Chapter:- 3

Innovative Banking
In developing economy, the role of bank is more challenging than in a developed economy. As India is a developing country, the bank plays a crucial role in economy. The primary work of banks is to mobilize the savings of the people and direct them into productive channels. In a developing country, where people have regular habit of depositing their saving into the bank, the task of changing people behavior to create banking habit and mobilize country’s resources is very difficult. Banks need to upgrade their customer’s services with competitive environment; they found technology as an ideal tool to achieve this objective. Innovative banking is considered the best tool in this regard.

Therefore in this chapter, the researcher has studied concept of innovative banking, history of innovative banking, world scenario of innovative banking, RBI guidelines related to e-banking channel, various committee suggestions for e-banking, types of internet banking, types bank computerization, function of innovative banking, various types of intra and interbank application, advantage of innovative banking, limitation of innovative e-banking, Basel committee electronic banking group, technology model for driven internet banking and types of internet banking risk.
Chapter-3
Innovative banking

3.1 Introduction of Innovative banking

“Once a new technology rolls over you, if you are not part of the steamroller, you are part of the road”

- Stewart brand

Due to the burgeoning development of electronic commerce (e-commerce), the broader applications of emerging services have been expanded. Internet banking services have been introduced and provided by financial holding companies or banks at an accelerating rate in recent year since; they can provide efficient, reliable securable and convenient financial services, such as on-line payment, deposit/loan, trading and clearing/settlement via electronic channels for customers. Innovative banking not only can create new competitive advantages, perhaps but also can improve their relationship with customers for banks.

Obviously, Innovative banking can offer better services required by operations and individual. It could be a strategic matter for a bank how their customers conceivably by implementing of innovative banking successfully, it becoming a critical management issue.

Research plays attention on what factors affected to innovative banking particularly form of customers perspective satisfaction with banking, it is recognized that banks gaining higher.

Customer’s satisfaction will have a conspicuous marketing ascendancy because the higher customer’s satisfaction is associated with greater revenues, increased cross sell ration, higher customer retention and bigger market share.
3.2 **E-commerce classification**

E-Commerce classified in following manner.

**Diagram: 3.1**

**E-commerce classification**

```
\[\text{Diagram: 3.1}
\]
```

a). **E-Commerce**

Electronic commerce, commonly known as e-commerce, consists of the buying and selling of products or services over the electronic systems such as the Internet and other computer networks. E-commerce means conducting business through electronic network. E-commerce is divided into two parts—one is an E-finance and second one is E-money.
b). E-Finance

E-Finance is a financial transaction that depends on the internet or a similar network to which households or non-financial enterprises have access to bank. E-finance is providing financial services through electronic channels.

c). E-Money

E-money means store value or prepaid payment mechanisms. Electronic money also known as e-currency, e-money, electronic currency, digital money, digital cash, and cyber currency refers to money or scrip which is only exchanged electronically.

d). Innovative banking (E-banking)

E-banking means providing banking products and services through electronic delivery channels.

e). Other financial services.

Other financial services include insurance, on-line brokering etc. are also parts of e-commerce.

The difference between e-money and e-banking is that e-money balances are kept in financial accounts with banks through banking services.

3.3 Concept of Innovative banking

Innovative banking means the broader application of new methods and techniques, new scheme in the field of deposit mobilization, deployment of credit and bank management, for the example bank have introduced various types of schemes like retirement scheme, Akshaynidhi scheme, pension plan, money lending scheme such as education loans, car finance, home loans, household goods finance etc. Besides these, many banks have started Sunday branches, anytime anywhere banking
and mobile banking, CBS bank branch facilities, internet banking for the benefit of the customers.

In order to meet the challenges of the emerging competitive environment, the bank re-oriented their strategist to bring innovation in their product and services.

Computerization in banks solved many problems in banking sector and accelerator of the banking activities, so ‘computerization of banks’ has been termed as Innovative Banking. Computerization and technological upgradation in the field of communication enhanced banking activities. With this, banks could innovate various services to satisfy their customers.

One of the important innovations is ‘Cyber Banking’ which is a mixed structure of E-commerce and E-Banking. E-Banking means provide banking facilities over through internet.

➢ **Pre-innovative Banking:-**

The period after 1964 clearly described as the phase of ‘Innovative banking’. It is the Period (1964-67) where there was an increasing concern about the problem of concentration of economic power in few hands. Several official reports investigated into these problems such as:-

1. The Mahalnobis Committee (1964), the Committee on Distribution of Income and Levels of Living.
These committees formed significant reports in the basis of changes in Indian Banking. These committees provided a strong platform for the revolutionary changes in the structure, operation, policies, practices and services of banking in India\(^3\).

The main features of pre-innovative banking phase are:

1. Social control.
2. Follow-up of social control.
3. Nationalization.
4. Bank credit to priority sectors.

### 3.4 **Techniques of innovative banking**

The bank nationalization in 1969, it is a story of numerous diversifications and innovations introduced in the Indian banks with a view to improve their performance in accordance with the changing needs of the economy.

Important innovations in banking which have been introduced recently are as follows:-

1. **Social banking**:
   
   Now a day, the commercial banks of India have adopted a new policy orientation to meet the socio-economic responsibility of the country. The important aspects of social orientation are:-
   
   - Open bank branches in the rural area.
   - Gradual decline in the security and guarantee oriented approach.
   - Provide bank credit to the small scale industries.
   - Commercial banks formulate area wise plans and schemes.
   - SBI has undertaken a village adoption scheme under financial development of the villages.
- Increased flow of bank credit extended to smaller and poorer borrowers.

2. **Consortium Approach**

Consortium approach introduced by RBI in 1974. According to this approach, more than one bank would finance a single borrower requiring larger credit limits.

3. **Credit card facility**

Commercial banks introduced the credit card facility in the early 1980s. A credit card is a convenient medium for purchase of goods and consumes services from member establishment without using money directly by hand.

4. **Participatory approach**

The RBI introduced participation Certificate (PCs) in April 1970, with the objectives of greater mobilisation of funds. The participatory certificate scheme has been replaced by (IBPs).

5. **Diversification**

The commercial banks in India have diversified into many related areas, such as Merchant banking, Mutual funds, Venture capital and Equipment leasing, housing finance.

6. **New Technology**

The commercial banks are introducing computerization and many new techniques in their operating with the objective of improving the customer service.

The facets of new technology consist of:-

1. Internet banking
2. Shared payment network system (SPNS)
3. Electronic funds transfer system (EFTS)
4. Electronic clearing system (ECS)
5. Electronic cash
6. E-credit
   i. Smart cards
   ii. Memory cards
   iii. Shared key cards
   iv. Signature creating cards
   v. Signature carrying cards

7. Consolidation phase

The Indian banks have entered the phase of consolidation, sophistication and greater productivity. Consolidations with moderate and selective expansions are the keywords in banking operations. A part from social functions the bank would now pay greater attention to their customer:

1. Improvement in financial Strength.
2. Selective computerization.
3. Better consumer services.
5. Maintain Profit Adequacy.
6. Healthy organizational structure.

8. Merchant Banking

Merchant banking was formally started, when Grindlays bank received the license from Reserve Bank of India in 1967. At the end of 1991, eight commercial banks have started merchant banking facilities. Merchant banking activities are regulated by SEBI (Securities and exchange board of India), companies Act, securities contracts Act and listing guidelines of stock exchange.

➢ Services rendered by Merchant banks:

1. Provide finance for investment in projects.
2. Financing local authorities
3. Assistance in financial management.
4. Issue of foreign currency bonds.
5. Acceptance house business.
6. Equipment leasing
7. Mergers and takeovers.
8. Valuation of assets.

9. Mutual funds

Mutual funds are either open-ended or closed-ended financial intermediaries which obtain the resources by selling units or shares. UTI has a monopoly of mutual fund business in India. In the banking sector, mutual funds have been set up mainly by the merchant banking subsidiaries of some public sector banks.

10. Hire purchase credit

Hire purchase means purchase of goods on the basis of installments. Hire purchase or installment credit refers to term loans provided for the purchase of consumer goods.

11. Factoring service

The first factoring service in India has been started by the SEBI, namely the SEBI commercial and factoring service limited. In India, the SBI and Canara bank are the only two banks which have set up separate subsidiaries for undertaking factoring services.

Factor is a financial institution which manages the collection of accounts receivable of business firms and bears the credit risk associated with those account. Factoring service implies the advance payment of credit by the bank to the customer. It is to be collected later on from the debtor. The bank charges commission for this service.
12. Offshore Banking

Many banks now have an international dimension in the form of Offshore or overseas banking. The operation offshore banking is truly international business in which bank and management groups in many countries participate.

13. Venture capital

Venture capital fund (VCF) is a new type of financial intermediary which has emerged in India in late 1980’s. Venture capital funds (VCFs) are mutual funds or institutional investors which provide risk capital, management and marketing expertise to highly risky and new private business, particularly in technology oriented or knowledge intensive industries.

**Venture Capital Funds in India:**

- Risk Capital Foundation was sponsored by IFCI in March 1975 later reconstituted as Risk Capital and technology Finance Corporation (RCTFC) Limited in January 1988.
- Venture Fund of IDBI, started in 1986.
- Technology Development and Infrastructure Corporation of India (TDICI) by ICICI in 1988.
- Credit Capital Venture Fund (India) Limited (CCVP) and Venture Capital Funds set up by IDBI and UTI

14. Banking Ombudsmen Scheme

Banking Ombudsmen scheme was announced in June 1995 to provide quick and inexpensive facility to resolve customers’ grievances.

The complaints can come under the areas like:

1. Deficiency in bank services like non-payment.
2. Delay in collection.
3. Handling of cash currency.
4. Non-adherence to working hours.
5. Complaints from NRI and exporters.
6. Complaints concerning loans and advances relating to delay in sanction.

Non-observance of RBI directions on interest rates

15. Customer services

A number of measures have been taken to improve the quality of customer services offered by the banks to depositors and borrowers. Important factors among these are given:-

1. Till June 1996 about 1400 branches have been computerized.
2. Facilities like passbook printing, self-service terminals for customers have been started in many of the branches.
3. Efforts were made to conduct SWIFT training courses for Indian banking community on regular basis.
4. Shared payment Network System (SPNS) was started at Mumbai in 1997.
5. RBI launched the Electronic Clearing services (ECS) in April 1995 at Mumbai and Chennai.
6. RBI has also started the Electronic funds transfer (EFT) in Mumbai and Chennai for retail customers.
7. Customer service audit are being conducted periodically to ensure meaningful implementation of Goiporia Committee recommendations.

16. Service area approach

In 1988, the RBI has started the service area approach for rural lending. This approach refers to a system of assigning special areas to each bank branch in which it can concentrate for productive lending. It aims at making available adequate and timely credit for
meaningful activities and ensuring effective recycling of bank funds\textsuperscript{13}. Service area approach intended to bring about a major change in the country and productivity of rural lending.

The implementation of service area approach involves the following five stages:

1. Identification of services area for each bank branch.
2. Survey of the villages in the service area for assessing the potential for lending for different activities and identification of beneficiaries for assistance.
3. Preparation of credit plans on an annual basis for the service area by each branch.
4. Inter and intra co-ordination between credit institution and field level development agencies on an ongoing basis for effective implementation of credit plans.
5. Continues system of monitoring the progress in the implementation of the plans and individual schemes.

3.5 **History of Innovative banking**

The precursor for the modern home online banking services were the distance banking services over electronic media from the early 80s. The term online became popular in the late ‘80s and referred 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 instruction to the bank.

History of Innovative banking has been discussed under five broad head namely.

3.5.1 Videotax
3.5.2 Alex
3.5.3 Telesp
3.5.4 CEPT
3.5.5 Other broadcasting services

3.5.1 Videotex

Videotex systems are interactive; computer-based which electronically deliver text, number and graphics for display on a television set, video monitor or personal computer. The data travels over telephone lines, two-way cable, computer networks or any combination of the four. On-line services started in New York 1981, then four of the city’s major banks 1). Citibank, 2). chase, 3). Manhattan and 4). chemical offered home banking services using the Videotex system. Videotex was one of the earliest implementations on “End-user information system”. From the late 1970s to mid-1980s, it was used of deliver information usually pages of text to a user in computer like format, typically to be displayed on television set.

Videotex refers to systems that provide interactive content and display on a television, typically using modems to send data in both directions. A close relative is “Teletext” which sends data in one direction only, typically encoded in a television signal sometimes the term “View data” is used to describe all such systems generally unlike the modern internet; all traditional videotext services were highly centralized.
Vediotex Machine

Source: http://instinctive.at/ypnwjm.php?q=minitel

Telex Machine


Vediotex was not originally delivered to computers. Instead, a television set hooked to set-top box was used to receive information from a remote database via a telephone line or cable TV. The early services
offered thousands of pages ranging from consumer information to financial data, but with limited graphics, such services were offered in many countries around the world, most notably Great Britain, France and the United States. Videotex in its broader definition can be used to refer to any such service, including the internet bulletin board systems, online services providers and even the arrival/departure displays at an airport. This usage is no longer common.

A videotex service was provided by “Minitel” in worldwide. This minitel terminal was an early device used of connecting to minitel\textsuperscript{14}.

3.5.2 Alex

Bell Canada introduce Minitel to Quebec as Alex in 1988, and Ontario two years later, it was available both as a standalone CRT terminal very similar in design to Apple’s e-Mac with 1200bit is modem and as software only for Ms-dos computers.

\textbf{Picture:-3.3}

Bell Alex Machine

![Bell Alex Machine](http://www.answers.com/topic/videotex)

The system was received enthusiastically thanks to a free two months introductory period, but fizzled within two years. Online fees were very high and the useful services such as home banking restaurant reservation and news feeds, that Bell Canada advertised did not material
within a very short time the majority of content on “Alex” was of poor quality or very expensive chat-lines. The Alex terminals did double duty for connecting to text only BBSes\textsuperscript{15}.

