CHAPTER 1
INTRODUCTION

In the last two decades, continuous changes in information and communication technology (ICT) have affected the way people live their life and perform day to day operations. These advancements in ICT have contributed towards the transformation of electronic commerce into mobile commerce and have also affected the business operations. With the greater popularity of mobile commerce in business, banks also responded positively to provide an alternative channel of banking using mobile phones. This latest channel of banking was named as mobile banking and has redefined the way personal banking operations were performed. Mobility in banking provided by mobile commerce makes mobile banking most suitable for delivering personal banking or retail banking services to the individual customers. This further requires fair knowledge of the perception of customers towards this new service. In the light of such transformation, it becomes important to understand the key issues concerning mobile banking.

1.1 Background of Mobile Commerce

Mobility in business is the need of the hour nowadays and the recent advancements in ICT and electronic commerce have eventually helped in achieving this objective. ICT has extended its applications to the field of mobile commerce through middle way of electronic commerce. Thus, it becomes necessary to understand both of these terms before proceeding to mobile commerce.

1.1.1 Information and Communication Technology

ICT has great importance these days as it involves the use of technology in communication of information from one place to another. It includes the use of technology in exchange of information and is generally considered as a starting point for both electronic commerce and mobile commerce. ICT has immense implications on both electronic commerce and mobile commerce based on economic, technological and social influences (Hu et al., 2008).
Several authors have defined ICT in different ways in the past. Castells (2002) has stated that “ICT is a tool that facilitates communication and the processing and transmission of information by electronic means”. Further, Blurton (2002) has mentioned that “ICT are a diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information”. UNESCO (2002), an agency of United Nations has proposed that “Information and communication technology, or ICT, is defined as the combination of informatics technology with other, related technologies, specifically communication technology”. Thus, the term ICT includes the combination of three words i.e. information, communication and technology. This suggests that the main focus of ICT is to create productive communication using telecommunication and information technology resources. ICT comprises of the use of different equipment such as fax machines, computers, radios, mobile phones, microwave relay stations and even satellites.

Wider acceptance of ICT has largely affected the operations of business which includes both manufacturing and service sector organizations (Safari and Yu, 2014). This growth of technology provides new users with friendly and flexible modes of accessing the banking services (Dixit and Datta 2010). Banks in the 21st century operate in a fast changing and competitive environment in which adoption of ICT has become vital for their success. It has also been revealed that the banks which restructure their payment and delivery system and effectively apply ICT resources in their daily operations are going to survive and progress in the long run (Woherem, 2000). Further, the introduction of ICT resources in banking operations has resulted in changing the mode of banking and provided new channels for accessing the services of banks. ICT includes the use of personal computer, mobile phone, telephone and even the digital television for accessing the banking services (Daniel, 1999). The use of different ICT applications has provided necessary support to the banks for their survival in the era of hyper competition. It enables the banks to increase their operational efficiency and provide prompt services to the customers. In addition to this, ICT applications also help the banks to reduce their cost of providing service (Alawode et al., 2011) and operate on lower margins. Different applications like automatic teller machines (ATMs), plastic money, telephone banking and electronic banking services are result of ICT implementation in banking sector.
There has been growing importance of ICT applications across the globe. International Finance Corporation (IFC) which is a member of the World Bank Group encourages the use of ICT applications such as electronic commerce, electronic governance, electronic health systems, electronic payment systems and mobile banking in different parts of the world (World Bank, 2012). In Indian context, Reserve Bank of India (RBI) which is the central bank of the country also promotes the use of ICT applications among different private and public sector banks. Chakrabarty (2011) in an address on ‘Financial Inclusion and Banks: Issues and Perspectives’ published in the RBI bulletin has advised the banks to increase their ICT usage which will in turn help them to increase the scope of banking in both urban and rural markets. In addition, it was further suggested that ICT solutions based on the state of the art infrastructure should be provided by the banks. This will enable them to provide sophisticated ICT services based on the highest security norms and will further assist in generating confidence among their customers.

1.1.2 Electronic Commerce

It is considered as an important outcome of the recent advancements in ICT applications. Electronic commerce (popularly known as e-commerce) has largely affected the working operations of modern days’ enterprises. It has been found that wide implementation of e-commerce applications helps the business organizations to generate revenue from technology based buying and selling (Magutu et al., 2011).

Wen et al. (2001) have defined e-commerce as “the buying and selling of product, services or information via computer networks, mainly the Internet”. Bartelt and Lamersdorf (2001) have stated that “e-commerce is the electronic form of business where suppliers and customers are involved in exchange of goods or services for an amount of money”. Cudjoe (2014) has also mentioned that “e-commerce involves business, technology, society, and skills of buying and selling of products and services with the aid of internet and computer or handheld devices which involves the process of ordering products or services to the time of delivery to the consumer or customer”. It is evident from this contribution by different authors that e-commerce involves the exchange of good and services through electronic means. The e-commerce based applications are comprised of hardware, software, databases and communication systems which interact with each other for the achievement of
Introduction

successful e-commerce transactions (Nanehkaran, 2013). All of these components work together and participate in transferring the information from sender to the receiver. They further help the users to complete electronic transactions in lesser time based on instant communication over the computer based network.

The rapid expansion of e-commerce has also affected the banking sector and provided new ways to carry out financial transactions. Growing popularity of e-commerce applications have posed new challenges for the banks to cope up with the changing needs of customers based on e-commerce based business (Wen et al., 2001). The introduction of e-commerce in banking has helped the customers to access the services of the banks from a remote location using a computer with internet facility. It helps the banks to provide special facilities to their customers by providing them different ways of accessing the banking services which may include electronic fund transfer (EFT), automatic teller machines (ATMs), internet banking, mobile banking, electronic data interchange (EDI) and the telecommunication services (Magutu et al., 2011).

