CHAPTER III

MOBILE BANKING—CONCEPTUAL FRAMEWORK AND PROCEDURE FOR OPERATING MOBILE BANKING SERVICES

3.1 INTRODUCTION

LPG (liberalization, privatization, Globalizations) of banking sector in India observed in the early 1990’s when India took over a new economical policy for the development of the country. In the year 1992 the Government of India issued a license to private and foreign banks. These banks are known as the new generation. Then the information technology has modified the aspect of banking in India. India started as a mere automation of some everyday work serves in banks in the mid 80’s has moved on and resulted in banking process re-engineering culminating in building banking services branchless, anytime and anywhere, helped new innovative product development and enabled approach real time service delivery. Information Technology helped banks to reach the doorsteps of the customer by overcoming the limits on geographical/physical contact in branch banking and easing the resource and volume constraints posed by the brick and mortar model. Branch banking, CBS, Internet banking, ATM, SMS, Phone banking and Mobile banking are the important modes of banking services offered by banking sectors in India.

<table>
<thead>
<tr>
<th>Table 3.1: Banking Modes in India</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Branch Banking</strong></td>
</tr>
<tr>
<td>Physically visiting bank for any financial transaction or activities</td>
</tr>
<tr>
<td><strong>Internet Banking</strong></td>
</tr>
<tr>
<td>Using a computer access the bank's website through a browser to perform financial transaction</td>
</tr>
<tr>
<td><strong>SMS Banking</strong></td>
</tr>
<tr>
<td>Subscribing for SMS alerts from the bank. Receiving alerts in case of cash withdrawal, money transfer, credit/debit card transaction</td>
</tr>
<tr>
<td><strong>Door Step Banking</strong></td>
</tr>
<tr>
<td>Having someone visit you from the bank at your home to carry out your financial transactions/activity</td>
</tr>
</tbody>
</table>
Mobile banking services has been regarded as convenient and cost-efficient services offered to customers of banks anytime and anywhere. Inherent features of mobile are ubiquity, personalization, flexibility and dissemination in general promises businesses, and unprecedented market potential. Mobile banking services enable consumers to avail several services: their account balance, the latest balance amount in their accounts, transfer funds between accounts, to make buy and sell goods and services, perform stock exchange transactions and to receive portfolio and price information. As far as Mobile banking services in India are concerned, it is still in its nascent stage due to lack of consumer acceptance and the slow process of the service. Mobile based banking seems to be on the rise in India and it can be gauged from the data provided by the central bank on mobile banking.

The rapid growth of mobile users in India, through wider coverage of mobile phone networks has made this medium an important platform for extending banking services to every section of banking customers. Today most of the banks in India provide various services such as net banking, ATMs, SMS banking and Mobile banking. So, Banking institutions are playing an important role in improving access and deliverability of Mobile banking services to India’s rural poor. Mobile banking has come forth as a favourite of banking masses in developed and developing nations. In India, there are around 40 million registered Mobile banking users and this estimate is growing speedily with Mobile banking services. Mobile phones users in India are the second largest users in the nation.

Mobile banking is a system that allows customers of a financial institution to conduct a number of financial transactions through a mobile device. Mobile banking refers to provision and availment of banking and financial services with the help of mobile telecommunication devices. This service facilitates one to conduct bank and other financial transactions.

In recent days, Mobile banking is offered by the banks to its customers in the form of Short Message Service (SMS) or Mobile Internet for the purpose of attaining higher levels of customer satisfaction and increased loyalty. Banks will benefit from reduced
administrative expenses, less number of branches and lower handling charges with better service to the customers than branch banking.

3.2 MOBILE TECHNOLOGY AND BANKS TRANSFORMATION

Technological development in the financial services industry has had a heavy impact on traditional bank especially Mobile technology. It gets current development among the various technological transformation of the banks like Card banking, Internet banking, ATMs etc. The mobile technology has given potential for banks regarding customers’ expectations. The changes that mobile technologies have brought to banking are enormous in their impact on officers/employees, and customers of banks. Advances in mobile technology are allowing for delivery of financial products and services more conveniently and effectively than traditional banks. Rapid access to important financial information and the ability to act quickly and effectively will distinguish the successful banks of the future. The bank gains a vital competitive advantage by having a door marketing of their financial products and accountable customer service environment and new, streamlined business processes.

