"We are seeing pioneers moving out to the Internet, banks that are taking transactions, retail shopping on the Internet, and although it's going to take most of a decade before most adults are turning to the Internet for a high percentage of their act"

Bill Gates
The world is experiencing a change in banking business. As everybody knows, the change is from physical banking to anytime, anywhere, universal and virtual banking. In this chapter an attempt has been made to explain how computerization and developments in information technology have made possible this change and how banks are forced to adopt themselves to this change. Core Banking has become common. Technology-based delivery channels - Automated Teller Machines (ATMs), Internet and mobile phones – have become popular. In this chapter how the transition has taken place from traditional banking to technology-based modern banking has been discussed.

3.1 Introduction

Banking has undergone a rapid change in the wake of Computerisation and Information Technology. Liberalisation, Privatisation and Globalisation have increased competition. Computerisation has made possible the introduction of cost effective core/universal banking, and alternate delivery channels like Automated Teller Machines, Internet Banking, and Mobile Banking. Now it is not traditional physical banking but it is core banking, universal banking, anywhere banking, anytime banking and virtual banking. Bankers do not want the customers to stand in queues at the branch and do not want them to go through cumbersome paper work for simple banking operations. Core banking solutions are used, online services are offered, ATMs are installed, plastic cards are issued, operations are virtualised, and customers are enabled to access a wide variety of innovative banking products and financial services anywhere and anytime through different means. The customers can transact with bank, by sitting either at home or in the office and by connecting themselves to internet either through computers or through their mobile phones. All this is done by the banks to serve the customers and to survive the
competition. In short, it is a paradigm shift from traditional to modern banking, from localised to universal banking, from limited hours to round the clock banking and from physical to virtual banking. Competition has forced and computerisation has facilitated the banks to innovate, to invent and to introduce alternate technology-based delivery channels. It is a cost effective measure to the banker and a convenient means to the customer.

The fundamental way of doing banking business is undergoing a rapid transformation. Margins have started falling due to increased competition. The major challenge faced by the banks, now-a-days, is to protect themselves from the falling margins. Falling profit margins call for increasing volumes so as to result in better operating results by exploiting the benefits of technology, by achieving higher levels of efficiency and by enhancing the customer relationships. It is in this context, an imperative need for improving the general way of functioning of banks, to give them an edge in respect of the services provided to their customers, has been recognised. Better housekeeping; optimum utilisation of funds; building up of MIS for better decision making and better management of assets, liabilities and risks etc., which have a direct impact on the balance sheets; have assumed importance.

Banks are under pressure to explore new avenues of business by providing new and innovative products, to enhance efficiency, to reduce costs, and to increase profitability. Traditional sectors of the economy, such as agriculture and small-scale industry are also reorienting themselves to meet the demands of the Information Age. These challenges call for a new, more dynamic, aggressive and challenging work culture to meet the demands of customer relationships, product differentiation, brand values,
reputation, corporate governance and regulatory prescriptions. Technology has demonstrated a potential to change methods of distribution of financial products and services, and cost savings in the form of introduction of electronic self-service product delivery channels. Technology also plays a pivotal role by providing solutions in the form of data warehousing and analysis for decision support. Any how it is certain that technology holds the key to the future success of Indian Banks.

During the last two decades technology has been the driving force in the banking industry. To counter the branch advantage of well established public sector banks and to have competitive advantage over the others, foreign and private sector banks have invested large sums of money on technology. Public sector banks to withstand competition from neo-private and foreign banks followed suit. The coming years will see even more investment on technology in banking industry. Technology and alternative channels have lowered the cost of delivering banking services to the creamy layers among the masses.

Winning in the new economy depends crucially on strategically effective and intelligent management of marketing and customer relationships. The first and foremost important shift required by banks is to treat the customer as a customer of the bank and not as a customer of any particular branch. Technology enables the customer to “help himself” through Internet Banking, ATM banking and Telephonic Banking. The competitive edge that a bank would require to retain its customers would be to provide innovative services, which offer the customer the convenience of transacting with the bank from anywhere and at any time by using delivery channels more suitable for them.
Therefore, the imperative need for bankers would be to computerise and to provide services to the customers through innovative, simple and secure means.

Another change is the use of alternatives to cash. The large-scale use of cards – credit, debit and smart cards – for settlement of financial transactions proves beyond doubt that cash is slowly losing the prominence. Banks are quickly adapting themselves to provide for non-cash based services too. It is a recognised fact that the cost of servicing a transaction conducted through an electronic mode is substantially less than a physical service to a customer from a counter of a bank. The need of the hour is therefore, to encourage the widespread usage of such cost effective modes. Non-cash based payment systems offer an excellent opportunity for reduced costs to banks thereby resulting in better overall financial results.

Table 3.1 shows retail electronic payments/transfers made during 2003–2010. This shows the magnitude of the use of electronic mode by the banks in India.
### Table 3.1
Retail Electronic Payment Systems