1.2 Concept of Mobile Commerce

Mobile commerce (popularly known as m-commerce) came into existence in the year 1997 in Finland when a company called Coca Cola used two vending machines supporting the use of mobile phones. In these machines, mobile phones were used to send payment to the machines using SMS or text messages. In the same year, the most famous application of m-commerce i.e. mobile banking was also introduced by the Merita Bank of Finland for sending mobile based payments. Since then, there has been great popularity of m-commerce applications due to greater concern for mobility among manufacturing and service based organizations. M-commerce has provided new dimensions to the business organizations after e-commerce revolution. Rapid growth in wireless and mobile communication sector has assisted in transformation of e-commerce into a new area of application called m-commerce (Mohd and Osman, 2005). M-commerce inherits the power of e-commerce due to its capability of transacting online along with the additional benefit of mobility which is unique to m-commerce (Antovski and Gusev, 2008). It has been treated as the offshoot of e-commerce (Au and Kauffman, 2008) and is also considered as the contributor towards advanced e-commerce applications (Liang and
Wei, 2004). M-commerce is also viewed as an important type of e-commerce with some special benefits (Scornavacca et al., 2006). The higher usage of mobile devices such as personal digital assistants, mobile phones and other types of handheld devices has opened ways for m-commerce which is considered as the next level of electronic commerce (Liang and Wei, 2004). M-commerce is also perceived as wireless e-commerce (Frolick and Chen, 2004) or in other words mobile e-commerce (Schwartz, 2000). It is the result of the combined functioning of wireless technology, hand held devices and the internet (Luo et al., 2010). M-commerce has been considered as the subset of e-commerce (Stafford and Gillenson, 2003; Alsultanany, 2012) and is strongly related to ICT (Magutu et al., 2011). The recent advances in ICT have contributed towards transformation of e-commerce into m-commerce. The rise of m-commerce is attributed to continuous growth in information and telecommunication technology sector.

Siau et al. (2001) have defined m-commerce as “the new type of ecommerce transactions, conducted through mobile devices using wireless telecommunications networks and other wired e-commerce technologies”. Coursaris and Hassanein (2002) have described m-commerce as an offshoot of e-commerce in which the transactions related to different goods and services are conducted using different mobile devices. Further, Dholakia and Dholakia (2004) have stated that m-commerce includes “electronic commerce transactions carried out via mobile, wireless terminals”. Agreeing to this view, Xin (2009) has termed m-commerce as the e-commerce implementation which is carried out using mobile phone or personal digital assistant. Alain (2013) has described that m-commerce includes different types of transactions which are performed through mobile devices by utilizing the communication network of different service providers. Omonedo and Bocij (2014) have also defined m-commerce “as the conduct of activities that involves content delivery (notification and reporting) and transactions (purchasing, transfers, data entry) on mobile devices capable of gaining access to a network, particularly the internet, which provides direct or indirect commercial benefit”. Taking view of this contribution by different authors, m-commerce could be considered as an electronic commerce implementation with an extra advantage of mobility.
M-commerce provides convenience and long reach to its stakeholders. Firstly, it helps the users to carry out transactions in the real time by using hand held devices and secondly, it assists the businesses in reaching to their customers at any time and place (Ngai and Gunasekaran, 2007). The ability provided by m-commerce to carry out transactions while on the move has made it different from e-commerce. M-commerce applications have gained popularity due to this unique features offered by them.

1.2.1 M-commerce Characteristics

Clarke (2001) in his study highlighted ubiquity, convenience, personalization and localization as the special characteristics which make m-commerce different from its antecedent e-commerce. He further highlighted that each of these characteristics could be treated as the general way of understanding customer benefits from m-commerce. Among these, ubiquity is related with the ability to provide services to anywhere and at any time, and is treated as the unique feature of the m-commerce applications. Next, convenience is concerned with the ease of using the service i.e. providing users with the ability to access the service at their own discretion of time and place based on their suitability. Further, localization helps in making the m-commerce service in line with the user preferences based on his/her present geographical location. Finally, personalization is associated with the customization of m-commerce services as per the preferences of individual users.

Such unique attributes of m-commerce makes it different from its predecessor e-commerce and are considered as important contributors towards m-commerce revolution in the society. Even in banking, both e-commerce and m-commerce have brought considerable changes in routine operations with the introduction of ICT applications. These changes are further witnessed in the form of online banking and mobile banking. Apart from this, it has also been observed that m-commerce provides more opportunities to the developing countries as it helps to reduce the constraints present in the use of e-commerce, which may include high investment in computer purchase (Lawrence and Tar, 2010) and non-continuous power supply.
1.2.2 M-commerce Applications

M-commerce revolution is evident from the rapid acceptance of its different applications in the society. Tiwari and Buse (2007) in their study have argued that there is greater acceptance of m-commerce applications in the society due to the impact of technological and demographic advancements on the sociocultural behavior of the people. They further highlighted the following key applications of m-commerce:

a) Mobile Banking: It is an important application of m-commerce and includes all the services concerned with banks which are carried out using a mobile phone. These services may be related to accounting, brokerage and financial information. Mobile banking has specific applications like conducting demat enquiry, transferring funds, checking financial statements using mobile devices.

b) Mobile Entertainment: This application includes the services like mobile gaming, downloading of ringtones, audio, video, special digital images and other entertainment services based on location. These services provide entertainment to the users independent of their location and have specific applications such as chatting, gaming and dating.

