FINAL SYNOPSIS

TOWARDS PARTIAL FULFILMENT OF THE Ph.D DEGREE

ON

”Impact of Consumer Adoption, Trust and Security Challenges on Mobile Banking: An Indian Study”

SUBMITTED BY

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Submitted to S.N.D.T. University

For

THE DEGREE OF DOCTOR OF PHILOSOPHY
SYNOPSIS

OF THE THESIS TO BE SUBMITTED TO SNDT WOMEN’S UNIVERSITY FOR THE DEGREE OF Ph.D IN MANAGEMENT STUDIES

Title of the Thesis : ”Impact of Consumer Adoption, Trust and Security Challenges on Mobile Banking: An Indian Study”

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DECLARATION

“I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, neither it contains material previously published or written by another person nor material which has been accepted for the award of any other degree or diploma of the university or higher learning, except where due acknowledgment has been made in the text”

Place: Mumbai

Date:                    Name: Sindhu Singh

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CHAPTER 1
INTRODUCTION

1.1 Background of the study
Information and Communication Technology (ICT), including the Internet and wireless technologies, has revolutionized the entire world. The rapid growth of ICT has transformed business. According to a report by Internet World Stats (2015), Internet penetration reached 3.08 billion globally by the end of 2014, with India, ranked third worldwide, reaching 190 million Internet users as of June 2014. There is enormous growth in the mobile sector in both developed and developing countries. Total mobile subscriptions reached almost seven billion by the end of 2015, reaching global penetration of 97 per cent (ITU, 2015). As per the report by Telecom Regulatory Authority of India (TRAI, 2015), as of February 2015, the number of wireless subscribers in India surpassed 961 million, and the total number of Internet subscribers, excluding wireless Internet access, reached 18 million.

To meet customers’ expectations, banks are offering wide-ranging services to their customers through the Internet and mobile technologies, embracing diverse ICT in order to endure the competitive environment, reduce costs, and increase customer convenience. Customers live in a technological cluster, able to access needed banking services through various alternative channels like ATMs, online banking, and mobile banking. Internet connectivity is shifting from wired connectivity with desktop computers to wireless and mobile devices, and banking services, too, are now available through a mobile phone, connected wirelessly. Mobile banking has broad potential in developing countries, where many customers are connected to the Internet primarily through their mobile phones.

The banking sector in India embraced the information technology (IT) revolution way back in the 1980s, based on the recommendations of the Rangarajan Committee report. The IT revolution in banking started with the computerization of bank branches, introduction of electronic clearing services (ECS), national electronic fund transfer (NEFT), real-time gross settlement (RTGS), and new delivery channels such as ATMs, online banking, and mobile banking, accelerating the pace of banks’ technology adoption and interconnection. India’s public-sector banks faced immense competition from the new generation of private-sector banks, which are fully technology-driven and launched in the early 1990s after India’s
economic reforms. The new private-sector banks and foreign banks pulled ahead of the public-sector banks in terms of technology, which spurred technology initiatives at the public-sector banks. The computerization of the branches of the nationalized banks reached 97.8 per cent at the end of March 2010, whereas the State Bank of India (SBI) had already reached full computerization by that time (RBI, 2010). The introduction of new delivery channels (ATMs, online banking, and mobile banking) obviated the need for the customer to visit bank branches. Their introduction commenced in India with the first ATM by HSBC bank in 1985. According to the report of RBI (2012), ATMs outnumbers bank branches in India. In 1996, ICCI Bank was the first in India to introduce online banking.

The IDC report estimates that the total number of user registrations for online banking in India is over two million (cited in Dash et al., 2012). The growing popularity of online banking results from the ability to conduct banking operations 24/7 and its convenience. Indian banks offered mobile banking services beginning in the late 2000s, with RBI issuing operating guidelines in 2008. The major advantage of mobile banking is that financial transactions may be conducted through a mobile phone, anytime and anywhere. Moreover, Internet penetration is much less in rural areas compared to mobile penetration. It may be easier to offer banking services through mobile phones in rural areas, where bank branches are scarce, than through any other delivery channel. Hence, it is important to study and understand consumer adoption of mobile banking.

1.2 Banking Sector in India

1.2.1 History of Indian Banking

The General Bank of India was the first bank in India established in the year 1786. The East India Company established three more banks: Bank of Calcutta (1809), Bank of Bombay (1840), and Bank of Madras (1843). Later in the year 1870, Hindustan Bank was established. The three banks (Bank of Calcutta, Bank of Bombay, and Bank of Madras) were called as Presidency Banks and in the year 1921, all Presidency Banks were amalgamated to form the Imperial Bank of India. Reserve Bank of India Act passed in 1934, and the Reserve Bank of India was established in 1935. The Banking Regulation Act was constituted in the year 1949 to streamline the functions and activities of commercial banks in India. The regulation act brought RBI under the control of the Government of India. Reserve Bank of India empowered as a central banking authority to supervise and control the operations of banks in
India. Under the Banking Regulation Act, no new bank or branch of an existing bank could be opened without the license of RBI.

In 1955, the Imperial Bank of India had come under RBI and renamed as State Bank of India. Seven banks forming the subsidiary of State Bank of India were nationalized in 1960, and 14 major commercial banks were nationalized in 1969. A further six more banks were nationalized in 1980; approximately, 80% of the banking sectors were under government ownership. The stated reason for nationalization was to provide the government for more control of credit delivery. With the second stage of nationalization, 91% of the banking sectors were in the control of the Government of India with a total number of nationalized banks reached at 20. Later in 1993, the government merged New Bank of India with Punjab National Bank, and that was the only merger between nationalized banks resulted in the reduction of the number of nationalized banks from 20 to 19.

