of the business continuity plan, including communications strategies with the press and public, will help the bank ensure it can respond effectively and promptly to any adverse customer or media reactions.
3.3.14 FACTORS INFLUENCING THE DIFFUSION OF E-BANKING

**Innovation factors**
- Relative advantages (the degree to which online banking is perceived as being better than traditional banking; such as convenience, economic benefits, and quick service)
- Compatibility (be consistent with existing values, past experiences and potential needs of adopters)
- Complexity (the degree to which online banking is perceived as difficult to understand and use)
- Trialbility (the degree to which online banking may be experimented with on a limited basis)
- Observability (the degree to which the results of online banking are visible to others)
- Risk (security concern, trust, and etc.)

**Adopter factors**
- Demographic variables (household income, age, education, and etc.)
- Personality variables (empathy, rationality, aspiration, and risk tolerance, and etc.)
- Innovativeness need (self-actualization need for adoption such as for work or pleasure)
- Self-efficacy (beliefs about one’s ability to adopt and use online banking service)
- Communication behavior (social participation, cosmopolitaness, mass media usage, interpersonal communication channels, and etc.)
System factors
- Organizational innovativeness (attitude toward change, centralization, formalization, interconnectedness, organizational slack, size, system openness, and etc.)
- Industry trends (the widespread adoption of Internet, information infrastructure, and etc.)
- Market competition (adopting online banking to gain competitive advantage or competitive necessity)
- Government policy/regulations (governmental support or regulation)

Social factors
- Opinion leadership (individuals who lead in influencing others’ opinion about online banking)
- Change agents (individuals who influence clients’ online banking adoption decision in a direction deemed desirable by a change agency)
- Social norms (the established behavior patterns for the members of a social system)
- Advertising (advertisement publicized in mass media)
- Critical mass (the point at which enough individuals have adopted the online banking so that its further rate of adoption becomes self-sustaining)
3.4 E-BANKING WORLD WIDE

Internet banking has experienced strong and sustained growth. World Bank report on leapfrogging in e-finance pointed out that the three countries with impressive progress in information technology in this sense are Estonia, Republic of Korea and Brazil. Creation of the world’s leading electronic banking systems has been done at a remarkably low cost compared to other world-class internet banks.

In the European Union, 60 million people, representing 18 per cent of the adult population, use online banking. In France, the number of online banking accounts is recording an annual growth rate of 75 per cent. However, Estonia is a country that has become a leader in Internet banking (which now reaches 18 per cent of the population), not only among Eastern European countries but in world rankings, through a combination of easy-to-use software, free-of-charge transactions and behavior changes resulting from the influence of the Nordic countries’ IT culture on Estonia.

A sector in which Latin America is seems to be performing better than in other industries is online retail banking. Growth in this area has been driven by traditional banks, which have used the online channel to generate customer loyalty and improve their operating margins. Two Brazilian banks, Bradesco and Banco do Brasil; have thus achieved more than 4 million online customers each. Mexico is another leader of Internet banking in Latin America. It adopted legislation providing for the development of both E-Commerce and e-finance.
In Mexico, the number of online bank users more than tripled from 700,000 in 2000 to 2.4 million in 2001, and it could reach 4.5 million in 2005 (E-Marketer 2002b). One reason for the success of Latin American banks’ online ventures seems to be the attention they have paid to providing retail customers with multiple ways to access their accounts (Internet, telephone, wireless). However, given that the share of the total population that actually has a bank account is relatively small, the expansion of Latin American online banking may be facing a bottleneck.

Compared with overall Internet usage estimated at 4.4 million in Australia, the major banks together have attracted only 1.2 million to online banking. The Internet is a global phenomenon and so is e-finance. Its deployment is not limited to developed countries, and indeed some developing countries – such as India and the Republic of Korea – are experiencing particularly strong growth in e-Banking. In Asia one of the most impressive records has been achieved by the Republic of Korea.

The Republic of Korea is leading in online brokerage and in mobile banking. In South-East Asia e-banking is also developing rapidly in Thailand, Malaysia, and Singapore and to a lesser extent, in the Philippines.

In Bangladesh there is a large gap between the computerization of foreign banks and that of local commercial banks and as regards the state of their intra- and inter-branch online networks. However, 75 per cent of local banks are planning to introduce e-banking, which implies very dynamic improvements.
Apart from North and South Africa the Sub Saharan Africa is the region that is seriously lagging behind in Internet banking, although it is giving to the rest of the world the good example of microfinance developments.