c) Mobile Information Services: This application of m-commerce includes the services such as travel information, current affairs, tracking services, use of search engines and mobile office. The specific applications of such services include any news updates related to sports, politics and finance, use of search engines on mobile phones, functionality of mobile office for sending and receiving e-mails and retrieval of travel information.

d) Mobile Marketing: This application is concerned with strengthening the marketing operations of an enterprise through cost effective mode of reaching the customers. It helps the organizations to take full advantage of the wireless communication technology by providing new options to the firms to increase their sales revenue, retain customers and provide up to the mark after service support. The specific applications of mobile marketing include the use of handheld devices for services such as direct marketing, sending newsletters and organizing mobile events.
e) **Mobile Shopping:** This application is related with the purchase of goods and services by making use of hand held devices. The user can purchase goods of day to day needs by shopping through mobile phone. One of the applications of mobile shopping includes selecting the products listed on mobile websites. This service provides mobility in shopping to the user as the products and services of routine nature could be purchased in addition to the digital goods.

f) **Mobile Ticketing:** This application is concerned with the purchase of ticket such as railway ticket, movie ticket, ticket of sports and cultural events. This ticket is usually in electronic form and is sent to the mobile phone of the user. Mobile ticketing has gained enormous importance nowadays as it helps to save the precious resources of the organizations in the form of paper and time.

g) **Telematics Services:** It includes the services related to navigation, vehicle tracking, emergency services and theft protection. The word ‘Telematics’ includes the combination of two words i.e. information technology and telecommunication technology. The major application of telematics is in transport sector which is named as intelligent transport system. Apart from its application in transport sector, telematics also helps in the delivery of other types of m-commerce applications like mobile shopping, entertainment, office and banking.

### 1.3 Personal Banking

Banking Industry has witnessed many changes on the technological front. Rapid introduction of technology in banking operations helps the banks to provide quality service to their customers and thus new classifications of banking such as personal banking and corporate banking have come into existence (Jayakumar and Anbalagan, 2012). Among the two, customers consider personal banking as more flexible and it has received greater attention of stakeholders than corporate banking (Fraser, 2010). The recent developments in technology have contributed more towards growing popularity of personal banking and it has eventually redefined the way banking operations have been performed (Sethuraman, 2010). The changes forced by electronic banking using ICT resources are mostly observed in personal banking services.
Personal banking being an individualistic type of banking has received greater focus in the past and is considered to be the core area of technology implementation. It has been the front runner in terms of the application of technology as it caters to the needs of individual customers and thus requires special attention of the banks. Personal banking has immense growth prospects in banking sector and the optimal delivery of this service is considered crucial for the success of banking operations. There is direct interaction of the bank with the customers in personal banking and this increases the need to pay special attention to its service quality. Personal banking helps the banks to deliver customer specific information by using technological channels such as automatic teller machines (ATMs), internet banking and mobile banking (Natarajan et al., 2010). Further, it has been found that individual customers are rated as the biggest beneficiaries of growth in personal banking services as they enjoy greater dominance in banking due to increased competition (Omarini, 2011). In addition, it has also been observed that the success and failure of banks depends on the way they adopt the new technologies such as internet banking, smart cards, voice response systems and mobile banking services which contribute towards the technological strength of personal banking (Nelson, 2007).

Further, ICT applications in banking have great suitability in the domain of personal banking as they help the banks to reduce their cost of providing services to individual customers. Internet banking and mobile banking are specifically considered as the effect of ICT implementation in personal banking. The services offered through personal banking include checking account statements, making loan enquiry, checking account balance, and making cheque book request. The extent of service usage may depend upon the nature of customer. Nowadays, personal banking has higher scope due to the rising demand for its products such as auto loans, personal loan, debit/credit cards, insurance and deposits which is further backed by the growing popularity of its new banking channels such as ATMs and internet banking (Rao, 2014). Personal banking provides great alternative for the banks to earn profits by serving the needs of individual customers. It is observed that increase in competition, rising cost and lowering margins have forced the banks to venture into retail banking or personal banking services (Bhole, 2009, p. 285).
According to a research study by Prasad (2003), Chief Economist, The Stock Exchange Mumbai, it was found that banks in Asia have witnessed tremendous growth in personal banking due to greater demand for the services like credit cards, home loans and online banking. In addition, it was also revealed that there has been increased use of technology among the banks in the Asian economies which has resulted in the growth of electronic mode of banking.

As per the report on retail banking by Dr. J. Sethuraman (2010) on behalf of Indian Institute of Banking & Finance (IIBF), it was revealed that personal banking has received tremendous growth worldwide. The report highlighted that even the banks in Asia have also realized the importance of retail operations which is evident from the extraordinary growth of personal banking in the countries such as Russia, India and China. This growth in the Asian economies was attributed to the liberalization, better economic conditions, changing demographics and bigger volume of unbanked population.

Jones Lang LaSalle (2012) in a report on ‘Global Retail Banking 2020’ has proposed that banks across the world are going to face great challenges due to higher competition which has further increased the power of the customers. It was mentioned that technology in retail banking services such as mobile banking will help the banks to cope up with the competitive pressure. The report further highlighted that the overall quality of the banking environment will become better due to introduction of technology and refinement in the service operations.

Further, as per the RBI (2014) financial stability report, it was highlighted that there is higher use of electronic technology in settlements systems. This tells about the growing importance of electronic channels in personal banking services.