The Narasimha Committee in early 1990s proposed the economic reforms in the banking sector and amended the Banking Regulation Act in 1993, which introduced the entry of private sector banks in India. These banks were known as new-generation technology enabled banks, included ICICI Bank, HDFC, Axis Bank (earlier UTI Bank), and Oriental Bank of Commerce (earlier Global Trust Bank). The economic reforms and the relaxation in the norms for Foreign Direct Investment (FDI) visualized a rapid growth in the banking sector which reshaped the outlook of the traditional banks. The banking evolution in India can be classified into four distinct phases:

- Pre-Nationalization Phase (Prior to 1955)
- Nationalization (1955-1990)
- Period of increased Liberalization (2004 onwards)

The banking system in India consists of commercial and cooperative banks. The commercial banks comprise of nationalized banks, State bank of India and its associates, private sector banks, and foreign banks. These banks along with the regional rural banks constitute the public sector banks in India.

An outline of the Indian banking structure is presented below.
According to the RBI report as at the end-March 2012, there are 41 foreign banks operating in India with 431 branches. Another 46 banks had their representative offices in India. Among the foreign banks, Standard Chartered had the maximum branches (96 branches), followed by HSBC (50 branches), City Bank (42 branches), and Royal Bank of Scotland (31 branches).

1.3 Technological innovations in Indian Banking Sector
Technology has transformed the functioning of banks and delivery of financial services. The tremendous growth of the ICT (Information and Communication Technology), wireless technology, and large diffusion of mobile devices, customers need not to visit the bank branches rather perform every banking transaction at anytime and anywhere. The process of computerization in the banking sector in India, started with the advanced ledger posting
machines in the mid-1980s based on the Rangarajan committee report. The second report of Rangarajan committee was formed in 1988 to make a comprehensive plan to computerize the banks and the extension of automation to other areas like fund transfer, ATMs, etc. The Indian banking sector visualized the benefits of IT (Information Technology) initiatives in the late 1990s or early 2000 with the deployment of ATMs, core banking solutions (CBS), automation of branches and the centralization of operations at the CBS. For enhancing the research and adoption of technology in the banking and financial sector, RBI established IDRBT (Institute for Development and Research in Banking Technology) in 1996. To facilitate secured payment practices in India, technological infrastructures like INFINIT (Indian Financial Network), PKI based electronic data transfer, NFS (National Financial Switch), SWIFT (Society for worldwide Inter-bank Financial Telecommunication), and Structured Financial Management systems (SFMS) were created (Rangarajan, 2011). The computerization process of branches of the nationalized banks reached to 97.8 percent at the end of March 2010 whereas SBI has already reached fully computerization of all its branches (RBI, 2010). The Indian banking sector has evolved from traditional cash payments to the electronic payments in the late 1990s with the growth of the ECS debit and credit transactions, internet banking in the early 2000s, introduction of RTGS in 2004, commencement of NEFT in 2005, and the mobile banking in the late 2000s.

In the IT Vision Document 2011-2017 release, RBI highlighted the need for banks to shift their focus to more advanced technologies in areas like MIS (Management Information System), overall risk management, financial inclusion, CRM (Customer Relationship Management), and enhancing automated data flow within the banks and to the Reserve Bank without manual intervention (RBI, 2012).

**1.3.1 ATM (Automated Teller Machine)**

The invention of the ATM has been considered as one of the most innovative and revolutionary technological developments in the banking sector. ATM enables the customer to dispense cash by using a debit/credit card issued by the bank. This technology initiated the facility of anytime and anywhere banking to Indian customers. HSBC Bank introduced the first ATM services in India in 1987. The channel initially used to disburse cash to customers has transformed to a touch-point for delivery of wide-variety of banking services at bank branches and convenient off-site locations. The number of ATMs in India is now 181252, of
which 28 percent is owned by private sector banks, 71 percent by public sector banks, and 1 percent by foreign banks (RBI, 2015).

1.3.2 Internet Banking

Electronic banking experienced tremendous growth in both developed and developing countries and reshaped the banking activities. Electronic banking popularly called as internet banking allows the customers to do the banking services online without visiting the bank branches. The internet banking (e-banking or online banking) uses the internet as the delivery channel to offer banking products to its customers (Khan & Mahapatra, 2009). This is one of the new delivery channels offered in the retail banking sector, provides services like view transaction details, transfer funds, pay utility bills, or shop on-line through a telecommunication network (Daniel, 1999; Aladwani, 2001). Internet banking or online banking transformed the traditional approach of ‘bricks and mortar’ service to the ‘clicks and mortar’ service with the help of the internet (Chau & Lai, 2003).

ICICI bank was the first one which introduced internet banking in India in 1996 (Malhotra & Singh, 2007). Other banks, which followed were HDFC, City bank, IndusInd, and Time bank (now part of HDFC). Nationalized banks of SBI, Canara Bank, Allahabad Bank, Punjab National Bank, Bank of Baroda, Syndicate Bank, and others followed the bandwagon by introducing online banking (Iyengar & Belvalkar, 2010). To study the different aspects of internet banking, RBI had set up a working group and their major focuses were on three notable areas such as (1) technology and security issues, (2) legal issues, and (3) regulatory and supervisory issues. Based on the recommendations from the working group, RBI issued the guidelines on ‘internet banking in India’. As per the guidelines of RBI, banks which have a physical presence in India licensed and supervised are permitted to offer internet banking.