Date Published: Jan 11, 2010

<table>
<thead>
<tr>
<th>Year/Period</th>
<th>Details</th>
<th>Electronic Clearing Services (ECS)</th>
<th>Electronic Funds Transfer EFT/NEFT</th>
<th>Card Payments#</th>
<th>Total Electronic Payments (3+4+5+6+7)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ECS (Credit)</td>
<td>ECS (Debit)</td>
<td>Credit</td>
<td>Debit*</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>2003-04</td>
<td>Volume</td>
<td>203.00</td>
<td>79.00</td>
<td>8.19</td>
<td>1,001.79</td>
</tr>
<tr>
<td></td>
<td>Amount</td>
<td>10,228.00</td>
<td>2,253.58</td>
<td>17,124.81</td>
<td>17,662.72</td>
</tr>
<tr>
<td>2004-05</td>
<td>Volume</td>
<td>400.51</td>
<td>153</td>
<td>25.49</td>
<td>1,294.72</td>
</tr>
<tr>
<td></td>
<td>Amount</td>
<td>20,179.81</td>
<td>2,921.24</td>
<td>54,601.38</td>
<td>25,686.36</td>
</tr>
<tr>
<td>2005-06</td>
<td>Volume</td>
<td>442.16</td>
<td>359.58</td>
<td>30.67</td>
<td>1,560.86</td>
</tr>
<tr>
<td></td>
<td>Amount</td>
<td>32,324.35</td>
<td>12,986.50</td>
<td>61,288.22</td>
<td>33,886.47</td>
</tr>
<tr>
<td>2006-07</td>
<td>Volume</td>
<td>690.19</td>
<td>752.02</td>
<td>47.76</td>
<td>1,695.36</td>
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<td></td>
<td>Amount</td>
<td>83,273.09</td>
<td>25,440.79</td>
<td>77,446.31</td>
<td>41,361.31</td>
</tr>
<tr>
<td>2007-08</td>
<td>Volume</td>
<td>783.65</td>
<td>1,271.20</td>
<td>133.15</td>
<td>2,282.03</td>
</tr>
<tr>
<td></td>
<td>Amount</td>
<td>7,82,222.30</td>
<td>48,937.20</td>
<td>1,40,326.48</td>
<td>57,984.73</td>
</tr>
<tr>
<td>2008-09</td>
<td>Volume</td>
<td>883.94</td>
<td>1,600.55</td>
<td>321.61</td>
<td>2,595.61</td>
</tr>
<tr>
<td></td>
<td>Amount</td>
<td>97,486.58</td>
<td>66,975.89</td>
<td>2,51,956.38</td>
<td>65,355.80</td>
</tr>
<tr>
<td>2009-10</td>
<td>Volume</td>
<td>985.50</td>
<td>1,502.14</td>
<td>663.57</td>
<td>2,340.65</td>
</tr>
<tr>
<td></td>
<td>Amount</td>
<td>1,17,833.07</td>
<td>69,818.82</td>
<td>4,11,087.81</td>
<td>62,851.86</td>
</tr>
</tbody>
</table>

Note: (a) #: Card Payments figures pertain only to Point of Sale (POS) transactions.

(b) *: Debit Cards figures for 2003-04 and 2004-05 are estimated based on 2005-06 figures.

(c) Figures in the parentheses are number of outstanding cards

(d) Number in Lakh and Amount in Rs. crore

Source: RBI Tables Retrieved from:
With the progress of liberalisation in banking and financial sectors, the increasing sophistication and specialisation, emergence of a pure inter-bank call/notice and term money markets, introduction of Real Time Gross Settlement (RTGS), funds flow freely from one market to another leading to better integration of the domestic financial markets among themselves, and with international financial markets as well requiring the banks to adopt strategies to benefit out of the developments which would be possible only with use of technology.

The technology initiatives call for attention to certain aspects such as:

- **Standardisation**: Standardisation of hardware, operating systems and application software is necessary to facilitate inter-connectivity of systems across the branches.

- **Security**: Security, confidentiality and integrity of transactions should be ensured. An effective security policy should be framed with the objective of protecting data, information, and economic value of the organisation. With movement of funds taking place electronically between different accounts of customers, requirements relating to security would require paradigm shift and various techniques such as digital signatures, certification etc., will assume significance. Continued security has to be ensured by periodical audits and assiduously guarding against computer crime.

- **Business Process Re-Engineering**: Business process re-engineering is necessary for getting holistic benefits of computerisation both by the bank and the customer.
• **Training and Development**: The managerial and operative staff, in fact all the human resources including customers should be adequately trained so as to gear them up to handle the situation in the changed environment.

• **Coexistence**: Technology and tradition should co-exist during the period of transition.

### 3.2 Core Banking

The advancement in technology, especially internet and information technology has led to new ways of doing business in banking. Core banking is a general term used to describe the services provided by a group of networked bank branches. Core Banking is normally defined as the business conducted by a banking institution with its retail and small business customers. Many banks treat the retail customers as their core banking customers, and have a separate line of business to manage small businesses. Larger businesses are managed via the Corporate Banking division of the institution.

Core banking basically is depositing and lending money. Normal core banking functions include operating deposit accounts, advancing loans, accepting mortgages and making payments. Banks render these services through multiple channels like branches, ATMs, Internet Banking, and Phone/Mobile Banking. The platform where communication technology and information technology are merged to suit core needs of banking is known as Core Banking Solutions. Bank customers may access their funds and carry simple transactions from any of the member branch offices.

### 3.2.1 Core Banking Solutions

The Core Banking solutions are integrated solutions that automate all aspects of core banking operations across entities, languages and currencies. These technologies cut
down time, working simultaneously on different issues and increase efficiency. Computer software is developed to perform core banking operations like recording the transactions, maintaining the customers' accounts and other records, calculating interests on loans and deposits, balancing payments and withdrawals etc. The software so developed is installed at different branches of the bank and then interconnected by means of communication lines like telephones, satellite, internet etc. It is called 'core banking solution'. 'Core Banking Solution' is a new jargon used in banking circles. Thus core banking solutions are banking applications on a platform enabling a phased, strategic approach that lets people improve operations, reduce costs, and prepare for growth.

An overall service-oriented-architecture (SOA) helps banks reduce the risk that can result from multiple data entries and out-of-date information, increase management approval, and avoid the potential disruption to business caused by replacing entire systems. Installation of core banking solutions allows the customers to operate accounts from not only the branch where in they have opened accounts but also from other branches. This new platform has changed the way banks are working.

3.2.2 Core Banking Application Package Vendors (ISVs)

While many Banks implement custom (bespoke) applications for core banking, others implement/customize commercial ISV packages. A few prominent ones are given in table 3.2.
### Table: 3.2
Core Banking Solutions and Their Providers

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Package</th>
<th>Provider</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alnova Financial Solutions</td>
<td>Accenture / Alnova</td>
<td>Formerly called Altamira, Altair (variant)</td>
</tr>
<tr>
<td>2</td>
<td>TCS BaNCS</td>
<td>TCS</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>BANKMILL</td>
<td>MINDMILL SOFTWARE LTD</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Bankway</td>
<td>FIS</td>
<td>Formerly a product of Metavante which was acquired by FIS Oct 1, 2009</td>
</tr>
<tr>
<td>5</td>
<td>Corebank</td>
<td>FIS</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>SAP Transactional Banking</td>
<td>SAP AG</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Finacle</td>
<td>Infosys</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>FLEXCUBE</td>
<td>Oracle Financial Services Software</td>
<td>former package: MicroBanker, Finware; former company i-flex and others</td>
</tr>
<tr>
<td>9</td>
<td>Hogan</td>
<td>CSC</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Intellect Core</td>
<td>Polaris software Labs Ltd</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>OMNIEnterprise</td>
<td>InfrasoftTech</td>
<td>With Offline</td>
</tr>
<tr>
<td>12</td>
<td>Profile</td>
<td>FIS</td>
<td>formerly Sanchez Profile</td>
</tr>
<tr>
<td>13</td>
<td>Signature</td>
<td>Fiserv</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Systematics</td>
<td>FIS</td>
<td>formerly Systematics Inc./ Alltel</td>
</tr>
<tr>
<td>15</td>
<td>T24</td>
<td>Temenos Group</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Fincraft</td>
<td>Nelito Systems Limited</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Laser Panacea</td>
<td>Laser Soft</td>
<td></td>
</tr>
</tbody>
</table>