In India, from the past few years there has been greater focus on retail electronic payments in personal banking. Figure 1.1 shows the yearly comparison of payments through electronic clearing and paper clearing system since the financial year 2010-11. This comparison has been made on the basis of data given in payment system indicators at RBI database on Indian economy (RBI, 2015). From the figure, it is evident that there has been more growth rate in electronic clearing as compared to paper clearing. Further, it is revealed that in case of paper clearing the volume of
transactions was 138.73 million in 2010-11, 1341.88 in 2011-12, 1313.46 in 2012-13, 1257.31 in 2013-14 and 1196.51 in 2014-15. Whereas in case of retail electronic clearing, the volume of transactions was 406.38 million in 2010-11, 512.44 in 2011-12, 694.07 in 2012-13, 1108.32 in 2013-14 and 1687.44 in 2014-15. The data from five years reveals that in comparison to paper clearing, there has been continuous growth trend in the retail electronic clearing. It has also been observed that the number of paper clearing transactions in the recent years have marginally come down. This decline in transactions is not present in case of electronic clearing whose numbers of transactions have been growing all the time.

Figure 1.1 Comparison of Electronic and Paper Clearing Transactions in India
Source: Payment system indicators - RBI Database on Indian Economy

The rising trend in payment system in case of electronic clearing indicates the enormous growth and importance of electronic technology in case of personal banking services.

1.4 Electronic Banking

The increased focus of the banks to apply different ICT resources in their day to day operations has resulted in growing popularity of electronic banking (popularly known as e-banking). This new channel of banking has vital applications in personal
banking as it helps the banks to deliver customer specific services based on the needed technology support. E-banking is similar to the traditional banking with a difference in delivery of services through electronic channels (Dixit and Datta, 2010). This service due to its high customer centricity has also been considered as an important business application of e-commerce (Poustchi and Schurig, 2004). The service requires an electronic connection to be established between the bank and the customer before preparation, management and controlling of the financial transactions (Salehi and Zhila, 2008). E-banking is used by different banks to deliver information and services to their customers through electronic mediums like personal computers, mobile phones, telephones and the digital televisions (Daniel, 1999).

Anyanwokoro (1999) has defined e-banking as “the application of computer technology to banking specially the payment (deposit transfer) aspects of banking”. Keeping it simple, Leow (1999) has proposed that internet banking, telephone banking and mobile banking are treated as the subsets of e-banking and provide different alternatives to access the banking services with no need of visiting the bank’s branch. Basel Committee Report on Banking Supervision (2003) has also stated that “electronic banking, or e-banking, includes the provision of retail and small value banking products and services through electronic channels as well as large value electronic payments and other wholesale banking services delivered electronically”. Further, The Federal Financial Institutions Examination Council (2003) has mentioned that e-banking includes “the automated delivery of new and traditional banking products and services directly to customers through electronic, interactive communication channels”. Further, Singh and Malhotra (2004) have also highlighted that e-banking involves delivery of banking services and products to the customers over some telecommunications network. This contribution by different authors suggests that e-banking could be considered as a technology based banking using either the computing or handheld devices.

According to Asfour and Haddad (2014), both internet banking and mobile banking are further treated as the subsets of e-banking with a difference that while using internet banking connections are established through computers using internet and in case of mobile banking the connections are made through mobile networks of the hand held devices. E-banking provides great utility for customers and helps to
save their time and cost. It is different from traditional banking due to less human interaction and increased dependence on technology (Schaupp and Bélanger, 2005) which brings both efficiency and convenience in operations. E-banking helps the customers to access various types of personal banking services except the direct withdrawal of cash (DeYoung, 2001). It has also been treated as an important outcome of the use of ICT resources in banking operations. E-banking has great suitability in the domain of personal banking as it helps the banks to reduce their cost of providing services to individual customers. It is considered as the most suitable channel for accessing the services provided in personal banking due to its customer centric nature. E-banking includes both internet banking and mobile banking which are nowadays treated as important electronic channels of accessing personal banking services. Among the two, mobile banking is considered as the latest channel of accessing the banking services and needs more research focus.

1.5 Mobile Banking - A New Banking Channel

The greater popularity of m-commerce applications has given rise to this new mode of banking. M-commerce is affecting the businesses as well as the personal banking services, and serves their needs in the form of mobile banking (Luo et al., 2010). Mobile banking (also known as m-banking) is considered as an important channel of retail banking or personal banking for future (Moser, 2015). It is seen as the most important upcoming service in the m-commerce value chain (Lee et al., 2003; Barnes, 2002).

In the past many authors have contributed different definitions of m-banking. Barnes and Corbitt (2003) have defined m-banking as “a channel whereby the customer interacts with a bank via a mobile device, such as a mobile phone or personal digital assistant (PDA)”. Mallat, Ross and Tuunainen (2004) have stated that m-banking includes “provision and availment of banking services with the help of mobile telecommunication devices such as mobile phones”. Zhou, Lu, and Wang (2010) have also mentioned that “m-banking is the use of mobile terminals such as cell phones and personal digital assistants (PDAs) to access banking networks via the wireless application protocol (WAP)”. ITU (2011) has proposed that through m-banking “individuals can engage in a variety of financial services, including mobile transactions and payments, by using their mobile phone and without having to visit a
financial institution”. Thus, m-banking could be considered as an application of e-banking that utilizes the mobile devices.

It has provided the customers with the abilities to control their banking operations from the mobile phones in their pocket (Parvin, 2013). M-banking has emerged as an important channel to access the banking services and perform the transactions related to balance enquiry, getting account information, transferring funds and selling shares (Kim et al., 2009; Luo et al., 2010). It is the result of the mixture of services provided in banking and telecommunications industry (Ashta, 2010). Gupta (2013) has proposed that the adoption of m-banking among the customers is faster than the internet banking. He further highlighted that m-banking helps the banks to reduce their cost of providing services to the customers and also assists in their retention.