### 3.5.3 Telesp

Telecomunicacoes-de-sao-paulo ot operted from 1982 to the mid-nineties from Sao Paulo, Brazil a few other state telephone companies followed Telesp’s lead but each kept standalone database and services. The key to its success was that the phone company offered only its service and phone subscriber databases and third parties banks, database providers, newspapers offered additional content and services. The system peaked at to thousand subscribers around 1995 all bank transaction going through using Telesp services\textsuperscript{16}.

### 3.5.4 CEPT

The Germans took the CEPT 1 concept and expanded it so it was somewhat more flexible, the resulting standard was called CEPT 2 in Germany. The system was named BTX (Bildschirmtext) English “Screen text, after that the French went one step further and developed CEPT 3 that would be used for their popular Minitel system. Screen text services provided by bank to the customer who using CEPT services\textsuperscript{17}.

**Picture:-3.4**

**BTX Machine**

![Source:-http://www.kalaydo.de/anzeigen/](http://www.kalaydo.de/anzeigen/)
3.5.5 Other broadcasting services

Ceefax (See facts) is the BBC’s name for its public teletext services available on TV channels using spare capacity. Oracle (Optional recognition of coded in electronics) is the name of the IBA’s equipment teletext services.

Picture:-3.5

BBC Ceefax

Source:- http://www2.tv-ark.org.uk/testcards/teletext_bbc.html

3.6 World scenario of internet banking

According to research done by Cyber dialogue, there were 53.5 million cyber citizens in 1999; approximately 6.3 million of these people were banking on-line in 1999, as well, this was up from 6 million using on-line banking services in 1998.
Table: -3.1

Internet users and population status of the World (31, March.2011)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Population (2011 Est.)</th>
<th>Internet user Dec. 31, 2000</th>
<th>Internet user 2011</th>
<th>% in population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>1,037,524,058</td>
<td>4,514,400</td>
<td>139875242</td>
<td>13.48</td>
</tr>
<tr>
<td>Asia</td>
<td>3,879,740,877</td>
<td>114,304,000</td>
<td>1016799076</td>
<td>26.20</td>
</tr>
<tr>
<td>Europe</td>
<td>816,426,346</td>
<td>105,096,093</td>
<td>500723636</td>
<td>61.33</td>
</tr>
<tr>
<td>Middle East</td>
<td>216,258,843</td>
<td>3,284,800</td>
<td>77020995</td>
<td>35.61</td>
</tr>
<tr>
<td>North America</td>
<td>347,394,870</td>
<td>108,096,800</td>
<td>273067546</td>
<td>78.60</td>
</tr>
<tr>
<td>Latin America</td>
<td>597,283,165</td>
<td>18,068,919</td>
<td>235819740</td>
<td>39.48</td>
</tr>
<tr>
<td>Austria</td>
<td>35,426,995</td>
<td>7,620,480</td>
<td>23927457</td>
<td>67.54</td>
</tr>
<tr>
<td>World total</td>
<td>6,930,055,154</td>
<td>360,985,492</td>
<td>2,267,233,742</td>
<td>32.71</td>
</tr>
</tbody>
</table>

Source: - Internet world states, Miniwatts marketing groups.

Graph: -3.1

Internet users and population status of the World

The above table no. 3.1 and Graph no.3.1 exhibits data of internet users and population status of the world. The population of whole world was 6,930,055,154 and internet users 360,985,492 approximately 32.70%
of total population used internet. The growth of internet user increased from 2000 to 2011 approximately 528.06%.

World scenario of internet banking has been discussed under six heads by the researcher namely:-

3.6.1 United States of America.
3.6.2 Hong Kong.
3.6.3 Sweden & Finland.
3.6.4 United Kingdom’s.
3.6.5 Japans.
3.6.6 Singapore.

3.6.1 United States of America

In the USA, the number of financial institutions and commercial banks with transaction through web sites is 46.6 % in 2009. Approximately 78% of all commercial banks with more than $ 5 billion in assets, 43% of banks with $ 500 million to $ 5 million in assets, and 10% of banks under $ 500 million in assets have transactional internet banking websites. Internet user and population status for the Americas are given in following table.

Table:-3.2

<table>
<thead>
<tr>
<th>Region</th>
<th>Population (2010)</th>
<th>Internet User's</th>
<th>% population of Internet user</th>
<th>internet user as per</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America</td>
<td>344,124,450</td>
<td>266,224,500</td>
<td>77.36</td>
<td>56.53</td>
</tr>
<tr>
<td>South America</td>
<td>396,626,130</td>
<td>156,609,436</td>
<td>39.48</td>
<td>33.25</td>
</tr>
<tr>
<td>Central America</td>
<td>154,298,120</td>
<td>38,433,400</td>
<td>24.90</td>
<td>8.16</td>
</tr>
<tr>
<td>The Caribbean</td>
<td>41,632,722</td>
<td>9,647,000</td>
<td>23.17</td>
<td>2.04</td>
</tr>
<tr>
<td>Total America</td>
<td>936,681,422</td>
<td>470,914,336</td>
<td>50.27</td>
<td>100</td>
</tr>
</tbody>
</table>

Sources:- Internet world states, Miniwatts Marketing groups,

Graph:-3.2

Internet users and population status of the USA

The above table no 3.2 and graph no. 3.2 exhibits data of internet user and population status of the USA. USA has a powerful country as well economy. The USA populations were 936,681,422, internet users of the country 470,914,336, about 50.30% of total population used internet in America. So it’s directly effect to the internet banking user. Most of internet user stood in South America

3.6.2 Hong Kong

There has been a spate of activity in Internet banking in Hong Kong. Hong Kong’s total population was 70, 55,071 in 2009 and approximately Internet user was a 48, 78,713 there is a 69.20% of the total population. Banks are participating in strategic alliances for e-commerce venture and forming alliances for internet banking services delivered through Jetco a bank consortium operating an ATM network in Hong Kong. A few banks have launched transactional mobile phone banking earlier for retail customers.
3.6.3 Sweden & Finland

Swedish and Finlandish markets lead the world in terms of Internet penetration and the range and quality of their online services. Merita Nordbanken leads in “log-ins per month” with 1.2 million Internet customers and its penetration rate in Finland around 45% is among the world’s highest bank of ‘brick and mortar’ origin. Standinaviska Easkilda Banken (SEB)\(^{19}\) was Sweden’s first Internet bank, having gone on-line in December 1996. It has 1,000 corporate clients for its Trading Station. Swed bank is another large sized internet bank, almost all of the approximately ISO banks operating in Norway has established “net banks”.

3.6.4 United Kingdom

In United Kingdom, most of banks offering banking transaction through Wireless Application Protocol (WAP)\(^{20}\), mobile phone and T.V. A number of non-banks have approached the Financial Services Authority (FSA) about charters for virtual banks or ‘clicks and mortar’ operations. There is a move towards banks establishing portals.

3.6.5 Japan

Japanese banks are increasingly focusing on Internet banking transactions. Internet banking is a most important part of their strategy. While some banks provide services such as inquiry, settlement, purchase of financial products and loan application.

3.6.6 Singapore

The Monetary Authority of Singapore (MAS) has reviewed its current framework for licensing and for prudential regulation and supervision of banks, to ensure its relevance in the light of developments in Internet banking, the existing policy of MAS already allows all banks licensed in Singapore to use the Internet to provide banking services.
MAS is subjecting Internet banking, including IOBs, to the same prudential standards as traditional banking\textsuperscript{21}.

### 3.7 Internet user statistics in Asia

Internet users in Asia are growing fast. It seems that every country is taking to use internet services. There is a bright future of internet services in Asian market. China and India is most users of internet services.

In Asia, Japan, Taiwan and Korea nearly 70\% of the total population used internet services. In India, Indonesia and Thailand approximately 6.90\%, 12.30\% and 26.30\% of the total population used internet banking and Singapore, South Korea 77.80\% and 81.10\% of the people used internet banking services. The current statistics about internet users in Asia are given in the below table no.3.3.

**Table:-3.3**

**Internet users and population statistics of the Asia**

<table>
<thead>
<tr>
<th>Asia</th>
<th>Population 2010 Est.</th>
<th>Internet users '00</th>
<th>Internet users 2010</th>
<th>% In population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afganistan</td>
<td>29121286</td>
<td>1000</td>
<td>1000000</td>
<td>3.4</td>
</tr>
<tr>
<td>Armenia</td>
<td>2966802</td>
<td>30000</td>
<td>208200</td>
<td>7</td>
</tr>
<tr>
<td>Azerbaiyan</td>
<td>8303512</td>
<td>12000</td>
<td>3689000</td>
<td>44.4</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>158065841</td>
<td>100000</td>
<td>617300</td>
<td>0.4</td>
</tr>
<tr>
<td>Bhutan</td>
<td>699847</td>
<td>500</td>
<td>50000</td>
<td>7.1</td>
</tr>
<tr>
<td>Brunei</td>
<td>395027</td>
<td>30000</td>
<td>318900</td>
<td>80.70</td>
</tr>
<tr>
<td>Combodia</td>
<td>14753320</td>
<td>6000</td>
<td>78000</td>
<td>0.5</td>
</tr>
<tr>
<td>China</td>
<td>1330141295</td>
<td>22500000</td>
<td>420000000</td>
<td>31.6</td>
</tr>
<tr>
<td>Georgia</td>
<td>4600825</td>
<td>20000</td>
<td>1300000</td>
<td>28.30</td>
</tr>
<tr>
<td>Hongkong</td>
<td>7089705</td>
<td>2283000</td>
<td>4878713</td>
<td>68.80</td>
</tr>
<tr>
<td>India</td>
<td>1173108018</td>
<td>5000000</td>
<td>81000000</td>
<td>6.90</td>
</tr>
<tr>
<td>Indonesia</td>
<td>242968342</td>
<td>2000000</td>
<td>30000000</td>
<td>12.30</td>
</tr>
</tbody>
</table>

Table no. 3.3 Cont.........
<table>
<thead>
<tr>
<th>Country</th>
<th>Population</th>
<th>GDP</th>
<th>Nominal GDP</th>
<th>Per Capita GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>126804433</td>
<td>47080000</td>
<td>99143700</td>
<td>78.20</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>15460484</td>
<td>70000</td>
<td>5300000</td>
<td>34.30</td>
</tr>
<tr>
<td>Koria(N)</td>
<td>22757275</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Koria(S)</td>
<td>48636068</td>
<td>1904000</td>
<td>39440000</td>
<td>81.10</td>
</tr>
<tr>
<td>Kyrgystan</td>
<td>5508626</td>
<td>51600</td>
<td>3194400</td>
<td>39.80</td>
</tr>
<tr>
<td>Laos</td>
<td>6993767</td>
<td>6000</td>
<td>527400</td>
<td>7.50</td>
</tr>
<tr>
<td>Macao</td>
<td>567957</td>
<td>60000</td>
<td>2809000</td>
<td>49.50</td>
</tr>
<tr>
<td>Malaysia</td>
<td>26160256</td>
<td>3700000</td>
<td>16902600</td>
<td>64.60</td>
</tr>
<tr>
<td>Maldivas</td>
<td>395650</td>
<td>6000</td>
<td>87900</td>
<td>22.20</td>
</tr>
<tr>
<td>Mongolia</td>
<td>3086918</td>
<td>30000</td>
<td>350000</td>
<td>11.30</td>
</tr>
<tr>
<td>Myanmar</td>
<td>53414374</td>
<td>1000</td>
<td>1100000</td>
<td>0.20</td>
</tr>
<tr>
<td>Nepal</td>
<td>28951852</td>
<td>50000</td>
<td>625800</td>
<td>2.20</td>
</tr>
<tr>
<td>Pakistan</td>
<td>177276594</td>
<td>133900</td>
<td>18500000</td>
<td>10.40</td>
</tr>
<tr>
<td>Phillippines</td>
<td>99900177</td>
<td>2000000</td>
<td>297000000</td>
<td>29.70</td>
</tr>
<tr>
<td>Singapore</td>
<td>4701069</td>
<td>1200000</td>
<td>36584000</td>
<td>77.80</td>
</tr>
<tr>
<td>Shri Lanka</td>
<td>21513990</td>
<td>121500</td>
<td>1776200</td>
<td>8.30</td>
</tr>
<tr>
<td>Taiwan</td>
<td>23024956</td>
<td>6260000</td>
<td>161300000</td>
<td>70.10</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>7487489</td>
<td>2000</td>
<td>700000</td>
<td>9.30</td>
</tr>
<tr>
<td>Thailand</td>
<td>66404688</td>
<td>2300000</td>
<td>174864000</td>
<td>26.30</td>
</tr>
<tr>
<td>Timor</td>
<td>1154625</td>
<td>0</td>
<td>2100</td>
<td>0.20</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>4940916</td>
<td>2000</td>
<td>80400</td>
<td>1.60</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>27865738</td>
<td>7500</td>
<td>4689000</td>
<td>16.80</td>
</tr>
<tr>
<td>Vietnam</td>
<td>89571130</td>
<td>200000</td>
<td>24269083</td>
<td>27.10</td>
</tr>
<tr>
<td><strong>Total Asia</strong></td>
<td><strong>3834792852</strong></td>
<td><strong>114304000</strong></td>
<td><strong>825094396</strong></td>
<td><strong>21.50</strong></td>
</tr>
</tbody>
</table>

Source: Internet World State, Miniwatts marketing groups, 2010
Graph:-3.3
Internet users and population statistics of the Asia

The above table no 3.3 and graph no. 3.3 exhibit data of Internet users and population statistics of Asia. Internet users directly affected to internet banking user. If, internet user is high, technology based services easily provided to the customers by the bank. The internet users in Brunei, South Korea, Japan, Malaysia, Singapore and Taiwan’s were more than 50% of the total population. In India, total populations were 1173108018 and internet users were 81000000. There is an approximately 6.90% of the total population used internet. Highest internet users were in South Korea i.e. 81.10% of the total population and lowest internet users were in Myanmar and Timor i.e. 0.20 and 0.20 of the total population.