Source: "http://en.wikipedia.org/wiki/Core_banking"

Modules generally incorporated in Core Banking Solutions are: Enterprise Customer Information, Consumer Banking, Wealth Management, Corporate Banking, Trade Finance, Islamic Banking, Functional Services, Reusable Business Components, Accounting Backbone, Infrastructure, Retail Banking, Subsidy Management, Business Benefits, Differentiated Product Spread etc.
While many Banks run core banking in-house, there are a few outsourced service providers as well. There are several Systems integrators like IBM which implement these Core banking packages at Banks.¹

3.2.3 Advantages of Core Banking Systems

By using core banking solutions banks are able to achieve good business. Banking is a scale business that thrives on customer acquisition and retention. The solutions support a variety of products including savings accounts, checking accounts, overdraft accounts, term deposit accounts and a variety of lending products including personal loans, corporate loans, mortgages, along with a full complement of transactional services incorporating remittances, foreign exchange, drafts, bankers’ cheques, cards and trade finance. These capabilities are accessible through multiple channels, from branch to call center to mobile banking and web. The solutions integrate front, middle and back-office processes in real-time, providing bankers throughout the organization with complete timely and actionable information about customer relationships and providing a single view of the bank to the customer. The Core Banking solutions are generally easy-to-integrate, scalable, enterprise-wide solutions that handle large transaction volumes on a 24x7 basis. They automate banking processes and provide customer service, maximize operational efficiency and minimize risks.² Other advantages of the core banking systems are:

(a) Core banking solutions provide banking customers real-time access to their relationships with the bank, such as account inquiries, fund transfers, remittances, credit card and mutual fund payments. It enables them to make
payments to individuals and institutions, through channels like the Internet, kiosk and ATM.

(b) Core banking solutions extend the reach of the bank’s services, surmounting the complexities of diverse and far-flung locations. They enable banks to include various customer segments, including specific under-banked and unbanked communities. The solutions’ self-service capabilities empower customers to access comprehensive banking services in a completely secure environment.

(c) The core banking solutions also enable banking staff to understand customer needs better. The additional comfort of human intervention, through video, audio and data communication, creates a truly satisfactory customer experience.

(d) The solutions generally have an integrated CRM module enabling banks to offer a rich and differentiated value proposition to customers. The layered Service Oriented Architecture (SOA), STP capabilities, Web-enabled technology and 24X7 operations core banking solutions ensure multi-channel, multi-country and multi-currency implementations. The functionality-rich modules in the solutions provide banks with a varied palette of features to continuously innovate on their product and service offerings.

(e) Core banking solutions offer features for banks to design and deploy products for varying market segments. The product bundling capabilities of the solutions offer a wide range of possibilities for banks to create products with innovative features.
Core banking solutions support business event automation and process orchestration, thus eliminating manual tasks and reducing process time. The elimination of error and data redundancies also result in increased branch productivity.

3.3 Internet Banking

Internet banking (or online banking) allows customers to conduct financial transactions on a secure website operated by their retail or virtual bank, credit union or building society. The internet banking is changing the banking industry and is having the major effects on banking relationships.

"Internet banking refers to systems that enable bank customers to access accounts and general information on bank products and services through a personal computer (PC) or other intelligent device."³

Internet banking (or E-banking) means any user with a personal computer and a browser can get connected to his bank's website to perform any of the virtual banking functions. In internet banking system the bank has a centralized database that is web-enabled. All the services that the bank has permitted on the internet are displayed in menu. Any service can be selected and further interaction is dictated by the nature of service. Once the branch offices of bank are interconnected through terrestrial or satellite links, there would be no physical identity for any branch. It would a borderless entity permitting anytime, anywhere and anyhow banking.⁴

Internet banking involves use of internet for delivery of banking products and services. It falls into four main categories, from Level 1 - minimum functionality sites that offer only access to deposit account data - to Level 4 sites, which are highly
sophisticated sites, enabling integrated sales of additional products and access to other financial services such as investment and insurance.

Internet banking products and services can include wholesale products for corporate customers as well as retail and fiduciary products for consumers. Ultimately, the products and services obtained through internet banking may mirror products and services offered through other bank delivery channels.

Some examples of wholesale products and services include:

- Cash management.
- Wire transfer.
- Automated clearinghouse (ACH) transactions.
- Bill presentment and payment.

Examples of retail and fiduciary products and services include:

- Balance inquiry.
- Funds transfer.
- Downloading transaction information.
- Bill presentment and payment.
- Loan applications.
- Investment activity.
- Other value-added services.

Other Internet banking services may include providing Internet access as an Internet Service Provider (ISP).
3.3.1 History of Internet 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 to the use of a terminal, keyboard and TV (or monitor) to access the banking system using a phone line. 'Home banking' can also refer to the use of a numeric keypad to send tones down a phone line with instructions to the bank. Online services started in New York in 1981 when four of the city's major banks (Citibank, Chase Manhattan, Chemical and Manufacturers Hanover) offered home banking services using the videotex system. Because of the commercial failure of videotex these banking services never became popular except in France where the use of videotex (Minitel) was subsidised by the telecom provider and the UK, where the Prestel system was used.