M-banking is considered as one of the important off shoots of e-banking and the latest mode of accessing the services of the banks. It is the implementation of e-banking (Safeena et al., 2011) and has received greater attention from all of its stakeholders such as banks, internet service providers and the ultimate consumers in the recent past. It enables the banks to provide more value to their customers by utilizing mobile network based channels of service delivery (Pousttchi and Schurig, 2004) and is considered as the union of financial services and mobile technology (Chung and Kwon, 2009). It helps the customers to perform different types of transactions such as balance enquiry, funds transfer, mobile recharge, railway ticket and movie ticket booking by using a mobile phone.

1.5.1 History of M-banking

M-banking service was introduced in the later 1990s by the German based company Paybox in association with the Deutsche Bank. Firstly, this service was used in European countries including Spain, Sweden, Germany, UK and Austria and then among the developing nations, this service was first introduced in Kenya in the year 2007 (Shaikh and Karjaluoto, 2015). In India, full-fledged m-banking service was first launched by ICICI bank in the year 2008.
1.5.2 Modes of Accessing M-banking

M-banking service is provided to the customers through the following modes:

a) SMS Banking

This is the simplest mode through which the m-banking service is offered to the customers based on SMS (Short Message Service) communication. It is easy to use and does not require the smart phone or any data plan activated on the mobile phone of customers for its functioning. In this mode, the transactions are carried out by sending a simple SMS to the bank. However, this mode of banking suffers from certain limitations such as inability to transact in real time, security issues and lack of good experience of the customers.

b) WAP Based Banking

This is the second mode of accessing the m-banking service and takes care of some of the limitations of SMS banking. WAP stands for wireless application protocol which is a special type of protocol used to transact on mobile devices. This mode of banking enables the customers to access the services of the banks in a real time environment through proper data communication. WAP based m-banking service provides more secured and user friendly services to the customers in a real time communication mode.

c) USSD Mode

This is the third mode through which m-banking service could be used and it helps to carry out m-banking transactions without using internet. This mode helps to access the m-banking service using Unstructured Supplementary Service Data (USSD) code. In USSD, m-banking transactions are carried out using interactive menu which is displayed on the mobile phone screen without using internet. This mode provides a secured way of accessing the m-banking service on the basic mobile phones using USSD encryption.
d) Mobile Web Banking

This is another way of accessing the m-banking service and is used by mobile devices with advanced browsing capabilities such as displaying complete website content. This mode of m-banking usage provides improved customer experience with an ability to transact online as in the case of computers. Mobile web banking operates in a similarity with internet banking service thereby providing the customers with internet banking like experience on the mobile phone.

e) Application on Mobile Phone

This is the most advanced mode through which the m-banking service of different banks could be accessed. In this mode, a special type of application (popularly known as the app) of the bank is installed on the mobile phone of the user. This application provides advanced m-banking features to the users and enables them to utilize different types of facilities provided by m-banking. Bank specific applications on mobile phone have best in class user interface and security features which ultimately helps the customers to get the enhanced user experience in m-banking.

1.5.3 Types of M-banking Services

M-banking provides the customers with a new way of accessing the personal banking services of the different banks. It acts as an alternative channel to access personal banking services and helps the banks to considerably reduce the cost of providing these services. In India, as on 10\textsuperscript{th} July 2015, there were 119 banks permitted by RBI to provide m-banking services to their customers. The growing popularity of m-banking has resulted in greater interest among the different stakeholders in finding out how the service is perceived by different personal banking customers. There are different types of personal banking services delivered through this new channel of banking. The personal banking services which are being provided through m-banking by most of the banks are funds transfer (within & outside bank), immediate payment services (IMPS), mobile top up, DTH top up, shopping from mobile, paying insurance premium, utility bills payment, paying credit cards bills, railway ticket booking, airline ticket booking, movie ticket booking, donations
payment, paying subscriptions (new/renewal), balance enquiry, mini statement, cheque book request, stop cheque request, message to relationship manager and demat enquiry service.

### 1.5.4 Classification of M-banking Service

As per Clifford (2011, p. 64), the services presented in m-banking are generally classified into the following categories:

**a) Push and Pull Service**

This type of classification is based on the starting point from where the request for service is initiated. In case of push service, the banks act as the starting point of the service as they send the desired information to the customers based on previously established standards and procedures. Apart from this, in case of pull service, the customers act as the starting point of the entire service encounter as they initiate the request for service and receive necessary information from the banks.

**b) Transaction Based and Enquiry Based Service**

In comparison to the push and pull service discussed above, this type of classification is based on the nature of m-banking transactions. In this classification, transactions carried out to transfer funds are considered as the part of transaction based services and the transactions which involve transfer of information to the customers are considered as the part of enquiry based services. It should be noted that the enquiry based services provided in this classification are not related with the financial transactions.

Based on the importance of the individual customers in personal banking, the second way of classification is more suitable in case of the current study and includes the different types of m-banking services. It should be noted that the services such as funds transfer (within & outside bank), immediate payment services (IMPS), mobile top up, DTH top up, shopping from mobile, paying insurance premium, utility bills payment, paying credit cards bills, railway ticket booking, airline ticket booking, movie ticket booking, donations payment, paying subscriptions (new/renewal) are considered as transaction based services and the services such as balance enquiry,
Introduction

mini statement, cheque book request, stop cheque request, message to relationship manager, demat enquiry service are considered as enquiry based services as they deal only with the transfer of information.