3.8 History of Innovative banking in India

Innovative banking practice in India started in 1991, marked the entry of foreign banks. They bought new technology with them. As banking products became more and more competitive, need for differentiation of banking products and services was felt.
The ICICI bank kicked off online banking in 1996, currently 78% of its customer base registered for on-line banking. 1996 to 1998 marked the adoption phase while usage increased only in 1999, owing to lower ISP on-line charged increased PC penetration and a tech friendly atmosphere. Guidelines about the internet banking policy have been approved by the bank’s overall information technology and information security policy and ensures confidentially of record and security system. The policy clearly lays down the procedure to be followed in respect to “Know your customer” (KYC) requirement. The policy broadly meets the parameters laid own in the earlier circulars.

Facts and figures about internet population currently is 38.5 Million end expected to grow to 100 million by 2009-10. At present 4.6 Million of these use internet banking. This figure is estimated grow to 16 million by the end of 2007-08. Only 59% of adult populations have access to a bank account, which implies 41% of adult population is unbanked.

At ICICI bank in the year 2000, 94% of the transaction happened at the branches, just 2% over the net. In fiscal 2006 transactions at the branch were down to 22% of the total while net banking transactions rise to 18%. ICICI Demat services boasts of an ever growing customer base of 16.2 lacs as on 30 September 2009. ICICI Bank offers various innovative products in their endeavour to offer world class services to its customers.

At HDFC bank transaction that accounted for 43% of all transaction in fiscal 2001, came down 23.5 in fiscal 2006. In the same period, internet transactions rise from about 3% to 16%, about 40 of the transaction on the net take place during non-banking hours. i.e. 6 p.m. to 8. a.m.
3.9 **Internet banking in India: RBI Guidelines**

Reserve Bank of India has set up a Working Group on Internet Banking to examine different aspects of Internet Banking which focused on three major areas such as (A). Technology and security issue, (B). Legal issues the regulatory and (C). Supervisory issues, which are discussed below, RBI has issued following guidelines on June 14, 2001 for implementation by commercial banks.

All banks, who propose to offer internet banking should obtain prior approval from RBI. 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.

Overseas branches of Indian banks will be permitted to offer Internet banking services to their overseas customers subject to their satisfaction, in addition to the host supervisor, the home supervisor.

**A. Technology and Security Standards**

- Banks should have a security policy duly approved by the Board of Directors with segregation of duty of Security Officer, Further; Information systems, Auditor should audit the information systems.
- Banks should designate a network and database administrator with clearly defined roles.
- Bank should introduce logical access controls to data, systems, application software, utilities, telecommunication lines, libraries, system software, etc.
- Banks should use the proxy server type of firewall so that there is no direct connection between the Internet and the bank’s system.
• Physical security should cover all the information systems and sites where they are housed, both against internal and external threats.

• 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.

B. Legal Issues

• Internet accounts should be opened only after proper introduction and physical verification of the identity of the customer.

• From a legal perspective, security procedure should be adopted by banks for authenticating signature.

• In Internet banking scenario, there is very little scope for the banks to act on stop-payment instructions from the customers.

C. Regulatory and Supervisory Issues

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

• The services should only include local currency products.

• Banks will report to RBI every branch or failure of security systems and procedure.

• Banks must make mandatory disclosures of risks, responsibilities and liabilities of the customers.

• The banks should also provide their latest published financial results over the net.
3.10 **Role of RBI in computerization of Indian bank**

Computerization became popular in the western countries right from the sixties. Main frame computers were extensively used both by the public institutions and major pvt. Organizations. Mini computer became famous in eighties.

The Electronics Corporation of India ltd. was set up under the Department of Atomic Energy on 11th, 1967 with the objective of research & development in the fields of Electronic communication, control, instrumentation, and automation and information technology\(^\text{26}\). CMC ltd (Computer Maintenance Corporation Of India Ltd.) was established in 1976 to look after maintenance operation of main frame computers installed in several organizations in India. TCS (Tata Consultancy Services) which started functioning from 1968. In the 1980 an IIT Delhi pioneered the effort to start a major education centre in India to impart training in information technology and their efforts resulted in the setting up of NIIT in 1981. Aptech computer education was established in 1986 following the experiment of NIIT.

The former governor of the RBI Dr. C. Rangarajan had strongly recommended computerization banking operations at various levels and suggested appropriate architecture.

The committee on the mechanization of the banking industry (1984) was set up for the first time to suggest a model for mechanization of bank branches regional/controlling offices and head office was necessitated by the explosive growth in the geographical spread of banking following nationalization of banks in 1969.

In the first phase of computerization spanning the five years ending 1989, banks in India had installed 4776 ALPMs (Advanced Ledger Posting Machines)\(^\text{27}\), at the branch level, 233 mini computers at the
regional / controlling office level and trained over 2000 programmers / systems personnel and over 12000 data entry terminal operators.

The RBI too had embarked upon an ambitious programme to bring about state-of-the-art technology in the clearing process and had introduced MICR clearing at 4 centers and computerizes clearing settlement at 9 centers. Rangarajan Committee draws up a perspective plan for computerization in Indian banks, the report submitted by Dr. Rangrajan. The committee acknowledged the gains of the initial efforts and sought to more away from stand-alone dedicated systems to an on-line transaction processing environment in branch banking.

3.11 **RBI first step towards- Information Technology (IT)**

Information technology and the communication networking systems are inter related with each other. In India, banks as well as other financial entities have entered the world of information technology and computer networking with INFINET.

The Indian Financial Network (INFINET), a wide area satellite based network using VSAT technology, was jointly set up by the Reserve Bank and Institute for Development and Research in Banking Technology (IDRBT) at Hyderabad to facilitate connectivity within the financial sector. The network was inaugurated in June 1999.

The INFINET was planned to cover, in a phased manner, 100 commercially important centers and serve as the communication backbone of the proposed Integrated Payment and Settlement System (IPSS). The Indian Financial Network (INFINET), which initially comprised only the public sector banks, was opened up for participation by other categories of members. 26 public sector banks achieved the level of 70 per cent of business captured through computerization by June 2001.
Banks and financial institutions had taken a decision to adopt SWIFT (Society for Worldwide Interbank Financial Telecommunication) like message formats for putting all their funds based applications on the Internet. This initiative would not only help standardization in banks but would as well help across border Straight through Processing so as to ultimately integrate our financial system with other cross border financial systems. Here the researcher has tried to focus major highlights of various committee appointed by RBI on IT issue, which are as below:

3.11.1 Rangarajan committee (1983),
3.11.2 Rangarajan committee (1988),
3.11.3 W.S. Saraf committee (1994)
3.11.4 Shere committee (1995),
3.11.5 Narsimham committee (1998),
3.11.6 Vasudevan committee (1999).

3.11.1 Rangarajan Committee (1983)\(^\text{30}\)

In the early 80s, a high level committee was formed under the chairmanship of Dr. C Rangarajan, then Governor of the Reserve Bank of India, to draw up a phased plan for computerization and mechanization in the Banking Industry over a five year time frame of 1985-89. The focus by this time was on customer service and two models of branch automation were developed and implemented.

- Front office mechanization, where front desk operations were computerized while back office work was done manually.
- Back office automation, covering mechanization of General Ledger and back office operations while the front office work was done manually\(^\text{31}\).

Both the models provided the customer with error-free accounting, regular statements of accounts etc. Considering the contemporary level of computerization, these were major achievements but did not go far
enough and the pace of their implementation was tardy, to say the least, with not a little opposition from trade unions\(^{32}\).

### 3.11.2 Rangarajan Committee (1988)\(^ {33}\)

The second Rangrajan Committee constituted in 1988 drew up a detailed perspective plan for computerization of in Banks and for extension of automation to other areas like funds transfer, electronic mail, BANKNET, SWIFT, ATMs etc.

- Around 2000 to 2500 large branches located at high activity urban and metropolitan centers to be fully computerized
- Regional Offices / Zonal Offices/Head Offices to be fully computerized.
- Inter and intra bank transactions using the BANKNET set up by the RBI and
- Installation of a network of cash dispensers / ATMs at strategic locations such as airports and railway stations etc., on a shared basis by banks\(^{34}\).

The Committee also studied recommendations on the 'Single Window Concept', 'all bank credit cards', ‘credit clearing/GIRO system’ and ‘office automation’ etc. In fact, this report was the most comprehensive road map for Bank Automation considering the state of the art technology at that time\(^ {35}\).

### 3.11.3 W.S. Saraf Committee (1994)\(^ {36}\)

Reserve bank of India had appointed a committee on technology issues under the chairmanship of W. S. Saraf. The committee looked into technological issues related to the payment system and to make recommendations for technology in the banking industry.

- The Saraf committee recommended to set up institutions for electronic funds transfer system in India.
The committee also reviewed the telecommunication system like use of BANKNET and optimum utilization of SWIFT by the banks in India.

### 3.11.4 Shere Committee (1995)³⁷

RBI formed a committee under the chairmanship of K. S. Shere, to study all aspects relating to electronic funds transfer and propose appropriate legislation.

The Shere committee had recommended framing of RBI (EFT system) regulations under section 58 of the Reserve bank of India Act 1934 (RBI Act.), amendments to the RBI act and to the bankers book evidence act, 1891 as short term measures and enacting of a few new acts such as EFT act, the computer misuse and data protection act etc. as long term measures.

### 3.11.5 Narsimham Committee (1998)³⁸

The Reserve Bank of India appointed Narasimhan committee in September 1998. The committee consists of representatives from the Government, Reserve Bank of India, banks and academic institutions associated with the information technology. The committee dealt with the issues on technology up gradation and observed. The committee also suggested implementation of the necessary legislative changes are as under:–

- Evidence of Electronic files,
- Encryption on Public Switching Telephone Network (PSTN) lines,
- Electronic Record keeping,
- Provide data protection,
- Digital signatures,
- Electric fund transfer Clarification.
3.11.6 Vasudevan Committee (1999)\textsuperscript{39}


The Vasudevan Committee recommended a new legislation on Electronic funds-transfer system to facilitate multiple payment systems to be set up by banks and financial institutions.

3.12 Types of bank computerisation\textsuperscript{40}

Banking computerization system can be classified as three types, which are as under:-

3.12.1 Back office application
3.12.2 Total Branch Automation
3.12.3 Core banking Solution

3.12.1. Back Office Application:-

The Back office application uses computers only for data entry operations and a few calculative operations. It also stores customer’s data and uses MS-dos based Fox Pro to calculate interest and calculate the employees’ salary.

This application was not beneficial to the banks customers because it was not providing any kind of service. The working hours of bank employees were increased due to this system. It is also observed that in this system, daily / weekly / monthly back up was required.

3.12.2 Total Branch Automation:-

Total Branch Automation is used in branches that are covering 80\% of the total business of a bank. These branches should have a single customer ID concept using which all the accounts of the customer can be retrieved. The bank should start collecting customer information through system. TBA trained the employees in the areas of customer relationship;
In case of TBA, bank can also provide ATM facility. Total Branch Automation is more convenient method of bank transaction, as compared to back office application.

3.12.3 Core banking Solution:-

Core banking applications (CBS) in Banks provide the complete front-end and backend automation of banks. Core banking applications provide anywhere, anytime 24 by 7 non-stop services, which is not possible with traditional localized branch automation systems. These applications also provide automation across multiple delivery channels. Core banking is a centralized system that provides accounting, customer information management and transaction processing functions.

In case of core banking, customer can operate their account from various locations. Core banking is just one part of a fairly complex architecture of today’s banking which takes care of the essential banking activities.

The following modules are offered by the Core Banking Solutions

- Customer information files management
- Loan management
- Deposit management
- Security management
- Limit management
- Financial accounting
- Reserve for bad debts
- Complementary third party products
3.13  **Types of Internet Banking**

The various types of internet banking products will help examiners assess the risks involved. Currently, the following three basic types of internet banking are being employed in the market place\(^4\).

3.13.1  **Informational**

- This is the basic level of internet banking. Typically the bank has marketing information about the bank’s products and services on a standalone server.
  - The risk relatively low, as informational system does typically have no path between the server and the bank’s internal network.
  - This internet banking can be provided by the bank or outsourced.
  - While the risk to a bank is relatively low, the server or website may be vulnerable to attention.
  - Appropriate controls therefore must be in place to prove unauthorized alternations to the bank’s server or website.

3.13.2  **Communicative**

- These types of internet banking allow some interaction between bank’s system and the customer.
  - The interaction may be limited to electronic mail, account inquiry, loan application or static fill updates.
  - The risk is higher with this configuration than with informational systems.

3.13.3  **Transactional**
Appropriate controls need to be in place to prevent, monitor and alert management of any unauthorized attempt to access the bank’s internal network and computer systems.

3.13.3 **Transactional**

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

3.14 **Function of Innovative banking**

The partout functions of innovative banking can be summarized as below.

1) **Inquiry about the information of account**
   
   The client inquires about the details of his own account information such as the card’s/account’s balance and the detailed historical records of the account and download the report list.

2) **Bank securities accounts transfer**
   
   The client can achieve the fund transfer between his own bank savings accounts of his own credit card account and his own capital accounts in the securities company. Moreover, the client can inquire about the present balance at real time.
3) The transaction of foreign exchange
The client can trade the foreign exchange, cancel orders and inquire about the information of the transaction of foreign exchange according to the exchange rate given by our banks on net.

4) The BQC disbursement on net
The client can do the real-time transfer and get the feedback information about payment from our bank when the client does shopping in the appointed web.

5) Account management
The client can modify his own limits of right and state of the registered account in the personal e-bank. Such as modifying his own login password freezing or deleting some cards and so on.

6) Client services
The client can modify the login password, information of the credit card and the client information in e-bank on net.

7) Reporting the loss to the bank
The client can report the loss in the local area not a national wide when the client’s credit card or passbook is missing or stolen.

8) Card account’s transfer
The client can achieve the fund to another person’s credit card in the same city.