The UK's first home online banking services was set up by the Nottingham Building Society (NBS) in 1983. The system used was based on the UK's Prestel system and used a computer, such as the BBC Micro, or keyboard (Tandata Td1400) connected to the telephone system and television set. The system (known as 'Homelink') allowed on-line viewing of statements, bank transfers and bill payments. In order to make bank transfers and bill payments, a written instruction giving details of the intended recipient had to be sent to the NBS who set the details up on the Homelink system. Typical recipients were gas, electricity and telephone companies and accounts with other banks. Details of payments to be made were input into the NBS system by the account holder via Prestel. A cheque was then sent by NBS to the payee and an advice giving details of the payment was sent to the account holder. BACS was later used to transfer the payment.
directly. Stanford Federal Credit Union was the first financial institution to offer online internet banking services to all of its members in Oct, 1994.8

3.3.2 Advantages of Internet Banking9

As per the Internet and Mobile Association of India's report on online banking 2006, "There are many advantages of online banking. It is convenient, it isn't bound by operational timings, there are no geographical barriers and the services can be offered at a miniscule cost."

A successful Internet banking solution offers:

a) Exceptional rates on Savings, CDs, and IRAs.

b) Checking with no monthly fee, free bill payment and rebates on ATM surcharges.

c) Credit cards with low rates.

d) Easy online applications for all accounts, including personal loans and mortgages.

e) 24-hour account access.

f) Quality customer service with personal attention.

3.3.3 Drivers of Change

Advantages, previously held by large financial institutions, have shrunk considerably. The Internet has leveled the playing field and afforded open access to customers in the global marketplace. Internet banking is a cost-effective delivery channel for financial institutions. Consumers are embracing many benefits of Internet banking. Access to accounts at anytime and from any location via the World Wide Web is a convenience which was not available in the past. Thus, the presence of internet and
networking transforms the banking from 'Branch Banking' to 'Internet Banking', in short from 'Physical Banking' to 'Virtual Banking', and enables the customer to access information about his or her specific account from anywhere and at anytime. The six primary drivers of Internet banking, in order of primacy, include:

a) Improved customer access  
b) Facility of offering more services  
c) Increased customer loyalty  
d) Attracting the new customers  
e) Providing the services offered by the competitors  
f) Reducing the customer attrition

3.3.4 Internet banking in India

The banking industry in India is facing unprecedented competition from non-traditional banking institutions, which offer banking and financial services over the Internet. The deregulation of the banking industry coupled with the emergence of new technologies, are enabling new competitors to enter the financial services market quickly and efficiently.

The Reserve Bank of India constituted a working group on Internet Banking. The group divided the internet banking products in India into 3 types based on the levels of access granted. They are:

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

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

iii) **Fully Electronic Transactional System**: This system allows bi-directional capabilities. Transactions can be submitted by the customer for online update. This system requires high degree of security and control. In this environment, web server and application systems are linked over secure infrastructure. It comprises technology covering computerization, networking and security, inter-bank payment gateway and legal infrastructure.

Indian banks are going for the retail banking in a big way. However, much is still to be achieved. A study, which was conducted by students of IIML, gives out certain interesting facts about internet banking in the country. They are:

a) Throughout the country, the Internet Banking is in the nascent stage of development (only 50 banks are offering varied kind of Internet banking services).
b) In general, these Internet sites offer only the most basic services. 55 per cent are so called 'entry level' sites, offering little more than company information and basic marketing materials. Only 8 per cent of the sites offer 'advanced transactions' such as online funds transfer, transactions & cash management services.

c) Foreign and private banks are much advanced in terms of the number of sites and their level of development.

3.3.5 Guidelines for Internet Banking in India

In June 2001 banks were advised to seek prior approval of Reserve Bank of India before offering transactional services on the Internet. The position has since been reviewed and RBI has advised on 20th July 2005 that while the offering of Internet Banking services will continue to be governed by the provisions of the above circular, no prior approval of the Reserve Bank of India will be required by banks for offering Internet Banking services. Banks should, however, ensure compliance with the following conditions:

a) The Internet banking policy has been approved by the Bank's Board.

b) The policy fits into the bank's overall Information Technology and Information Security policy and ensures confidentiality of records and security systems.

c) The policy takes into account operational risk.

d) The policy clearly lays down the procedure to be followed in respect of "Know Your Customer" requirements, and

e) The policy broadly meets the parameters laid down in the earlier circular.

3.3.6 Main Concerns in Internet Banking
In a survey conducted by the Online Banking Association, member institutions rated security as the most important issue of online banking. There is a dual requirement to protect customers' privacy and protect against fraud.

(i) Security: Online banking via the World Wide Web provides an overview of internet commerce and how a company handles secure banking for its customers. Some basic information on the transmission of confidential data is presented in Security and Encryption on the Web. PC Magazine Online also offers a primer: How Encryption Works. A multi-layered security architecture comprising firewalls, filtering routers, encryption and digital certification ensures that account information is protected from unauthorized access:

- Firewalls and filtering routers ensure that only the legitimate Internet users are allowed to access the system.
- Encryption techniques used by the bank (including the sophisticated public key encryption) ensure the privacy of data flowing between the browser and the Infinity system.
- Digital certification procedures provide the assurance that the data the customer receives is from the Infinity system.

Protection through single password authentication, as is the case in most secure Internet shopping sites, is not considered secure enough for personal online banking applications in some countries. Basically there exist two different security methods for online banking.

- The PIN/TAN system where the PIN represents a password, used for the login and TANs representing one-time passwords to authenticate transactions.
TANs can be distributed in different ways, the most popular one is to send a list of TANs to the online banking user by postal letter. The most secure way of using TANs is to generate them by need using a security token. These token generated TANs depend on the time and a unique secret, stored in the security token (this is called two-factor authentication or 2FA). Usually online banking with PIN/TAN is done via a web browser using SSL secured connections, so that there is no additional encryption needed.

- Signature based online banking where all transactions are signed and encrypted digitally. The Keys for the signature generation and encryption can be stored on smartcards or any memory medium, depending on the concrete implementation.

Claus Nehmzow, a Principal in the Information Technology Group in London at Booz Allen & Hamilton, writes of some compelling research findings and offers his projections for European banks in The Internet Will Shake Backing’s Medieval Foundations. He believes the low transaction cost will make banking on the Net irresistible, but also that this will require institutions to carefully consider and plan customer relations programs.