3.3 TYPES OF MOBILE BANKING TECHNIQUES

Mobile banking is a subset of electronic banking. Mobile banking is a way for the customer to perform banking actions on his or her cell phone or other mobile device. It is a quite popular method of banking that fits in well with a busy, technologically oriented lifestyle. Mobile banking allows bank customers to check balances, monitor transactions, obtain other account information, transfer funds, locate branches or ATMs, fund transfer, mobile phone recharge, pay bills, tax pay etc. All these services are performing via SMS, WAP, GPRS, 3G, SIM toolkit and USSD. Technically speaking, most of these Mobile banking services can be deployed using more than one of the following channels.

3.3.1 IVR – Interactive Voice Response

IVR or Interactive Voice Response service operates through pre-specified numbers that banks advertise to their customers. Customers make a call at the IVR number and
are usually greeted by a stored electronic message followed by a menu of different options. Customers can choose options by pressing the corresponding number in their keypads, and are then read out the corresponding information, mostly using a text to speech programme.

3.3.2 SMS – Short Messaging Service

SMS uses the popular text-messaging standard to enable mobile application based banking. The way this works is that the customer requests for information by sending an SMS containing a service command to a pre-specified number. The bank responds with a reply SMS containing the specific information. In a few instances even transaction-based services are made available to the customer using SMS.
3.3.3 WAP – Wireless Access Protocol

WAP uses a concept similar to that used in the Internet banking. Banks maintain WAP sites which customers access using a WAP compatible browser on their mobile phones. WAP sites offer the familiar form based interface and can also implement security quite effectively. The bank customers can have an anytime, anywhere access to a secure reliable service that allows them to access all enquiry and transaction-based services and also more complex transactions like trade insecurities through their phone.

A WAP based service requires hosting a WAP gateway. Mobile Application users access the bank’s site through the WAP gateway to carry out transactions, much like Internet users access a web portal for accessing the bank’s services.

The following figure demonstrates the framework for enabling mobile applications over WAP. The actual forms that go into a mobile application are stored on a WAP server, and served on demand. The WAP Gateway forms an access point to the Internet from the mobile network.

*Figure 3.3: WAP Network Architecture for Mobile Applications*
3.3.4 Standalone Mobile Application Clients

Standalone mobile applications are most suitable to implement complex banking transactions like trading in securities. They can be customized according to the user interface complexity supported by the mobile. In addition, mobile applications enable the implementation of a very secure and reliable channel of communication with end-to-end encryption.

One requirement of mobile applications clients is that they require to be downloaded on the client device before they can be used, which further requires the mobile device to support one of the many development environments like J2ME or Qualcomm’s BREW. J2ME is fast becoming an industry standard to deploy mobile applications and requires the mobile phone to support Java.

Figure 3.4: Standalone Mobile Application Clients

3.3.5 SIM application Tool Kit

SIM Application Toolkit (STK) is a standard of the GSM system which enables the SIM to initiate actions which can be used for various value-added services. The SIM Application Toolkit consists of a set of commands programmed into the SIM card which define how the SIM should interact directly with the outside world and initiates
commands independently of the handset and the network. This enables the SIM to build up an interactive exchange between a network application and the end user and access or control access to the network. STK has been deployed for many applications, often where a menu-based approach is required, such as Mobile Banking.

Figure 3.5: SIM application Tool Kit

3.3.6 Unstructured Supplementary Service Data (USSD)

Unstructured Supplementary Service Data (USSD) is a protocol used by cellular telephones to communicate with the service provider's computers. USSD can be used for WAP browsing, prepaid callback service, location-based content services, menu-based information services, and as part of configuring the phone on the network.

USSD messages are up to 182 alphanumeric characters in length. Unlike Short Message Service (SMS) messages, USSD messages create a real-time connection during a USSD session. The connection remains open, allowing a two-way exchange of a sequence of data. This makes USSD more responsive than services that use SMS.

Figure 3.6: Unstructured Supplementary Service Data (USSD)
USSD technology is used by telecom operators to send alerts to their users. It can be used for pre-paid call-back service, location-based content services and menu-based information services. USSD messages create a real-time connection during a USSD session.