3.5 BANKS FUTURE VISION

In the developing countries like India, Banks should have a long foresighted vision on developments of banking operations. It has to observe what is happening in the developed countries and what is going to happen in India in near future with the following four trends:

1. FINANCIAL LIBERALISATION
2. DISINTERNMEDIATION
3. GLOBALISATION
4. TECHNOLOGICAL INNOVATION

Financial liberalization leads to the rise of non banks like finance companies, mutual funds, investment banks, insurance companies and even non-financial firms as purveyors of liquidity and risk management services.

Disintermediation erodes banks' share and role because banks evolved within a culture of very cautious credit risk-taking. This culture has been encouraged or even demanded by regulators for which banks have erected expensive credit, audit and risk management departments. The rise of secondary markets for bank loans not only helps satisfy the liquidity needs of non-traditional investors but also conscripts banks' role.
Globalization is a result of liberalization and disintermediation. It encourages consolidation and concentration within the industry. Mergers and acquisitions will be anointed on the industry and a large number of small banks disappear into a small number of large banks. Technological innovation has rendered "information" as a serious input in the financial services industry. Home banking, banking by e-mail, the rise of electronic money, the increased use of electronic highway, etc., though remain unmatched by non bank competition, and have to become banks' forte for survival.

In the late 1990s, the plastic cards market in India, comprising credit cards, smart cards, debit cards, charge cards, stored value cards and others picked up momentum like never before, growing at an annual rate of 25%. Though initially, there were only two players, (HDFC and Citibank), the debit card market base grew considerably through 1999 and reached the 3 million mark in March 2000). The usage figures indicated a very healthy growth of the market in future, as seven out of 10 cardholders were reportedly using their card regularly. The annual spending through debit cards in India reached over Rs.5 billion. The growth of debit cards was all the more impressive considering the fact that credit cards, introduced in the country in the early 1980s, had managed to reach the 100 million-user base level only in 2000. Thus, the debit card user base had reached one-third of the credit card user base in just around one-tenth of the time.

The global card market is dominated by two US-based players, Visa and Master Card. Visa introduced its first credit card, Bank of America card in 1958, which went on to become a great success, acquiring universal merchant acceptance. Visa's card base increased significantly through the decades and reached the one billion mark in 2000.
MasterCard International was established in the 1970s. The first MasterCard was issued in 1988, in Soviet Union. By 2000, MasterCard was issued in 1988, in Soviet Union. By 2000, Master Card had over 30 offices around the world in various countries like India, Thailand, Chile, US, China, Europe, South Korea, Taiwan and others.

In the 1990s, having covered a majority of US and European markets, Master Card and Visa shifted their focus to the East, especially the Asia Pacific region. By 2000, MasterCard and Visa had established their debit cards as well in the Asia Pacific region. In 2000, Visa debit cards reached the 48 million mark in the Asia Pacific region, while the MasterCard debit card base touched the 37 million mark. MasterCard's credit card base touched 80 million during the period. Credit cards are electronic cards that enable the holders to pay for their purchases without physically carrying cash. The issuer of the cards gives a short-term loan to the cardholders, enabling them to make purchases and pay for them later, by giving them an interest free credit period of 30 to 50 days. Credit cards bear many numbers that stand for different features. Usually, the first digit in the credit card number denotes the card system it uses, for example, the digit 3 stands for travel / entertainment cards, 4 for Visa cards and 5 for Master Card. The structure of the card number differs with the card system. For example Diners Club card numbers start with 38 and American Express card numbers with 37. For American Express, digits three and four signify card type and currency, five to eleven, the account number, twelve to fourteen, the card number in the account and fifteen, the check digit. Similarly for Visa, digits two to six denote the bank code, seven to twelve, the account number and thirteen to sixteen, a check digit.
The reverse side of the credit card carries the magnetic stripe, also known as a magnetic stripe. The magnetic stripe is built from minute iron-based magnetic particles embedded in a plastic like film. Each particle is a bar magnet, about 20 millionths of an inch in size. The tiny bar magnets can be magnetized in both the north and south directions, which enables writing of the stripe. The stripe contains three tracks, each track one-tenth of an inch wide. The ISO / IEC standard 7811 is the typical magnetic stripe technology used by the banks. Generally, credit cards only use tracks one and two. The third track is a read / write track that includes the encrypted Personal Identification Number (PIN), currency units, country code and the amount authorized.

