CHAPTER 1

INTRODUCTION: MOBILE PHONE AND MOBILE BANKING

1.1 Problems to be evaluated and assessed:

In the information Technology (IT) based era, mobile phone users (consumers) and business as well as social network are coming to realizing the value of mobile device and its utilization along with application in their daily business and non – business activities and movements. They have shift their perception of the mobile handset (phone) from that of a voice telephone device to that of a personal e – commerce and trade device, it is because of the advancement in mobile phone devices like general packet radio system or services (GPRS), Universal mobile telecommunication system (UMTS), code division multiple access (CDMA), high speed circuit switched data technology (HSSSD), first generation 1st G to 3G and 4G, wireless market language (WML), Social protocol stack (WAPS) and its application (usages) in various areas. viz mobile general communication, mobile banking, mobile ticketing, mobile vouchers, mobile brokerage, mobile purchase, mobile marketing, mobile entertainment, mobile information, etc. This together is called e – commerce or mobile business activities and movement. It also includes social mobile communication. Therefore this study attempts to know what are business activities and movements of the mobile users? , extent and awareness of recharge, call rate, objective of mobile use, sms etc, behaviour of mobile users on functional, technical and social business activity and movement.

Mobility is the window to the world for many people in small towns and rural India. It is their newspaper, radio, television all rolled into one. It has made some
journalist, some a conscience keeper and some a cameraman. News in India is first reported on SMS and then follow to mobile phone pictures, videos. For young people mobility has given them a ticket to a set of digital communities. A mobile phone has become the ultimate personal product in India. It is the huge personality statement and competes with other ‘notice me’ products like a watch, a pen, shoes, handbags, and sunglass. A mobile phone is with you 24 X 7. Thus, mobility is here to impact nations, citizens and commerce in profound way. Today you go out with your visiting card, wallet, keys and pen. In future world, you will not need any of these. All you need is a mobile phone. This indicates that the accessibility of mobile phone by the users in their daily business and non – business or overall in their daily life are being increasing rapidly. Around more than 85% of world’s population have mobile phone coverage as of 2012. India is the biggest growth market adding about 6 million cell phones every month and it is expected to be 1134 million\(^1\) by the end of 2013. This kind of rapid changes in the mobile use is changing business activity and movement game. It is because of changes happening in the mobile network technologies further which ensure the strength of mobile phone application to the users say for instance concept of mobile commerce and mobile banking. Undertaking banking transactions using mobile phones (device) by bank customers that involve credit/debit to their accounts and many other banking business activities and movement. This changes from non – monetary business transactions to monetary (banking) related business transactions is very important changes in the life of mobile phone users. Therefore it is interesting to know and assess the social business activity and movement of mobile phone users, and its perceptions on mobile banking. Hence this study attempts to assess financial, social, functional business activities and movement and perception of
mobile users on mobile banking services. Therefore the specific problems to be
evaluated and assessed in the present study are as under.

1. What are the responses of mobile phone users towards possession of mobile
phone?

2. What are the responses of mobile phone users towards price preference?

3. What are the attributes considered by mobile phone users while purchasing
mobile phone?

4. What are the responses of mobile phone users in respect of awareness, extent
of recharge, call rate, objectives of mobile phone use, sms etc.?

5. What is the behaviour of mobile phone users on functional business activity
and movement?

6. What is the behaviour of mobile phone users on financial business activity and
movement?

7. What is the behaviour of mobile phone users on social business activity and
movement?

8. To what extent mobile phone users aware of general concept of mobile
banking, mobile banking services (activities) and specific types of mobile
banking services.

9. What is the perception of mobile phone users on advantages and
disadvantages of mobile banking?

10. What is the perception of mobile phone users on apprehensions about mobile
phone and expectations from mobile banking attractiveness?

11. What is the perception of mobile phone users on purpose of using mobile
banking activities/services?
12. What is the willingness perception of mobile phone users on using mobile banking for
   a. Selling and purchasing of financial instruments,
   b. Making fixed deposits,
   c. Making payments bills,
   d. Derivates,
   e. Money transfer
   f. Initial public offers.

13. What is overall willingness perception of mobile phone users on utility of mobile banking services?

14. What is behaviour of mobile phone users on M – commerce/M – marketing/SMS and other functions?

15. How mobile phone user’s perceived movement of mobile banking services?

16. What are the movement styles of mobile phone users in respect of availing mobile banking services?

17. What is a relationship between demographic variables and uses of mobile banking services?

18. Does demographic factors / variables influences uses of mobile banking services?

19. What is relationship between mobile perceived service quality and dimensions?

20. Does dimensions influences mobile perceived service quality?

This study seeks to answer some of these questions in systematic, and scientific manner based on primary and secondary data. But before doing so, it is
essential to know the conceptual framework of mobile phone, and users (consumers), rate of recharge, and call rate, sms, miss, dialed and received calls, functional and social, business activities and movement, mobile banking services, and related issues, and growth of mobile phone in India.

1.2 Some aspects of mobile phones and mobile phone users:

1.2.1 Meaning of mobile phone and mobile phone users:

A cell phone is a type of two way radio Cellular telephone is also define as a type of short-wave analog or digital telecommunication in which a subscriber has a wireless connection from a mobile telephone to a relatively nearby transmitter. The transmitter's span of coverage is called a cell.

The Cellular telephone (commonly "mobile phone" or "cell phone" or "handphone") is a long-range, portable electronic device used for mobile communication. In addition to the standard voice function of a telephone, current mobile phones includes SMS for text messaging, email, packet switching for access to the Internet, and MMS for sending and receiving photos and video. Most current mobile phones connect to a cellular network of base stations (cell sites), which is in turn interconnected to the public switched telephone network (PSTN) the exception is satellite phones.

In early days, mobile phones means walkie – Talkies, this was used mainly in military, railway, police department, etc. but today mobile phone means internet, and every function of communication through electronic devices. Now it is used as computer, laptop, PDA and etc.
Mobile phone is the window to the world for many people in small towns and rural India. It is their newspaper, radio, television all rolled into one. It has made some journalist, some a conscience keeper and some a cameraman. News in India is first reported on SMS and then follow to mobile phone pictures, videos. For young people mobile phone has given a ticket to a set of digital communities. A mobile phone has become the ultimate personal product in India. It is the huge personality statement and competes with other ‘notice me’ products like a watch, a pen, shoes, handbags, and sunglass. A mobile phone is with you 24 X 7. Thus, mobile phone is here to impact nations, citizens and commerce and management in profound way. Today you go out with your visiting card, wallet, keys and pen. In future world, you will not need any of these. All you need is a mobile phone.

Mobile phone is a vehicle for financial and non – financial inclusion. Clark\(^2\) state that as a channel the mobile phone can augment the number of channel available to consumers, thereby giving consumers more low – cost self – service options by which to access funds, banking information and make payments and act for normal functions. Mobile as a channel delivered convenience, immediacy and choice to consumers.

Thus mobile phone facility is an easy and faster means of communication and one communicates with family and friends and transacts the business anywhere, anytime at a reasonable cost.

Mobile phone is a device or tool or instrument used by individual or a person for communication purpose. It is a means of modern communication. It is a handset or device which performs e – mode communication his/her own idea and services through mobile. It is a electronic mode or handset used for all types of modern
communication. Mobile phone user means a person or individuals who buy and use mobile phone for modern communication like talking, sms, e–marketing and commerce, financial and non–financial, cultural and non–cultural, social and non–social, banking, health and insurance related and general, camera, internet, music, political and non–political, environmental and non–environmental etc. Mobile phone user can be consumer/customer from mobile service provider’s point of view, or bankers and insurer’s point of view, or handset sellers point of view. Performing and functioning on mobile is required (1) handset or mobile (2) sim card, (3) prepaid or postcard recharging (4) call rate nature and pattern hiring. Hence in the present study, mobile phone users are people who buy and use mobile phone/device to satisfy their modern communication needs and wants.

A consumer/customer mobile phone user is an individual who buys mobile for personal use (communication) and not for resale. Mobile phone user means any person who buys mobile handset/phone and hires certain mobile services from service providers (here Airtel, Reliance, etc) for his/her own use (communication) or for the use of others. Hence in the present study mobile phone users refers to people who buy mobile phone/handset and use for the monetary and non–monetary, or business and non–business, or financial and non-financial, social and non–social, cultural and non–cultural, banking and non–banking, or health and non–health, or general and specific communication purpose. In practice there are 3 main decision making styles of mobile phone users namely (1) psychographic life style approach, (2) users topology approach (3) users characteristics approach. Mobile phone users can be divided into prospecting users and reluctant users. The prospects are generally positive about using services of mobile phone. These people play a game with service providers or banking service provider in which they win win when they get good
value and satisfaction for their money. Whereas the reluctant mobile phone users have little interest in using these services. Style is the way in which something is performed. It is a mental orientation characterizing a mobile phone users approach. Mobile phone users decision making styles can be as under:

1. Quality conscious decision making style mobile phone users
2. Price conscious
3. Recreational conscious
4. Novelty and fashion conscious
5. Brand conscious
6. Confused by over choice
7. Variety seeking
8. Compulsive and impulsive
9. Habitual/brand loyal

The quality decision making style mobile phone users perceive the quality of the product/service to be very important and are willing to make special efforts to choose products/services with the very best quality. Such mobile phone users are unique in nature and attitude. Their approach is different and their decision – making style is also different. They are not budget oriented but quality oriented. As against this price conscious decision - making mobile phone users take decision on the basis of price only and not quality or any other factor. They check and compare the prices/charges of products or services before buying them.