Three levels of internet banking services offered in India: information only systems, electronic information transfer system, and fully electronic transaction system (RBI, 2001).

1.3.2.1 Information only systems

In this type of service, the bank’s website provides general-purpose information like interest rates, branch locations, product features, FAQs, loan and deposit calculators. The site allows downloading of applications, and the interactivity is limited in the form of e-mail. There is no
interaction between the bank's production system and the customer and there is no need of an identification required from the customer.

1.3.2.2 Electronic Information Transfer System

These types provide customer-specific information like account balances, transaction details, statement of account, etc. The identification and authentication of the customer are done through simple mechanisms such as passwords. Most of the information provided is read-only, and the information is fetched from the bank's production system in either the batch mode or offline. Fund-transfer is not supported for this type of systems.

1.3.2.3 Fully Transactional System

This system allows bi-directional transaction capabilities. These systems allow the customers to operate on their accounts for the transfer of funds, bill payments, subscribing for other products and services, and it will directly update their accounts. Most of the banks in India are now offering fully transactional websites to its internet banking customers. Banks such as SBI, ICICI, HDFC, and city bank are in the lead to offer internet banking compared to other banks (Nandan et al, 2008; Sharma, 2009).

Banking customers do not prefer to do online transactions due to the various reasons such as security concerns (43%), preference for face-to-face transactions (39%), lack of knowledge about transferring online (22%), lack of user friendliness (10%), and lack of facility in the current bank (2%) (Iyengar & Belvalkar, 2010).

1.3.3 Mobile Banking

Mobile banking was introduced in the late 1990s and the beginning of 2000s. Mobile banking or m-banking enables a customer to make banking services through a mobile device. These services were introduced initially through short messaging services (SMS), WAP (Wireless Application Protocol), or GPRS (General Packet Radio Services) enabled mobile devices. Mobile banking (M-Banking or mbanking) is defined as “a channel whereby the customer interacts with a bank via a mobile device, such as a mobile phone or personal digital assistant (PDA)” (Barnes & Corbitt, 2003). Mobile banking services can be categorized as two types: transaction based, and enquiry based services. The distinct feature of mobile banking
compared to other banking channels (e.g., ATM, phone banking, internet banking) is ubiquity, mobility, and flexibility. Mobile banking is not an add-on to internet banking instead considered as a better digital alternative to other traditional banking channels and can reach to wider population due to the high penetration of mobile devices (Puschel et al, 2010).

Mobile banking services allow customers to check account balances, transfer funds between accounts and order for electronic bill payments. There is a vast market potential for mobile banking due to its always-on functionality and the option to bank virtually anytime and anywhere (Kleijnen et al, 2004; Herzberg, 2003; Rivari, 2006; Laukkanen, 2007).

RBI (Reserve Bank of India) sets up the operational guidelines for banks for mobile banking transactions in October 2008 under the Payments and Settlements Act 2007 with fewer revisions and clarifications in further releases. The key points are highlighted:

- Only banks, which implemented core banking solutions (CBS), can provide mobile banking to its customers.
- The services are restricted to banking customers and debit/credit holders issued as per RBI guidelines.
- Only banks which are licensed and have a physical presence in India can offer mobile banking services.
- Only INR based transactions allowed, and cross border inward and outward transfers are prohibited.
- Mobile banking services should be offered through any mobile phone independent of the network operator.
- To ensure interoperability between banks, and between their mobile service providers, the message formats like ISO 8583, with suitable modifications were to be adopted.

The Reserve Bank of India has granted approval to 69 banks to offer mobile banking services as of June 2012, where in which 49 banks have already started operations. Mobile banking in India is presently driven by a bank-led model insisted by RBI. Mobile banking guidelines issued by the RBI being modified on December 2011, removed the daily cap earlier set for fund transfer for both personal remittance and for purchase of goods and services. Fund transfer of small value transactions up to Rs. 5000/- can be done without end-to-end encryption. Banks have permitted in money transfer facility up to Rs.5000 from a bank
account to beneficiaries not having bank accounts with cash payout facility at an ATM or banking correspondent.

1.3.3.1 Inter-bank Mobile Payment Service (IMPS)
Inter-bank Mobile Payment Service (IMPS) was launched in November 2010 under the National Payment Corporation of India (NPCI). IMPS are a unique, 24X7 inter-bank electronic fund transfer system through mobile phone systems. This service allows money transfer instantaneous, and both the remitter and the beneficiary receive SMS confirmation from their respective banks immediately after the transaction. The operational guidelines set up by the NPCI are as follows:

- Customers are required to register with the participating banks and obtain a unique seven-digit MMID (Mobile Money Transfer Identified Number)
- There is no requirement of Internet connectivity instead the customer needs to download the software and activate the same (one-time).
- The service can be operated via SMS or the application installed in the mobile handset.

With the growing acceptance of IMPS, RBI waived of the transaction limit set up earlier for mobile banking, allowed the banks to fix their own transaction limit based on the risk perceptions with the approval of their respective Boards.