3.15 Innovative banking and technology vendor
Indian banks have to define RFP (Request for proposals) for selection of a suitable core banking solution based on the various parameters. For this proposed, some bank are not offer various types of technology based services. Nevertheless, a quick scan of product
catalogues of leading core banking system vendors throws the following names for consideration.

**Table:-3.4**

**Banking environment and technology vendor**

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Vendor name</th>
<th>Leading banking customers</th>
<th>Transaction Volume branches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finacle 6.X</td>
<td>Infosys technologies Ltd</td>
<td>-ICICI             -UTI                   -IDBI, ABN Amro</td>
<td>- Million of transaction - Hundred of Branches - Thousand of ATM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Punjab National Bank -Union Bank of India</td>
<td>Tamilnadu Merantile bank -Karnataka Bank</td>
</tr>
<tr>
<td>Flexcube</td>
<td>1-Flex Solution ltd</td>
<td>-Syndicate Bank    -Bharath overseas Bank -Karur Vyasa Bank -HDFC Bank</td>
<td>- Lakhs Of transaction - Hundred of branches - Several ATM</td>
</tr>
<tr>
<td>Sanchez</td>
<td>IBM</td>
<td>-Vyasya Bank</td>
<td>- More than 100 branches</td>
</tr>
<tr>
<td>Equation</td>
<td>ACT Kindle</td>
<td>-Indus Bank        -Centurion Bank</td>
<td>- More than 100 branches</td>
</tr>
<tr>
<td>FNS</td>
<td>TCS</td>
<td>-SBI Bank</td>
<td>- Under implementation</td>
</tr>
<tr>
<td>TC/4</td>
<td>TCS/CMC</td>
<td>-United western Bank</td>
<td>- Under implementation</td>
</tr>
<tr>
<td>Newton</td>
<td>ICICI InfoTech</td>
<td>-Lakhshmi Vilas Bank</td>
<td>- Under implementation</td>
</tr>
<tr>
<td>Quartz</td>
<td>TCS</td>
<td>City Union Bank</td>
<td>- Under implementation</td>
</tr>
</tbody>
</table>


There are also other players such as Temenos, who are active with their core banking solution but yet to win a customer and satisfy customer’s requirement at a present.
3.16 **Computerisation- Intra bank and Inter bank application**

Computerization is a necessary of all banks. Almost all the activities in a bank can be performed more effectively and efficiently with the help of computers broadly. Computer application is divided in two types:

3.16.1 Intra bank application

3.16.2 Inter bank application

**3.16.1 Intra Bank Application**

"Intra" means within, as in a transfer within the bank. Your bank may have an agreement where you designate your accounts to and from which funds may go. A checking and savings account at the same bank are examples.

**Diagram:-3.2**

**Intra bank mobile payment transfer**

Source: www.mpf.org.in/ppt/MPFI2520Technology%2520Sub%2520committee%2520Presentation%252016-02-08.ppt
Intra bank application includes the following types of services to the bank:-

1. Fund Transfer and payment messages
2. Banks owned ATM/ credit card and other application on the corporate network
3. Inter branch reconciliation
4. Investment proposal/ quick disposal of loan
5. cash management product
6. treasury management
7. Any branch banking
8. Asset liability management
9. E-Mail
10. Software distribution in the bank
11. Organizational bulletin boards may contain the following.
   a. Circulars
   b. News letters, phone and address directories
   c. Undesirable parties
   d. Missing security items
   e. Confidential circular in attempted funds
12. Human resources development and personal administration
13. Auditing and inspecting computerized branches using the network
14. Organizational database may include
   a. Statutory returns
   b. Control returns
   c. Standardized returns
15. Management information systems
   a. Borrower’s profile
   b. Branch profile
c. Employee analysis
d. Product/service profile
e. Business profile of branches

16. Apart from providing efficient service to customers the financial network will also fulfill the following objectives
a. Timely information to top management
b. Helping in development of new products
c. Speedy communication among branches and with the controlling offices.

3.16.2 Inter Bank Application

"Inter" means between, such as from one bank to another bank. You may set up a transfer of funds from your bank to your child's local bank while they are away at college.

Diagram:-3.2

Interbank mobile payment transfer

Source: www.mpf.org.in/ppt/MPFI2520Technology%2520Sub%2520committee%2520Presentation%25202016-02-08.ppt
Inter bank application, following services are included.

1. Electronic funds transfer (EFT)
   a. Retail EFT on net settlement basis
   b. Wholesale EFT on RTGS basis
2. Clearing and settlement systems for securities delivery Vs payment.
3. Transferring balance from net settlement system to RTGS server at periodic intervals. The net obligation could be from
   a. Local paper based clearing
   b. Inter city paper based clearing
   c. Bulk payments ECS, Debit, credit
   d. Shared ATM networks
   e. Smart cards and other prepaid/ pre authorized debit cards.
4. Exchange of defaulting borrowers list among RBI and banks
5. EDI services
6. Consolidation of current account balance from the existing DAD( Deposit account department in RBI offices)
7. Reporting of government account transaction
8. Reporting of basic statistical returns to RBI.
9. Asset liability management
10. Internet in RBI to enable banks to get circulars press releases.
11. Return to be submitted by the banks to department of banking supervision (DBS) for off side supervision and monitoring.
3.17 **Advantages of Innovative Banking (E-banking)**

Advantages of innovative banking (Includes e-banking) has been presented below.

1. **Account information:**
   
   Real time balance information and summery of day’s transaction can be easily assessed by the customer due to e-banking.

2. **Fund Transfer (EFT):**
   
   Manage your supply chain network, effectively by using our online hand transfer mechanism. We can effect fund transfer on a real time basis across the bank locations.

3. **Customers can integrate the system with his own ERP:**
   
   The customers can download the account statements either as a text file or as an excel file. The bank can help him in integrating the account statements and bank payments files with his ERP system. The bank may charge a nominal fee depending upon the nature of work involved.

4. **The Electronic shopping mall:**
   
   The customer can also make his shopping payment through the bank’s secure website. Therefore, he can shop online without any security worries as the bank can provide online real time shopping male services through partner shopping site.

5. **Effecting personal investment through Electronic Banking**
   
   The bank’s website can also allow the customer to invest in shares, mutual fund and other financial products.

6. **Initial public offers online:**
   
   The customer could also invest in initial public offers online without going through the hassles of filling any application form,
paperwork and get in-depth analyses of new initial public offers issues which are about to hit the market and analysis of these.

7. **Online Request:**

Customers can also submit the following requests of online registration for account statement by e-mail daily / weekly / fortnightly / monthly basis.

- Stop payment or cheques.
- Cheque book replenishment
- Demand draft / pay-order
- Opening of fixed deposit account
- Opening of letter of credit

8. **Paper less banking operations**

Due to use of computer in banking transaction, banks could not to maintain records of customers’ accounts in a paper. All transactions can be checked completed speedily through I.T. Hence bank officers burden of preparing customer’s account on a paper reduce.

9. **Other benefits:**

The innovative banking provides some other benefits also such as.

1. convenience
2. Speed of concluding transactions
3. safely banking from own home
4. Economy banking without visiting your bank.
5. Cheaper service fees
6. Highly scalable
7. Easy customization
8. Seamless integration with existing environment (IDM-Intelligent Data Module)
9. Platform independence
10. Remote authorization
11. Round the clock and cross border availability
12. Lower costs of both installation and maintenance

3.18 **Limitation of Innovative Banking**

Innovative banking practices offer a number of benefits to customers. But in the present scenario, we are obvious various cyber-crimes, due to lack of awareness of customers. Hence if the customer is unaware about security requirement for use of e-banking facilities, limitation of innovative banking way occur. In this regard, limitations of innovative banking (Including e-banking) can be summarized below.

- Abuse of bank cards by fraudsters at ATMs.
- Danger of giving your card number when buying one-line.
- Danger when card was stole etc.

3.19 **The Basel Committee’s Electronic Banking Groups**

The Basel committee on banking supervision has taken the lead in this area through the creation of its Electronic Banking Group (EBG) in late 1999, a group whose members represent it central banks and bank supervisory agencies.45

The major focus of the EBG’s work has been to develop risk management guidance for internet banking that will guide bankers and promote effective and consistent bank supervision around the world.

The EBG has identified various risk management principles for electronic banking to promote sound risk management of e-banking. These principles are intended to help banking institutions expand their
existing oversight policies and processes to cover their e-banking activities\textsuperscript{46}.

- Authentication of e-banking customers
- Non repudiation and accountability for e-banking transaction of duties
- Appropriate measure to ensure segregation of duties.
- Proper authorization control within e-banking systems, databases and application.
- Data integrity of e-banking transaction records and information.
- Establishment of clear audit trails for e-banking transactions.
- Confidentiality of key bank information.

### 3.20 Technology driven E-banking:-Current Technology Models

The use of technology has several impacts on the banking systems. It provides multiple channels for the service industry. The technology enabled delivery channels are attractive from the point of reducing cost of operations.
Above diagram no. 3.4 shows that the process of delivery channel related with banking service process. In India, most of public sector banks, private sector banks and foreign banks focus on e-commerce strategy. Bank always try to mark a step with recent trend for using the Information Technology in banking.

In the delivery channels, it is shows that a customer has a many choices of variety in banking services, he selects necessary of need and use it. Sometime Bank also provides various quality aspect services to the customer and satisfied customers requirement.

Source: - cover story on “The future of Indian banking” – A survey business world 9th July 2005
3.21 **Internet Banking Risk**

Internet banking creates risk for bank, so the new risk control is necessary. It is a challenge for national bank. Internet banking risk classified as under.

1. **Interest rate risk**
   - Interest rate risk is the risk to earning or capital arising from movement in interest rates from an economic perspective, a bank focuses on the sensitivity of the value of its assets liabilities to change in interest rates.
   - Evolution of interest rate risk must consider the impact of complex, illiquid hedging strategic or products and also the potential impact that changes in interest risk rates will have on fee income.
   - Internet banking can attract deposits, loans and other relationship from a larger pool of possible customers than other forms of marketing. Interest rate risks depend upon quickly changing of market condition.

2. **Liquidity Risk**
   - Liquidity risk is the risk to earning or capital arising from a bank’s inability to meet its obligations when they came due without incurring unacceptable losses.
   - Liquidity risk also arises from the failure to recognize or address changes in market condition affecting the ability of the bank to liquidate assets quickly and with minimize losses value.
   - Liquidity risk includes the inability to manage unplanned changes in founding sources.

3. **Price Risk**
   - Price risk is the risk to earning or capital arising from changes in the value of traded portfolio of financial instruments.
This risk arises from market dealing and position taking in interest rate.
Banks may be exposed to price risk if they create or expand deposit broking, loan sales or securitization programs as a result of internet banking activities.

4. **Credit Risk**
- Credit risk is the risk to earning 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 on all activities where success depends on counterparty issuer, or borrower performance.
- It arises any time, when bank fund are extended, committed, invested or otherwise exposed through actual or implied contractual agreement whether on or off the balance sheet.
- Internet banking provides the opportunity for banks to expand their geographical range and this type of risk may be increased.

5. **Transactional Risk**
- Transactional risk is the current and prospective risk to earning or capital arising from fraud, error and the inability to deliver products or services.
- Transactional risk is evident each products and service offered and encompasses products development and delivery, transaction, processing, system development, computing system, complexity of products and services and the internal control environment.

6. **Compliance risk**
- Compliance risk is the risk to earning or capital arising from violation of or non-conformance with law, rules and 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.

Compliance risk can lead to a diminished reputation, reduced franchise value, limited business opportunities, reduced expansion potential and lack of contract enforceability.

7. **Strategic Risk**

- Strategic risk is the current and prospective impact on earning or capital arising from adverse business decisions, improper implementation of decision or lack of responsiveness to industry changes.

- Strategic risk is a function of the compatibility of an organization's strategic goal, the business strategies developed to achieve those goals, the resources deployed against these goals and the quality of implementation.

- The resources need to carry out business strategies are both tangible and intangible.

- They include communication channels, operating systems, delivery networks and managerial capacities and capabilities.

8. **Reputation Risk**

- Reputation risk is the current and prospective impact on earning capital arising from negative public opinion.

- This risk affects the institution's ability to establish new relationship or services or continue servicing existing relationships.

- Reputation risks 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 reputation can suffer if it fails to deliver on marketing claims or to provide accurate timely services.

3.22 Conclusion

Today, the banking is re-defined with the use of information technology and it is sure that the future of banking will offer more sophisticated and customer oriented services. For banks, it can provide a cost effective way of conducting business relationship with customers by offering “conventional banking to convenience banking” and “mass banking to class banking”.

The new generation banks brought the necessary competition into the industry towards higher utilization of technology, improved customer service and innovative products. In spite of their strong and larger network, public sector banks provide quick and flexible service to the customers and faced though competition to the private sector banks. Innovative banking offers a number of advantages to customers and banking sector. But at the same time limitations of innovative banking arises. If the customer is unaware about securities reassessment for use of e-banking facilities. Overall effect of innovative is that it has brought new technology revolution in the banking sector.

Now a day, banks follow this motto “Change is the order of the day”.

150
References

1. Sterwart Brand,
http://thinkexist.com/quotation/once_a_new_technology_rolls_over_you-if_you-re/219930.html.
16. Applegate Lynda m, Applegate Robert clustern, F warren McLaren, Corporate information strategy, Tata McGraw hill, New Delhi, 2007, p.541,
22. ICICI case study, finacle from Infosys, www.infosys.com/finacle
26. ECIL establishment (www.ecil.co.in/ecil_rti_websites_12-5-2011.pdf)
34. RBI (1989) Report of the committee on computerization in banks (The Rangarajan committee) Mumbai: Reserve Bank of India
43. Institute for development and research in banking, www.mpf.org.in/ppt/MPFI2520Technology%2520Sub%2520committee%2520Presentation%25202016-02-08.ppt
44. S.S.Kapan and N.S. Choubey, Indian banking in electronic era, Sarup and sons, New Delhi, 2003, pp. 145-146.