Recreational conscious decision making style mobile phone users takes pleasure in performing service for the fun of it. They are moody people. On the other hand, novelty and fashion conscious decision making style mobile phone users like
new and innovative services had products and gain excitement from seeking out new things. They are fashion oriented and very much conscious of new and innovative fashionable items and services. Their intention to follow latest fashion and innovation in market. They are followers of celebrity and they act accordingly to their choice model.

Brand conscious decision making style mobile phone users are brand loyal and personality loyal. Brand switched price conscious, brand shifting quality, brand centric and brand oriented prestige seeking are styles here. As against this, confused by over choice towards brand selection, product selection, price and quality selection. They have complex nature. Mobile phone users having high scores on variety seeking nature are likely to switch brands, even if their current brands satisfy their needs. They may also switch brands to experience better alternatives or to increase stimulation by bringing something new into their lives. They are highly experimentive.

Compulsive decision makes appear to get some emotional release or temporary mood ‘repair’, out of the process of buying. They act for which they don’t need and want. They show high materialism and low self – esteem. Whereas impulsiveness decision making style mobile phone users never plan but tend to act spontaneously. Habitual style consumers buy or act due to habit from some service, some store, some brand, etc.

1.2.2 Global history of mobile phone:

Martin Cooper, a former general manager for the systems division at Motorola, is considered the inventor of the first modern portable handset. Bell Laboratories introduced the idea of cell phone communications in 1947 with the
police car technology. However, Motorola was the first to incorporate the technology into a portable device that was designed for use outside an automobile.

Anything to do with broadcasting and sending a radio or television message over the airwaves comes under the control of Federal Communications Commission (FCC) Regulation of the United States. A cell phone is a type of two-way radio. In 1947, AT and T (American Telephone and Telegraph) proposed that the FCC allocates a large number of radio-spectrum frequencies so that widespread mobile telephone service would become feasible and AT and T would have an incentive to research the new technology. The FCC decided to limit the number of frequencies available in 1947, the limits made only twenty-three phone conversations possible simultaneously in the same service area.

By 1977, AT and T and Bell Laboratories had constructed a prototype cellular system. A year later, public trials of the new system were started in Chicago with over 2000 trial customers. In 1979, in a separate venture, the first commercial cell phone system began its operation in Tokyo. In 1981, Motorola and American Radio Telephone started a second U.S. cell phone radio-telephone system test in the Washington/Baltimore area. By 1982, the slow-moving FCC finally authorized commercial cellular service for USA. A year later, the first American commercial analog cell phone service or AMPS (Advanced Mobile Phone Service) was made available in Chicago by Ameritech.

AT and T and Bell Laboratories proposed a cell phone system to the FCC of many small, low-powered, broadcast towers, each covering a 'cell' a few miles in radius and collectively covering a larger area. Each tower would use only a few of the total frequencies allocated to the system. As the phones travel across the area, calls would be passed from tower to tower. (Rastogi 2003)
Despite the incredible demand, it took 37 years for cell phone services to become commercially available in the United States. Consumer demand quickly outstripped the 1982 system standards. By 1987, cell phone subscribers exceeded one million and the airways were crowded. (COAI 2005)

Worldwide cell phone subscribers are increasing at first rate. The worldwide number of cell phone subscribers surpassed 2 billion in 2005, It has increased from 11 million in 1990 and 750 million in 2000.

The share of cell phone subscribers shows that china stood first followed by USA. India share in the world was to the extent of 3.8percent has increased upto 12 percent in 2012. Top 15 countries share position in cell phone subscribers is presented in Table 1.1.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Year 2005</th>
<th>Cell Phone subscribers (in million) 2005</th>
<th>Share ) %</th>
<th>Cell Phone subscribers (in million) 2013</th>
<th>Change in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>China</td>
<td>398</td>
<td>19.3</td>
<td>1198</td>
<td>18.2</td>
</tr>
<tr>
<td>2</td>
<td>USA</td>
<td>202</td>
<td>9.9</td>
<td>345</td>
<td>5.2</td>
</tr>
<tr>
<td>3</td>
<td>Russia</td>
<td>115</td>
<td>5.6</td>
<td>237</td>
<td>3.6</td>
</tr>
<tr>
<td>4</td>
<td>Japan</td>
<td>95</td>
<td>4.6</td>
<td>137</td>
<td>2.1</td>
</tr>
<tr>
<td>5</td>
<td>Brazil</td>
<td>86</td>
<td>4.1</td>
<td>268</td>
<td>4.1</td>
</tr>
<tr>
<td>6</td>
<td>India</td>
<td>79</td>
<td>3.8</td>
<td>875</td>
<td>13.3</td>
</tr>
<tr>
<td>7</td>
<td>Germany</td>
<td>73</td>
<td>3.5</td>
<td>114</td>
<td>1.7</td>
</tr>
<tr>
<td>8</td>
<td>Italy</td>
<td>59</td>
<td>2.9</td>
<td>88</td>
<td>1.3</td>
</tr>
<tr>
<td>9</td>
<td>UK</td>
<td>58</td>
<td>2.8</td>
<td>76</td>
<td>1.2</td>
</tr>
<tr>
<td>10</td>
<td>France</td>
<td>47</td>
<td>2.3</td>
<td>72</td>
<td>1.1</td>
</tr>
<tr>
<td>11</td>
<td>Mexico</td>
<td>46</td>
<td>2.2</td>
<td>93</td>
<td>1.4</td>
</tr>
<tr>
<td>12</td>
<td>Turkey</td>
<td>40</td>
<td>1.9</td>
<td>68</td>
<td>1.0</td>
</tr>
<tr>
<td>13</td>
<td>Spain</td>
<td>39</td>
<td>1.9</td>
<td>56</td>
<td>0.9</td>
</tr>
<tr>
<td>14</td>
<td>South Korea</td>
<td>38</td>
<td>1.8</td>
<td>53</td>
<td>0.8</td>
</tr>
<tr>
<td>15</td>
<td>Indonesia</td>
<td>38</td>
<td>1.8</td>
<td>290</td>
<td>4.4</td>
</tr>
<tr>
<td>16</td>
<td>Top 15 countries</td>
<td>1414</td>
<td>68.5</td>
<td>3972</td>
<td>60.3</td>
</tr>
<tr>
<td>17</td>
<td>Worldwide Total</td>
<td>2065</td>
<td>100</td>
<td>6587</td>
<td>100</td>
</tr>
</tbody>
</table>

Source : Business Wire, Sep’ 26 2005

Paul Lombart, Informa (Q2 :2013) :National telecom regulators
Table 1.1 clearly shows that India was in 5th place and in 2013 it shifted to 2nd place next to China. The share of China in 2005 was 19.3 percent and in 2013 18.2 percent lightly declined. Whereas India’s share has increased from 3.5 percent in 2005 to 13.3 percent in 2013.

Since 2010 – 2011, new evaluation is emerged in the history of mobile application network. They have shifted their perception of the mobile handset from that of a voice telephone device to that of a personal e-commerce device, it is because of the advancement in mobile phone devices (GPRS, UMTS etc) and its application in various area viz, mobile banking, mobile ticketing, mobile vouchers, mobile brokerage, mobile purchase, mobile social networking, and mobile marketing and so on. Wireless local area network (WLAN), wireless application protocol (WAP), wireless markup language (WML) etc. is playing a vital role towards the growth of mobile network technology. The evolution of mobile network technology has divided into 5 generations that is 1G, (1st generation), 2G, 2.5G, 3G and 4G. This advancement in mobile network technology enables to support the WAP. Advanced/developed economics like USA, etc are using 4G mobile network. Its speed upto 100+ mbps by using WiMAX protocol, in addition to that it has been supporting all the feature of existing 3G network technology.