1.4 Internet Banking and Mobile Banking: Current Trends
Current trends of banking channels preferred by customers indicate that both branch and internet banking remains popular all over the world (Capgemini, 2012). Internet banking customers expect to carry out all types of transactions and have a holistic view of account information. The market for mobile phones and handheld devices is exploding given the low costs, increasing computational power and ease of use. The current estimates of mobile device connections are around 4 billion worldwide. In India, mobile penetration is very high and growing rapidly.

It is easier to offer banking services through mobile devices rather than setting up new branches in rural India due to the soaring penetration of mobile phones. The usage rate of mobile banking is increasing leaps and bounds in both developed and developing countries.
(Khraim et al, 2011; Dasgupta et al, 2011). Based on the forecast of Juniper Research, worldwide, the number of consumers using mobile banking will exceed 860 million globally by 2016, which was 300 million in 2011 more than double. Mobile banking is gaining popular all over the world. In North America and Western Europe, mobile will be used to do banking and contactless payments joint with near-field communication (NFC). In Asia Pacific and the Middle East/Africa, it will be used to target unbanked customers and person-to-person banking (Capegemini, 2012).

1.5 Need for the Study
Technology has made a paradigm shift in the banking operations all over the world. The major challenges which today’s banking sector faces are exploiting the potential for profiting on the investments made in technology. The success of the new technology-enabled delivery channel like mobile banking solely depends upon the acceptance of customers. Many researchers identified that consumer adoption plays a major role in the acceptance and success of new technology or service (Davis et al, 1989; Venkatesh & Davis, 2000; Venkatesh et al, 2003; Wixom & Todd, 2005).

However, compared to the advantages of mobile banking only a few percentages of customers are actually using these services. Currently, the adoption of mobile banking is in a nascent stage, expected to increase or surpass the rate of adoption of internet banking. Many studies have been conducted in the developed and developing countries to understand the adoption of mobile banking (Kleijnen et al., 2004; Riivari, 2005; Suoranta & Mattila, 2004; Laforet & Li, 2005; Luarn & Lin, 2005; Laukkanen & Cruz, 2009; Lee & Chung, 2009; Wessels & Drennan, 2010). Although, there are many advantages of mobile banking, when compared to developed countries like USA, UK, Finland, the adoption of mobile banking in India is at its infancy rate. Even though, the RBI has removed the cap of daily transaction limit per day per customer, apart from SBI and ICICI Bank, other banks have to go still further based upon the volume and value of transaction of mobile banking (IDRBT, 2011).

Compare to the 961 million mobile subscribers, a little over 22.51 million bank customers have registered for mobile banking services in India (RBI, 2014). These details point out that technological advancements and availability of services do not automatically lead to the
acceptance of mobile banking by the customer. There are very limited research studies related to the adoption of mobile banking in India, which indicates the need for further research for understanding the motivators and inhibitors of mobile banking adoption (Dasgupta et al, 2011; Ketkar et al, 2012; Rejikumar & Ravindran, 2012; Samudra & Phadtare, 2012).

The service-delivery process for internet banking is very different from the traditional brick-mortar service of banking operation where the customer is interacting with the bank's website (Daniel, 1999; Jayawardhena & Foley, 2000; Pikkarainen et al, 2006.). The usage of internet banking is increasing steadily worldwide. It is important to understand the quality perceptions of internet banking users. Measuring the service quality of internet banking services and customer satisfaction is crucial for banks to stay competitive in the market place, retain their customers, and increase the profitability. Customers do not prefer to do online transactions due to the various reasons such as security concerns (43%), preference for face-to-face transactions (39%), lack of knowledge about transferring online (22%), lack of user friendliness (10%), and lack of facility in the current bank (2%)(IMAI,2006). Taking these details into consideration, measuring the quality attributes of internet banking and customer satisfaction seems to be very appropriate and relevant in the Indian banking context. In India, internet banking is used by 7 percent of the account holders in 2010-11 according to a report by global management consultancy McKinsey & Company (2011). Considering the low percentage of adoption of internet banking, it is necessary to measure the satisfaction level of the customers, and to verify that do they have any intention to switch over to other alternative channels like mobile banking. The awareness of how customers perceive service quality is essential, to understand what customers’ value in an online transaction for attracting new customers and retaining the existing customers. Apart from this, there is a need to understand the factors that influence the adoption of mobile banking among the current internet banking customers, due to their preference of using multiple channels rather than a single channel to obtain banking services (Howcroft et al, 2002; Chung & Kwon, 2009; Riquelme & Rios, 2010).

1.6 Benefits of the Study

The study has a number of contributions to both theory and management practice. The outcomes from this study can be used by bank managers to identify the tech-savvy customers
and their major characteristics. The understanding of various adoption factors and barriers will enable them to devise strategies to promote the mobile banking adoption in India. The demographic characteristics identified by this study can be used to devise strategies effectively to promote the adoption to various identified segments. The study provides guidelines to banks and other financial institutions to know the key drivers influencing mobile banking usage intention. For this, the study attempted to find the quality of internet banking services, which is gaining popularity in India. The quality attributes and measuring their satisfaction will help the banks to improve the service quality of internet banking services, which will increase the satisfaction level and continued use of this service. The quality attributes identified from this study can be used to improve the internet banking products of their banks.

This study attempted to analyze the factors that influence the intention of using mobile banking in an integrated manner in terms of the technical characteristics of mobile banking and user characteristics. The major theoretical contribution is the development of an adoption model for mobile banking in Indian Banking context. The study identified the adoption factors and inhibitors of mobile banking. The study also identified the antecedents of the service quality of internet banking.