*A typical transaction involving a credit card takes place in the following manner*

- When a purchase is paid for by a credit card, the merchant sends details of the transaction to the merchant acquirer.
- The acquirer controls all card transactions of the merchant, regardless of which organization issued the card.
- The acquirer credits the merchant's account with the amount of the purchase or transaction along with a nominal service fee.
- Details of the transaction are transferred to the organization that issued the card, at times through the card scheme networks.

Authentication is a key step in the processing of a credit card transaction. The process of authentication includes verifying the identity of the holder, ascertaining whether the cardholder is within the stipulated credit limit and checking other related information.
The process includes the following steps:

- When the credit card is swiped through the card reader, the Electronic Data Capture (EDC) software on the point-of-sale (POS) terminal dials a stored telephone number through a modem to call the acquirer. On obtaining the credit-card authentication request, the acquirer company checks the transaction, with help of the data on the magnetic stripe, for the merchant identification, valid card number, credit-card limit, balance on the card and its expiration date. Single dial-up (telephone) transactions are processed at a speed of 1,200 to 2,400 bps and the direct Internet attachment uses even higher speeds.

- For authentication the cardholder is required to enter his / her personal identification number (PIN) using the keypad. The PIN is present in an encrypted form either in the bank's database or on the card itself. The conversion system used in this type of cryptography is known as one-way, which means, it is easy to decrypt the PIN when the bank code and the cardholders PIN are given, but technically impossible to decrypt it when only the bank code is given. The one-way technology ensures the safety of the bank's computer files. The communication between the bank's central computer and the ATM is also encrypted.

- Once the transaction is authenticated, the Electronic Funds Transfer at the Point of Sale machine records the authentication on the sales voucher.
DEBIT CARDS

Debit Cards, also called 'check cards', appear similar to an ATM or a credit card. Though debit card serves the same purpose as a credit card, unlike a credit card, it does not offer any credit facility, but entails a debit to the holder's bank account every time it is used.

In other words, the debit card works like a cheque book, giving the holder access to his bank account at all hours. It makes sure the holder spends only the balance available in his account and also keeps track of his purchases.

There are two types of Debit cards - Direct debit cards (on-line debit cards) and Deferred debit cards (off-line debit cards). In the case of direct debit cards, the money is electronically transferred from the cardholder's account to the merchant's account, on entry to the holder's PIN in the store's terminal.

In the case of deferred debit cards, the transaction gets recorded in the merchant's terminal and is executed in two-three days following the actual transaction. Currently, only direct debit cards are in use in India.

The debit card design is similar to that of any credit card or an ATM card and follows the same process of authentication.
A typical debit card transaction includes the following steps:

- When the card is presented for payment at the payment counter, it is swiped through the reader.
- The card gets connected to the cardholder's bank account and the holder is required to enter his ATM PIN to forward the transaction.
- The bank debits the cardholder's account with the value of the goods or services purchased, fee, charges cash and other payments made by the cardholder through the card.
- The transactions appear in the account statement of the accounts related to the card.

Citibank and HSBC were the pioneers in the Indian credit card market in the 1980s. Over the next two decades, the number of players increased to more than ten in 2000. The credit card market registered a healthy annual growth rate of over 25% during 1987 - 2001. Besides Citibank and HSBC, the other leading players in the market were SBI, ICICI, Bank of India and Standard Chartered Bank. A wide variety of cards were introduced in the market during this period ranging from gold, silver and smart to global, affinity to secure cards.

The credit card issuers principally targeted the uppers and middle classes. However, while the middle class population was around 300 million in 2001, the total credit card users amounted to only over 10 million. Identifying the vast potential for growth in the middle class segment, many players entered the fray. This intensified the
competition, and forced the players to enhance their product and service offerings (through co-branded cards), enhance their card technologies, expand their reach through increased number of card operating outlets and extend the card facilities to smaller cities, apart from the metros and tourist centers.