1.2.3 History of mobile phone in India:

At present India’s share in the cell phone subscribers is 2nd China are only ahead of India (in 2013). Actual mobile phone subscribers one subscribed has increased from 150 million in 2006 to 525 million in 2009 and further to 1049 million in 2012 respectively. This shows that in 2012 it has increased by 599 percent as compared to 2006 respectively. A brief historical sketch helps to understand the stages and direction of mobile phone progress.
Table 1.2  
Brief History of mobile phones in India

<table>
<thead>
<tr>
<th>Period</th>
<th>Year</th>
<th>Historical events/History of mobile phones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliberalization</td>
<td>1851</td>
<td>Introduction of Telegraph service</td>
</tr>
<tr>
<td></td>
<td>1947</td>
<td>Foreign Telecom companies nationalized to form PTT</td>
</tr>
</tbody>
</table>
|                        | 1980’s: The beginning | ⋅ Teledensity in 1980 -81 : 0.3%  
⋅ Introduction of public phones  
⋅ Private sector allowed      |
| Post liberalization    | 1992  | Telecommunication sector in India was liberalized to bridge the gap through government spending and to private additional resources for the nation’s telecom target. Private sector was allowed participation. |
|                        | 1993  | The telecom industry got an annual foreign investment Rs.20.6 millions.                                   |
|                        | 1994  | License for providing cell phone services was granted by the government of India for the metropolitan cities of Delhi, Mumbai, Kolkata and Chennai Cell phone service became duopoly (i.e Not more than two cell phone operators could be licensed in each telecom circle) under a fixed license fee regime for 10 years. |
|                        | 1995  | 19 more telecom circles got mobile licenses                                                             |
|                        | 1995 (August) | Kolkata became the first metro with a cell phone network                                                  |
|                        | 1997  | TRAI was set up                                                                                         |
|                        | 1998  | Annual foreign investment in telecom stood at Rs. 17,756.4 million                                      |
|                        | 1999  | FDI inflow telecom sector has increased to Rs.2126.7 millions                                            |
|                        | 1999  | Tariff rebalancing exercise got initiated.                                                              |
|                        | 1999(March) | National Telecom Policy was announced                                                                 |
|                        | 2000 (June) | FDI inflow dropped further down to Rs.918 millions and CAGR of around 85% since 1999.                  |
|                        | 2000 (Jan) | Amendment of TRAI Act.                                                                                   |
|                        | 2005  | FDI allowed in telecom sector upto 74%                                                                  |
|                        | 2006  | Having the world’s lowest call rates, the fastest growth in the number of subscribers (45 million in 4 months) |
|                        | 2009  | The world’s cheapest mobile handset                                                                      |
|                        | 2009  | The world’s most affordable color mobile phone                                                          |
|                        | 2009  | 3rd largest mobile population in the world by 2007 as middle classes ‘went mobile’                     |
|                        | 2009  | 100% FDI in permitted through the automatic route in telecom equipment manufacturing.                   |
|                        | 2009  | Introduction services on a pan – India basis 3G introduced in 2009.                                      |
|                        | 2009  | 2010 shift from a voice telephone device to that of a personal e – commerce/e-marketing, e- social network, e- guarantee, and mobile banking, mobile ticketing etc |
|                        | 2009  | Advancement in mobile phone devices – GPRS, UMTS, WLAN, WAP, GSM, EDGE,                                 |
|                        | 2009  | Introducing 4G High quality video conferencing, streaming video, voice – over ip                         |
| Mobile Network Technology Phase | 2010-2013 | Multiple functioning and application.                                                                    |
| Recent                 |       | The total wireless subscribers has increased from 752 million in Dec, 2010 to may 929 million in 2012 respectively |
1.2.4 Evolution stages of mobile network technology in India:

The Evolution of mobile technology has divided into five generations; viz 1G (First generation), 2G, 2.5G, 3G, 4G. This advancement in mobile network technology enables to support the WAP (Wireless Application Protocol).

I. First Generation mobile networks (1G)

The first-generation (1G) mobile phones used analog into transceivers designed purely for voice calls. These devices were far more advanced than two-way radio and brought users the first widespread wireless access to the traditional telephone network and it has been replaced by the second generation networks during 1990s.

II. Second generation mobile networks (2G)

It includes Global system for mobile communication (GSM), Code division Multiple Access 2000 (CDMA 2000), High Speed Circuit Switched Data Technology (HSCSD). This type of infrastructure offer typically a bandwidth ranging from 9.6 to 14.4 k bit/sec. for both downlink an uplink directions for the application data.

III. Second-and-a-half generation mobile networks (2.5G)

It includes General Packet Radio System (GPRS) and Enhanced Data Rate for GSM Evolution (EDGE). GPRS (General Pocket Radio Service) is packet switch protocol. It provides a continuous connectivity between the mobile device and the network offering up to 114 k bit/sec transmission rates (about 30 k bit/sec effectively). Furthermore, the EGDE (Enhanced Data rates for Global Evaluation) technology offers up to 560 k bit/sec transfer rates (about 30 k bit/sec effectively), both are supporting the WAP effectively.
IV. Third Generation networks (3G)

Nowadays, the major interest is in the third generation (3G) networks, namely UMTS (Universal Mobile Telecommunication System) technology. The 3G is perceived as a Uniform and global worldwide standard for cellular wireless communication. According to International Telecommunications Unions, the standard set for 3G is up to 2 Mbps. Which include both uplink and downlink the video, audio and other multimedia services at anytime, to a stationary 3G devices in 20 seconds is possible but presently, in India, BSSNL has only just offering 3G services to its users. This service has made considerable impact on the mobile device introduced by Sony Ericson, Nokia, Blackberry etc.

V. Fourth generation mobile networks (4G)

Presently, it has been introduced and accessed in United States only, Its speed up to 100+ mbps by using WiMAX protocol, in addition to that it has been supporting all the features to existing 3G network technology. The summary of their development is presented in Table 1.3.
Table 1.3
Evolution of Network Technologies for Mobile Phone

<table>
<thead>
<tr>
<th>Stages of network</th>
<th>Network speed</th>
<th>Features</th>
</tr>
</thead>
</table>
| 1G                | Not applicable | - Analog networks  
                  |               | - Voice service only  
                  |               | - No data service |
| 2G                | Up to 20 kbps  | - Digital voice service  
                  |               | - Short message service (SMS)  
                  |               | - Conference calling  
                  |               | - Caller ID  
                  |               | - Voice mail  
                  |               | - Email and Web browsing |
| 2.5G              | Up to 380 kbps (depends on nature of protocol) | All 2G services applicable with;  
                  |               | - Multimedia Message Service(MMS)  
                  |               | - Real time location based services |
| 3G                | Up to 2.4 mbps (depends on nature of protocol) | Supports all 2G and 2.5G features with the following:  
                  |               | - Full motion video  
                  |               | - Streaming video  
                  |               | - 3D gaming  
                  |               | - Faster web browsing |
| 4G                | Up to 100 mbps (depends on the nature of protocol) | Support all prior network features with following special feature:  
                  |               | - High quality video conferencing  
                  |               | - High quality streaming video  
                  |               | - High quality voice – over – IP |

1.2.5 Importance of Mobile Phone:

Phones have greater impacted in every one's lives to such an extent that it has become an essential device for Human like Tv, Fridge, washing machine Etc.. And it has also become a common gadgets owned by almost every individual worldwide.
Latest mobile phones not only serve's the voice function, But also other features like texting, voice calls, camera, video recorder, internet browsing, music, multimedia features. Besides, Ring tones, games, radio, infrared and Bluetooth connectivity are the features that made mobile more popular.

Mobile phones has a great Impact on businessmen and people those are engaged with internet marketing. I-Phone and smart phones, Blackberry are ideal for business. These phones are not only used for communication but also to enhance business communication and transactions. Scheduling interviews, appointments, sending e-mails, developing business contacts and having access to work related documents and contacts. The most of the basic model mobile phones are affordable and that has made mobile communication in raise. Many service providers also offer user friendly options that make communication more simple. The latest mobile brands have started integrating social networking sites like Face book, Orkut on mobile phones due to the raise of popularity of social networking sites among young people. The Top branded mobiles like Nokia, Samsung and Sony Ericsson, Have all ready equipped with social networking in addition to other features like MP3s, memo recording, multimedia features, games and connectivity options.

Mobile phones have become ever-growing and important way for effective communication. As today world is Busy and fast moving, Mobile phones have adopted well and its being a best way to communicate and Keep interacting with friends. Latest mobile has taken over the traditional modes of communication.

Mobile phones have a greater impact at present people and handsets that offer entertainment, internet options, email facility and social networking facilities are a
blessing for mobile technology. The mobile internet has made a replacement to PDA, Computer, laptop. This indicates mobile phones has great importance in the life of socio – economic development. With free trade treaties with different countries, many smaller brands from obscure markets now fight for consumer space against the usual suspects like Nokia, Sony Ericsson, Motorola and Samsung. This fierce competition has brought down the prices of mobile phones drastically in the Indian market and thus thee making everyone mobile literate. Not only this bring down communication cost toward lower level.

With the emergence of free SMS concept, the usage of mobile phones has taken a new meaning. Now more and more people are logging into web sites that offers free SMS services and optimizing their mobile spending strategies. These web sites provide the best SMS services to consumers, who are looking for a one stop shop for their communication needs. These SMS services can be used anywhere in the world and is also a wonderful worldwide SMS service integrated in a user friendly interface. Therefore mobile phone has great importance in the life of individuals and business. Entertainment too has been made wireless. Media communication is an ever growing sector. This growing media needs users to connect with them in the easiest possible manner for they are dependent on the users and vice-versa. Thus we have phones in India which have dedicated applications of downloading and listening to online music. Even gamers can now connect to a gaming portal and play with different users through their mobiles. Live TV has been introduced into the phones, to bring the latest news, happenings and your favorite programs right into a customer’s hands, at the click of a button and all this being on the go. In this context also mobile phone is very important instrument.
With the world becoming a smaller place and businesses becoming integrated and interconnected, the mobile phones of today have started supporting various e-mailing interfaces to keep the user connected to his business. The e-mailing options have been made completely mobile by also allowing the user to attach files and documents he has worked upon in his Office and business applications, which are also installed onto his mobile. Technologies like GPRS, EDGE, and Bluetooth etc. have made wireless communication all the more easier and comfortable for the user. As if all these were not enough, the zeal to make the device more user-friendly introduced Wi-Fi enabled phones which can connect to the internet over the selected Wi-Fi hot spots. Even in India, Wi-Fi spots are being built in colleges, campuses, coffee shops and business parks. Thus the Wi-Fi enabled phones are the next in target for the users seeking to go with time. This has enhanced the importance of mobile phones in business and non–business area.