1.7 Statement of Problem

The success of a new, technology-enabled delivery channel like mobile banking solely depends on customers’ acceptance. Despite the advantages of mobile banking, only a small percentage of customers actually use these services. Currently, the adoption of mobile banking is in a nascent stage, though it is expected to surpass the rate of adoption of online banking. When compared with developed countries like the United States, the UK, or Finland, Indian adoption of mobile banking is in its infancy. Although the RBI has removed its daily per customer transaction limit, apart from SBI and ICCI Bank, other banks still have further to go to capture the volume and value mobile banking transactions. Very few research studies concern the adoption of mobile banking in India, which indicates the need for further research in order to understand the motivators and inhibitors of mobile-banking adoption. The purpose of this study is to understand the factors contributing to the adoption of mobile banking in India.
The use of online banking is way ahead in urban areas in India compared to mobile banking, which is still in a very nascent stage. Increased use of online banking will enhance customers’ expectations and perceptions about the quality of this new delivery channel. Thus, understanding the service quality of online banking and measuring customer satisfaction is an important area of research. There is a need to understand the factors that influence the adoption of mobile banking by current online banking customers, who prefer to use multiple channels to obtain banking services.

1.8 Variables of the Study

The definitions of the main variables used in the study, which is identified from the literature review are listed in TABLE 1.1.

**TABLE 1.1: OPERATIONAL DEFINITION OF KEY VARIABLES IN THE PRESENT STUDY**

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Definition</th>
</tr>
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<tbody>
<tr>
<td>Behavioral Intention</td>
<td>“The strength of one’s intention to perform a specified behavior” (Fishbein &amp; Ajzen, 1975).</td>
</tr>
<tr>
<td>E-Service Quality</td>
<td>Consumers overall assessment and judgment of the excellence and quality of e-services in the virtual environment (Santos, 2003).</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>“The contentment of the customer with respect to his or her prior purchasing experience with a given electronic commerce firm” (Anderson &amp; Srinivasan, 2003).</td>
</tr>
<tr>
<td>Perceived ease of use (PEOU)</td>
<td>“The degree to which a person believes that using a particular system would be free of effort” (Davis, 1989).</td>
</tr>
<tr>
<td>Social Influence (SI)</td>
<td>An individual's perception of other people's opinions on if he/she should perform a particular behavior (Venkatesh et al, 2003).</td>
</tr>
<tr>
<td>Computer Self-efficacy</td>
<td>“Conviction that one can successfully execute the behavior required to produce the outcomes” (Bandura, 1977). Computer self-efficacy (CSE) defined as one’s perception of his/her ability to use a computer (Compeau &amp; Higgins, 1995).</td>
</tr>
</tbody>
</table>
Perceived Financial Cost | The extent to which a person believes that using mobile banking would be costlier (Luarn & Lin, 2005).
---|---
Security | “A threat which creates circumstances, condition, or event with the potential to cause economic hardship to data or network resources in the form of destruction, disclosure, modification of data, denial of service and/or fraud, waste, and abuse” (Kalakota & Whinston, 1997).
Trust | Trust in mobile banking as “the belief that allows individuals to willingly become vulnerable to the bank, the telecommunication provider, and the mobile technology after having the bank’s and the telecommunication provider’s characteristic embedded in the technology artifacts” (Masrek et al., 2012).
Access | “It empowers customers to utilize the service through a number of points of entry and the ability to carry out a wide range of transactions” (Jayawardhena, 2004).
Web Interface | “The maintenance of a web site that enhances the overall browsing experience of customers” (Jayawardhena, 2004).
Attention | Referred as “provision of an accurate, personalized service to customers” (Jayawardhena, 2004).
Credibility | Referred as “delivering the promised service to customers at all times” (Jayawardhena, 2004).

1.9 Conceptual and Operational Definition of the Terms

The key terms used in the research study is presented in TABLE 1.2.

**TABLE 1.2: KEY TERMS USED IN THE PRESENT STUDY**

<table>
<thead>
<tr>
<th>Key Terms</th>
<th>Description</th>
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<tbody>
<tr>
<td>Mobile Banking</td>
<td>Mobile banking is a channel in which a customer conducts banking operations through a mobile phone or a handheld device using wireless technology.</td>
</tr>
<tr>
<td>Internet Banking</td>
<td>Internet Banking (e-banking or online banking) uses the Internet as a delivery channel to offer banking products to its customers.</td>
</tr>
</tbody>
</table>
Consumer Adoption of Technology

It is a process of adopting a new technology/innovation by a consumer which is influenced by various consumer characteristics such as personality traits, demographic/socioeconomic factors, new product characteristics, and social influence.

E-Service

Services delivered electronically via information and communication technologies where the customer interacts solely with an appropriate user interface.

E-Service Quality

Consumers’ overall assessment and judgment of the excellence and quality of e-services in the virtual environment.

Customer Satisfaction

It covers the entire customer experience cycle from information retrieval through purchase, payment, receipt, and service.

Behavioral Intention

An individual’s subject probability of performing a specified behavior which is the major determinant of actual usage behavior.

1.10 Objectives of the Study

The purpose of the study is to understand the impact of consumer adoption factors on mobile banking in India. The primary objectives of this study are the following,

- **Identify the various factors which influence the adoption of mobile banking.** The success of the fairly new technology-enabled delivery channel like mobile banking solely depends on the acceptance of customers. Many researchers identified that consumer adoption plays a major role in the acceptance and success of new technology or service (Davis et al, 1989; Venkatesh & Davis, 2000; Venkatesh et al, 2003; Wixom & Todd, 2005).