47. Internet Banking, Comptrollers handbook, comptrollers of the currency administrator of national banks, Washington dc, 1999, pp. 5-12.
In developing economy, the role of bank is more challenging than in a developed economy. As India is a developing country, the bank plays a crucial role in economy. The primary work of banks is to mobilize the savings of the people and direct them into productive channels. In a developing country, where people have regular habit of depositing their saving into the bank, the task of changing people behavior to create banking habit and mobilize country’s resources is very difficult. Banks need to upgrade their customer’s services with competitive environment; they found technology as an ideal tool to achieve this objective. Innovative banking is considered the best tool in this regard.

Therefore in this chapter, the researcher has studied concept of innovative banking, history of innovative banking, world scenario of innovative banking, RBI guidelines related to e-banking channel, various committee suggestions for e-banking, types of internet banking, types bank computerization, function of innovative banking, various types of intra and interbank application, advantage of innovative banking, limitation of innovative e-banking, Basel committee electronic banking group, technology model for driven internet banking and types of internet banking risk.
Chapter-3
Innovative banking

3.1 Introduction of Innovative banking

“Once a new technology rolls over you, if you are not part of the steamroller, you are part of the road”
- Stewart brand

Due to the burgeoning development of electronic commerce (e-commerce), the broader applications of emerging services have been expanded. Internet banking services have been introduced and provided by financial holding companies or banks at an accelerating rate in recent year since; they can provide efficient, reliable securable and convenient financial services, such as on-line payment, deposit/loan, trading and clearing/settlement via electronic channels for customers. Innovative banking not only can create new competitive advantages, perhaps but also can improve their relationship with customers for banks.

Obviously, Innovative banking can offer better services required by operations and individual. It could be a strategic matter for a bank how their customers conceivably by implementing of innovative banking successfully, it becoming a critical management issue.

Research plays attention on what factors affected to innovative banking particularly form of customers perspective satisfaction with banking, it is recognized that banks gaining higher.

Customer’s satisfaction will have a conspicuous marketing ascendancy because the higher customer’s satisfaction is associated with greater revenues, increased cross sell ration, higher customer retention and bigger market share.
3.2 **E-commerce classification**

E-Commerce classified in following manner.

**Diagram:-3.1**

**E-commerce classification**

![Diagram of E-commerce classification]

a). **E-Commerce**

Electronic commerce, commonly known as e-commerce, consists of the buying and selling of products or services over the electronic systems such as the Internet and other computer networks. E-commerce means conducting business through electronic network. E-commerce is divided into two parts—one is an E-finance and second one is E-money.
b). E-Finance

E-Finance is a financial transaction that depends on the internet or a similar network to which households or non-financial enterprises have access to bank. E-finance is providing financial services through electronic channels.

c). E-Money

E-money means store value or prepaid payment mechanisms. Electronic money also known as e-currency, e-money, electronic currency, digital money, digital cash, and cyber currency refers to money or scrip which is only exchanged electronically.

d). Innovative banking (E-banking)

E-banking means providing banking products and services through electronic delivery channels.

e). Other financial services.

Other financial services include insurance, on-line brokering etc. are also parts of e-commerce.

The difference between e-money and e-banking is that e-money balances are kept in financial accounts with banks through banking services.

3.3 Concept of Innovative banking

Innovative banking means the broader application of new methods and techniques, new scheme in the field of deposit mobilization, deployment of credit and bank management, for the example bank have introduced various types of schemes like retirement scheme, Akshaynidhi scheme, pension plan, money lending scheme such as education loans, car finance, home loans, household goods finance etc. Besides these, many banks have started Sunday branches, anytime anywhere banking.
and mobile banking, CBS bank branch facilities, internet banking for the benefit of the customers.

In order to meet the challenges of the emerging competitive environment, the bank re-oriented their strategist to bring innovation in their product and services.

Computerization in banks solved many problems in banking sector and accelerator of the banking activities, so ‘computerization of banks’ has been termed as Innovative Banking. Computerization and technological upgradation in the field of communication enhanced banking activities. With this, banks could innovate various services to satisfy their customers.

One of the important innovations is ‘Cyber Banking’ which is a mixed structure of E-commerce and E-Banking. E-Banking means provide banking facilities over through internet.

➢ Pre-innovative Banking:-

The period after 1964 clearly described as the phase of ‘Innovative banking’. It is the Period (1964-67) where there was an increasing concern about the problem of concentration of economic power in few hands. Several official reports investigated into these problems such as:-

1. The Mahalanobis Committee (1964), the Committee on Distribution of Income and Levels of Living.
These committees formed significant reports in the basis of changes in Indian Banking. These committees provided a strong platform for the revolutionary changes in the structure, operation, policies, practices and services of banking in India$^3$.

The main features of pre-innovative banking phase are:

1. Social control.
2. Follow-up of social control.
3. Nationalization.
4. Bank credit to priority sectors.

3.4 **Techniques of innovative banking**

The bank nationalization in 1969, it is a story of numerous diversifications and innovations introduced in the Indian banks with a view to improve their performance in accordance with the changing needs of the economy.

Important innovations in banking which have been introduced recently are as follows:-

1. **Social banking:**

   Now a day, the commercial banks of India have adopted a new policy orientation to meet the socio-economic responsibility of the country. The important aspects of social orientation are:-
   
   - Open bank branches in the rural area.
   - Gradual decline in the security and guarantee oriented approach.
   - Provide bank credit to the small scale industries.
   - Commercial banks formulate area wise plans and schemes.
   - SBI has undertaken a village adoption scheme under financial development of the villages.
Increased flow of bank credit extended to smaller and poorer borrowers.

2. **Consortium Approach**

Consortium approach introduced by RBI in 1974. According to this approach, more than one bank would finance a single borrower requiring larger credit limits.

3. **Credit card facility**

Commercial banks introduced the credit card facility in the early 1980s. A credit card is a convenient medium for purchase of goods and consumes services from member establishment without using money directly by hand.

4. **Participatory approach**

The RBI introduced participation Certificate (PCs) in April 1970, with the objectives of greater mobilisation of funds. The participatory certificate scheme has been replaced by (IBPs).

5. **Diversification**

The commercial banks in India have diversified into many related areas, such as Merchant banking, Mutual funds, Venture capital and Equipment leasing, housing finance.

6. **New Technology**

The commercial banks are introducing computerization and many new techniques in their operating with the objective of improving the customer service.

The facets of new technology consist of:

1. Internet banking
2. Shared payment network system (SPNS)
3. Electronic funds transfer system (EFTS)
4. Electronic clearing system (ECS)
5. Electronic cash
6. E-credit
   i. Smart cards
   ii. Memory cards
   iii. Shared key cards
   iv. Signature creating cards
   v. Signature carrying cards

7. Consolidation phase

   The Indian banks have entered the phase of consolidation, sophistication and greater productivity. Consolidations with moderate and selective expansions are the keywords in banking operations\(^6\). A part from social functions the bank would now pay greater attention to their customer:-
   1. Improvement in financial Strength.
   2. Selective computerization.
   3. Better consumer services.
   5. Maintain Profit Adequacy.
   6. Healthy organizational structure.

8. Merchant Banking

   Merchant banking was formally started, when Grindlays bank received the license from Reserve Bank of India in 1967. At the end of 1991, eight commercial banks have started merchant banking facilities. Merchant banking activities are regulated by SEBI (Securities and exchange board of India), companies Act, securities contracts Act and listing guidelines of stock exchange\(^7\).

   ➢ Services rendered by Merchant banks:-
   1. Provide finance for investment in projects.
   2. Financing local authorities
   3. Assistance in financial management.
4. Issue of foreign currency bonds.
5. Acceptance house business.
6. Equipment leasing
7. Mergers and takeovers.
8. Valuation of assets.

9. Mutual funds

Mutual funds are either open-ended or closed-ended financial intermediaries which obtain the resources by selling units or shares. UTI has a monopoly of mutual fund business in India. In the banking sector, mutual funds have been set up mainly by the merchant banking subsidiaries of some public sector banks.

10. Hire purchase credit

Hire purchase means purchase of goods on the basis of installments. Hire purchase or installment credit refers to term loans provided for the purchased of consumer goods.

11. Factoring service

The first factoring service in India has been started by the SEBI, namely the SEBI commercial and factoring service limited. In India, the SBI and Canara bank are the only two banks which have set up separate subsidiaries for undertaking factoring services.

Factor is a financial institution which manages the collection of accounts receivable of business firms and bears the credit risk associated with those account. Factoring service implies the advance payment of credit by the bank to the customer. It is to be collected later on from the debtor. The bank charges commission for this service.
12. Offshore Banking

Many banks now have an international dimension in the form of Offshore or overseas banking. The operation offshore banking is truly international business in which bank and management groups in many countries participate\(^\text{10}\).

13. Venture capital

Venture capital fund (VCF) is a new type of financial intermediary which has emerged in India in late 1980’s. Venture capital funds (VCFs) are mutual funds or institutional investors which provide risk capital, management and marketing expertise to highly risky and new private business, particularly in technology oriented or knowledge intensive industries\(^\text{11}\).

**Venture Capital Funds in India:**

- Risk Capital Foundation was sponsored by IFCI in March 1975 later reconstituted as Risk Capital and technology Finance Corporation (RCTFC) Limited in January 1988.
- Venture Fund of IDBI, started in 1986.
- Technology Development and Infrastructure Corporation of India (TDICI) by ICICI in 1988.
- Credit Capital Venture Fund (India) Limited (CCVP) and Venture Capital Funds set up by IDBI and UTI

14. Banking Ombudsmen Scheme

Banking Ombudsmen scheme was announced in June 1995 to provide quick and inexpensive facility to resolve customers’ grievances\(^\text{12}\).

The complaints can come under the areas like:

1. Deficiency in bank services like non-payment.
2. Delay in collection.
3. Handling of cash currency.
4. Non-adherence to working hours.
5. Complaints from NRI and exporters.
6. Complaints concerning loans and advances relating to delay in sanction.

Non-observance of RBI directions on interest rates

15. Customer services

A number of measures have been taken to improve the quality of customer services offered by the banks to depositors and borrowers. Important factors among these are given:-

1. Till June 1996 about 1400 branches have been computerized.
2. Facilities like passbook printing, self-service terminals for customers have been started in many of the branches.
3. Efforts were made to conduct SWIFT training courses for Indian banking community on regular basis.
4. Shared payment Network System (SPNS) was started at Mumbai in 1997.
5. RBI launched the Electronic Clearing services (ECS) in April 1995 at Mumbai and Chennai.
6. RBI has also started the Electronic funds transfer (EFT) in Mumbai and Chennai for retail customers.
7. Customer service audit are being conducted periodically to ensure meaningful implementation of Goiporia Committee recommendations.

16. Service area approach

In 1988, the RBI has started the service area approach for rural lending. This approach refers to a system of assigning special areas to each bank branch in which it can concentrate for productive lending. It aims at making available adequate and timely credit for
meaningful activities and ensuring effective recycling of bank funds\textsuperscript{13}. Service area approach intended to bring about a major change in the country and productivity of rural lending.

The implementation of service area approach involves the following five stages:

1. Identification of services area for each bank branch.
2. Survey of the villages in the service area for assessing the potential for lending for different activities and identification of beneficiaries for assistance.
3. Preparation of credit plans on an annual basis for the service area by each branch.
4. Inter and intra co-ordination between credit institution and field level development agencies on an ongoing basis for effective implementation of credit plans.
5. Continues system of monitoring the progress in the implementation of the plans and individual schemes.

3.5 **History of Innovative banking**

The precursor for the modern home online banking services were the distance banking services over electronic media from the early 80s. The term online became popular in the late ‘80s and referred 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 instruction to the bank.

History of Innovative banking has been discussed under five broad head namely.

3.5.1 Videotax
3.5.2 Alex
3.5.3 Telesp
3.5.4 CEPT

3.5.5 Other broadcasting services

3.5.1 Videotex

Videotex systems are interactive; computer-based which electronically deliver text, number and graphics for display on a television set, video monitor or personal computer. The data travels over telephone lines, two-way cable, computer networks or any combination of the four. On-line services started in New York 1981, then four of the city’s major banks 1). Citibank, 2). chase, 3). Manhattan and 4). chemical offered home banking services using the Videotex system. Videotex was one of the earliest implementations on “End-user information system”. From the late 1970s to mid-1980s, it was used of deliver information usually pages of text to a user in computer like format, typically to be displayed on television set.

Videotex refers to systems that provide interactive content and display on a television, typically using modems to send data in both directions. A close relative is “Teletext” which sends data in one direction only, typically encoded in a television signal sometimes the term “View data” is used to describe all such systems generally unlike the modern internet; all traditional videotext services were highly centralized.
Vediotex Machine

Source: http://instinctive.at/ypnwjm.php?q=minitel

Telex Machine


Vediotex was not originally delivered to computers. Instead, a television set hooked to set-top box was used to receive information from a remote database via a telephone line or cable TV. The early services
offered thousands of pages ranging from consumer information to financial data, but with limited graphics, such services were offered in many countries around the world, most notably Great Britain, France and the United States. Videotex in its broader definition can be used to refer to any such service, including the internet bulletin board systems, online services providers and even the arrival/departure displays at an airport. This usage is no longer common.

A videotex service was provided by “Minitel” in worldwide. This minitel terminal was an early device used of connecting to minitel\textsuperscript{14}.

3.5.2 Alex

Bell Canada introduce Minitel to Quebec as Alex in 1988, and Ontario two years later, it was available both as a standalone CRT terminal very similar in design to Apple’s e-Mac with 1200bit is modem and as software only for Ms-dos computers.

**Picture:-3.3**

**Bell Alex Machine**

Source:- http://www.answers.com/topic/videotex

The system was received enthusiastically thanks to a free two months introductory period, but fizzled within two years. Online fees were very high and the useful services such as home banking restaurant reservation and news feeds, that Bell Canada advertised did not material
within a very short time the majority of content on “Alex” was of poor quality or very expensive chat-lines. The Alex terminals did double duty for connecting to text only BBSes\(^5\).