The connection remains open, allowing a two-way exchange of a sequence of data. USSD is a protocol that can be used by GSM cellular telephones to communicate with service providers. It allows menu-based operations for high and low end mobile phones. A common USSD service is to query the available balance for prepaid phones. USSD operations are typically initiated by typing a short code between hashes, for example #1234#, which will return a result text directly, and possibly display a menu with more options. USSD appears to be one of the most promising modes for Mobile banking services for financial inclusion.
Figure 3.7: USSD based Mobile banking Process Flow
Figure 3.8: USSD based Mobile banking Transaction Flow

- Customer dials *99#
- Request will be received by the mobile operator gateway and will be routed to NPCI G/w
- Request will be sent to NPCI Common USSD Platform which will send the welcome screen and prompt customer to enter his/her MMID provided by the Issuer Bank.
- Based on the MMID entered by the customer, NPCI will identify the bank to which the transaction will be routed.
- The menu can be maintained at Issuer bank
- The menu can be maintained at NPCI Common USSD Platform
- OR
- The details will be sent to the Issuer Bank for processing.
- Customer will be confirmed about the status of the transaction in the USSD session
- SMS confirmation will be received by customer in case of IMPS transaction.
3.3.7 Mobile banking Architecture

The Mobile banking architecture is based on the specific requirement that the facility is provided through GRPS, GSM, CDMA, EDGE, 3G and CSD enabled mobile phones. The services can be provided to customers either directly by the bank or through a 3rd party vendor.

Figure 3.9: Mobile banking Architecture

![Diagram showing Mobile banking Architecture]

**Third party service architecture** is the more popular architecture as banks can quickly roll out their Mobile banking solutions by connecting to a 3rd party. In this architecture, the Mobile banking servers are located at the 3rd party vendor’s data centre. These servers will talk to the Core Banking Servers of the bank through a secured channel (dedicated or shared link) for authentication, authorization and transaction processing.

3.4 MOBILE BANKING MODELS

Mobile banking models have often been falling into two primary categories, namely, Bank-Led model and a non-bank-Led model. Each model has distinct means of operating, especially with respect to the relationship with the end customer in terms of establishing accounts, deposit taking, and lending Services.
3.4.1 Bank-Led model

Only banks, licensed and supervised and have a physical presence, will be permitted to offer Mobile banking services. Services shall be restricted only to customers of banks and holders of debit/credit cards issued as per guidelines. This model is additive in nature and may be seen as a modest extension of conventional branch-based banking.

![Figure 3.10: Bank- led Model](image)

In India in the year 2008, the Reserve Bank of India (RBI) issued Mobile banking guidelines that permit only licensed banks with a physical bank presence in India to launch Mobile banking using this Bank-led model.

<table>
<thead>
<tr>
<th>Table 3.2: RBI Guidelines for Bank – Led Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>KYC</strong></td>
</tr>
<tr>
<td>Banks shall put in place a system of document based registration with mandatory physical presence of customers, before commencing m-banking service</td>
</tr>
<tr>
<td><strong>Maximum limit of</strong></td>
</tr>
<tr>
<td>Per transaction limit INR 50,000 per day, per customer. Banks may place per transaction limits based on their own risk perception with the approval of its Board.</td>
</tr>
<tr>
<td><strong>AML/CFT</strong></td>
</tr>
<tr>
<td>Regulated under the ‘Prevention of Money Laundering Act 2002</td>
</tr>
<tr>
<td><strong>E-money issuance</strong></td>
</tr>
<tr>
<td>Policy on e-money clearly does not permit issuance by non-banks</td>
</tr>
<tr>
<td><strong>Payment system</strong></td>
</tr>
<tr>
<td>The Payment and Settlement Systems Bill 2008</td>
</tr>
<tr>
<td><strong>Cross border money transfer</strong></td>
</tr>
<tr>
<td>Strictly prohibited</td>
</tr>
<tr>
<td><strong>Other applicable law</strong></td>
</tr>
</tbody>
</table>
3.4.2 Bank- Led Model operating procedure

**Step 1: Customer** requests financial service.

Examples of Services Offered: Deposits and withdrawals; money transfers; loan/bill/tax payments; loan application and disbursal; account opening and credit card application acceptance.

**Step 2: Retail agent** checks customer’s ID and processes transaction, either directly through bank’s infrastructure (POS) or through payment processing agent.

Examples of Retail Agents: Retail outlets (grocery stores, lottery outlets, pharmacies, etc.); socially motivated organizations (NGOs, MFIs, etc.); post offices.

**Step 3: Bank** credits and debits bank accounts of customer and other party to the transaction.

Examples of Other Parties: It includes retail agent (for deposits or withdrawals) and recipients of money transfers (other customers, utility companies, tax authorities, etc.).

3.4.3 Non Bank-Led Model

The non-bank-led model is where a bank does not come into the picture (except possibly as a safe-keeper of surplus funds) and the non-bank organizations perform all the functions.