Mobility has provided safety and security to women. They know that safety is a call away. It has also provided income enhancement of the plumber, the carpenter, the tailor and every small entrepreneur. It has also helped them to manage their time schedule better. Their incomes have gone up by 50 to 100 percent in all.

Thus importance of mobile phones specially in terms of miss, dialed and received calls can be studied as follows:

- **Accessibility** The main advantage of mobile phones is that you can be contacted at all times. If you are away from the office then staff or clients can still reach you, and if you don't want to be disturbed you simply turn your phone off and let messages go to voice mail. Even if you can only speak briefly a client will be more satisfied with actual contact with you rather than
just getting a recorded message. It also means your staff can contact you when you are out of the office, which will lead to greater productivity. If they have to wait until you are back in the office before being able to ask a question, get your advice or refer a query to you, a lot of time is wasted while they have to put projects on hold. If they can reach you at any time while you are out of the office your staff will be able to work more efficiently and won't become frustrated. A whole network of staff or offices will be able to be in touch instantly, no matter where they are, and with effective employer to employee and general staff communication, your business will run a lot more efficiently.

- **Better use of Time** A lot of time can be wasted making those important phone calls if you have to wait until you are sitting at your desk. If you spend a lot of time travelling via public transport, for example, then you could use this time where you would normally be idle, and make your daily round of calls. You can also provide a better response time to customer queries.

- **Confirm Details** With a mobile phone you can remain up to date even while out of the office, and if you forget any details of an important project you can call or text another staff member for the information. You can quickly find out any vital information you may have forgotten after leaving the office, which saves you an unnecessary trip back. It also means you can keep up to date on what is going on back at the office, and make sure that staff are on schedule. You can still manage your office effectively while you are away from it.

- **Appointments** You can easily book appointments wherever you are but you can also store this information in your phone, as most phones will have an organiser function. You can set reminders, type in notes and have an alarm go off when you need to be alerted to a meeting or appointment.
• **Email** You can also receive email on many mobile phones, as well as search the internet. In a world where emails are becoming the preferred method of contact between staff and external clients or companies, you can keep up to date and not miss any important information.

• **Redirection and Answering Services** Calls to your landline can easily be redirected to your mobile and can be used as part of an existing switchboard. You can also pay for a personalised answer service, so if you are unable to answer calls they are put through to an actual person who will take the caller's name, number and message.

• **Employee Use** Some networks allow you to have a dual line on a single phone, meaning you can have a phone for business and personal use. This is a particularly handy feature if your business supplies a mobile phone to staff but you do not want them making personal calls. This way they can have two lines, one which they use for business purposes and the other for personal calls, which they pay for themselves.

• **International Use** Mobile phones can also be used overseas in a number of countries, which is handy if you take international trips for business. This can, however, be expensive, as you are charged for incoming as well as outgoing calls, and the charges are usually high.

1.2.6 **Growth of mobile phone in India:**

   India’s Mobile Journey started in 1995 and within 13 short years, India has become the second largest country in terms of subscriber base. Mobility has achieved a huge success in India due to the following reasons:

   (i) Poor landline penetration
Progressive and proactive government policy towards mobile communication.

The regulatory frame work

The operator’s faith in the market and a unique outsourced business model, a unique combination of low call rates, low cost base, high talk time.

Affordable and relevant innovation from hand set of brands.

Mobility has propelled economic progress. The Indian economy hit the trillion dollar mark in 2012. It has brought in democratisation and efficiency of market and information. It has also provided and enhanced real time productivity in India. Mobility has provided safety and security to women. They know that safety is a call away. It has also provided income enhancement of the plumber, the carpenter, the tailor and every small entrepreneur. It has also helped them to manage their time schedule better. Their incomes have gone up by 50 to 100 percent in all. The benefit of mobile phones are enormous. They are even more for developing and emerging economies. More than 80% of the telephone connections in the ten poorest African countries are mobile phones. However, one is not blind to the side effects of mobile phones. The dividing line between public space and private space has disappeared. People have the most private and confidential conversations in the most public places like lifts, airports, and restaurants. Mobile phones have increased our expectations of other’s response to calls messages etc. It has been occupying almost all of our secondary activity and free time. Thus, mobile phone is here to impact nations, citizens and commence in a profound way.
India has become the second country in the world to have more than 100 million CDMA users. The Indian telecommunications industry is an growth trajectory with the operators adding 9 million new subscribers in April 2009. Taking the total user base in December 2009, 525 million. It has increased to 929 million in 2012 and it is expected to increase 1134 in 2013 December. This growth is presented in Table 1.4.

Table 1.4
Growth of mobile phone in India

<table>
<thead>
<tr>
<th>Years</th>
<th>Subscribers base in Million</th>
<th>Average Revenue per user</th>
<th>Advantages of minutes of users per subscriber per months</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>234</td>
<td>261</td>
<td>464</td>
</tr>
<tr>
<td>2008</td>
<td>347</td>
<td>220</td>
<td>496</td>
</tr>
<tr>
<td>2009</td>
<td>525</td>
<td>144</td>
<td>411</td>
</tr>
<tr>
<td>2010</td>
<td>752</td>
<td>105</td>
<td>360</td>
</tr>
<tr>
<td>2011</td>
<td>894</td>
<td>96</td>
<td>332</td>
</tr>
<tr>
<td>2012</td>
<td>929</td>
<td>98</td>
<td>359</td>
</tr>
</tbody>
</table>

Source: COAI, Annual Reports: 2007 - 2013

Table 1.4 shows that subsribes base in India has increased from 234 million in 2007 to 752 million in 2010 and further to 929 million in 2012. Average revenue per user was from 261 in 2007 and declined to 105 in 2010 and further to 98 in 2012.

Average minutes of usage per subscriber per minutes was 464 in 2007. It has declined to 360 in 2010 and 359 in 2012.

Thus table 1.4 shows that overall growth in mobile phone trade and commerce is at faster rate in India. The market share of each mobile service provider in respect of subscriber base is changing. The two public sector enterprises namely BSNL and
MTNL were allowed belated entry into the cellular segment in the beginning of the present decade. As a result of this, Bharati, Reliance, Vodafone, BSNL, Tata teleservices and Idea are enjoying trade and commerce. Along with these players, these are many small players also such as Airtel, Unitech, Sistema, Videocon, STEL, Loop, and HFCL etc. Table 1.5 gives growth and trend in market share of the mobile phone service providers in India.

**Table 1.5**

Growth and trend of market share of service providers in subscriber base (in %)

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Service Provider</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bharti</td>
<td>22.49</td>
<td>23.74</td>
<td>23.97</td>
<td>21.84</td>
<td>19.88</td>
<td>19.72</td>
<td>21.86</td>
</tr>
<tr>
<td>2</td>
<td>MTNL</td>
<td>01.78</td>
<td>01.35</td>
<td>01.14</td>
<td>00.87</td>
<td>00.67</td>
<td>00.63</td>
<td>01.63</td>
</tr>
<tr>
<td>3</td>
<td>BSNL</td>
<td>20.42</td>
<td>17.23</td>
<td>14.36</td>
<td>11.88</td>
<td>11.31</td>
<td>10.74</td>
<td>14.22</td>
</tr>
<tr>
<td>4</td>
<td>Reliance</td>
<td>16.96</td>
<td>17.54</td>
<td>18.55</td>
<td>17.53</td>
<td>16.72</td>
<td>16.65</td>
<td>17.23</td>
</tr>
<tr>
<td>5</td>
<td>Aircel</td>
<td>03.34</td>
<td>04.06</td>
<td>04.72</td>
<td>06.30</td>
<td>06.76</td>
<td>06.81</td>
<td>05.23</td>
</tr>
<tr>
<td>6</td>
<td>Sistema</td>
<td>00.03</td>
<td>00.04</td>
<td>00.02</td>
<td>00.65</td>
<td>01.24</td>
<td>01.70</td>
<td>00.61</td>
</tr>
<tr>
<td>7</td>
<td>Loop</td>
<td>00.65</td>
<td>00.49</td>
<td>00.55</td>
<td>00.49</td>
<td>00.38</td>
<td>00.36</td>
<td>00.49</td>
</tr>
<tr>
<td>8</td>
<td>Unitech</td>
<td>00.00</td>
<td>00.00</td>
<td>00.00</td>
<td>00.73</td>
<td>02.81</td>
<td>04.62</td>
<td>01.36</td>
</tr>
<tr>
<td>9</td>
<td>Idea</td>
<td>08.49</td>
<td>09.19</td>
<td>09.53</td>
<td>10.92</td>
<td>11.03</td>
<td>12.26</td>
<td>10.30</td>
</tr>
<tr>
<td>10</td>
<td>Estisalat</td>
<td>00.00</td>
<td>00.00</td>
<td>00.00</td>
<td>00.01</td>
<td>00.12</td>
<td>00.08</td>
<td>00.04</td>
</tr>
<tr>
<td>11</td>
<td>Videocon</td>
<td>00.00</td>
<td>00.00</td>
<td>00.00</td>
<td>00.01</td>
<td>00.88</td>
<td>00.64</td>
<td>00.26</td>
</tr>
<tr>
<td>12</td>
<td>Stel</td>
<td>00.00</td>
<td>00.00</td>
<td>00.00</td>
<td>00.17</td>
<td>00.35</td>
<td>00.37</td>
<td>00.15</td>
</tr>
<tr>
<td>13</td>
<td>Tata</td>
<td>09.70</td>
<td>09.32</td>
<td>08.96</td>
<td>11.28</td>
<td>10.98</td>
<td>08.89</td>
<td>09.66</td>
</tr>
<tr>
<td>14</td>
<td>HFCl</td>
<td>00.90</td>
<td>00.01</td>
<td>00.10</td>
<td>00.06</td>
<td>00.18</td>
<td>00.14</td>
<td>00.10</td>
</tr>
<tr>
<td>15</td>
<td>Vodafone</td>
<td>16.01</td>
<td>16.90</td>
<td>17.55</td>
<td>17.26</td>
<td>16.58</td>
<td>16.37</td>
<td>16.76</td>
</tr>
<tr>
<td>16</td>
<td>All India</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: Complied from (I) TRAI Performance Indicator Report, 2009–2013