- It is believed that everything will be determined by content and context, and where execution will be key. From a customer and service provider perspective, this is where the world is moving—it is going to be real-time, online, personalization for both marketing and the service experience. If existing banks don’t want to disappear, it is this challenge of Integration that they need to embrace in order to win and survive. The more things change, the less they
change. In the months and years-ahead are going to be how Service Providers integrate and market their offerings across different channels. The strategic and executional battles of the future are going to be fought for Channel Integration. What does Channel Integration mean? It means that an institution presents an identical face to the customer—be it in the branch, on the web, at an ATM or for that matter, through a sales representative or a broker. An identical face, an identical message. Or better still, messages that reinforce each other. If a sales representative tries to sell you a housing loan, you get e-mail a day later reminding you about the loan. That's called Integrated Sales, which results in incremental economic activity and improved efficiencies of communications. Channel Integration across the phone web can clearly lead to a gain of several percentage points of GDP. The beauty of this approach is that one channel does not displace another. They feed on each other to create incremental value for the customer, as well as the institution. The incremental value comes from two distinct sources. Firstly, you reduce inefficiencies. You don't send people junk mail because you know that they are not likely to buy a particular product or service today. That results in net saving for the economy. Secondly, you persuade people at the right time (the right time from the customer's perspective, not from the service provider's perspective) to opt for a tailor made offering. This too increases value. Actually, this has to do with the Internet itself, and more to with the underlying technologies of the Internet, which allow incremental efficiency, and empowers the customer to make more enlightened and timely choices.
• Lastly the product range is another issue, which becomes important. It will take a technological revolution to make available advanced banking products on the net and given the rate at which the technology is developing we can expect this to happen in near future.

(ii) Attacks

Most of the attacks on online banking used today are based on deceiving the user to steal login data and valid TANs. Two well known examples for those attacks are phishing and pharming and pharming. Cross-site scripting and keylogger/Trojan horses can also be used to steal login information.

A method to attack signature based online banking methods is to manipulate the used software in a way, that correct transactions are shown on the screen and faked transactions are signed in the background.

A recent FDIC Technology Incident Report, compiled from suspicious activity reports banks file quarterly, lists 536 cases of computer intrusion, with an average loss per incident of $30,000. That adds up to a nearly $16-million loss in the second quarter of 2007. Computer intrusions increased by 150 percent between the first quarter of 2007 and the second. In 80 percent of the cases, the source of the intrusion is unknown but it occurred during online banking, the report states.12

(iii) Countermeasures

There exist several countermeasures which try to avoid attacks. Digital certificates are used against phishing and pharming, the use of class-3 card readers is a measure to avoid manipulation of transactions by the software in signature based online
banking variants. To protect their systems against Trojan horses, users should use virus scanners and be careful with downloaded software or e-mail attachments.

1. In 2001 the FFIEC issued guidance for multifactor authentication (MFA) and then required to be in place by the end of 2006.13

- Current account
- Enhanced Telephone
- Guide to E-payments
- Mobile banking
- Online lenders
- On-line and off-line
- SMS Banking
- Telephone banking

3.3.7 Strategies to be Adopted by Indian Banks

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

(i) For long term success, a bank may follow:

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

(ii) The above can be implemented in four steps:
• Familiarizing the customer to new environment by demo version of software on bank's web site. This should contain tour through the features which are to be included. It will enable users to give suggestions for improvements, which can be incorporated in later versions wherever feasible.
• Second phase provides services such as account information and balances, statement of account, transaction tracking, mail box, check book issue, stop payment, financial and customized information.
• The third phase may include additional services such as fund transfers, DD issue, standing instructions, opening fixed deposits, intimation of loss of ATM cards.
• The last step should include advanced corporate banking services like third party payments, utility bill payments, and establishment of L/Cs, Cash Management Services etc. Enhanced plan for the customers in future can include requests for demand drafts and pay
orders and many more to bring in the ultimate in banking convenience.

All the above strategies will help banks in translating their traditional business model into an Internet one, falling into three main categories

- One stop shop
- Virtual one-stop-shop
- Best of breed supplier.

3.3.8 Internet Banking Frauds

Internet Banking Fraud is a fraud or theft committed using online technology to illegally remove money from a bank account and/or transfer money to an account in a different bank. Internet Banking Fraud is a form of identity theft and is usually made possible through techniques such as phishing.

Now internet banking is widely used to check account details, make purchases, pay bills, transfer funds, print statements etc. Generally, the user identity (the customer identity number and password) is provided to secure transactions. But due to some ignorance or silly mistakes the user can easily fall into the trap of cyber criminals. Here are some simple tips to prevent oneself from falling into the trap of cyber criminals. Remember, a simple ignorance or oversight can make a huge dent in the hard-earned savings.

(a) Securing the account:

Avoid online banking on unsecured wifi systems and operate only from PCs at home. Never reveal the password to anyone. Do not even write it on a piece of paper on diary. Just memorize it. It should be alphanumeric and change it frequently. Never reply
to queries from bank online about account or personal details. The personal information should not be kept in a public computer or in emails.

(b) Phishing:

A person's personal details are obtained by fraudsters posing as bankers, who float a site similar to that of the person's bank. They are asked to provide all personal information about themselves and their account to the bank on the pretext of database upgradation. The number and password are then used to carry out transactions on their behalf without their knowledge. Phishing involves using a form of spam to fraudulently gain access to people's online banking details. As well as targeting online banking customers, phishing emails may target online auction sites or other online payment facilities. Typically, a phishing email will ask an online banking customer to follow a link in order to update personal bank account details. If the link is followed, the victim downloads a program which captures his or her banking login details and sends them to a third party.

(c) Spam:

Spam is an electronic 'junk mail' or unwanted messages sent to your email account or mobile phone. These messages vary, but are essentially commercial and often annoying in their sheer volume. They may try to persuade you to buy a product or service, or visit a website where you can make purchases; or they may attempt to trick you into divulging your bank account or credit card details.

(d) Nigerian Scam:

Nigerian or Frauds 409 or 419 are basically the lottery scam in which some overseas persons are involved to cheat innocent persons or organizations by promising to
give a good amount of money at nominal fee charges. Their intention is to steal money in the form of fee against the lottery prize.