- **Develop and empirically validate a model to explain the behavioral intention to use mobile banking in the Indian banking context.** There were very limited research studies related to the adoption of mobile banking in India. This indicates the need for further research for understanding the motivators and inhibitors of mobile banking adoption (Dasgupta et al, 2011; Ketkar et al, 2012; Rejikumar & Ravindran, 2012; Samudra & Phadtare, 2012).

- **To study the influence of demographic factors such as gender and age on the adoption of mobile banking services by Indian bank customers.** Previous studies
in mobile banking empirically proved that gender difference exists in which male were more willing to use mobile banking than female (Ainin et al, 2007; Koenig-Lewis et al, 2010). Existing studies in mobile banking identified that age had a major influence on the usage of mobile banking (Suoranta & Matilla, 2004; Laukkanen & Pasanen, 2008; Koenig-Lewis et al, 2010).

- To study the quality perceptions towards Internet banking and satisfaction level of Internet banking customers. It is important to understand the quality perceptions of Internet banking users. Measuring the service quality of Internet banking services and customer satisfaction is crucial for banks to stay competitive in the market place, retain their customers, and increase the profitability.

- To examine the perception of current online banking customers’ in India towards the adoption of mobile banking Previous studies on Internet banking user's perception towards mobile banking showed mixed results. Some researchers argued that current Internet banking users would be likely to stick with Internet banking, and others pointed out that Internet banking users were more probable to adopt mobile banking (Suoranta & Matilla, 2004; Koenig-Lewis et al, 2010).

1.11 Hypotheses of the Study

The hypotheses of the present study were formulated based on the theoretical framework discussed in Chapter 3. The null hypotheses H1_0 to H6_0 was used to measure the influence of adoption factors such as perceived ease of use, social influence, computer self-efficacy, perceived financial cost, security, and trust on behavioral intention to use mobile banking. The null hypotheses H7_0 and H8_0 were used to measure the influence demographic factors such as gender and age on intention to use mobile banking. The null hypothesis H9_0 was used to test the Internet banking user satisfaction and their intention to use mobile banking.

Hypothesis H1

The hypothesis H1 proposes if the mobile banking service is easy to learn and use, it will positively influence the customer to use this service. It is necessary that mobile banking technology should be simple and easy to understand by the customer. Through this hypothesis, this study investigates the impact of perceived ease of use on intention to use mobile banking.
H1₀: Perceived ease of use (PEOU) has no positive effect on the behavioral intention to use mobile banking.
H1: Perceived ease of use (PEOU) has a positive effect on the behavioral intention to use mobile banking.

Hypothesis H2
The hypothesis H2 proposes that social influence has a positive effect on mobile banking. An individual's decision and behaviors are not made solely by him/her, but influenced by the opinions, recommendations and suggestions of other important people (friends, colleagues’ family and society). Through this hypothesis, this study investigates whether the social influence has any effect on customers’ decision to use mobile banking.

H2₀: Social influence (SI) has no positive effect on the behavioral intention to use mobile banking.
H2: Social influence (SI) has a positive effect on the behavioral intention to use mobile banking.

Hypothesis H3
The hypothesis H3 proposes that computer self-efficacy (CSE) has a positive effect on mobile banking. In the context of mobile banking, if the customer believes that they have the required knowledge, skill or ability to operate mobile banking, then there is a higher chance to attempt the service. Through this hypothesis, the study investigates whether a customer has the self-confidence to use mobile banking. The sub-hypothesis H3a investigates the causal link between perceived ease of use and computer self-efficacy.

H3₀: Computer self-efficacy has no positive effect on behavioral intention to use mobile banking.
H3: Computer self-efficacy has a positive effect on behavioral intention to use mobile banking.

H3a₀: Computer self-efficacy has no positive effect on perceived ease of use of mobile banking.
H3a: Computer self-efficacy has a positive effect on perceived ease of use of mobile banking.
Hypothesis H4
The hypothesis H4 proposes that the perceived financial cost (PFC) has a positive relation with intention to use mobile banking. Through this hypothesis, the study investigates the lower financial cost which might positively influence their intentions to use mobile banking.

\( H_{40} \): Perceived financial cost has no significant effect on behavioral intention to use mobile banking.

\( H_4 \): Perceived financial cost has a significant effect on behavioral intention to use mobile banking.

Hypothesis H5
The hypothesis H5 proposes that security mechanism of mobile banking has a positive effect on intention to use. Security is an important element which is to be considered while carrying out mobile banking transactions. Through this hypothesis, the study investigates the impact of security challenges on mobile banking adoption.

\( H_{50} \): Security will have no positive effect on behavioral intention to use mobile banking.

\( H_5 \): Security will have a positive effect on behavioral intention to use mobile banking.

Hypothesis H6
The hypothesis H6 proposes that trust will have a significant role in the adoption of mobile banking. Trust plays a major role in the adoption of mobile banking since it helps the customers overcome the fears of security/privacy risks and fraudulent activities, which take place in the mobile environment. Through this hypothesis, the study investigates the influence of trust on behavioral intention to use mobile banking. Trust is enhanced by the security mechanisms provided in the mobile banking services. Customers will be more likely to trust the new service if adequate security is provided to their transaction data. The sub-hypothesis \( H_{6a} \) investigates the causal link between trust and security.