*Figure 3.11: Non Bank-Led Model*

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Bank reconciliation

Services Mobile Wallet

Mobile access
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In this model mobile phone can be transformed into a virtual wallet and utilized to make payments, transfer funds, and convert virtual money into cash without the need for a bank. Customers do not deal with a bank, nor do they maintain a bank account. A bank may not be involved at all. Instead, customers deal with a non bank firm—either a mobile network operator or prepaid card issuer—and retail agents serve as the point of customer contact.

Rather than deposit money into and withdraw money from a bank account, customers exchange their cash for e-money stored in a virtual e-money account on the non bank’s server, which is not linked to a bank account in the individual’s name.

E-money, according to the Basel Committee’s definition, is “a stored value or prepaid product in which a record of the funds or value available to the consumer for multipurpose use is stored on an electronic device in the consumer’s possession.” (Bank for International Settlements 2004).

3.4.4 Non-bank-led model operating procedure

Step 1: Customer requests Sale or Financial Services using either cell phone or smart card.

Step 2: Retail agent checks customer’s ID and processes transaction on behalf of Non-bank, using either cell phone or smart card reader.

Step 3: Non-bank registers transaction, updates the (virtual) e-money accounts belonging to the customer and the other party to the Transaction.

Step 4: Bank (generally) holds net funds from the Non-bank are issuance of e-money on behalf of Non-bank. Bank does not have a relationship with customer or retail agent.

3.5 Classification of Mobile Banking Services

One way to classify these services depending on the originator of a service session is the 'Push/Pull' nature. 'Push' is when the bank sends out information based upon an agreed set of rules, for example your banks sends out an alert when your account balance goes...
below a threshold level. 'Pull' is when the customer explicitly requests a service or information from the bank, so a request for your last five transaction statement is a Pull-based offering.

The other way to categorize the Mobile banking services, by the nature of the service, gives us two kinds of services – Transaction-based and Enquiry-based. So a request for your bank statement is an enquiry-based service and a request for your fund's transfer to some other account is a transaction-based service. Transaction-based services are also differentiated from enquiry-based services in the sense that they require additional security across the channel from the mobile phone to the banks data servers.

Based upon the above classifications, the following in the taxonomy of the services listed before.

Table – 3.3: Classification of Mobile banking Services

<table>
<thead>
<tr>
<th></th>
<th>Push-based services</th>
<th>Pull-based services</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transaction-based</strong></td>
<td>❖ Alerts on credits/debits</td>
<td>❖ Transfer of Funds</td>
</tr>
<tr>
<td></td>
<td>❖ Alerts on payment of bills, balance</td>
<td>❖ Payment of bills</td>
</tr>
<tr>
<td></td>
<td>❖ Deposit due date alert</td>
<td>❖ Other payment services</td>
</tr>
<tr>
<td></td>
<td>❖ Inward clearing cheques</td>
<td></td>
</tr>
<tr>
<td></td>
<td>❖ Amount withdrawn more than specified by the customers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>❖ Alerts on RTGS/NEFT</td>
<td></td>
</tr>
<tr>
<td><strong>Enquiry-based</strong></td>
<td>❖ Enquiry on account balance, account statement, status of cheque, recent transactions</td>
<td>❖ Request for stop cheque, cheque book, free format request, and other request services</td>
</tr>
</tbody>
</table>

3.5.1 Mobile banking Business Modes

Mobile banking business modes of services are offered through mobile application. It is useful to the entire customer to use this mode of business channel through the mobile phone.
Following is the comprehensive list of Mobile banking business modes of services offered by banks in India.

1. Application Based (SMS/GPRS) Mode
2. Wireless application protocol (WAP) Mode
3. Unstructured Supplementary Services Data (USSD) Mode
4. SMS Banking Mode

The description related to the above listed Mobile banking business modes are given below.

3.5.1.1 Application Based (SMS/GPRS) Modes of Mobile banking Business channel

Application based (SMS/GPRS) modes of business channel. It is the most Prospective and convenient method for Mobile banking users. Application Based Mobile banking business channel offered services via (SMS/GPRS) channel. The following table exhibits the feature of application-based mode of Mobile banking.
### Table 3.4: Application Based (SMS/GPRS) Modes of Business channel