### 3.5.3 Telesp

Telecomunicacoes-de-sao-paulo ot operted from 1982 to the mid-nineties from Sao Paulo, Brazil a few other state telephone companies followed Telesp’s lead but each kept standalone database and services. The key to its success was that the phone company offered only its service and phone subscriber databases and third parties banks, database providers, newspapers offered additional content and services. The system peaked at to thousand subscribers around 1995 all bank transaction going through using Telesp services.\(^6\)

### 3.5.4 CEPT

The Germans took the CEPT 1 concept and expanded it so it was somewhat more flexible, the resulting standard was called CEPT 2 in Germany. The system was named BTX (Bildschirmtext) English “Screen text, after that the French went one step further and developed CEPT 3 that would be used for their popular Minitel system. Screen text services provided by bank to the customer who using CEPT services.\(^7\)

**Picture:-3.4**

**BTX Machine**

Source:-http://www.kalaydo.de/anzeigen/
3.5.5 Other broadcasting services

Ceefax (See facts) is the BBC’s name for its public teletext services available on to TV channels using spare capacity. Oracle (Optional recognition of coded in electronics) is the name of the IBA’s equipment teletext services.

Picture:-3.5

BBC Ceefax

Source:- http://www2.tv-ark.org.uk/testcards/teletext_bbc.html

3.6 World scenario of internet banking

According to research done by Cyber dialogue, there were 53.5 million cyber citizens in 1999; approximately 6.3 million of these people were banking on-line in 1999, as well, this was up from 6 million using on-line banking services in 1998.
Table:-3.1
Internet users and population status of the World (31, March.2011)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Population (2011 Est.)</th>
<th>Internet user December 31, 2000</th>
<th>Internet user 2011</th>
<th>% in population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>1,037,524,058</td>
<td>4,514,400</td>
<td>139875242</td>
<td>13.48</td>
</tr>
<tr>
<td>Asia</td>
<td>3,879,740,877</td>
<td>114,304,000</td>
<td>1016799076</td>
<td>26.20</td>
</tr>
<tr>
<td>Europe</td>
<td>816,426,346</td>
<td>105,096,093</td>
<td>500723636</td>
<td>61.33</td>
</tr>
<tr>
<td>Middle East</td>
<td>216,258,843</td>
<td>3,284,800</td>
<td>77020995</td>
<td>35.61</td>
</tr>
<tr>
<td>North America</td>
<td>347,394,870</td>
<td>108,096,800</td>
<td>273067546</td>
<td>78.60</td>
</tr>
<tr>
<td>Latin America</td>
<td>597,283,165</td>
<td>18,068,919</td>
<td>235819740</td>
<td>39.48</td>
</tr>
<tr>
<td>Australia</td>
<td>35,426,995</td>
<td>7,620,480</td>
<td>23927457</td>
<td>67.54</td>
</tr>
<tr>
<td>World total</td>
<td>6,930,055,154</td>
<td>360,985,492</td>
<td>2,267,233,742</td>
<td>32.71</td>
</tr>
</tbody>
</table>

Source: - Internet world states, Miniwatts marketing groups.

Graph:-3.1
Internet users and population status of the World

The above table no. 3.1 and Graph no.3.1 exhibits data of internet users and population status of the world. The population of whole world was 6,930,055,154 and internet users 360,985,492 approximately 32.70%
of total population used internet. The growth of internet user increased from 2000 to 2011 approximately 528.06%.

World scenario of internet banking has been discussed under six heads by the researcher namely:-

3.6.1 United States of America.
3.6.2 Hong Kong.
3.6.3 Sweden & Finland.
3.6.4 United Kingdom’s.
3.6.5 Japans.
3.6.6 Singapore.

3.6.1 United States of America

In the USA, the number of financial institutions and commercial banks with transaction through web sites is 46.6 % in 2009. Approximately 78% of all commercial banks with more than $ 5 billion in assets, 43% of banks with $ 500 million to $ 5 million in assets, and 10% of banks under $ 500 million in assets have transactional internet banking websites. Internet user and population status for the Americas are given in following table.

Table:-3.2

<table>
<thead>
<tr>
<th>Region</th>
<th>Population (2010)</th>
<th>Internet User's</th>
<th>% population of Internet user</th>
<th>internet user as per</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America</td>
<td>344,124,450</td>
<td>266,224,500</td>
<td>77.36</td>
<td>56.53</td>
</tr>
<tr>
<td>South America</td>
<td>396,626,130</td>
<td>156,609,436</td>
<td>39.48</td>
<td>33.25</td>
</tr>
<tr>
<td>Central America</td>
<td>154,298,120</td>
<td>38,433,400</td>
<td>24.90</td>
<td>8.16</td>
</tr>
<tr>
<td>The Caribbean</td>
<td>41,632,722</td>
<td>9,647,000</td>
<td>23.17</td>
<td>2.04</td>
</tr>
<tr>
<td>Total America</td>
<td>936,681,422</td>
<td>470,914,336</td>
<td>50.27</td>
<td>100</td>
</tr>
</tbody>
</table>

Sources:- Internet world states, Miniwatts Marketing groups,

The above table no 3.2 and graph no. 3.2 exhibits data of internet user and population status of the USA. USA has a powerful country as well economy. The USA populations were 936,681,422, internet users of the country 470,914,336, about 50.30% of total population used internet in America. So it’s directly effect to the internet banking user. Most of internet user stood in South America

3.6.2 Hong Kong

There has been a spate of activity in Internet banking in Hong Kong. Hong Kong’s total population was 70,55,071 in 2009 and approximately Internet user was a 48, 78,713 there is a 69.20% of the total population. Banks are participating in strategic alliances for e-commerce venture and forming alliances for internet banking services delivered through Jetco a bank consortium operating an ATM network in Hong Kong. A few banks have launched transactional mobile phone banking earlier for retail customers.
3.6.3 Sweden & Finland

Swedish and Finlandish markets lead the world in terms of Internet penetration and the range and quality of their online services. Merita Nordbanken leads in “log-ins per month” with 1.2 million Internet customers and its penetration rate in Finland around 45% is among the world’s highest bank of ‘brick and mortar’ origin. Standinaviska Easkilda Banken (SEB) was Sweden’s first Internet bank, having gone on-line in December 1996. It has 1,000 corporate clients for its Trading Station. Swed bank is another large sized internet bank, almost all of the approximately ISO banks operating in Norway has established “net banks”.

3.6.4 United Kingdom

In United Kingdom, most of banks offering banking transaction through Wireless Application Protocol (WAP), mobile phone and T.V. A number of non-banks have approached the Financial Services Authority (FSA) about charters for virtual banks or ‘clicks and mortar’ operations. There is a move towards banks establishing portals.

3.6.5 Japan

Japanese banks are increasingly focusing on Internet banking transactions. Internet banking is a most important part of their strategy. While some banks provide services such as inquiry, settlement, purchase of financial products and loan application.

3.6.6 Singapore

The Monetary Authority of Singapore (MAS) has reviewed its current framework for licensing and for prudential regulation and supervision of banks, to ensure its relevance in the light of developments in Internet banking, the existing policy of MAS already allows all banks licensed in Singapore to use the Internet to provide banking services.
MAS is subjecting Internet banking, including IOBs, to the same prudential standards as traditional banking\textsuperscript{21}.

### 3.7 Internet user statistics in Asia

Internet users in Asia are growing fast. It seems that every country is taking to use internet services. There is a bright future of internet services in Asian market. China and India is most users of internet services.

In Asia, Japan, Taiwan and Korea nearly 70\% of the total population used internet services. In India, Indonesia and Thailand approximately 6.90\%, 12.30\% and 26.30\% of the total population used internet banking and Singapore, South Korea 77.80\% and 81.10 of the people used internet banking services. The current statistics about internet users in Asia are given in the below table no.3.3.

<table>
<thead>
<tr>
<th>Asia</th>
<th>Population 2010 Est.</th>
<th>Internet users '00</th>
<th>Internet users'2010</th>
<th>% In population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afganistan</td>
<td>29121286</td>
<td>1000</td>
<td>10000000</td>
<td>3.4</td>
</tr>
<tr>
<td>Armenia</td>
<td>2966802</td>
<td>30000</td>
<td>208200</td>
<td>7</td>
</tr>
<tr>
<td>Azerbaiyan</td>
<td>8303512</td>
<td>12000</td>
<td>3689000</td>
<td>44.4</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>158065841</td>
<td>100000</td>
<td>617300</td>
<td>0.4</td>
</tr>
<tr>
<td>Bhutan</td>
<td>699847</td>
<td>500</td>
<td>50000</td>
<td>7.1</td>
</tr>
<tr>
<td>Brunai</td>
<td>395027</td>
<td>30000</td>
<td>318900</td>
<td>80.70</td>
</tr>
<tr>
<td>Combodia</td>
<td>14753320</td>
<td>6000</td>
<td>78000</td>
<td>0.5</td>
</tr>
<tr>
<td>China</td>
<td>1330141295</td>
<td>225000000</td>
<td>420000000</td>
<td>31.6</td>
</tr>
<tr>
<td>Georgia</td>
<td>4600825</td>
<td>20000</td>
<td>1300000</td>
<td>28.30</td>
</tr>
<tr>
<td>Hongkong</td>
<td>7089705</td>
<td>2283000</td>
<td>4878713</td>
<td>68.80</td>
</tr>
<tr>
<td>India</td>
<td>1173108018</td>
<td>50000000</td>
<td>81000000</td>
<td>6.90</td>
</tr>
<tr>
<td>Indonesia</td>
<td>242968342</td>
<td>20000000</td>
<td>30000000</td>
<td>12.30</td>
</tr>
</tbody>
</table>

Table no. 3.3 Cont.-------
<table>
<thead>
<tr>
<th>Country</th>
<th>Population</th>
<th>GDP per Capita</th>
<th>Number of Internet Users</th>
<th>Internet Penetration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>126804433</td>
<td>47080000</td>
<td>99143700</td>
<td>78.20</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>15460484</td>
<td>70000</td>
<td>5300000</td>
<td>34.30</td>
</tr>
<tr>
<td>Korea(N)</td>
<td>22757275</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Korea(S)</td>
<td>48636068</td>
<td>1904000</td>
<td>39440000</td>
<td>81.10</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>5508626</td>
<td>51600</td>
<td>3194400</td>
<td>39.80</td>
</tr>
<tr>
<td>Laos</td>
<td>6993767</td>
<td>6000</td>
<td>527400</td>
<td>7.50</td>
</tr>
<tr>
<td>Macao</td>
<td>567957</td>
<td>60000</td>
<td>2809000</td>
<td>49.50</td>
</tr>
<tr>
<td>Malaysia</td>
<td>26160256</td>
<td>3700000</td>
<td>16902600</td>
<td>64.60</td>
</tr>
<tr>
<td>Maldives</td>
<td>395650</td>
<td>6000</td>
<td>87900</td>
<td>22.20</td>
</tr>
<tr>
<td>Mongolia</td>
<td>3086918</td>
<td>30000</td>
<td>350000</td>
<td>11.30</td>
</tr>
<tr>
<td>Myanmar</td>
<td>53414374</td>
<td>1000</td>
<td>1100000</td>
<td>0.20</td>
</tr>
<tr>
<td>Nepal</td>
<td>28951852</td>
<td>50000</td>
<td>6258000</td>
<td>2.20</td>
</tr>
<tr>
<td>Pakistan</td>
<td>177276594</td>
<td>133900</td>
<td>18500000</td>
<td>10.40</td>
</tr>
<tr>
<td>Phillipines</td>
<td>99900177</td>
<td>2000000</td>
<td>297000000</td>
<td>29.70</td>
</tr>
<tr>
<td>Singapore</td>
<td>4701069</td>
<td>1200000</td>
<td>36584000</td>
<td>77.80</td>
</tr>
<tr>
<td>Shri Lanka</td>
<td>21513990</td>
<td>121500</td>
<td>1776200</td>
<td>8.30</td>
</tr>
<tr>
<td>Taiwan</td>
<td>23024956</td>
<td>6260000</td>
<td>161300000</td>
<td>70.10</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>7487489</td>
<td>2000</td>
<td>7000000</td>
<td>9.30</td>
</tr>
<tr>
<td>Thailand</td>
<td>66404688</td>
<td>2300000</td>
<td>17486400</td>
<td>26.30</td>
</tr>
<tr>
<td>Timor</td>
<td>1154625</td>
<td>0</td>
<td>21000000</td>
<td>0.20</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>4940916</td>
<td>2000</td>
<td>8040000</td>
<td>1.60</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>27865738</td>
<td>7500</td>
<td>46890000</td>
<td>16.80</td>
</tr>
<tr>
<td>Vietnam</td>
<td>89571130</td>
<td>2000000</td>
<td>24269083</td>
<td>27.10</td>
</tr>
<tr>
<td><strong>Total Asia</strong></td>
<td><strong>3834792852</strong></td>
<td><strong>114304000</strong></td>
<td><strong>825094396</strong></td>
<td><strong>21.50</strong></td>
</tr>
</tbody>
</table>

Source: Internet World State, Miniwatts marketing groups, 2010
The above table no 3.3 and graph no. 3.3 exhibit data of Internet users and population statistics of Asia. Internet users directly affected to internet banking user. If, internet user is high, technology based services easily provided to the customers by the bank. The internet users in Brunai, South Korea, Japan, Malaysia, Singapore and Taiwan’s were more than 50% of the total population. In India, total populations were 1173108018 and internet users were 81000000. There is an approximately 6.90% of the total population used internet. Highest internet users were in South Korea i.e. 81.10% of the total population and lowest internet users were in Myanmar and Timor i.e. 0.20 and 0.20 of the total population.