1.5.5 Global Trends in M-banking

International Telecommunication Union (ITU) which is an agency of United Nations committed to support the implementation of ICT resources across the world finds great potential in m-banking. ITU (2014) has revealed that very soon the number of mobile subscribers in the world will match with the number of people on earth. In some of the facts and figures given by ITU (2015), it was revealed that by the end of the year 2015, the number of mobile service subscribers across the world will exceed 7 billion. Apart from this, it has been observed that there is huge increase in the usage of smart phones across the globe. In an estimate made by eMarketer (2014), it has been proposed that 51.7% i.e. over half of the mobile phone users across the world will have a smart phone by the year 2018. This increase in the number of mobile phone subscribers and the smart phone users across the world presents great opportunity for m-banking.

As per the study titled ‘Mobile Banking and Financial Inclusion’ conducted by Klein and Mayer (2011) on the behalf of World Bank, it was observed that m-banking is seen as a global revolution and is becoming famous across the world due its ability to carry out banking transactions without visiting the bank’s branch. In this study, it was mentioned that m-banking helps to increase the scope of banking into new locations and initiates healthy competition among the banks which in turn will benefit the customers. In addition, it was also revealed that m-banking has prospered in the developed nations and further presents huge scope of improvement in the financial services sector among the developing countries.

In another study presented in European Financial Review by Sunil Gupta (2013) Professor at Harvard Business School, it was mentioned that m-banking as a whole provides great scope for both developed and developing nations. However among these, the emerging markets present a more promising situation with more number of mobile phone users and lower number of bank accounts.
Further, in a study on ICT for the greater development impact conducted by World Bank (2012), it was highlighted that m-banking helps to achieve more comprehensive growth of the financial markets. It is the most preferred medium for accessing the banking services in the near future.

In another report on m-banking presented by Juniper Research (2014), it was mentioned that there will be more users of m-banking than online banking by the year 2019. Further, it was revealed that in case of global banks like Bank of America, more number of customer access the banking services from mobile devices rather than the online system.

1.5.6 M-banking Scenario in India

M-banking service has huge growth prospects in the Indian market. In a study jointly conducted by KMPG and CII (2013) on ‘Indian Banking Maneuvering through Turbulence: Emerging Strategies’, it was highlighted that banks in India are spending more on the purchase of IT products and services. The new channels of banking such as internet banking, mobile ATMs and m-banking are emerging as the cost effective medium of accessing the banking services. In the study, it was also highlighted that in India there has been greater emphasis on digital banking which can further help in minimizing the cost of providing banking services. This calls for an association between the banks, telecom service providers and the ultimate consumers for creating a progressive environment in support of m-banking.

In a study conducted by BCG, FICCI and IBA (2010) on ‘Indian Banking 2020’, it was proposed that in the next decade m-banking will change the way banking transactions are performed resulting in greater advantage to personal banking or retail banking customers. In addition to this, it was also mentioned that the changing demographics in the country will positively affect the personal banking scenario.

BCG, FICCI and IBA (2011) conducted another study titled ‘Being Five Star in Productivity Roadmap for Excellence in Indian Banking’, in which it was proposed that m-banking will be preferred over internet banking due to greater ease of use. In this report, it was further mentioned that m-banking due to greater use of cellular
phones and increased popularity of 3G service will become a popular medium of banking in India by the year 2020.

In another joint study conducted by BCG, FICCI and IBA (2012) titled ‘From 5 Star to 7 Star in Productivity Excellence in Banking with Customer and Employee Centricity’, it was mentioned that the new channels of banking i.e. internet banking and m-banking have a promising future ahead. In this report, it was also revealed that there is greater diffusion of SMS based m-banking than the internet banking which tells about the power of mobile phone as an alternative channel of banking in India.

Apart from the above, the wireless telecom services environment in the country is also conducive to the growth of m-banking. As per the mobile subscriber data released by Telecom Regulatory Authority of India, the total number of wireless subscriber in December 2014 were 943.97 million which further increased to 952.34 million at the end of January 2015. In addition, it was also revealed that the wireless subscribers in urban areas increased from 550.64 million in December 2014 to 553.45 million at the end of January 2015. In this data, it was evident that monthly growth rate of 1.41% in case of wireless subscribers from rural areas was greater than 0.51% monthly growth rate in urban areas.

Apart from this, Ganesh (2014) in his study also revealed that the number of mobile phone users in India is exceeding the number of people. He further highlighted the role of m-banking as an alternative banking channel and as a medium to connect the unbanked with banking services. In an article in The Economic Times (2014), it was revealed that government has ambitious plans to enable the usage of m-banking on all types of cell phones and this is considered as a part of its target to reach 75 million banking customers by 2018. As per a report published in Business Standard (2014), the latest move by the government on m-banking is to enable the use of service for people using basic handsets, as this will further help to attain the objective of financial inclusion in India. In this regard, National Payment Corporation of India will work in association with telecom operators for providing the service to people who do not use smartphones. This will in turn provide convenience to the customers and will reduce their necessity of coming to the banks’ branch for performing banking transactions.
M-banking service has seen an upward trend in India from the past few years and this is evident from the volume of m-banking transactions in the country as shown in Figure 1.2. The figure is based on the data related to the volume of m-banking transactions since 2011 given in payment system indicators at RBI database on Indian economy (RBI, 2015). Figure 1.2 presents that the volume of transactions in case of m-banking shows an upward trend. It is evident from the figure that volume of transactions was 25.56 million in the financial year 2011-12 which later on increased to 53.3 million in 2012-13, 94.71 million in 2013-14 and 171.92 million in the financial year 2014-15. These figures reveal that m-banking service in India has shown tremendous growth prospects and there has been continuous increase in the volume of transactions.