<table>
<thead>
<tr>
<th>Mode (Channel) (SMS/GPRS)</th>
<th>Facilities available</th>
<th>Business Rules</th>
<th>Service available on</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Funds transfer (within and outside the bank).</td>
<td>1. All Current/Savings Bank Account holders in P segment are eligible.</td>
<td>Java enabled /Android mobile phones (with or without GPRS) where the user is required to download the application on to the mobile handset using GPRS/Bluetooth/Dat a cable.</td>
</tr>
<tr>
<td></td>
<td>2. Immediate Payment Services (IMPS).</td>
<td>2. Transaction limit per customer per day is Rs.50,000/- with a calendar month limit of Rs.2,50,000/-.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Enquiry services (Balance Enquiry/Mini statement).</td>
<td>3. All customers can avail the Service irrespective of their telecom service provider.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Cheque book request.</td>
<td>4. The Service is free of charge. SMS/GPRS cost will be borne by the customer.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Bill Payment (Utility bills, credit cards, Insurance premium), Donations, Subscriptions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Mobile Top up.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. M-Commerce (Top up of Tata sky, Big TV, Sun Direct, Dish TV, Digital TV and Videocon d2h connections, life insurance premium).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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3.5.1.2 Wireless application protocol (WAP) Modes of Business channel

Wireless application protocol (WAP) Modes of Business channel is the most secure and easiest access for Mobile banking users. Wireless application protocol-based Mobile banking business channel offered services via (GPRS) channel. The following table highlights the features of these modes of Mobile banking business.

<table>
<thead>
<tr>
<th>Mode (Channel)</th>
<th>Facilities available</th>
<th>Business Rules</th>
<th>Service available on</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Fund Transfer</td>
<td>1. Funds transfer (within and outside the bank).&lt;br&gt;2. Immediate Payment Services (IMPS).&lt;br&gt;3. Enquiry services (Balance enquiry/Mini statement).&lt;br&gt;4. Cheque book request.&lt;br&gt;5. Bill Payment (Utility bills, credit cards, Insurance premium), Donations, Subscriptions.&lt;br&gt;6. Mobile Top up.&lt;br&gt;7. M-Commerce (Top up of Tata sky, Big TV, Sun Direct, Dish TV, Digital TV and Videocon d2h connections, LIC life insurance premium)</td>
<td>1. All Current/Savings Bank Account holders in P segment are eligible.&lt;br&gt;2. Transaction limit per customer per day is Rs.50,000/- with a calendar month limit of Rs.2, 50,000/-.&lt;br&gt;3. All customers can avail the Service irrespective of their telecom service provider.&lt;br&gt;4. The Service is free of charge. GPRS cost will be borne by the customer.</td>
<td>Non-Java/Java Enabled /Android mobile Mobiles with GPRS connection</td>
</tr>
</tbody>
</table>
3.5.1.3 Unstructured Supplementary Services Data (USSD) Modes of Business channel

Unstructured Supplementary Services Data (UUSD) Modes of Business channel are friendly with the customer. It is the most promising modes services for Mobile banking users. Unstructured Supplementary Services Data Based Mobile banking business channel offered services via (With GPRS/Without GPRS) channel. Features of this model are given in the table below:

*Table-3.6: Unstructured Supplementary Services Data (USSD) Modes of Business channel*

<table>
<thead>
<tr>
<th>Mode (Channel)</th>
<th>Facilities available</th>
<th>Business Rules</th>
<th>Service available on</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Enquiry services (Balance Enquiry/Mini Statement).</td>
<td>All Current/Savings Bank Account holders in P segment are eligible.</td>
<td>The service is available on all Mobile phones (java/non java) with/without GPRS connection. No need to download the application.</td>
</tr>
<tr>
<td></td>
<td>2. Mobile Top up.</td>
<td>Transaction limit per customer per day is Rs.1000/- with a calendar month limit of Rs.5,000/-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Funds Transfer (within Bank).</td>
<td>3. The Service is available for subscribers of selected telecom operators only.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Service is free of charge. USSD session charges will be borne by the customer.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. The service is session-based and requires a response from the user within a reasonable time.</td>
<td></td>
</tr>
</tbody>
</table>
3.5.1.4 SMS-based Modes of Banking Business channel

SMS Banking Modes of Business channel are easy access to the customer. It is convenient modes of services for Mobile banking users. SMS Banking based Mobile banking business channel offered services via With GPRS/Without GPRS channel. The following table exhibits the features of this model.