3.8 **History of Innovative banking in India**

Innovative banking practice in India started in 1991, marked the entry of foreign banks. They bought new technology with them. As banking products became more and more competitive, need for differentiation of banking products and services was felt.
The ICICI bank kicked off online banking in 1996, currently 78% of its customer base registered for on-line banking. 1996 to 1998 marked the adoption phase while usage increased only in 1999, owing to lower ISP on-line charged increased PC penetration and a tech friendly atmosphere. Guidelines about the internet banking policy have been approved by the bank’s overall information technology and information security policy and ensures confidentially of record and security system. The policy clearly lays down the procedure to be followed in respect to “Know your customer” (KYC) requirement. The policy broadly meets the parameters laid own in the earlier circulars.

Facts and figures about internet population currently is 38.5 Million end expected to grow to 100 million by 2009-10. At present 4.6 Million of these use internet banking. This figure is estimated grow to 16 million by the end of 2007-08. Only 59% of adult populations have access to a bank account, which implies 41% of adult population is unbanked.

At ICICI bank in the year 2000, 94% of the transaction happened at the branches, just 2% over the net. In fiscal 2006 transactions at the branch were down to 22% of the total while net banking transactions rise to 18%. ICICI Demat22 services boasts of an ever growing customer base of 16.2 lacs as on 30 September 200923. ICICI Bank offers various innovative products in their endeavour to offer world class services to its customers.

At HDFC bank transaction that accounted for 43% of all transaction in fiscal 2001, came down 23.5 in fiscal 2006. In the same period, internet transactions rise from about 3% to 16%, about 40 of the transaction on the net take place during non-banking hours. i.e. 6 p.m. to 8. a.m24.
3.9 **Internet banking in India: RBI Guidelines**

Reserve Bank of India has set up a Working Group on Internet Banking to examine different aspects of Internet Banking which focused on three major areas such as (A). Technology and security issue, (B). Legal issues the regulatory and (C). Supervisory issues, which are discussed below, RBI has issued following guidelines on June 14, 2001 for implementation by commercial banks.

All banks, who propose to offer internet banking should obtain prior approval from RBI. 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.

Overseas branches of Indian banks will be permitted to offer Internet banking services to their overseas customers subject to their satisfaction, in addition to the host supervisor, the home supervisor.

**A. Technology and Security Standards**

- Banks should have a security policy duly approved by the Board of Directors with segregation of duty of Security Officer, Further; Information systems, Auditor should audit the information systems.
- Banks should designate a network and database administrator with clearly defined roles.
- Bank should introduce logical access controls to data, systems, application software, utilities, telecommunication lines, libraries, system software, etc.
- Banks should use the proxy server type of firewall so that there is no direct connection between the Internet and the bank’s system.
• Physical security should cover all the information systems and sites where they are housed, both against internal and external threats.
• 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.

B. Legal Issues
• Internet accounts should be opened only after proper introduction and physical verification of the identity of the customer.
• From a legal perspective, security procedure should be adopted by banks for authenticating signature.
• In Internet banking scenario, there is very little scope for the banks to act on stop-payment instructions from the customers.

C. Regulatory and Supervisory Issues
• The products should be restricted to account holders only and should not be offered in other jurisdictions.
• The services should only include local currency products.
• Banks will report to RBI every branch or failure of security systems and procedure.
• Banks must make mandatory disclosures of risks, responsibilities and liabilities of the customers.
• The banks should also provide their latest published financial results over the net.
3.10 **Role of RBI in computerization of Indian bank**

Computerization became popular in the western countries right from the sixties. Main frame computers were extensively used both by the public institutions and major pvt. Organizations. Mini computer became famous in eighties.

The Electronics Corporation of India ltd. was set up under the Department of Atomic Energy on 11th, 1967 with the objective of research & development in the fields of Electronic communication, control, instrumentation, and automation and information technology\(^{26}\). CMC ltd (Computer Maintenance Corporation Of India Ltd.) was established in 1976 to look after maintenance operation of main frame computers installed in several organizations in India. TCS (Tata Consultancy Services) which started functioning from 1968. In the 1980 an IIT Delhi pioneered the effort to start a major education centre in India to impart training in information technology and their efforts resulted in the setting up of NIIT in 1981. Aptech computer education was established in 1986 following the experiment of NIIT.

The former governor of the RBI Dr. C. Rangarajan had strongly recommended computerization banking operations at various levels and suggested appropriate architecture.

The committee on the mechanization of the banking industry (1984) was set up for the first time to suggest a model for mechanization of bank branches regional/controlling offices and head office was necessitated by the explosive growth in the geographical spread of banking following nationalization of banks in 1969.

In the first phase of computerization spanning the five years ending 1989, banks in India had installed 4776 ALPMs (Advanced Ledger Posting Machines)\(^{27}\), at the branch level, 233 mini computers at the
regional / controlling office level and trained over 2000 programmers / systems personnel and over 12000 data entry terminal operators.

The RBI too had embarked upon an ambitious programme to bring about state-of-the-art technology in the clearing process and had introduced MICR clearing at 4 centers and computerizes clearing settlement at 9 centers. Rangarajan Committee draws up a perspective plan for computerization in Indian banks, the report submitted by Dr. Rangrajan\textsuperscript{28}. The committee acknowledged the gains of the initial efforts and sought to more away from stand-alone dedicated systems to an online transaction processing environment in branch banking.

\textbf{3.11 RBI first step towards- Information Technology (IT)}

Information technology and the communication networking systems are inter related with each other. In India, banks as well as other financial entities have entered the world of information technology and computer networking with INFINET\textsuperscript{29}.

The Indian Financial Network (INFINET), a wide area satellite based network using VSAT technology, was jointly set up by the Reserve Bank and Institute for Development and Research in Banking Technology (IDRBT) at Hyderabad to facilitate connectivity within the financial sector. The network was inaugurated in June 1999.

The INFINET was planned to cover, in a phased manner, 100 commercially important centers and serve as the communication backbone of the proposed Integrated Payment and Settlement System (IPSS). The Indian Financial Network (INFINET), which initially comprised only the public sector banks, was opened up for participation by other categories of members. 26 public sector banks achieved the level of 70 per cent of business captured through computerization by June 2001.
Banks and financial institutions had taken a decision to adopt SWIFT (Society for Worldwide Interbank Financial Telecommunication) like message formats for putting all their funds based applications on the Internet. This initiative would not only help standardization in banks but would as well help across border Straight through Processing so as to ultimately integrate our financial system with other cross border financial systems. Here the researcher has tried to focus major highlights of various committee appointed by RBI on IT issue, which are as below:-

3.11.1 Rangarajan committee (1983),
3.11.2 Rangarajan committee (1988),
3.11.3 W.S. Saraf committee (1994)
3.11.4 Shere committee (1995),
3.11.5 Narsimham committee (1998),
3.11.6 Vasudevan committee (1999).

3.11.1 Rangarajan Committee (1983)30

In the early 80s, a high level committee was formed under the chairmanship of Dr. C Rangarajan, then Governor of the Reserve Bank of India, to draw up a phased plan for computerization and mechanization in the Banking Industry over a five year time frame of 1985-89. The focus by this time was on customer service and two models of branch automation were developed and implemented.

- Front office mechanization, where front desk operations were computerized while back office work was done manually.
- Back office automation, covering mechanization of General Ledger and back office operations while the front office work was done manually31.

Both the models provided the customer with error-free accounting, regular statements of accounts etc. Considering the contemporary level of computerization, these were major achievements but did not go far
enough and the pace of their implementation was tardy, to say the least, with not a little opposition from trade unions\(^{32}\).

### 3.11.2 Rangarajan Committee (1988)\(^ {33}\)

The second Rangrajan Committee constituted in 1988 drew up a detailed perspective plan for computerization of in Banks and for extension of automation to other areas like funds transfer, electronic mail, BANKNET, SWIFT, ATMs etc.

- Around 2000 to 2500 large branches located at high activity urban and metropolitan centers to be fully computerized
- Regional Offices / Zonal Offices/Head Offices to be fully computerized.
- Inter and intra bank transactions using the BANKNET set up by the RBI and
- Installation of a network of cash dispensers / ATMs at strategic locations such as airports and railway stations etc., on a shared basis by banks\(^ {34}\).

The Committee also studied recommendations on the 'Single Window Concept', 'all bank credit cards', ‘credit clearing/GIRO system’ and ‘office automation’ etc. In fact, this report was the most comprehensive road map for Bank Automation considering the state of the art technology at that time\(^ {35}\).

### 3.11.3 W.S. Saraf Committee (1994)\(^ {36}\)

Reserve bank of India had appointed a committee on technology issues under the chairmanship of W. S. Saraf. The committee looked into technological issues related to the payment system and to make recommendations for technology in the banking industry.

- The Saraf committee recommended to set up institutions for electronic funds transfer system in India.
• The committee also reviewed the telecommunication system like use of BANKNET and optimum utilization of SWIFT by the banks in India.

3.11.4 Shere Committee (1995)\textsuperscript{37}

RBI formed a committee under the chairmanship of K. S. Shere, to study all aspects relating to electronic funds transfer and propose appropriate legislation.

The Shere committee had recommended framing of RBI (EFT system) regulations under section 58 of the Reserve bank of India Act 1934 (RBI Act.), amendments to the RBI act and to the bankers book evidence act, 1891 as short term measures and enacting of a few new acts such as EFT act, the computer misuse and data protection act etc. as long term measures.

3.11.5 Narasimham Committee (1998)\textsuperscript{38}

The Reserve Bank of India appointed Narasimhan committee in September 1998. The committee consists of representatives from the Government, Reserve Bank of India, banks and academic institutions associated with the information technology. The committee dealt with the issues on technology up gradation and observed. The committee also suggested implementation of the necessary legislative changes are as under:-

• Evidence of Electronic files,
• Encryption on Public Switching Telephone Network (PSTN) lines,
• Electronic Record keeping,
• Provide data protection,
• Digital signatures,
• Electric fund transfer Clarification.
3.11.6 Vasudevan Committee (1999)\textsuperscript{39}

The Reserve Bank of India appointed Vasudevan Committee for the Technology up gradation in the banking sector. The Committee in its Report, submitted in July 1999.

The Vasudevan Committee recommended a new legislation on Electronic funds- transfer system to facilitate multiple payment systems to be set up by banks and financial institutions.

3.12 Types of bank computerisation\textsuperscript{40}

Banking computerization system can be classified as three types, which are as under:-

3.12.1 Back office application
3.12.2 Total Branch Automation
3.12.3 Core banking Solution

3.12.1. Back Office Application:-

The Back office application uses computers only for data entry operations and a few calculative operations. It also stores customer’s data and uses MS-dos based Fox Pro to calculate interest and calculate the employees’ salary.

This application was not beneficial to the banks customers because it was not providing any kind of service. The working hours of bank employees were increased due to this system. It is also observed that in this system, daily / weekly / monthly back up was required.

3.12.2 Total Branch Automation:-

Total Branch Automation is used in branches that are covering 80% of the total business of a bank. These branches should have a single customer ID concept using which all the accounts of the customer can be retrieved. The bank should start collecting customer information through system. TBA trained the employees in the areas of customer relationship;
In case of TBA, bank can also provide ATM facility. Total Branch Automation is more convenient method of bank transaction, as compared to back office application.

3.12.3 Core banking Solution:-

Core banking applications (CBS) in Banks provide the complete front-end and backend automation of banks. Core banking applications provide anywhere, anytime 24 by 7 non-stop services, which is not possible with traditional localized branch automation systems. These applications also provide automation across multiple delivery channels. Core banking is a centralized system that provides accounting, customer information management and transaction processing functions.

In case of core banking, customer can operate their account from various locations. Core banking is just one part of a fairly complex architecture of today’s banking which takes care of the essential banking activities.

The following modules are offered by the Core Banking Solutions

- Customer information files management
- Loan management
- Deposit management
- Security management
- Limit management
- Financial accounting
- Reserve for bad debts
- Complementary third party products
3.13 **Types of Internet Banking**

The various types of internet banking products will help examiners assess the risks involved. Currently, the following three basic types of internet banking are being employed in the market place\(^4\).

3.13.1 Informational

3.13.2 Communicative

3.13.3 Transactional

3.13.1 **Informational**

This is the basic level of internet banking. Typically the bank has marketing information about the bank’s products and services on a standalone server.

- The risk relatively low, as informational system does typically have no path between the server and the bank’s internal network.
- This internet banking can be provided by the bank or outsourced.
- While the risk to a bank is relatively low, the server or website may be vulnerable to attention.
- Appropriate controls therefore must be in place to prove unauthorized alternations to the banks server or website.

3.13.2 **Communicative**

- These types of internet banking allow some interaction between bank’s system and the customer.
- The interaction may be limited to electronic mail, account inquiry, loan application or static fill updates.
- The risk is higher with this configuration than with informational systems.
Appropriate controls need to be in place of prevent, monitor and alert management of any unauthorized attempt to access the bank’s internal network and computer systems.

3.13.3 Transactional

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

3.14 Function of Innovative banking

The partout functions of innovative banking can be summarized as below.

1) Inquiry about the information of account
   The client inquires about the details of his own account information such as the card’s/account’s balance and the detailed historical records of the account and download the report list.

2) Bank securities accounts transfer
   The client can achieve the fund transfer between his own bank savings accounts of his own credit card account and his own capital accounts in the securities company. Moreover, the client can inquire about the present balance at real time.
3) **The transaction of foreign exchange**
   The client can trade the foreign exchange, cancel orders and inquire about the information of the transaction of foreign exchange according to the exchange rate given by our banks on net.

4) **The BQC disbursement on net**
   The client can do the real-time transfer and get the feedback information about payment from our bank when the client does shopping in the appointed web.

5) **Account management**
   The client can modify his own limits of right and state of the registered account in the personal e-bank. Such as modifying his own login password freezing or deleting some cards and so on.

6) **Client services**
   The client can modify the login password, information of the credit card and the client information in e-bank on net.

7) **Reporting the loss to the bank**
   The client can report the loss in the local area not a national wide when the client’s credit card or passbook is missing or stolen.

8) **Card account’s transfer**
   The client can achieve the fund to another person’s credit card in the same city.

### 3.15 Innovative banking and technology vendor

Indian banks have to define RFP (Request for proposals) for selection of a suitable core banking solution based on the various parameters. For this proposed, some bank are not offer various types of technology based services. Nevertheless, a quick scan of product
catalogues of leading core banking system vendors throws the following names for consideration.