(e) Spyware:

Spyware such as Trojan Horse is generally considered to be software that is secretly installed on a computer and takes things from it without the permission or knowledge of the user. Spyware may take personal information, business information, bandwidth; or processing capacity and secretly gives it to someone else. "Trojan Horse" scheme unfolds when malicious software (malware) embeds to a consumer's computer without the consumer being aware of it. Trojans often come in links or as attachments from unknown email senders. After installation the software detects when a person accesses online banking sites and records the username and password to transmit to the offender. People using public computers, in places like Internet cafes, are often susceptible to Trojans like malware or spyware.

(f) Check Sites URL:

Always check the URL of the bank's web site. Fraudsters can lure to enter the user ID and password at a fake website that resembles your bank. If you see anything other than the bank's genuine URL, it has to be fake. Never enter the user ID or password or such sensitive information without ascertaining that you are on the right website. Always type the Web address of your bank into the browser address space. Never click on the link in the email.

(g) Fool-Proof Password:

Change your online banking password at regular intervals. Also, avoid easy-to-guess passwords, like first names, birthdays, kid's or spouse's name and telephone
numbers. Try to have an alpha-numeric password, one that combines alphabets and numbers. If you have several bank accounts, never use the same online banking password for all. Never select the option on browser that stores or retains user name and password as it can easily be cracked by cyber criminals. Also, never paste your password, always type it in. This little amount of 'finger exercise' will go a long way in safety.

(h) Always check 'last logged':

Most banks have a 'last logged in' panel on their websites. If your bank has it, check the panel whenever you log in. If you notice irregularities (like you are logging in after two days, but the panel says you logged in that morning!), report the matter immediately to your bank and change your password right way. Always log out when you exit the online banking portal. Close the browser to ensure that your secure session is terminated. Never exit simply by closing the browser.

(i) Keep the system up to date:

Regularly check for security updates for the computer operating system. Most security updates are aimed at reducing risks to the computer. These may be data-related or otherwise. Make sure that your operating system and the browser have the latest security patches installed. And, always install these only from trusted websites. Install a personal firewall to prevent hackers from gaining unauthorized access to the computer, especially if you connect to the Internet through a cable or a DSL modem.

(j) Public access can be injurious:

Don't leave the PC unattended after keying in information while transacting on the website. Avoid accessing the bank online at cyber cafes or on a share or public
computer. Also, avoid locations that offer online connections through wireless networks (Wi-Fi), where privacy and security are minimal.

(k) Follow Bank instructions:

Banks say that appropriate upgradations are carried out from time to time by their IT departments for risk mitigation. They issue instructions to the customers to manage their accounts through virtual keyboards by way of which the characters typed by them are not identified by hackers. SMS alerts are also an important tool since any transaction carried out on account is reported to the account holder through an SMS.

(l) Protection:

Learn the ways to protect yourself from online banking fraud schemes. Detect Trojans that appear on your PC in the form of viruses, spyware or malware through Antivirus Software, anti Spyware, and Adware. Also, learn to keep your cards, documents and passwords safe, and monitor your accounts to safeguard yourself from bank fraud committed through identity theft.

3.4 Telephone Banking

Telephone banking is a service provided by a financial institution, which allows its customers to perform transactions over the telephone.

Most telephone banking use an automated phone answering system with phone keypad response or voice recognition capability. To guarantee security, the customer must first authenticate through a numeric or verbal password or through security questions asked by a live representative (see below). With the obvious exception of cash withdrawals and deposits, it offers virtually all the features of an automated teller
machine: account balance information and list of latest transactions, electronic bill payments, funds transfers between a customer's accounts, etc.

Usually, customers can also speak to a live representative located in a call centre or a branch, although this feature is not guaranteed to be offered 24/7. In addition to the self-service transactions listed earlier, telephone banking representatives are usually trained to do what was traditionally available only at the branch: loan applications, investment purchases and redemptions, chequebook orders, debit card replacements, change of address, etc.

Banks which operate mostly or exclusively by telephone are known as phone banks.

3.5 Mobile Banking

The practice in the past is to visit the bank physically even for a simple thing like balance enquiry. The customer need not undergo the ordeal of visiting the branch, stand in the queue and waste his/her precious time for such small things anymore. Now the customer can access his/her bank account and conduct a host of banking transactions and inquiries through Mobile Banking service.

Mobile banking (also known as M-Banking, mbanking, SMS Banking etc.) is a term used for performing balance checks, account transactions, payments etc. via a mobile device such as a mobile phone. Mobile banking today is most often performed via SMS or the Mobile Internet but can also use special programs downloaded to the mobile device.

Mobile Banking is a service that allows the customer to do banking transactions through his/her mobile phone without making a call, using the SMS / WAP facility. The
customer can check the balance, stop a cheque payment, or even pay his/her utility bills. Mobile Banking service gives the customer, account information and real-time transaction capabilities from the mobile phones anywhere and anytime.

In one academic model¹⁷, mobile banking has been defined as:

"Mobile Banking refers to provision and availment of banking- and financial services with the help of mobile telecommunication devices. The scope of offered services may include facilities to conduct bank and stock market transactions, to administer accounts and to access customised information."

According to this model Mobile Banking can be said to consist of three inter-related concepts:

- Mobile Accounting
- Mobile Brokerage
- Mobile Financial Information Service

Most of the services offered in the first two categories – mobile accounting and mobile brokerage - are transaction-based, whereas the services coming under the third category are non-transaction-based. Non-transaction-based services of informational nature are essential for conducting transactions. For instance, balance enquiry may be necessary before committing a money remittance. The accounting and brokerage services are therefore offered invariably in combination with information services. Information services, on the other hand, may be offered as an independent module.
3.5.1 Trends in mobile banking

The advent of the Internet has revolutionized the way the financial services industry conducts business, empowering organizations with new business models and new ways of offering round the clock accessibility to their customers.

Over the last few years, the mobile and wireless market has been one of the fastest growing markets in the world and it is still growing at a rapid pace. According to the GMS Association and Ovum, the number of mobile subscribers exceeded two billion in September 2005, and now exceeds 2.5 billion (of which more than 2 billion are GSM).