Table 3.7: SMS Banking Modes of Business channel

<table>
<thead>
<tr>
<th>Mode (Channel)</th>
<th>Facilities available</th>
<th>Business Rules</th>
<th>Service available on</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Enquiry Services (Balance Enquiry/Mini Statement)</td>
<td>1. All Current/Savings Bank Account holders in P segment are eligible. 2. Transaction limit per customer per day is Rs.1000/- with a calendar month limit of Rs.5,000/- All customers can avail the Service irrespective of telecom service provider. 3. The Service is free of charge. SMS cost will be borne by the customer. 4. As a matter of abundant precaution, Customers are requested to delete all the messages sent to the number 9999999999, once the response for their request has been received.</td>
<td>The service is available on all Mobile phones (java/non java) with/without GPRS connection. No need to download the application. Ordinary SMS charges are applicable.</td>
<td></td>
</tr>
</tbody>
</table>
3.6 MOBILE BANKING SERVICES IN INDIA

Mobile banking in secular terms involves the applying of a mobile phone to provide banking services. Banks have introduced two dissimilar products in Mobile banking. One is an Individual/retail banking product and the other is retail agent banking product to promote the financial inclusion. As a prospective banking product it is proposed to all savings/current account holder and offers anytime anywhere banking. The Mobile banking opening moves were started by foreign and private banks adopted by public sector banks.

Following are the comprehensive list of Mobile banking services offered by various banks in India.

*Table 3.8: Mobile banking services offered by commercial banks in India*

<table>
<thead>
<tr>
<th>Name of the Mobile banking services</th>
<th>Description</th>
</tr>
</thead>
</table>
| Account Information               | • Mini-statements and checking of account history  
• Alerts on account activity or passing of set thresholds  
• Monitoring of term deposits  
• Access to loan statements  
• Access to card statements  
• Mutual funds/equity statements  
• Insurance policy management  
• Pension plan management |
| Payments & Transfers              | • Domestic and international fund transfers  
• Micro-payment handling  
• Mobile recharging  
• Commercial payment processing  
• Bill payment processing |
| Investments                        | • Portfolio management services  
• Real-time stock quotes  
• Personalized alerts and notifications on security prices |
<table>
<thead>
<tr>
<th>Support</th>
<th>Content Services</th>
<th>Future functionalities in mobile banking</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Status of requests for credit, including mortgage approval, and</td>
<td>• General information such as weather updates, news</td>
<td>• Communication enrichment: - Video Interaction with agents, advisors.</td>
</tr>
<tr>
<td>insurance coverage</td>
<td>• Loyalty-related offers</td>
<td>• Pervasive Transactions capabilities: - Comprehensive “Mobile wallet”</td>
</tr>
<tr>
<td>• Check book and card requests</td>
<td>• Location-based services</td>
<td>• Customer Education: - “Test drive” for demos of banking services</td>
</tr>
<tr>
<td>• Exchange of data messages and E-mail, including complaint submission</td>
<td></td>
<td>• Connect with new customer segment: - Connect with Gen Y – Gen Z using games and social network</td>
</tr>
<tr>
<td>and tracking</td>
<td></td>
<td>ambushed to surrogate bank’s offerings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Content monetization: - Micro level revenue themes such as music, e-book download</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Vertical positioning: - Positioning offerings over Mobile banking specific industries</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Horizontal positioning: - Positioning offerings over Mobile banking across all the industries</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Personalization of corporate banking services: - Personalization experience for</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Multiple roles and hierarchies in corporate banking as against the vanilla based segment based</td>
</tr>
<tr>
<td></td>
<td></td>
<td>enhancements in the current context.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Build Brand: - Built the bank’s brand while enhancing the “Mobile real estate”.</td>
</tr>
</tbody>
</table>
3.6.1 Mobile banking trends in India

India has more than 950 million mobile subscribers of which about 350 million mobile subscribers belongs to rural areas but only 450 million individuals are having bank accounts and prominent unbanked divisions of population occupying in the villages (as per census 2011, only 54.4% of rural families had access to banking services), It indicates the increase in rural and urban and semi-urban mobile penetration in India. This mobile penetration helps to implement the Mobile banking services effectively and it will help to bring all sections of people into the banking system. Mobile banking provides a vast chance for banking industry to leveraging upon the mobile compactness in the country.