![Volume of Transactions (in millions)](image)

**Figure 1.2 Mobile Banking Transactions in India**

*Source: Payment system indicators - RBI Database on Indian Economy*

### 1.5.7 Regulatory Framework of M-banking in India

In India, the two main organizations related to m-banking have taken imperative steps towards the optimal delivery of this service. The initiatives taken by these organizations are as follows:
Introduction

I) Reserve Bank of India

H. R. Khan, Deputy Governor, RBI (2011) has stated that “the e-commerce and m-commerce are poised for a big stride in coming years. Banks and payment system operators could leverage on the huge potential of e-commerce and m-commerce”.

Reserve Bank of India (RBI) has always supported the adoption of both e-commerce and m-commerce applications in banking. M-banking was launched in India when the central bank of the country i.e. RBI issued its first operative guidelines concerning m-banking transactions. RBI sensing the growing importance of m-banking as a new channel of accessing banking services issued its first guidelines in October 2008. These guidelines were the result of sincere efforts of the Reserve Bank and its commitment to support the implementation of technology in banking. In the first operative guidelines, it was highlighted that with the rapid growth in the number of mobile phone subscribers in India, banks were busy in finding out new ways of delivering banking services. Consequently, m-banking has emerged as the ultimate solution to this problem. In the operative guidelines, it was mentioned that initially some of the banks had started services like transaction enquiry, branch location, balance enquiry, stop payment for cheques and funds transfer.

The main issues given in the first operative guidelines (RBI, 2008) were:

a) Regulatory & Supervisory Issues

In this issue, it was highlighted that m-banking service will be provided by only those banks which are licensed and supervised in India. This service will be available for only those customers which are the holders of debit or credit cards issued as per RBI guidelines and will be provided by only those banks which have successfully implemented core banking solutions. Apart from this, it was also made mandatory that m-banking service will allow domestic services based transactions only in Indian Rupee and will not be allowed to carry out cross border transactions. In this issue, the branch correspondent model was also supported by RBI for extending the reach of service.
b) Registration of Customers for Mobile Service

This issue included the procedure which the banks should follow while registering the customers for availing m-banking service. RBI insisted that proper documentation and verification should be carried out by the banks during the registration process. In addition, the banks must also communicate terms and conditions of m-banking service to the customers.

c) Technology and Security Standards

In this issue, RBI made it mandatory for the banks to maintain highest security standards while providing m-banking service to the customers. It was highlighted that security of the service is the most important concern in case of m-banking. RBI enforced that the technology used in m-banking should be of utmost highest standards and must safeguard the interest of customers.

d) Interoperability

This issue of operative guidelines deals with the provision of providing m-banking service on the cell phone supported by any network service provider. RBI mentioned that the ultimate goal of m-banking is to enable transfer of funds from one account to the other in same bank or in any other bank through mobile phone linked with any network. This requires special interaction between the mobile service providers operating on different networks and the banks.

e) Clearing and Settlement for Interbank Funds Transfer Transactions

In this instruction, it was mentioned that for successfully implementing m-banking service across the nation, a special framework related to interbank settlements, and a strong clearing and settlement system operating round the clock is necessary. In order to achieve this objective, the banks may get into new type of multiple engagements for interbank transactions with the permission of RBI.

f) Customer Complaints and Grievance Redressal Mechanism

This guideline issued by RBI deals with protecting the interests of the consumers. In this guideline, it was mentioned that m-banking is a relatively new
introduction

Service so any problems related to the consumers must be carefully addressed. Further, it was also enforced by RBI that banks must take required and timely action to redress the grievances of m-banking customers.

g) Transaction Limit

This guideline was related to the limit of the value of transaction which could be carried out using m-banking service. In the first operative guidelines, the daily limit for fund transfer was set to INR 5000/- and INR 10000/- for the purchase of any goods and services. In addition, the banks were also given the option to set the monthly transaction limit at their own discretion based on their perception of the customer.

h) Board Approval

In this guideline, it was made compulsory by RBI to get the approval of the board of directors, if any of the banks wants to launch a new product or scheme related to m-banking.

i) Approval of Reserve Bank of India

This guideline included the instruction that banks which are interested in providing m-banking service to their customers must receive one time approval of RBI by submitting all the relevant documents in the proposal to provide this new service.

Further, it is important to mention here that the per day transaction limit given in first operative guidelines of m-banking transactions was later on revised by RBI to INR 50,000/- for both transfer of funds, and purchase of goods and services based on a circular issued in the year 2009. However, in the year 2011, the limit of INR 50,000/- was eventually removed by RBI through a circular. Apart from this, the banks were given the authority to place any transaction limits based on the risk or on their own perception of the customer.

Apart from these regulatory measures related to m-banking, RBI also proposed a new organization called National Payment Corporation of India (NPCI) in the year 2008 to deal with the clearing houses and electronic payment systems in the
country. With the rapid increase in the volume of m-banking payments in future, this organization also started taking care of Interbank Mobile Payment Systems (IMPS) offered in m-banking.

M-banking supports the objective of financial inclusion of the government. In the Report of Technical Committee (2014) constituted by RBI to give necessary recommendations on m-banking, it was mentioned that m-banking service can help to extend the reach of banking services to the unbanked portion of the population and will further assist in attainment of the goal of financial presence among all the sections of the society. RBI based on its Payment and Settlements Systems has always supported the electronic channels and encouraged the innovative methods of payments such as prepaid electronic payments, cards, internet banking and m-banking.