According to a study by financial consultancy Celent, 35 per cent of online banking households will be using mobile banking by 2010, up from less than one per cent today. Upwards of 70 per cent of bank centre call volume is projected to come from mobile phones. Mobile banking will eventually allow users to make payments at the physical point of sale. "Mobile contact-less payments" will make up ten per cent of the contact-less market by 2010.18

Many believe that mobile users have just started to fully utilize the data capabilities in their mobile phones. In Asian countries like India, China, Bangladesh, Indonesia and Philippines, where mobile infrastructure is comparatively better than the fixed-line infrastructure, and in European countries, where mobile phone penetration is very high (at least 80 per cent of the consumers use a mobile phones), mobile banking is likely to appeal even more.

This opens up huge markets for financial institutions interested in offering value added services. With mobile technology, banks can offer a wide range of services to their customers such as doing funds transfer while traveling, receiving online updates of stock
prices or even performing stock trading while being stuck in traffic. According to the German mobile operator Mobilcom, mobile banking will be the "killer application" for the next generation of mobile technology.

Mobile devices, especially smartphones, are the most promising way to reach the masses and to create "stickiness" among current customers, due to their ability to provide services anytime, anywhere, high rate of penetration and potential to grow. According to Gartner, shipment of smartphones is growing fast, and should top 20 million units (of over 800 million sold) in 2006 alone.

In the last four years, banks across the globe have invested billions of dollars to build sophisticated internet banking capabilities. As the trend is shifting to mobile banking, there is a challenge for CIOs and CTOs of these banks to decide on how to leverage their investment in internet banking and offer mobile banking, in the shortest possible time. The proliferation of the 3G (third generation of wireless) and widespread implementation has resulted in the development of more sophisticated services such as multimedia and links to m-commerce services.

3.5.2 Mobile Banking Business Models

A wide spectrum of Mobile/branchless banking models is evolving. However, no matter what business model, if mobile banking is being used to attract low-income populations in often rural locations, the business model will depend on banking agents, i.e., retail or postal outlets that process financial transactions on behalf telcos or banks. The banking agent is an important part of the mobile banking business model since customer care, service quality, and cash management will depend on them. Many telcos
will work through their local airtime resellers. However, banks in Colombia, Brazil, Peru, and other markets use pharmacies, bakeries, etc.

These models differ primarily on the question that who will establish the relationship (account opening, deposit taking, lending etc.) to the end customer, the Bank or the Non-Bank/Telecommunication Company (Telco). Another difference lies in the nature of agency agreement between bank and the Non-Bank. Models of branchless banking can be classified into three broad categories - Bank Focused, Bank-Led and Nonbank-Led.

(i) **Bank-focused model:** The bank-focused model emerges when a traditional bank uses non-traditional low-cost delivery channels to provide banking services to its existing customers. Examples range from use of automatic teller machines (ATMs) to internet banking or mobile phone banking to provide certain limited banking services to banks’ customers. This model is additive in nature and may be seen as a modest extension of conventional branch-based banking.

(ii) **Bank-led model:** The bank-led model offers a distinct alternative to conventional branch-based banking in that customer conducts financial transactions at a whole range of retail agents (or through mobile phone) instead of at bank branches or through bank employees. This model promises the potential to substantially increase the financial services outreach by using a different delivery channel (retailers/mobile phones), a different trade partner (telco/chain store) having experience and target market distinct from traditional banks, and may be significantly cheaper
than the bank-based alternatives. The bank-led model may be implemented by either using correspondent arrangements or by creating a joint venture between Bank and Telco/non-bank. In this model customer account relationship rests with the bank

(iii) **Non-bank-led model:** The non-bank-led model is one in which a bank does not come into the picture (except possibly as a safe-keeper of surplus funds) and the non-bank (e.g. telco) performs all the functions.

### 3.5.3 Mobile Banking Services

Mobile banking services can broadly be categorized under five heads. They are:

(i) **Account Information,**  (ii) **Payments,** **Deposits,** **Withdrawals,** and **Transfers,**  (iii) **Investments,**  (iv) **Support,** and  (v) **Content Services**

(i) **Account Information:** Mobile banking services coming under this head are:

a) Mini-statements and checking of account history / Getting last three transaction details / Recent transactions / Request for an account statement

b) Alerts on account activity or passing of set thresholds

c) Monitoring of term deposits / Getting fixed deposit details

d) Access to loan statements

e) Access to card statements

f) Mutual funds / equity statements

g) Insurance policy management

h) Pension plan management
i) Status on cheque (inquiry about a cheque status), stop payment on cheque etc.

j) Ordering check books (i.e., Requesting for a cheque book)

k) Balance checking in the account (i.e., Getting balance details)

l) Due date of payment (functionality for stop, change and deleting of payments)

m) PIN provision, Change of PIN and reminder over the Internet

n) Blocking of (lost, stolen) cards

o) Get Bill payment details for Electricity, Mobile phone and Telephone services

p) Pay your bills

   For the purpose the customer has to designate a particular account linked to the customer-id as the operative account. Balance inquiry will give information on all accounts linked to the Customer Identification Number. All other transactions will give information on the Operative Account.

(ii) **Payments, Deposits, Withdrawals, and Transfers**: Mobile banking services falling under this category are:

a) Domestic and international fund transfers

b) Micro-payment handling

c) Mobile recharging

d) Commercial payment processing

e) Bill payment processing
f) Peer to Peer payments

g) Withdrawal at banking agent

h) Deposit at banking agent

Especially for clients in remote locations, it will be important to help them deposit and withdraw funds at banking agents, i.e., retail and postal outlets that turn cash into electronic funds and vice versa. The feasibility of such banking agents depends on local regulation which enables retail outlets to take deposits or not.

A specific sequence of SMS messages will enable the system to verify if the client has sufficient funds in his or her wallet and authorize a deposit or withdrawal transaction at the agent. When depositing money, the merchant receives cash and the system credits the client's bank account or mobile wallet. In the same way the client can also withdraw money at the merchant: through exchanging SMS to provide authorization, the merchant hands the client cash and debits the client's account.