Table 1.5 shows that Bharti Airtel 21.86 percent, Reliance 17.23 percent, Vodafone 16.76 percent, BSNL 14.22 percent, Idea 10.30 percent and Tata 9.66 percent market share in Indian mobile phone service providers market. These 6 service providers market share is to the extent of 90.03 percent. The market share of Bharti, BSNL is declined whereas Reliance and Vodafone remain more or less same and Idea shows upward movement. Tata shows download movement since 2011. Aircel, Sistema, Unitech, S.tel are shown upward movement. Thus large size scale service providers share is more or less decline whereas small scale size service providers market share is increasing.

1.3 Some aspects of mobile banking and mobile banking services:

One must be fascinated by the massive growth in mobile phone penetration globally. This must be one of the biggest social changes that humans were ever submitted to. This social phenomena, will eventually impact the way that we trade and pay as well and it will contribute to the business activity and its movement on a large scale. The last time that technology had a major impact in helping banks service their customers was with the introduction of the Internet banking. Internet Banking helped give the customer's anytime access to their banks. Customer's could check out their account details, get their bank statements, perform transactions like transferring money to other accounts and pay their bills sitting in the comfort of their homes and offices.

However the biggest limitation of Internet banking is the requirement of a PC with an Internet connection, not a big obstacle if we look at the US and the European countries, but definitely a big barrier if we consider most of the developing countries of Asia like China and India. Mobile banking addresses this fundamental limitation of
Internet Banking, as it reduces the customer requirement to just a mobile phone. Mobile banking may also be used to help in business situations as well as financial, long with to know the business activities and movement of mobile banking. Then what is mobile banking? Its global and national history. What services or functions are offered by Indian mobile banking? What are the types of movement styles of mobile banking users or customers? This subsection focused on conceptual framework of mobile banking and its related issues.

1.3.1 Meaning of mobile banking and mobile banking services:

The Federal Reserve survey defines mobile banking as 6 “using a mobile phone to access your bank account, credit card account, or other financial account. Mobile banking can be done either by accessing your bank’s web page through the web browser on your mobile phone, via text messaging, or by using an application downloaded to your mobile phone.”

Mobile banking is defined by Tiwari and Buse 7 as mobile banking refers to provision and a 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 customized information."

According to this model mobile banking can be said to consist of three inter-related concepts:

- Mobile accounting
- Mobile brokerage
- Mobile financial information services
Most services in the categories designated accounting and brokerage are transaction-based. The non-transaction-based services of an informational nature are however essential for conducting transactions - for instance, balance inquiries might be needed 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.

As per Reserve Bank of India guidelines u/s 18 of payments and settlements system Act, 2007; RBI defines ‘mobile banking’ as – “Undertaking banking transactions using mobile phones by bank customers that involve credit/debit to their accounts.” It also covers accessing the bank accounts by customers for non-monetary transactions like balance enquiry etc.

In today’s world Mobile Banking is a popular term. Mobile Banking means a financial transaction conducted by logging on to a bank's website using a cell phone, such as viewing account balances, making transfers between accounts, or paying bills. It is a term used for performing balance checks, account transactions, payments etc. via a mobile device such as a mobile phone. In recent time Mobile banking is most often performed via SMS or the Mobile Internet but can also use special programs called clients downloaded to the mobile device. In other words Mobile banking can be a system that allows, customers of a financial institution, to conduct a number of financial transactions through a mobile device such as a mobile phone or personal digital assistant.

Recent innovations in telecommunications have enabled the launch of new access methods for banking services, one of these is mobile banking; whereby a customer interacts with a bank via mobile phone while one almost always carries a mobile phone, one does not carry one’s PC or laptop if one can look at overall
context the number of cell phone users is four and half times the total number of bank accounts in this country, so mobile banking is being looked at as an option for providing transfer across the length and breath. Thus mobile banking is the usage of mobile phone as a platform for banking transactions. The high penetration of mobile phones in India is the biggest driver for mobile banking in India. SMS, interactive voice response and wireless internet protocol are few modes available to Indian users for mobile banking.

Mobile phone facility is an easy and faster means of communication and one communicates with family and friends, and transacts the business anywhere, anytime at a reasonable cost. It means the mobile phone is no doubt a communication tool but it has enormous potentials to aid other value added services especially financial services. In Japan and Korea, mobile banking has taken the bank into mobile phone, but in India, mobile banking is in a budding stage and act like win–win situation for both the banks and the bank’s customers due to the fact that mobile banking services are innovative, intangible and employing high technology. Mobile phone provider many of the services in banking sector such as request for accounts balance, business from accounts, transfer funds, trading or buying and selling, price information etc. If should be very clear that from mobiles phones it is not necessary to have net access on phone because now banks are offering wireless service connection with or without mediating internet on phones have mobile banking refers to any kind of banking services through phone. On the other hand internet banking refers to have a desktop arrangements with proper land line connection. The mobile banking service is among the recent innovations that use the mobile devices such as smart phone, cell phone or personal digital assistant (PDA) in banking service; and currently mobile banking services enable consumers, for example, to request their account balance and the latest transactions of their accounts, to transfer funds between accounts, to make buy and
sell others for the stock exchange and to receive portfolio and price information. These are referred mobile banking services. Mobile banking services means providing all banking services or facilities to users through mobile device by bankers. Mobile banking services means providing all banking services or facilities to users through mobile device by bankers. Mobile banking services includes making various/payments, paying bills, various enquiries, checking various accounts, selling and purchasing of financial instruments, money transfer/remittances, making fixed deposits, setting various information like product, foreign exchange, domestic exchange, stock market/commodity prices enquiries and reports, enquiry on ATM branches, balances, sms services, etc. In short sms alerts, account inquiries, fund transfer, bill payment, payment and stock exchange services, loan request and deposit services are called mobile banking services. The following chart help to know various services provided bankers through mobile to customers/users.

**Chart 1.1**

Mobile banking services provided by bankers to users

- Retail Customers or mobile phone users
  - 1. Transaction alerts
  - 2. Accounts inquiries
  - 3. Funds transfers
  - 4. Bill payments
  - 5. Various requests and inquiries other than accounts
  - 6. Proximity payment
  - 7. Loan related services
  - 8. SMS banking services
  - 9. WAP banking services
  - 10. Web banking services

- Corporate customers or mobile phone users
  - 1. Transaction alerts
  - 2. Accounts inquiries
  - 3. Funds transfers
  - 4. Bill payments
  - 5. Various requests and inquiries other than accounts
  - 6. Proximity payment
  - 7. Loan related services
  - 8. SMS banking services
  - 9. WAP banking services
  - 10. Web banking services

- Bank staff or mobile phone users
  - 1. Bank alerts
  - 2. Pattern branch alerts
  - 3. Transactions approvals
  - 4. Inquiries
  - 5. All retail customers services
Thus banks offering mobile access for the following services:

1. Account Balance Enquiry
3. Cheque Status Enquiry.
5. Fund Transfer between Accounts.
6. Credit/Debit Alerts.
8. Bill Payment Alerts.
10. Recent Transaction History Requests.
11. Information Requests like Interest Rates/Exchange Rates.

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 bank 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 transactions statement is a Pull based offering.

The other way to categorize the mobile banking services, by the nature of the service, gives us two kind 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 taxonomy of the services can be listed,

### Table 1.6

*Push and Pull based mobile banking service*

<table>
<thead>
<tr>
<th></th>
<th>Push Based</th>
<th>Pull Based</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transaction Based</strong></td>
<td>• Fund Transfer</td>
<td>• Bill Payment</td>
</tr>
<tr>
<td></td>
<td>• Bill Payment</td>
<td>• Other financial services like share trading.</td>
</tr>
<tr>
<td><strong>Enquiry Based</strong></td>
<td>• Credit/Debit Alerts.</td>
<td>• Account Balance Enquiry</td>
</tr>
<tr>
<td></td>
<td>• Minimum Balance Alerts</td>
<td>• Account Statement Enquiry</td>
</tr>
<tr>
<td></td>
<td>• Bill Payment Alerts</td>
<td>• Cheque Status Enquiry</td>
</tr>
<tr>
<td></td>
<td>• Bill Payment Alerts</td>
<td>• Cheque Book Requests.</td>
</tr>
<tr>
<td></td>
<td>• Recent Transaction History</td>
<td>• Recent Transaction History.</td>
</tr>
</tbody>
</table>

Thus mobile banking service defined as the wireless access to banking services/facilities via mobile devices, promises to users access to tremendous amount of information and products (here banking services) available on the mobile phone, anywhere and anytime.