\( H_{60} \): Trust will have no significant effect on behavioral intention to use mobile banking.

\( H_6 \): Trust will have a significant effect on behavioral intention to use mobile banking.

\( H_{6a0} \): Security has no positive effect on customer trust to use mobile banking.

\( H_{6a} \): Security has a positive effect on customer trust to use mobile banking.
Hypothesis H7
The hypothesis H7 proposes that adoption of mobile banking significantly differs among the customers of different gender. Through this hypothesis, the study identifies whether to differentiate the perception of mobile banking adoption.

H7₀: There is no significant difference exist between gender in behavioral intention to use mobile banking.

H7: There is significant difference exist between gender in behavioral intention to use mobile banking.

Hypothesis H8
The hypothesis H8 proposes that age is an important predictor of mobile banking adoption. Through this hypothesis, the study investigates whether a significant difference exists between diverse age categories while adopting mobile banking.

H8₀: There is no significant difference across different age categories in behavioral intention to use mobile banking.

H8: There is a significant difference across different age categories in behavioral intention to use mobile banking.

Hypothesis H9
The hypothesis H9 proposes that user satisfaction of Internet banking positively influences the behavioral intention to use mobile banking. Existing Internet banking customers who are satisfied by the Internet banking services will be likely to stick to the existing bank and exhibit positive behavioral intentions towards using mobile banking services. User satisfaction of Internet banking depends on the service quality of Internet banking. The service quality of Internet banking comprises of dimension access, web interface, attention, and credibility. Through the hypothesis H9, the study investigates the relationship between user satisfaction and behavioral intention to use mobile banking. The sub-hypothesis H9a investigates the relationship between service quality and user satisfaction of Internet banking.

H9₀: The user satisfaction of Internet banking has no positive effect on intention to use mobile banking.

H9: The user satisfaction of Internet banking has a positive effect on intention to use mobile banking.
H9a₀: The e-service quality of internet banking is not positively related to user satisfaction of internet banking.

H9a: The e-service quality of internet banking is positively related to user satisfaction of internet banking.

1.12 Limitations of the Study

This study, however, has some inherent limitations. It did not study the influence of the moderating factors such as, the availability of alternative channels, technology readiness, and demographic factors such as gender and age in the theoretical model. The study had not used other additional independent variables, which can predict the usage more accurately. This study focused only two kinds of technology enabled banking services, which were mobile and Internet banking. Another limitation is that, it had not focused on the relationship between intention to use these services and actual use of these services. Another limitation related to Internet banking was that, there is a possibility of not capturing all e-service quality dimensions, to measure the service quality of Internet banking. Another limitation of this study was that, the sampling method used was convenience sampling. Given that, a convenience sampling method is not considered an effective method of representation of the population, the results may be interpreted cautiously, especially when generalized. The method used for data collection was a survey method using a questionnaire. Researchers have limitations with this kind of data collection, because of low response rate, complex and confusing questions and surveys that might be too long (Cooper & Schindler, 2003). Hence it is hard to decide whether the theoretical model proposed is applicable in other services such as Internet banking.
CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

Internet banking and mobile banking are technological creations involving both an intangible service and an innovative medium of services employing high technology. These service channels are technology-based banking services available in favor of the consumers. From this perceptive, it is important to review two areas of literature, the technology adoption literature, and the e-service quality literature. This chapter begins with the details of the consumer adoption process, mobile banking, technology adoption models, preceding studies on mobile banking adoption, Internet banking, e-service quality, and previous studies on Internet banking e-service quality.

2.2 Consumer Adoption

The term consumer behavior is “the behavior that consumers display in searching for, purchasing, using, evaluating and disposing of products and services that they anticipate will satisfy their needs” (Schiffman & Kanuk, 2004). Two kinds of consuming entities described in consumer behavior: the personal consumer and the organizational consumer. The personal consumers or end users or ultimate consumers buy goods and services for individual consumption, for the use of the household, or as a gift for a friend. Organizational consumers buy products, equipments, and services to run their organization. The focus of this study is on the individual consumer or end user whose perception towards using mobile banking. Consumer acceptances of new products and services are drawn from the area of research known as the diffusion of innovation. The diffusion of innovation broadly consists of two processes: the diffusion process and the adoption process. The diffusion is a macro process concerned with the spread of an innovation from its source to the end user, whereas adoption is a micro process that focuses on the different stages through which a consumer passes when deciding to accept or reject a new product or service. The adoption process involves many stages through which an individual consumer arriving at a conclusion to accept or reject a new product or service. The five major adoption stages are described as (1) awareness, (2) interest, (3) evaluation, (4) trial, and (5) adoption (or rejection) (Schiffman & Kanuk, 2004). There exist many enhancements to the traditional adoption process to suit the need for the different kind of products or services.
2.3 Convergence of Technology and Services