**Measures for Plastic Card Protection**

- The card should be signed as soon as it is received.
- The PIN should be entered in such a way that no one will be able to easily memorize the number typed.
- The receipt should not be left behind at the ATM.
- The PIN and account number from a discarded receipt could make the cardholder susceptible to credit-card fraud. The credit-card statement, receipts or carbons should not be thrown without first being shredded.
- Giving the card number over the telephone has to be avoided, unless the call has been initiated by the cardholder. Giving the card number over a cordless phone, even when the call is initiated by the cardholder is not recommended.
- Credit card offers that require the holders to spend money up-front or which fail to disclose the identity of the card issuer should be ignored.
- The card should be taken back after the transaction is completed. The cardholder should take care of cancelled sales slips by personally tearing them.
- A record of all credit cards, credit-card numbers and toll-free numbers has to be maintained.
Monthly statements should be thoroughly checked, to make certain the holder himself made all the transactions. He should immediately inform the card issuer in case of errors of unauthorized charges.

Aversion to debt: The average Indian consumer was found to be averse to the concept of utilizing debt to meet his needs. As the credit card business offered short-term loans, Indian customers were slow to respond to the concept.

High Interest Rates: The short-term credit offered to the holders was to be repaid within a stipulated time-period, failing which the cardholder had to pay a high interest over the amount not repaid. Carry forward of payments past the scheduled limit at times resulted in a debt trap for the cardholder. The interest reached 36% - 40% per annum in some cases.

Limited number of card operating outlets and their location: Until the late 1990s, the credit card market in India was largely confined to the metros and other major cities. The number of outlets offering the service was also limited.

SMART CARDS

Smart cards were first introduced in France in 1984. A Smart card is a credit card sized plastic card containing an integrated circuit chip, with memory capacity and high computing ability. In a smart card permanent data is stored in non-volatile memory and to an extent into volatile memory. Smart card's self-containment enables it to work independent of other external resources, thus offering high security protection and authentication. The smart card serves many purposes - it can serve as an identity card for a cardholder, a medical card that contains the medical history of the holder and as a credit card / debit card, facilitating off-line transactions. In future single card, with the help of a
multi-functional smart card, is expected to replace the conventional magnetic strip card. The single card is referred to as an electronic purse or a wallet.

The smart card principally contains a plastic card that has an integrated circuit and a printed circuit. The principal ability of the smart card lies in its circuit chip (made of silicon), which includes a microprocessor, non static random access memory (RAM) and read only memory (ROM) and electrically erasable programmable read only memory (EEPROM). The EEPROM works even in the absence of power. The smart card is programmed to ask for user authentication before it provides access to the data.

The working of the smart card involves many aspects of encryption, along with the authentication process similar to the credit cards. The microprocessor embedded in the card and the encryption technology help in the functioning of the card.

*The transaction in which a smart card is used involves the following steps:*

- The cardholder has to establish his identity every time a transaction is made.
- For identity verification, the card and the card reader exchange a sequence of encrypted signs / countersigns to confirm the identity.
- After the identity has been verified, the transaction is executed in encrypted form to prevent discrepancies or fraud. Major advantages provided by the smart card technology as compared to magnetic-stripe technology include:
  - Enhanced security that makes it impossible to tamper with the data on the card, and the capability of the card to verify the authenticity of the cardholders.
  - Higher storage capacity than cards using traditional magnetic - stripe technology.
  - Ability to the card to divide storage area and apply separate security to each area.
**Smart Cards – Future plastic money**

While companies were putting in place various measures to address security issues, the debit card market was having a smooth run in India. After being introduced in the mid 1990s, debit cards acquired popularity and user acceptance at a rapid pace. A major reason for the quick popularity gained by debit cards was the absence of the credit component that resulted in elimination of interest charges or monthly card bills.

By 2001, many banks had replaced their standard ATM cards with new ones that also included the debit card features. However, industry analysts believed that the Indian plastic money market would pick up real momentum once smart cards became popular and widely available. The memory and processing capacity of a smart card is around 10-times greater than that of conventional magnetic-stripe cards. A smart card is capable of performing various applications that eliminates the need to carry different cards for different purposes. Though growth in the market for smart cards was very slow, most analysts agreed that with their advanced technologies and the corresponding benefits, it would not be long before smart cards established themselves in India.