#### 1.3.2 Global history and evolution of mobile banking:

The first mobile banking and payment initiatives was announced during 1999 (the same year that Fundamo deployed their first prototype)\(^{14}\). The first major deployment was made by a company called Paybox (largely supported financially by Deutsche Bank). The company was founded by two young German’s (Mathias Entemann and Eckart Ortwein) and successfully deployed the solution in Germany, Austria, Sweden, Spain and the UK. At about 2003 more than a million
people were registered on Paybox and the company were rated by Gartner as the leader in the field. Unfortunately Deutsche Bank withdraw their financial support and the company had to reorganise quickly. All but the operations in Austria closed down.

Another early starter and also identified as a leader in the field was a Spanish initiative (backed by BBVA and Telephonica), called Mobi Pago. The name was later changed to Mobi Pay and all banks and mobile operators in Spain were invited to join. The product was launched in 2003 and many retailers were acquired to accept the special USSD payment confirmation. Because of the complex shareholding and the constant political challenges of the different owners, the product never fulfilled the promise that it had. With no marketing support and no compelling reason for adoption, this initiative is floundering at the moment.

Many other large players announced initiatives and ran pilots with big fanfare, but never showed traction and all initiatives were ultimately discontinued. Some of the early examples are the famous vending machines at the Helsinki airport supported by a system from Nokia. Siemens made announcements in conjunction with listed and high-flying German e-commerce company, Brokat. Brokat also won the lucrative Vodafone contract in 2002, but crashed soon afterwards when it run out of funds. Israel (as can be expected) produced a large number of mobile payment start-ups. Of the many, only one survived – Trivnet. Others like Adamtech (with a technically sound solution called Cellpay) and Paytt disappeared after a number of pilots but without any successful production deployments. Initiatives in Norway, Sweden and France never got traction. France Telecom launched an ambitious product based on a special mobile phone with an integrated card reader. The solution worked well, but never became popular because of the unattractive,
special phone that participants needed in order to perform these payments. Since 2004, mobile banking and payment industry has come of age. Successful deployments with positive business cases and big strategic impact have been seen recently. The increasing circulation of mobile technology and WAP –enabled strategy has brought very visible development in e- banking or mobile banking during 2008-09. Global mobile subscription in June, 2013 reported to 6587.4 millions.

1.3.3 History and evolution of mobile banking in India:

Union bank of India, the first state – owned bank which introduced mobile banking services in India, has so far added only 1700 customers in mobile banking. SBI has so far received only 10,000 registration for mobile banking, while ICICI bank has 80 lakh customers registered so far for mobile banking while HDFC bank has 40 lakh registered clients as against Kotak Mahaindra bank has around 52000 clients under the mobile banking fold.15 The Bosten – based financial regional and consulting firm reports that 84percent of India households were unbanked in 2005 and that mobile banking in India has grown 94 percent since 2002.16 In this context Patel17 projected that India’s mobile banking active user base may reach to 25 million by 2012.

COAI Annual Report shown that were 752 million mobile phone users in Dec, 2010 as against less than 200 million bank accounts holders18; a great opportunity for tapping financial inclusion.

According to RBI projection, the penetration of mobile phone banking active use base is anticipated to increase to 53 million in 2013 as compared to 10 million in 2009 which represents a compound annual growth rate of 51.8percent.19
The two business drives namely customer experience and cost savings and two technology drivers such as security and customer experience to adopt technology which contributed to the evolution of mobile banking.

1.3.4 Characteristics/features of Mobile Banking:

Mobile banking has become increasingly popular over the years. Banks offer mobile banking to their clients as a convenience, but also because mobile banking saves these institutions considerable money. Here are some characteristic/features to consider with mobile banking:

1. Saving money: Many banks use the savings generated from online transactions to offer clients better interest rates, or other rewards, for maintaining online accounts.

2. Saving the environment: Mobile banking reduces the number of paper transactions that would normally occur if a client walked into or called a bank. Reduced paper use helps preserve natural resources and is better for the environment.

3. Cross-selling: Banks often use mobile banking as a platform for cross-selling or up-selling other financial services, such as credit cards, vehicle loans, etc. Because the client is not being pressured to consider such services, he or she is more likely to research them while conducting an online banking transaction.

4. Convenience: Mobile banking is certainly more convenient when compared to calling a bank or physically visiting it. Financial transactions can be performed at any time, day or night, and during holidays.

5. Larger client base: Because mobile banking can be performed from any computer, clients that would otherwise need to find a more local bank are no longer required to
do so. This provides the bank with a geographically wider, and thus larger, client base.

6. **Security**: Mobile banking can be plagued with security concerns. Though it is rare, hackers have been known to gain access to client accounts. Banks have become increasingly vigilant about securing mobile banking access points and requiring additional passwords or answers to security questions.

7. **Information**: Clients who perform mobile banking have a better grasp of their day-to-day balances and financial transactions. They are more likely to have a balanced checkbook and to catch incorrect or even fraudulent transactions.

8. **Simplicity**: Clients can set up instant bill payment and automate other tasks via mobile banking. This simplifies bill payment and frees the client from spending time on writing checks and mailing envelopes. Automated bill payment is also invaluable when the client is out of the country and cannot physically pick up the mail.

9. **Account notification**: Most banks will e-mail notifications to their clients when a bill is due or when an account statement is available. This helps the client remember bill payment and other such items before they are overdue.

10. **Devices**: Mobile banking was first made available over the Internet via personal computer. It later became available on other (and smaller) devices, such as smartphones and PDAs. This means that clients no longer need to carry around a laptop or stay at their desktop computers in order to check their bank accounts.

1.3.5 **Growth of mobile banking in India**:

The business drivers contributed to the growth of mobile banking over various modes of operation which is shown in chart 1.2.
1. **SMS alerts**: One of the key concerns banks were facing was that of customers did several inquiry transactions on ATMs and this was adding to the burden on the ATM infrastructure. This traffic was particularly heavy during salary days. Banks adopted a solution of proactively communicating account balances and important transactional activity on accounts to customers through a simple SMS. Customers stopped queuing up in front of ATMs for inquiry transactions.

2. **Account inquiries**: The SMS technology proved simple enough for banks to adopt this as a self-service channel. This model of operation involved customers sending an SMS to a published number of the Bank with a key word and identification information. The customer experience for SMS-based inquiries was not very good and this led to the introduction of real-time communication channels such as WAP and USSD recently.

3. **Funds transfer and bill payment**: As customers experience from mobile banking improved and the penetration improved, banks began to realize the potential of offering financial transactions through the mobile device. The first
set of transactions to be offered were funds transfer between the customers own accounts and payments to pre-designated billers such as utility companies. These facilities vastly reduced the use of cheques, hence contributing to the cost benefit for banks.

4. **Payment services:** Mobile phones had caught on much faster than all previous technology delivery channels and banks were being forced to offer new facilities. The mobile phone was unique in that it was a personal device which had computation power, storage ability and occupied a greater mind-share of the customer than the traditional money wallet. This triggered new thoughts among bankers who wanted to leverage these capabilities to offer newer set of transactions on the mobile phone. This came in the form of enabling payment transactions through the mobile phone. The mobile-based payment comes in two basic forms (i) proximity payments and non – proximity payments

5. **Loan requests and service requests:** As mobile phones evolve into smart phones and the usability is improving, banks are finding it easier to offer more complex services on the mobile phone. The latest trends include offering loans through requests placed from the mobile phone where pre-registered customers can provide details about the loan and avail instant approval of loans. The mobile device technology progressed at a rapid pace and consumer expectations on usability of began to progress. Mobile banking progressed to offer enhanced customer experience and adopt the latest technology trends in communication to offer real time exchange of data.

These technology driven progress of mobile banking can be depicted as in the following chart.1.3
1. **SMS banking**: The early generations of mobile banking were powered by SMS communication. Using SMS banking, banks could alert customers about activities on their bank accounts and customers could request for information by sending an SMS to a published number. This mode of banking was quite popular but had the following limitations:
   - SMS communication was not real time and customer experience started deteriorating
   - Security issues around SMS transmission was another bugbear

2. **WAP banking**: In time mobile banking progressed to WAP banking which allowed customers to access their bank accounts using a real time data communication mode. This improved the customer experience as information access was now real time and secure.

3. **USSD**: WAP banking, while quite popular, was restricted to a specific set of devices and the use of Unstructured Supplementary Service Data (USSD)
came into practice which permitted a real-time interactive access to bank accounts on basic handsets.

4. **Mobile web:** The mobile communication technology progressed and mobile devices began supporting full-fledged web pages. This vastly enhanced customer experience on smart phones and sophisticated handsets which provided an almost desktop like experience. Mobile banking began progressing in this direction by providing an almost Internet banking kind of experience on the mobile phone.