II) Telecom Regulatory Authority of India

Telecom Regulatory Authority of India (TRAI) which is a premier regulatory body of telecom service providers in India in a vital step towards promotion of m-banking service has issued the m-banking quality of service regulations in the year 2012. These regulations were having huge importance for all the stakeholders involved in the delivery of m-banking services. In these regulations, TRAI issued the guidelines regarding mode, time frame, quality of service, security requirements and the reporting of m-banking service. These guidelines were issued to different wireless telecom service providers for introducing more transparency and clarity in the delivery of m-banking service. The basic aim of these regulations was to safeguard the interest of customers using the service.

Apart from the above, TRAI (2013) also presented a consultation paper to promote the use of m-banking. In the paper, it was mentioned that in India, large number of population is still unbanked or has less access to banking. A significant percentage of the households i.e. 41.3% do not even have a bank account. In this paper, it was also highlighted that only 54.4% rural households are in reach of banking services. Further, it was advised that banking services should be provided at lower cost to the people who are unable to avail them. Apart from this, in the consultation paper it was also mentioned that as on 30th June 2013, there were 873.4
million mobile connections in India, out of which 351.1 million were in rural areas. It was also presented in the paper that large number of population in rural areas does not have reach to banking services so the mobile phones present the obvious answer to this problem. TRAI also proposed that m-banking as a new banking channel provides an alternative way to deliver banking services at an affordable cost to the unbanked and further helps in realizing the goal of financial inclusion in lesser time frame. In order to achieve this goal, the different stakeholders including banks, customers, the reserve bank and telecom service providers need to work in a collaborative manner.

1.6 Research Gap and Relevance of the Study

Increased popularity of m-commerce has led to greater concern among the academicians and industrial experts to analyze the behavioral issues related to its different applications. M-banking being the first commercial application of m-commerce (Barnes and Corbitt, 2003; Laukkanen and Lauronen, 2005) seeks greater research attention in the domain of m-commerce. This service is provided by the financial institutions such as banks and has received more focus of research in m-commerce due to its formal and specialized nature (Tiwari et al., 2006).

Previous studies reveal that there is research gap in the m-commerce literature related to the usage and socio-economic impact of m-banking especially in case of developing countries (Maurer, 2008; Donner and Tellez, 2008). Recent research in m-banking presents that large number of the studies in this domain have concentrated on the issue of mobile banking adoption involving the famous technology acceptance model (TAM) and are mostly related to SMS banking specifically among the developing nations (Shaikh and Karjaluoto, 2015). It has also been observed that there is scarcity of studies related to the effect of mobile services usage as large numbers of studies are related with the adoption of service (Nysveen et al., 2015). In addition to this, based on the literature review conducted in this study, it is evident that mobile banking being a new service lacks in research related to post service adoption and the issues related to consumer behavior. This calls for more research focus in ascertaining the post usage behavior of consumers related to the domain of m-banking. Customer perception being the key determinant of consumer behavior invites special research attention as it tells how the users perceive the service after its usage or what
impression of the service they have in their mind. This creates the need to conduct research in context of customer perception towards m-banking.

Further, it is observed that customer perception or the view about the service is based on the level of satisfaction which a customer feels after its usage (Angelova and Zekiri, 2011). This level of customer satisfaction indicates the type of behavior which a customer will exhibit after using the service. Customer satisfaction is dependent upon the quality of service which one experiences after its usage. A satisfied customer will speak positive about the service and may recommend it to others. This calls for research related to customer satisfaction in the field of m-banking. After the literature review, it was evident that there were very few studies focused on customer satisfaction. In addition to this, it was also found that the literature on m-banking shows shortage of studies focused on consumer behavior (Mattila, 2003). This further supports the argument to conduct research related to the level of customer satisfaction in m-banking.

In addition to the above, the issue of consumer demographics is always an indispensible part of consumer behavior. In past different research studies have focused on the role of demographic variables in the adoption of m-banking service (Laukkanen and Cruz, 2010; Yu, 2012; Shukla and Bhatt, 2012; Ramdhony and Munien, 2013; Bigne et al., 2007). However, the literature review conducted in the course of the current study suggests that comparatively less research is carried out to ascertain the association of these variables with the usage of m-banking service in India. The usage of service may change as per the different demographic profile of the customers. This further calls for the need to conduct research related to the association of demographics with the m-banking usage.

Furthermore, the study of consumer behavior may also include the analysis of purpose for which the customers of m-banking would like to use the service. Purpose of the transaction may have important implications on the usage of m-banking. The usage of different transactions may vary among the customers depending upon the purpose in hand. The review of literature in the current study also revealed that that there is scarcity of research focused on evaluating the purpose of m-banking usage. This further creates the need to ascertain the association of m-banking usage with the purpose of transaction.
1.7 Objectives of the Study

The present research study deals with ascertaining the customer perception towards mobile banking in the state of Punjab in India and helps to understand the behavioral outcome of the m-banking service encounter. This outcome of the service is revealed in the form of overall perception, level of satisfaction, service usage and purpose of the transaction. Thus, the objectives of this study are as follows:

1. To ascertain the customer perception towards m-banking in personal banking.

2. To identify the level of satisfaction of a customer in carrying out personal banking transactions using mobile phone.

3. To find out the relationship between m-banking usage and demographic segmentation of the customer.

4. To determine the association of m-banking usage with the purpose of the transaction.