(iii) Investments: Mobile banking services coming under this category are:

a) Portfolio management services

b) Real-time stock quotes

c) Personalized alerts and notifications on security prices

(iv) Support: Mobile banking services coming under this category are:

a) Status of requests for credit, including mortgage approval, and insurance coverage

b) Check (cheque) book and card requests
c) Exchange of data messages and email, including complaint submission and tracking

d) ATM Location

(v) **Content Services:** Mobile banking services coming under this category are:

a) General information such as weather updates, news etc.

b) Loyalty-related offers

c) Location-based services

### 3.5.4 Challenges for a Mobile Banking Solution

Key challenges in developing a sophisticated mobile banking application are:

(i) **Interoperability:** Interoperability means the ability of the component parts of a system to operate successfully together. Interoperability is high when common technology standards are used. A wide variety of mobile phones are used by the customers. The technologies used and their capabilities differ. No common technology standards are used for mobile banking. For example different protocols (HTML, WAP, SOAP, XML etc.) are being used for mobile banking. It is better to develop a mobile banking application that can connect multiple banks. It would require either the application to support multiple protocols or the banks to use a common and widely acceptable set of protocols for data exchange. At present some of the mobile phone devices support J2ME and others support WAP browser or only SMS.

(ii) **Security:** Security of financial transactions, being executed from some remote location and transmission of financial information over the air, are the most complicated challenges that need to be addressed jointly by mobile application
developers, wireless network service providers and the banks’ IT departments. The following aspects need to be addressed to offer a secure infrastructure for financial transaction over wireless network:

a) Physical part of the hand-held device. If the bank is offering smart-card based security, the physical security of the device is more important.

b) Security of any thick-client application running on the device. In case the device is stolen, the hacker should require at least an ID/Password to access the application.

c) Authentication of the device with service provider before initiating a transaction. This would ensure that unauthorized devices are not connected to perform financial transactions.

d) User ID / Password authentication of bank’s customer.

e) Encryption of the data being transmitted over the air.

f) Encryption of the data that will be stored in device for later / off-line analysis by the customer.

(iii) **Scalability & Reliability**: Another challenge for the CIOs and CTOs of the banks is to scale-up the mobile banking infrastructure to handle exponential growth of the customer base. With mobile banking, the customer may be sitting in any part of the world (true anytime, anywhere banking) and hence banks need to ensure that the systems are up and running in a true 24 x 7 fashion. As customers will find mobile banking more and more useful, their expectations from the solution will increase. Banks unable to meet the performance and reliability expectations may lose customer confidence. There are systems such as Mobile Transaction Platform which enable quick and secure mobile
enabling of various banking services. Recently in India there has been a phenomenal growth in the use of Mobile Banking applications with leading banks adopting Mobile Transaction platform and the Central Bank (RBI) publishing guidelines for mobile banking operations.

(iv) **Application distribution:** Due to the nature of the connectivity between bank and its customers, it would be impractical to expect customers to regularly visit banks or connect to a web site for regular upgrade of their mobile banking application. It will be expected that the mobile application itself check the upgrades and updates and download necessary patches (so called Over the Air updates). However, there could be many issues to implement this approach such as upgrade / synchronization of other dependent components.

(iv) **Personalization:** It would be expected from the mobile application to support personalization such as:

a) Preferred Language  
b) Date / Time format  
c) Amount format  
d) Default transactions  
e) Standard Beneficiary list  
f) Alerts

### 3.5.5 Mobile Banking through SMS

Mobile Banking with SMS is conducted through SMS codes sent to a particular number as directed by the bank. The customer receives the response in the form of a text message on the mobile phone screen within a few seconds. For example for getting
details of HDFC bank account one has to use codes like HDFCBAL for balance enquiry, HDFCTXN for last transaction details, HDFCSTM for account statement, HDFCSTP<six digit cheque no.> for stop cheque payment, etc. The message sent by the customer travels from the customer's mobile phone to the SMS Centre of the Cellular Service Provider, and from there it travels to the Bank's systems. The information is retrieved and sent back to the customer's mobile phone via the SMS Centre, all in a matter of a few seconds.

3.5.6 Mobile Banking through WAP

Once the customer logs onto his/her Bank's WAP site through his/her WAP/GPRS enabled mobile phone, all the customer needs to do is enter his/her Customer ID and Net Banking IPIN. Then go to the Transactions Menu after selecting his/her account. Then select any one of the transactions like Balance Inquiry, Mini Statement, Statement Request, Cheque Book Request, Stop Payment, Cheque Status Inquiry, Fixed Deposit Inquiry etc.

If the customer selects:

a) 'Balance Inquiry' the bank provides the balance details of a particular account.

b) 'Mini Statement' the bank gives details of a few (generally last three) transactions on the customer's account.

c) 'Statement Request' the bank will mail to the customer's address a Statement of Accounts for the selected account for the current period.

d) 'Cheque Book Request' the bank sends a cheque book by post to the customer's address on record with the bank.
e) ‘Stop Payment’ the bank stops payment on a particular cheque issued by the customer.

f) ‘Cheque Status Inquiry’ the bank will tell the customer whether the cheque has been paid or not.

g) ‘Fixed Deposit Inquiry’ the bank provides the information relating to principal amount, rate of interest, maturity date and maturity amount etc.

3.5.7 Who Can Avail Mobile Banking Services?

To avail Mobile Banking services a person should have an account in a bank that offers mobile banking service, should be a subscriber of any of the cellular service providers which have tie up with the bank and should apply for mobile banking through an appropriate application form with the bank. Most of the banks offer mobile banking service absolutely free. Although SMS charges for outgoing messages would be charged as usual by your mobile phone service provider.

3.5.8 Mobile Banking Alerts

Some banks also provide the facility of mobile banking alerts where the customer can get regular updates of transactions in his/her account as they happen. These include credits and debits to an account, and the cheques returned if any. At present some of the banks in India are offering these services. In the time to come more and more banks will be offering such services.

3.5.9 Mobile Banking in the world

This part of the mobile commerce is very popular in countries where most of their population is unbanked. Countries like Sudan, Ghana and South Africa received very well this new commerce. In Latin America countries like Uruguay, Paraguay Argentina,
Brazil, Venezuela, Colombia, Guatemala and recently Mexico started with a huge success. In Colombia it was released with Redeban. Guatemala have the support of Banco industrial. Mexico released the mobile commerce with Omnilife, Bancomer and a private company (MPower Ventures).

Based on a survey conducted by Forrester, mobile banking will be attractive, mainly to the younger and more "tech-savvy" customer segment. A third of mobile phone users say that they may consider performing some kind of financial transaction through their mobile phone. But most of the users are interested in performing basic transactions such as querying for account balance and making bill payment.

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