Table 3.9: State-wise Number of Registered Mobile banking Users in India

<table>
<thead>
<tr>
<th>STATES</th>
<th>NO. OF USERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gujarat</td>
<td>3799</td>
</tr>
<tr>
<td>Karnataka</td>
<td>518</td>
</tr>
<tr>
<td>West Bengal</td>
<td>660</td>
</tr>
<tr>
<td>Sikkim</td>
<td>55</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>2840</td>
</tr>
<tr>
<td>Chhattisgarh</td>
<td>535</td>
</tr>
<tr>
<td>Orissa</td>
<td>408</td>
</tr>
<tr>
<td>Punjab</td>
<td>217</td>
</tr>
<tr>
<td>Haryana</td>
<td>143</td>
</tr>
<tr>
<td>Himachal Pradesh</td>
<td>59</td>
</tr>
<tr>
<td>Jammu &amp; Kashmir</td>
<td>29</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>1614</td>
</tr>
<tr>
<td>Puducherry</td>
<td>27</td>
</tr>
<tr>
<td>Andhra Pradesh</td>
<td>758</td>
</tr>
<tr>
<td>Kerala</td>
<td>604</td>
</tr>
<tr>
<td>Uttar Pradesh</td>
<td>719</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>2588</td>
</tr>
<tr>
<td>Goa</td>
<td>214</td>
</tr>
</tbody>
</table>
In recent years, the number of Mobile banking users in India has been slowly increasing and speculating a growth with the volume and value increasing. It will indicate that in the coming years our country to reach out to more Mobile banking users and transaction-based services. The analyses of growth and development of Mobile banking services are given in chapter four.

Table 3.10: The usage of Mobile banking users in India (From May 2010 To April 2013) is given below

<table>
<thead>
<tr>
<th>Year</th>
<th>No of registered Mobile banking users in India (million)</th>
<th>Volume of transaction in million (In Actual)</th>
<th>Value of transaction (In Rs.'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-2011</td>
<td>12.96</td>
<td>7665087</td>
<td>6620486</td>
</tr>
<tr>
<td>2011-2012</td>
<td>22.51</td>
<td>27648430</td>
<td>19792703</td>
</tr>
<tr>
<td>2012-2013</td>
<td>35.53</td>
<td>56458124</td>
<td>67441451</td>
</tr>
</tbody>
</table>

Source: RBI Website
3.7 MOBILE BANKING: REGULATORY FRAMEWORK IN INDIA

❖ October 8, 2008

Mobile banking transactions defined as undertaking banking transactions using mobile phones by bank customers that involve credit/debit to their account.

Some of the significant norms were as under:

a. Technology & security standards were laid down.
b. All transactions to be encrypted irrespective of value limit inter-operability were ensured.
c. Customer complaints and grievance mechanism were laid down.
d. Daily cap of Rs. 5,000 per customer for funds transfer and Rs.10,000 per customer for transactions involving purchase of goods & services were prescribed.
e. Banks to seek one-time prior approval of the Reserve Bank of India after obtaining their respective Board’s approval.
g. Such services could also be offered through the Business correspondent model

❖ December 24, 2009

Raise in the daily cap transaction limits for funds transfer and for purchase of goods & services to Rs. 50,000

A. Transactions upto Rs. 1,000 can be facilitated without end to end encryption of messages.
B. Permitted to provide cash-outs to the recipients through ATMs or BCs subject to a cap of Rs. 5,000 per transaction and a maximum of Rs. 25,000 per month per customer.

❖ May 4, 2011

A. Transaction upto Rs. 5,000 can be facilitated without end-to-end encryption of messages.
A. Transaction cap limits for funds transfer and for purchase of goods & services of Rs. 50,000 per customer per day removed.
B. Banks may place their own limits based on their risk perception with the approval of their Board.
C. Ceiling on cash-outs to the recipients through ATMs or BCs raised to Rs.10,000 per transaction subject to the existing cap of Rs. 25,000 per month

3.8 PROCEDURE FOR OPERATING MOBILE BANKING SERVICES

Mobile banking services are offered in different modes. Following are the four modes of Mobile banking services offered by banks in India.

1. Application Based (SMS/GPRS) Mode
2. Wireless application protocol (WAP) Mode
3. Unstructured Supplementary Services Data (USSD) Mode
4. SMS Banking Mode

The procedures for operating Mobile banking services through the above said modes are explained below using flow chart and algorithm.

3.8.1 PROCEDURES FOR OPERATING USSD-BASED MOBILE BANKING SERVICES (Unstructured Supplementary Services Data)

The USSD-based Mobile banking services are offered to customers from the mobile device without internet connection. The following flow chart and algorithm illustrate the procedure for using the USSD-based Mobile banking services.
Figure 3.12: Flow chart describing the USSD based Mobile banking services
Enter payee MMID & the Amount

Y

Enter payee mobile number

N

numb format 10 digit?

Y

Enter user id, MPIN

N

Number, PIN format?