In late 2001, most of the companies had announced plans to convert their credit / debit cards to smart cards by replacing the magnetic stripes in them with computer chips and incorporating latest encryption technologies. The new financial landscape has presented customers with greater opportunities and bargaining power - redefining how banks and non-banks approach the marketplace and each other.
Today, customers obtain customized solutions, choose modes of access and define the way they want to conduct business - often getting banks and non-banks to collaborate and form new value networks to service them. More recently, they have attempted to use capital account liberalization to explore new possibilities - be it deposits, investments in capital and money markets, or capital transfer in local and global markets. At the turn of the century, there were over a hundred scheduled commercial banks, several hundred more cooperative banks, Non-Banking Financial Companies (NBFCs), and other financial institutions in India. Most of these organizations were seen to be offering vanilla banking services with minimal differentiation. A few years ago, the banking industry could be classified into specific categories like public sector, private sector, foreign banks, etc. Barely half a decade later the scenario could not be more different. Far from the earlier days, where too many banks attempted to operate in both markets, only a few large players have been able to sustain servicing a broad range of customers, providing the entire range of service across both wholesale and retail markets.

Other players have limited their activities to one-market alone or focused on specific opportunities across both markets, due to a combination of market and regulatory pressures. Marginal players have been forced to reduce their range of activities, sell branches and assets, and in some cases, transform themselves to become service providers to banks. As a result, the banking industry today can easily be divided among a few large full-service banks, which are competing for market dominance, and the rest, which include some niche players specializing in product categories and customer segments, and a group of survivors who manage customer access and/or service other financial intermediaries.
**Financial Sector Reform**

The central regulator took a series of steps over the last few years, including adopting international accounting standards, strengthening the financial system and improving supervision and governance. In a bid to promote India as a regional financial centre, 'special licenses' or 'restricted licenses' were permitted. These licenses attempted to move away from the one-size-fits-all banking license towards offering licenses to carry out specific activities such as investment banking, debt restructuring, offshore banking and credit card issuance. This enabled banks and non-banks to build a portfolio of activities around their competence and choice rather than attempt broad market participation, as was the case before.

**Raising the Sustenance Barrier**

Strong prudential and supervisory norms along with new Basel Committee guidelines required many Indian Banks to bring in additional capital, and conform to rising regulatory standards. Through a series of market driven actions and regulator interventions, the banks had to merge, reduce scope and scale of operations or transform themselves to adopt new roles.

**Government Divestment**

The government's decision to divest its stake in most public sector banks (PSBS), either through the capital markets or through strategic sales, forced most public sector banks to develop a business case for their existence. Some PSBs had foreseen the impending changes and had taken initiatives to build upon their core strengths of reach and a large customer base. They invested in technology and changed the way they were
doing business to emerge stronger and more efficient. A few PSBs that had not reacted quickly to these changes, found business unsustainable and had to divest operations i.e., branches and portfolios selectively, or in some cases, merged their operations with stronger banks.

**Globalization**

Implementation of the WTO accord and the subsequent liberalization of rules for foreign banks have had a significant impact on the banking sector. Although not too many new banks entered the market, the existing foreign banks grew bigger by purchasing market share wherever they perceived value. The new banks were mostly specialists, which focused on particular segments using special licenses as their entry vehicles. Some foreign banks exited India as part of their global rationalization and decision to concentrate on their core competence or local markets.

**Co-operative Ban Reform**

A series of scams and the subsequent erosion of public confidence, a few years ago, affected the co-operative banking sector. Relief came when the government enacted the 'Demutualization of Cooperatives Act'. Financial incentives were given to banks that converted their ownership structure into a limited company structure. The new financial landscape has been a key impetus for banks to start looking at new business models to survive. Over the last few years, the increasing need to enhance fee-based income, improve quality of service and reduce cost of operations has forced most banks to rethink their business models.
Some banks have adopted the model of being specialist service providers to other banks in India and abroad. The range of these services is seen to include regular transaction processing, trade finance, credit documentation, etc. In addition to the above, a few non-banks have also entered the domain of providing wither services like provision of infrastructure e.g., shared ATM networks POS terminals, cheque processing centres and print shops.

It could be similar to the one presented above, which requires banks to be proactive and adopt a range of measures to shape their future:

- Anticipate and prepare for regulatory change
- Focus on identifying core competence and migrate to a business model of choice.
- Build an optimal operating model by understanding which activities to retain collaborate and outsource.
- Go beyond compliance to use risk management as a critical decision support tool.
- Create and sustain customer, investor and regulator confidence by adopting international accounting standards and improving corporate governance.
- The no of internet users and the developing technology paved the super highway to internet banking.
- The comfort and the security play a vital role in switching from the traditional banking system to modern 24/7 net banking.
- Increasing usage of mobile phones is going to revolutionize the banking culture in near future.