5. **Application on mobile phone:** The mobile devices became advanced and it was possible to have applications installed on the mobile phone to provide a rich user interface. The new generation mobile banking applications offer several comprehensive features such as:
   - Pre-stored customer relationship information to improve response times and customer experience
   - Enhanced communication layer security through use of encryption algorithms
   - Richer user interface and mobile device specific user interface enhancing customer experience
   - Richer user experience leads to more comprehensive features being offered on mobile banking

In 2010, SBI recorded a y–o–y growth of 1865 percent in transaction values, ICICI recorded a growth of 532 percent and HDFC recorded 512 percent growth.
1.4 Present study:

In the present day information technology based era, consumers (mobile phone users) and business are coming to realizing the value of mobile phone/device and its use in their daily business and non – business activities. They have shift their perception of the mobile handset (phone) from that of a voice telephone device to that of a personal e – commerce, e- marketing, e- management, e- social – cultural activities device, it is because of the advancement in mobile phone devices (GPRS, UMTS, etc) and its applications (usage) in various areas, viz., personal activities and movement, mobile banking, mobile ticketing, mobile – vouchers, mobile brokerage, mobile marketing, mobile bills payments, money transfer and so on. Around more than 80 percent of world’s populations have mobile phone coverage as of 2006. And this figure is excepted to increase to more than 90 percent during end of this year (2013). India is the biggest growth market adding about 6 million cell phones every month and it is expected to be 1061 million in 2016. Therefore this research attempts to explore attitude of mobile phone users towards possession and price of mobile, business activities and movements of mobile phone users on calls and recharge, and financial and social business activities and movement of mobile phone users.

The emergence of e-banking channels has changed the way banking is perceived by the customers. Banking sector has stepped into the wireless age mobile banking is the latest addition to the list and is all set to make banking more comfortable to the customers. It has been effectively used in various countries as a channel for providing banking product and services. It has gained popularity among service providers, customers and bankers as it is cost and time effective. On the other end, it allows customers (here mobile phone users as customers) to carry out banking operations irrespective increased geographical reach. The high penetration of mobile phones in
India is the biggest driver to mobile banking in India through sms, interactive voice response and wireless internet protocol modes by using push and pull based services. Mobile banking in India has evolved from its early stage of being just an information provider for services such as a checking bank balances and setting payment reminders to transaction – based functions like bill payment, remittances and banking tickets for movies, and for travel and so on. Therefore mobile services are became truly innovative, intangible and high technology oriented. In this context is interesting to know the perception of mobile phone users on mobile banking services. Hence this study attempts to understand the behaviour of mobile phone users towards mobile banking services. Specifically, the present study attempts to study and assess (i) awareness and perceptions of mobile phone users on mobile banking services, (ii) willingness of mobile phone users on utility of mobile banking services, (iii) The mobile phone users perceived movement and decision making styles and (iv) relationship between demographic variables and use of mobile banking services.

The review of literature (chapter 2) shows that there are many studies on behaviour of consumers/customers in respect of mobile phone and mobile banking across the globe but few studies are seen in Indian context and very few on Thane district. Hence a study which helps to understand perception of mobile phone users on business activity and movement and mobile banking services undertaken. To bridge the gap between earlier studies, it is worth to study systematically and empirically the perception/behaviour of mobile phone users towards business activity and movement and mobile banking services through mobile phone. Therefore an attempt is made in the present study to seek the answer of basic questions raised in section 1.1. Hence the main objectives of the present study is to examine and assess the (i) attitude of mobile phone users on calls, possession and price, recharge, financial and social business
activity and movement and (ii) perception of mobile phone users on mobile banking activity and movement (viz. services)

In order to address the problems to be investigated and objectives, Thane District is selected as study area. The district have 15 Taluka’s. Hence samples are 15 talukas of Thane district, plus male and female respondents collected through questionnaire from 15 talukas who are mobile phone users. Maximum number of sample respondents are collected from Kalyan Taluka (130) whereas minimum sample respondents are selected from Talasari and Vikramgad (i.e 6 in number) respectively. Here whole taluka is means only Taluka place which the sample unit. It means semi – urban area is the sample and sample respondents are not collected from village or rural area. Hence Taluka means Taluks place, say Bhiwandi, Kalyan, Ulhasnagar. Primary and secondary source of data is used for study purpose. Average and percentage and frequency distribution is used as statistical tools and techniques and data is analyzed and interpreted on the basis of tables, graphs, chart, average, frequency and percentage. Further study purpose in all objectives and hypothesis are set (for details research methodology see chapter 3).

1.5 Chapter plan of the study:

The entire study is divided in 8 chapters as under:

1. Introduction : mobile phone and mobile banking
2. Review of literature
3. Research methodology of the study
4. Profile of the mobile phone users sample respondents
6. Assessing perceptions of mobile phone users on mobile banking business activities and movement in Thane district.

7. Identifying the dimensions of mobile perceived service quality.

8. Summary of conclusions and suggestions

Chapter 1: Introduction: mobile phone and mobile banking

This chapter deals with introduction of mobile phone, and mobile phone users and mobile banking services. Chapter covers problems to be studies, some aspects of mobile phone and mobile phone users, some aspects of mobile banking and mobile banking services, key terms used in the present study and their definitions and chapter plan of the study. Basically chapter one is concept and growth oriented.

Chapter 2: Review of literature

Chapter second reviewed studies related to mobile phone users, growth, history and mobile banking and related issues. This is extensive review based on books, journals, periodicals, websites, internet and s3o on. Period covered also extensive and latest.

Chapter 3: Research methodology of the study

This chapter presents detail research methodology employed for the present study. It covers the problems to be investigated, objectives of the study, hypothesis of the study, significance of the study, research design employed, scope and period of the survey for data collection, sample and sample size, sources of data collection, statistical tools and techniques used and data analysis and interpretation method. This chapter also includes limitations of the study.
Chapter 4 : Profile of the mobile phone user sample respondents

The profile of the sample respondents is analyzed and presented in the chapter 4th. This deals on the basis of age, gender, marital status, educational qualification, occupation, religion, income, nature of family and earning members in the family.

Chapter 5 : Assessing business activity and movement of mobile phone users in Thane district

This chapter deals with attitude of mobile phone users towards possession and price of mobile, business activity and movement of mobile phone users on calls such as knowledge awareness, call rate, last call time, last call amount, daily received, dialed and miss calls. This chapter further assessed extent of recharge and amount of recharge, functional financial and social business activity and movement of mobile phone users also discussed in detail in this chapter. This chapter based on primary data.

Chapter 6 : Assessing perception of mobile phone users on mobile banking business activities and movement in Thane district

This chapter is based on primary data. Chapter is extensive research as well as systematic and empirical in nature. Chapter includes (i) awareness of mobile phone users on mobile banking business activities and movement (ii) perception of mobile phone users on mobile banking (iii) willingness of mobile phone users on using mobile banking services (iv) mobile phone users perceived movement of mobile banking services (vi) demographic influence on usage of mobile baking services.
Chapter 7 : Identifying the dimensions of mobile perceived service quality.

This chapter deals with identifying the dimensions of mobile perceived service quality which includes reliability, responsiveness, assurance, empathy, tangibility, convenience and network quality dimensions. This is done on the basis of percentage co-relations and factor analysis.

Chapter 8 : Summary of conclusions and suggestions

This chapter highlighted the conclusions and major findings made during the research in earlier chapter. Certain suggestions are presented to overcome the problems and lastly certain area of future research is located and presented.

1.6 Some present study concern terms and their definitions:

1. Mobile phone:

Mobile phone is a long-range, portable electronic device used for mobile communication. In addition to the standard voice function of a telephone, current mobile phones include SMS, email, pocket switching for access to the internet, and MMS for sending and receiving photos and video. Most current mobile phones connect to a cellular network of base station with is inter interconnected to the public phones. It is a handset or device which forms e-mode modern communication (i.e. ideas and services).

2. Mobile phone users:

Mobile phone users are people who buy and use mobile phone/device to satisfy their modern communication needs and wants. It means also any person who buys mobile handset/phone and hire certain mobile service from service providers here Airtel,
reliance, etc) for his/her own use (Communication) or for the use for the monetary and non-monetary, business and non-business, financial and non-financial, social and non-social, cultural and non-cultural, banking and non-banking and general and specific communication purpose.

3. **Business activity and movement:**

Business activity in respect of mobile phone users means attribute on possession and price, receiving and sending calls, recharging, time and amount spending on talking (communication) on mobile, receiving and sending sms, using internet, and rest of the all call features of mobile etc. and acting on these (using of them) activities is referred movement.

4. **Functional business activities and movements:**

Scheduler, MMS, Calculators, Memo, IM, Clock, Twitter, Game, setting, Facebook, Camera, Alarm, Calendar, Music, SMS, Video, Chat, e-mail, Internet and social networking etc are referred functional business activities and using them or acting on them is called movement. Every different type of mobile phone body has a specific structure. The structure of the cell is absolutely linked to its function like SMS, MMS, Video, Music, Internet, etc/ and these all feature are called functions of mobile phone. More people are turning to their favorite businesses application/functions for recommendations, referrals, research, and discounts, etc This every function or feature is made business and acting on these activity called movement. Performing these activity are called functional business activity and movement.
These mobile functions are playing very vital role not only in today’s business world but also at social and personal life’s also. These functions have given a boom to separate new business world like lot of music and video companies are running a software’s to download music and video’s, you tube, Similarly these functions also provide options of watch and scheduler, calendar etc which has shown an adverse effect on wrist watch, calendar companies. Lot many companies are proving mobile shopping as well so consumers are getting more attracted towards these facilities. This is how the business activity movements are happening with just a one scroll or key button. This growing trend enables every business or entrepreneur to successfully build a brand and their business with custom mobile applications.