Table: 3.4

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Vendor name</th>
<th>Leading banking customers</th>
<th>Transaction Volume branches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finacle 6.X</td>
<td>Infosys technologies Ltd</td>
<td>ICICI, UTI, IDBI,ABN Amro, Punjab National Bank, Union Bank of India, Tamilnadu Merantile bank, Karnataka Bank</td>
<td>Million of transaction, Hundred of Branches, Thousand of ATM</td>
</tr>
<tr>
<td>Flexcube</td>
<td>1-Flex Solution ltd</td>
<td>Syndicate Bank, Bharath overseas Bank, Karur Vyasa Bank, HDFC Bank</td>
<td>Lakhs Of transaction, Hundred of branches, Several ATM</td>
</tr>
<tr>
<td>Sanchez</td>
<td>IBM</td>
<td>Vyasya Bank</td>
<td>More than 100 branches</td>
</tr>
<tr>
<td>Equation</td>
<td>ACT Kindle</td>
<td>Indus Bank, Centurion Bank</td>
<td>More than 100 branches</td>
</tr>
<tr>
<td>FNS</td>
<td>TCS</td>
<td>SBI Bank</td>
<td>Under implementation</td>
</tr>
<tr>
<td>TC/4</td>
<td>TCS/ CMC</td>
<td>United western Bank</td>
<td>Under implementation</td>
</tr>
<tr>
<td>Newton</td>
<td>ICICI InfoTech</td>
<td>Lakhshmi Vilas Bank</td>
<td>Under implementation</td>
</tr>
<tr>
<td>Quartz</td>
<td>TCS</td>
<td>City Union Bank</td>
<td>Under implementation</td>
</tr>
</tbody>
</table>


There are also other players such as Temenos, who are active with their core banking solution but yet to win a customer and satisfy customer’s requirement at a present.
3.16 **Computerisation- Intra bank and Inter bank application**

Computerization is a necessary of all banks. Almost all the activities in a bank can be performed more effectively and efficiently with the help of computers broadly. Computer application is divided in two types⁴³:-

3.16.1 Intra bank application
3.16.2 Inter bank application

**3.16.1 Intra Bank Application**

"Intra" means within, as in a transfer within the bank. Your bank may have an agreement where you designate your accounts to and from which funds may go. A checking and savings account at the same bank are examples.

**Diagram:-3.2**

**Intra bank mobile payment transfer**

Source:www.mpf.org.in/ppt/MPFI2520Technology%2520Sub%2520committee%2520Presentation%252016-02-08.ppt
Intra bank application includes the following types of services to the bank:

1. Fund Transfer and payment messages
2. Banks owned ATM/ credit card and other application on the corporate network
3. Inter branch reconciliation
4. Investment proposal/ quick disposal of loan
5. cash management product
6. treasury management
7. Any branch banking
8. Asset liability management
9. E-Mail
10. Software distribution in the bank
11. Organizational bulletin boards may contain the following.
    a. Circulars
    b. News letters, phone and address directories
    c. Undesirable parties
    d. Missing security items
    e. Confidential circular in attempted funds
12. Human resources development and personal administration
13. Auditing and inspecting computerized branches using the network
14. organizational database may include
    a. Statutory returns
    b. Control returns
    c. Standardized returns
15. Management information systems
    a. Borrower’s profile
    b. Branch profile
c. Employee analysis  
d. Product/service profile  
e. Business profile of branches  

16. Apart from providing efficient service to customers the financial network will also fulfill the following objectives  
a. Timely information to top management  
b. Helping in development of new products  
c. Speedy communication among branches and with the controlling offices.  

3.16.2 Inter Bank Application  
"Inter" means between, such as from one bank to another bank. You may set up a transfer of funds from your bank to your child's local bank while they are away at college.  

Diagram:-3.2  
Interbank mobile payment transfer  

Source:www.mpf.org.in/ppt/MPFI2520Technology%2520Sub%2520committee%2520Presentation%25202016-02-08.ppt
Inter bank application, following services are included.

1. Electronic funds transfer (EFT)
   a. Retail EFT on net settlement basis
   b. Wholesale EFT on RTGS basis
2. Clearing and settlement systems for securities delivery Vs payment.
3. Transferring balance from net settlement system to RTGS server at periodic intervals. The net obligation could be from
   a. Local paper based clearing
   b. Inter city paper based clearing
   c. Bulk payments ECS, Debit, credit
   d. Shared ATM networks
   e. Smart cards and other prepaid/ pre authorized debit cards.
4. Exchange of defaulting borrowers list among RBI and banks
5. EDI services
6. Consolidation of current account balance from the existing DAD (Deposit account department in RBI offices)
7. Reporting of government account transaction
8. Reporting of basic statistical returns to RBI.
9. Asset liability management
10. Internet in RBI to enable banks to get circulars press releases.
11. Return to be submitted by the banks to department of banking supervision (DBS) for off side supervision and monitoring.
3.17 **Advantages of Innovative Banking (E-banking)**

Advantages of innovative banking (Includes e-banking) has been presented below.

1. **Account information**: -

   Real time balance information and summary of day’s transaction can be easily assessed by the customer due to e-banking.

2. **Fund Transfer (EFT)**:-

   Manage your supply chain network, effectively by using our online hand transfer mechanism. We can effect fund transfer on a real time basis across the bank locations.

3. **Customers can integrate the system with his own ERP**: -

   The customers can download the account statements either as a text file or as an excel file. The bank can help him in integrating the account statements and bank payments files with his ERP system. The bank may charge a nominal fee depending upon the nature of work involved.

4. **The Electronic shopping mall**: -

   The customer can also make his shopping payment through the bank’s secure website. Therefore, he can shop online without any security worries as the bank can provide online real time shopping male services through partner shopping site.

5. **Effecting personal investment through Electronic Banking**

   The bank’s website can also allow the customer to invest in shares, mutual fund and other financial products.

6. **Initial public offers online**: -

   The customer could also invest in initial public offers online without going through the hassles of filling any application form,
paperwork and get in-depth analyses of new initial public offers issues which are about to hit the market and analysis of these.

7. **Online Request:-**
   
   Customers can also submit the following requests of online registration for account statement by e-mail daily / weekly / fortnightly / monthly basis.

   - Stop payment or cheques.
   - Cheque book replenishment
   - Demand draft / pay-order
   - Opening of fixed deposit account
   - Opening of letter of credit

8. **Paper less banking operations**
   
   Due to use of computer in banking transaction, banks could not to maintain records of customers’ accounts in a paper. All transactions can be checked completed speedily through I.T. Hence bank officers burden of preparing customer’s account on a paper reduce.

9. **Other benefits:-**
   
   The innovative banking provides some other benefits also such as.

   1. convenience
   2. Speed of concluding transactions
   3. safely banking from own home
   4. Economy banking without visiting your bank.
   5. Cheaper service fees
   6. Highly scalable
   7. Easy customization
   8. Seamless integration with existing environment (IDM-Intelligent Data Module)
9. Platform independence
10. Remote authorization
11. Round the clock and cross border availability
12. Lower costs of both installation and maintenance

3.18 **Limitation of Innovative Banking**

Innovative banking practices offer a number of benefits to customers. But in the present scenario, we are obvious various cyber-crimes, due to lack of awareness of customers. Hence if the customer is unaware about security requirement for use of e-banking facilities, limitation of innovative banking way occur. In this regard, limitations of innovative banking (Including e-banking) can be summarized below.

- Abuse of bank cards by fraudsters at ATMs.
- Danger of giving your card number when buying one-line.
- Danger when card was stole etc.

3.19 **The Basel Committee’s Electronic Banking Groups**

The Basel committee on banking supervision has taken the lead in this area through the creation of its Electronic Banking Group (EBG) in late 1999, a group whose members represent it central banks and bank supervisory agencies.45

The major focus of the EBG’s work has been to develop risk management guidance for internet banking that will guide bankers and promote effective and consistent bank supervision around the world.

The EBG has identified various risk management principles for electronic banking to promote sound risk management of e-banking. These principles are intended to help banking institutions expand their
existing oversight policies and processes to cover their e-banking activities.46

- Authentication of e-banking customers
- Non repudiation and accountability for e-banking transaction of duties
- Appropriate measure to ensure segregation of duties.
- Proper authorization control within e-banking systems, databases and application.
- Data integrity of e-banking transaction records and information.
- Establishment of clear audit trails for e-banking transactions.
- Confidentiality of key bank information.

3.20 Technology driven E-banking:-Current Technology Models

The use of technology has several impacts on the banking systems. It provides multiple channels for the service industry. The technology enabled delivery channels are attractive from the point of reducing cost of operations.
Diagram: 3.4

The process of delivery channels

Source: - cover story on “The future of Indian banking” – A survey business world 9th July 2005

Above diagram no. 3.4 shows that the process of delivery channel related with banking service process. In India, most of public sector banks, private sector banks and foreign banks focus on e-commerce strategy. Bank always try to mark a step with recent trend for using the Information Technology in banking.

In the delivery channels, it is shows that a customer has a many choices of variety in banking services, he selects necessary of need and use it. Sometime Bank also provides various quality aspect services to the customer and satisfied customers requirement.
3.21 **Internet Banking Risk**\(^{47}\)

Internet banking creates risk for bank, so the new risk control is necessary. It is a challenge for national bank. Internet banking risk classified as under.

1. **Interest rate risk**
   - Interest rate risk is the risk to earning or capital arising from movement in interest rates from an economic perspective, a bank focuses on the sensitivity of the value of its assets liabilities to change in interest rates.
   - Evolution of interest rate risk must consider the impact of complex, illiquid hedging strategic or products and also the potential impact that changes in interest risk rates will have on fee income.
   - Internet banking can attract deposits, loans and other relationship from a larger pool of possible customers than other forms of marketing. Interest rate risks depend upon quickly changing of market condition.

2. **Liquidity Risk**
   - Liquidity risk is the risk to earning or capital arising from a bank’s inability to meet its obligations when they came due without incurring unacceptable losses.
   - Liquidity risk also arises from the failure to recognize or address changes in market condition affecting the ability of the bank to liquidate assets quickly and with minimize losses value.
   - Liquidity risk includes the inability to manage unplanned changes in founding sources.

3. **Price Risk**
   - Price risk is the risk to earning or capital arising from changes in the value of traded portfolio of financial instruments.
This risk arises from market dealing and position taking in interest rate.

Banks may be exposed to price risk if they create or expand deposit broking, loan sales or securitization programs as a result of internet banking activities.

4. **Credit Risk**

- Credit risk is the risk to earning 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 on all activities where success depends on counterparty issuer, or borrower performance.
- It arises any time, when bank fund are extended, committed, invested or otherwise exposed through actual or implied contractual agreement whether on or off the balance sheet.
- Internet banking provides the opportunity for banks to expand their geographical range and this type of risk may be increased.

5. **Transactional Risk**

- Transactional risk is the current and prospective risk to earning or capital arising from fraud, error and the inability to deliver products or services.
- Transactional risk is evident each products and service offered and encompasses products development and delivery, transaction, processing, system development, computing system, complexity of products and services and the internal control environment.

6. **Compliance risk**

- Compliance risk is the risk to earning or capital arising from violation of or non-conformance with law, rules and 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 banks clients may be ambiguous or untested.

Compliance risk exposes the institution to fines civil money penalties, payment of damages and the voiding of contracts.

Compliance risk can lead to a diminished reputation, reduced franchise value, limited business opportunities, reduced expansion potential and lack of contract enforceability.

7. **Strategic Risk**

Strategic risk is the current and prospective impact one earning or capital arising from adverse business decisions, improper implementation of decision or lack of responsiveness to industry changes.

Strategic risk is a function of the compatibility of an organization strategic goal, the business strategies developed achieve those goals, the resources deployed against these goals and the quality of implementation.

The resources need to carry out business strategies are both tangible and intangible.

They include communication channels, operating systems, delivery networks and managerial capacities and capabilities.

8. **Reputation Risk**

Reputation risk is the current and prospective impact on earning capital arising from negative public opinion.

This risk affects the institution’s ability to establish new relationship or services or continue servicing existing relationships.

Reputation risks 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 reputation can suffer if it fails to deliver on marketing claims or to provide accurate timely services.

3.22 Conclusion

Today, the banking is re-defined with the use of information technology and it is sure that the future of banking will offer more sophisticated and customer oriented services. For banks, it can provide a cost effective way of conducting business relationship with customers by offering “conventional banking to convenience banking” and “mass banking to class banking”.

The new generation banks brought the necessary competition into the industry towards higher utilization of technology, improved customer service and innovative products. In spite of their strong and larger network, public sector banks provide quick and flexible service to the customers and faced though competition to the private sector banks. Innovative banking offers a number of advantages to customers and banking sector. But at the same time limitations of innovative banking arises. If the customer is unaware about securities reassessment for use of e-banking facilities. Overall effect of innovative is that it has brought new technology revolution in the banking sector.

Now a day, banks follow this motto “Change is the order of the day”.
References
16. Applegate Lynda m, Applegate Robert clustern, F warren McLaren, Corporate information strategy, Tata McGraw hill, New Delhi, 2007, p.541,


22. ICICI case study, finacle from Infosys, www.infosys.com/finacle


26. ECIL establishment (www.ecil.co.in/ecil_ rti_websites_12-5-2011.pdf)


34. RBI (1989) Report of the committee on computerization in banks (The Rangarajan committee) Mumbai: Reserve Bank of India
43. Institute for development and research in banking, www.mpf.org.in/ppt/MPFI2520Technology%2520Sub%2520committee%2520Presentation%252016-02-08.ppt
44. S.S.Kapan and N.S. Choubey, Indian banking in electronic era, Sarup and sons, New Delhi, 2003, pp. 145-146.


47. Internet Banking, Comptrollers handbook, comptrollers of the currency administrator of national banks, Washington dc, 1999, pp. 5-12.