Y

D
3.8.2 Algorithm for the USSD-based Mobile banking services

STEP 1: Dial *99# from Mobile handset

STEP 2: Enter the 7- digits of MMID

STEP 3: Bank displays its menu for user to choose
STEP 4: Kindly reply with the amount with to transfer

STEP 5: Kindly reply with 7-digit payee MMID

STEP 6: Kindly reply with the 10-digit payee Mobile number

STEP 7: Reply with the user ID

STEP 8: Reply with the MPIN
STEP 9: Fund transfer request accepted

![Message: Fund transfer request accepted.]

STEP 10: Bank authenticates the customer (2 factor authentication)

![Test message]

3.8.3 PROCEDURE FOR OPERATING OTHER MOBILE BANKING APPLICATIONS

The procedures for performing other financial applications, namely, railway ticket booking, Air ticket booking and Movie ticket booking, etc. are explained below.
3.8.4 Procedure for Railway ticket reservation using Mobile banking

The following Flow chart clearly exhibits the procedure for Railway ticket reservation using Mobile banking

Start

Select source station

Select Destination station

Select class, Quota of Travel

Select Date of Travel

Check for availability?

Y

Display train details

N

C
Enter passenger details Name, Age, Sex, Mobile, and Email

Selecting Seat

Enter transaction PIN (Maximum 3 times)

PIN format correct?

Y

Processing transaction and confirming through SMS, Email

N

Stop
3.8.6 Algorithm for Railway ticket reservation using Mobile banking

Step: 1  Enter Source and Destination Station

Step: 2  Destination Station can be selected

Step: 3  Source Station can be selected

Step: 4  Class of travel can be selected
Step: 5  Journey date can be selected

Step: 6  Availability information

Step: 7  Train details will be displayed along with the timings

Step: 8  Fare details will be displayed

Step: 9  Providing Passenger details
Step: 10 Providing passenger name

Step: 11 Providing e-mail and mobile number. Ticket will be sent in mail to this E-mail id

Step: 12 Choosing the seats

Step: 13 Train details confirmation
Step: 14 Payment Authorization

![Image of payment authorization step]

Step: 15 Ticket details confirmation

![Image of ticket details confirmation step]

3.8.7 Algorithm for PNR Status Enquiry using Mobile banking services

Step: 16 PNR status Enquiry

![Image of PNR status enquiry step]

Step: 17 PNR status
Step: 18 Train details

3.8.8 Procedure for E-mailing the booked ticket

Step: 19 E-mailing the ticket

Step: 20 E-mail sent successfully
Start

Enter PNR number

10 digits PNR format?

Y

Processing PNR status

PNR status display

Email on confirmation

Stop
3.8.9 Procedure for AIR Ticket reservation using Mobile banking

The following Flow chart clearly exhibits the procedure for Air ticket reservation using Mobile banking:

1. Start
2. Flying from origin Airport
3. Select Destination Airport
4. Select class, Economy, Business
5. Select Date of Travel
6. Check for availability?
   - Y: Computing fare
   - N: Repeat
7. C
Enter passenger details Name, Age, Sex, Mobile, and Email

Selecting Seat

Enter transaction PIN (Maximum 3 times)

PIN format correct?

Processing transaction and confirming through SMS, Email

Stop
3.8.10 Algorithm for Booking Flight Tickets using Mobile banking services

Step: 1 Searching flights

Step: 2 Flight timings

Step: 3 Fare amount

Step: 4 Providing Customer details
3.8.11 Procedure for Film ticket reservation using Mobile banking

The following Flow chart clearly exhibits the procedure for Film ticket reservation using Mobile banking.
Enter details Name, Age, Sex, Mobile and Email

Selecting Seat

Enter transaction PIN (Maximum 3 times)

PIN format correct?

Y

Processing transaction and confirming through SMS, Email

Stop

N
3.8.12 Algorithm for Booking Film Tickets using Mobile banking services

Step: 1 Selection Location and movie

Step: 2 Movie list

Step: 3 Theatre details

Step: 4 Selection of date
Step: 5 Show time

![Movie Timing]

Step: 6 Tickets details

![Movie Price]

Step: 7 Selection of seats

![Options]

Step: 8 Mailings the ticket details

![Movie Price]
3.9 CONCLUSION

This chapter has given a detailed presentation about different modes of banking services, mobile technology, Mobile banking services in India, types of Mobile banking techniques, Mobile banking models and Mobile banking regulatory framework in India.

In addition to the above conceptual presentation, this chapter also highlights the procedure for operating/availing banking and other financial services through mobile phones and exhibits the step-by-step procedure for performing banking transaction through mobile phones.

The growth and development of Mobile banking services in India is analysed and presented in the next chapter.