5. **Social business activity and movement:**

Receiving and sending sms or e-mail on religion and national festivals are referred social business activity and using of them by mobile phone users is called movement.

6. **M – activity and movement:**


7. **Miss, dialed and received call:**

(a) **Call**: A call means receiving or sending communication on mobile phone by mobile phone users to object, people or group
(b) **Miss Call:** A missed call is a telephone call that is not answered by its intended recipient prior to the termination of ringing on the recipient's end. The ringing may be terminated by the caller simply by pressing the appropriate button on a mobile phone, or if the answering machine or voicemail picks up on the recipient's end. The term "missed call" is only displayed prominently on mobile phones. It is commonly used as a way of communicating or conveying messages for free. This method can be used to save money or minutes. Miss call is also a common way of acquiring somebody's number without typing it in manually into your own handset. For example person B simply saves the number that the 'missed call' came from. Some people use missed call to convey some messages at free like 'Give me a missed call' is a common expression. unanswered received or send call is referred miss call.

(c) **Dialed (Send) and received call:**

Dial is a telecommunications term for a network-provided service feature in which a call originator may, without operator assistance, call any other user at local, national or international calling area. To dial a call, it requires mobile number in digits and the code of respective area. Dialed call is also known as out going calls. A received call means a call that you are receiving on your handset. It is also called as incoming call.

It is very important to study the missed call, dialed and received call movement because it also operates a business activity, each phone call which is being dialed and received involved in money spending and receiving process. At a time there are many more phone calls being received and dialed.
at local, national and international level so each mobile users who is involved in calling process in involved in revenue generation of this industry and ultimately in business activity, hence it would be interesting in studying business activity and movement of mobile phone calls.

8. **Recharge:** Mobile recharge means upgrading the talk time to ensure unlimited interferences to make call, send sms, and enjoys other services offered by service provider. Now the market offers you various ways to recharge your mobile phone. In case of postpaid bills, there isn’t much of a hassle. However, the prepaid customer has to regularly recharge and upgrade talk time to ensure unlimited interferences. The most common source of recharging would be going to a nearest shop and recharging via sms or coupons. The sms version is called an easy recharge whereby the store owner will send a message to the service provider and activate your sim card for the required amount. The coupon requires you to scratch and call on the particular number. Every coupon includes the process format and the way to dial the number. Today, the online world has made life much simpler. All you need to do is choose a service provider’s website and log in your bank account or debit or credit card details. The information gets stores and all you need to do is feed in the required amount. The mobile recharge services facilitates a quick and easy access to upgrading talk time which allows you to access calls, send text sms, mms, internet and all other added functions of mobile phones, The other side of mobile phone recharge is, it has given a boom to a new industry “Mobile Recharge.” Mobile recharge system has created a business platform for many. Mobile recharging should be simple, convenient, secure and totally hassle-free; Thus Recharge means to pay mobile phone service providers
certain amount and make mobile phone active or ready for functioning business and non–business activity and movement. (i.e. communication).

9.  **Extend of rate of recharge:**

For most recharge plans, users must pay a minimum amount periodically — often every 30 or 90 days — to keep their phone activated and phone number current. If the user does not keep the account active, the phone may no longer be able to make or receive calls, and the number may be disconnected, even if the user still has mobile phone. A mobile users spends a portion of their monthly earnings in a specific to keep their mobile phones active.

10. **Call rate:**

Service provider receives call data in files which are imported and processed through a sophisticated billing engine. Calls are analyzed, categorized and allocated with a tariff and based on that mobile phone users is being charged for per minutes usage of mobile phones for making and receiving calls with specific fixed amount prior decided by the service provider is called as call rate. The billing plans for mobile phones can be categorized as either a pre-paid plan or a post-paid plan. In a pre-paid plan, the mobile phone user pays for the minutes before using them. post-paid plans, the mobile phone user pays at the end of the month for the minutes used during that month. Earlier the call rate was chargeable to both the parties involved in the call dialer and receiver both. Now days call rate is being paid by the dialer a person who is making a call. Only few companies charge both the parties in case of roaming calls. The call rates are very important criteria for any mobile user to decide which company or service provider he/she should opt for. Call packages are cleverly
designed and tend to focus around inclusive minutes or capped calls. To an untrained eye these packages can look very attractive but on closer inspection the reality can be very different.

While comparing the rates between providers is important, making a choice based on cost alone is not advisable. Establishing a good relationship with your provider is key and can make the difference between a quick saving and a long term investment. Emerging technologies are changing the way in which we make calls, making it even more important to work with a provider who understands your exact business requirements. Call rates are strategically drawn with considering the needs of mobile phone users and in fact the reality is to push a caller to make more calls, for example giving free calling within the same service provider like reliance to reliance free calling to have strong bonding with consumers and capturing the market. The special tariffs for group calling and corporate calling cards to promote business. In nutshell the entire call rate formation process is activating a business movement across hence it is important to study the call rates. Thus call rate means amount charged per call per minutes or plus interms of talktime. Hence it may be called talk time amount or rate.

11. Short Message Service (SMS):

SMS stands for short message service. SMS is also often referred to as texting, sending text messages or text messaging. The service allows for short text messages to be sent from one cell phone to another cell phone or from the Web to another cell phone. An sms has achieved significance as a tool used for transferring messages from one person to the other. Nowadays, SMS is not used for conveying the personal messages but also for conveying the business related messages. The SMS has become
the most popular means of transferring messages. SMS text messaging proved itself to be a big revenue earner for the telecom companies especially thanks to the TV channels. Every program always shows a short code as advertising for viewers to send sms messages with their complaint / feedback / opinions and polling etc. So such a small sms tool is running a whole business activity. Marketing companies have used SMS so extensively that the courts stepped in to restrict the usage and this marketing technique is too much involved in daily life. Sending sms text messages is very convenient, this is very suitable way for sending payment intimations, payment reminders, greetings etc can be transmitted in this form. We can also Receipts of payments like utility bills, subscriptions, renewals etc can be sent by SMS message It is also use during times of crisis, governments rushed SMS alerts to people warning them of floods, earthquakes, etc. Thanks to SMS Text Messaging because it is ease of use, more people are taking up sms text messaging.

12. **Mobile Banking:**

Mobile banking means a financial transaction conducted by logging on to a bank’s website using a cell phone, such as viewing account balances, making money transfers between accounts, or paying bills. It is a term used for performing balance checks, accounts transactions, payments etc. via a mobile device such as a mobile phone, Banking services or banking business activities and use of banking services or banking business activities through mobile by mobile users are called movement.

13. **Mobile banking services:**

Mobile banking services defined as the wireless access to banking services or facilities via mobile devices. Promises to users access to tremendous amount of
information and products (here banking services) available on the mobile phone, anywhere and anytime.

14. **Mobile banking services/facilities**:

Mobile banking services means providing all banking services or facilities to users through mobile device by bankers. Mobile banking services includes making various payment, paying bills, various enquiries, checking various accounts, selling and purchasing of financial instruments and avenues, many transfer/ remittances, making fixed deposits, setting various information like product, foreign exchange, domestic exchange, stock market/commodity prices, enquiries and reports, enquiry on ATM, branches, balances, SMS services etc. In short SMS, alerts, accounts inquiries, fund transfer, bill payments, payment and stock exchange services, loan request and deposit services are called mobile banking services. Push and Pull based banking services together called banking mobile service perceived to mobile phone users or banking customer have mobiles.

15. **Financial instruments**:

It means shares, debentures, mutual funds, national saving schemes, insurance, bonds, company deposits, fixed deposits, loan and its installments, gold etc. selling and purchasing (i.e exchange) of these investment avenues are called financial instruments. Using mobile phone for exchange of this financial instrument is referred financial business activity and movement.
16. **Commercial or financial activity and movement:**

All M- activity referred financial or commercial or business activities and using or performing them are called movement.

17. **Service Quality:**

The customer’s overall impression of the relative inferiority / superiority of the organization and its services. It is a judgment or attitude relating to the superiority of the service. Service quality can be divided into ( i ) perceived service quality and objective service quality. Perceived service quality is the consumer’s judgment about an entity’s overall superiority. Mobile phone user’s perceptions of the service received or perceived is called here service quality.

18. **Dimensions:**

Reliability, responsiveness, assurance, empathy, tangibility, convenience and network quality is referred dimensions.

19. **Attributes / Variables / Items:**

Thirty statements which are representing dimensions are called attributes / variables / items of quality. This is also referred instrument of quality identification.

20. **Quality criteria:**

Thirty statements or attributes or variables or items are known as quality criteria.
References:


8. Reserve Bank of India, website.


11. Ibid; P 25.

19. Reserve Bank of India, July 24, 2010, P.4