The growth of the service sector is tremendous in today’s competitive business environment, and the number and diversity of service providers increase rapidly. Many definitions of service are present in the service marketing literature. Gronroos (1990) defined service as “a process consisting of a series of more or less intangible activities that normally, but not necessarily always, take place in the interaction between the customer and service employees and/or physical resources or goods and/or systems of the service provider, which are provided as solutions to customers.” According to Zeithmal and Bitner (1996), service is “deeds, processes, and performances”. The role of the customer is more prominent in the service where the customers participate in the production of the service. The significance of technology in a service delivery process attained much attention in the literature (Dabholkar et al, 1996; Bitner et al, 2000; Meuter et al, 2000; Parasuraman & Grewal, 2000). Today’s banking sector is largely driven by technology innovations and being characterized as a high-technology service sector. The advent of technology had replaced the traditional marketplace transactions to market-space transactions defined as “a virtual realm where products and services exist as digital information and can be delivered through information-based channels” (Rayport & Sviokla, 1995 cited in Bitner et al, 2000). The use of technology allows reducing cost, reducing employee/customer interactions, and eliminating uncertainties. A combination of technologies as computer, telecommunications, the Internet, and mobile phones can be used for a variety of service-delivery purposes, including customer service functions, transactions, and learning or information seeking (Meuter et al, 2000; Bitner et al, 2000; Bitner, 2001). The introduction of self-service technologies (SST) enables customers to produce a service independent of direct service employee involvement (Meuter et al, 2000; Dabholkar & Bagozzi, 2002). Examples of SSTs in the banking sector include ATM, Internet Banking, and Mobile Banking.

2.4 Mobile Banking

Mobile banking is a technological innovation, evolving much faster than Internet banking enables customers to do banking transactions via mobile or handheld devices operating in a wireless environment (Herzberg, 2003; Laukkanen, 2007a; Kleijnen et al, 2004; Laukkanen, 2007b). Mobile banking is considered as the most value-added and important mobile commerce applications currently available (Lee et al., 2003; Varshney & Veter, 2002). Laukkanen and Kiviniemi (2010) defined mobile banking as “an interaction in which a
customer is connected to a bank via a mobile device such as cell phone, smart phone, or personal digital assistant (PDA)”. Mobile banking services allow customers to check account balances, transfer funds between accounts and order for electronic bill payments. Mobile banking has vast market potential because of its always-on functionality and the option to bank virtually any time and anywhere. The mobile phone, especially supports the provision of time-critical information, for example, for trading in stocks or if of the acute need for money transfer or request of account balance. The key players for mobile financial applications include banks and other financial institutions such as credit-card companies, mobile operators and retailers (Mallat et al, 2004). The customer considers banks as outstanding trustful service providers compared with other financial institutions (Mallat & Tuunainen, 2008). In mobile banking, the customers interact with the bank with the help of a mobile device.

2.5 Framework for understanding Mobile Banking Adoption

Technology adoption is one of the major areas of focus in IS (Information Systems) researchers. A variety of theoretical perspectives have been advanced to provide an understanding of the determinants of adoption. Individuals are the ultimate users and consumers of any information systems. The individual acceptance of IS had been studied from many theoretical viewpoints such as the act of adopting the technology or the relationship between individual acceptance and significant individual-level outcomes. Many theoretical models are derived from social psychology, such as the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), and the Theory of Planned Behavior (TPB) (Ajzen, 1991) to understand the behavioral intention to use new information systems and its usage.

2.5.1 Theory of Reasoned Action (TRA)

Most of the information systems (IS) usage and adoption relied on models derived from the Theory of Reasoned Action (TRA) and its extensions (Fishbein & Ajzen, 1975). TRA is derived from social psychology, one of the most fundamental and influential theories about human behavior. This theory specifies that human behavior is preceded by intentions, which are formed based on the individual's attitude toward the behavior and on perceived subjective norms. TRA has been widely used and empirically tested within the context of information system acceptance (Davis et al, 1989; Mathieson, 1991; Taylor & Todd, 1995).
2.5.2 Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) (Ajzen, 1991) is derived from the Theory of Reasoned Action (TRA) by supplementing an additional construct called perceived behavioral control. PBC describes the resources and opportunities required to form a behavior. In TPB, perceived behavioral control is theorized as an additional determinant of intention and behavior. According to TPB (Ajzen, 1991), an individual’s behavior can be explained by behavioral intentions, that are jointly influenced by attitude, subjective norms and perceived behavioral control. TPB has proven to be a richer model provides deeper insights about the factors which influence an individual’s intention and behavior (Mathieson, 1991; Pavlou & Fygenson, 2006).

2.5.3 Innovation Diffusion Theory (IDT)

Innovation Diffusion Theory (Rogers, 1995) is derived from sociology and used to study the innovation characteristics. An innovation is “an idea, practice or object that is perceived as new by an individual or other unit of adoption” (Rogers, 1995). The core idea of innovation diffusion is the process in which innovation is communicated through certain channels, over time among the members of a social system. The diffusion rate is influenced by adopter characteristics, the social network they belong to, the communication process, the characteristics of the promoters and the innovation attributes. According to IDT, individuals react differently to a new idea, practice or an object due to their difference in innovation characteristics. The perceived characteristics of an innovation are the key determinants of the adoption outcomes. Rogers (1995) classified individuals into various adoption categories based on the innovation characteristics. The adopter categories are innovation adopters, early majority, late majority and laggards.

2.5.4 Technology Acceptance Model (TAM)

The TAM model (Davis, 1989) describes a consumer's willingness to use technology. The TAM model is derived from TRA (Fishbein & Ajzen, 1975). The TAM is tailor-made for IS context, and was designed to predict information technology acceptance and usage in the organization. TAM is an intention-based model which uses behavioral intention to predict usage. The TAM model consists of five constructs, which are perceived usefulness, perceived ease of use, attitude, intention to use and actual use. It uses to predict antecedents of system
usage through two fundamental beliefs: the perceived ease of use and the perceived usefulness. To improve the explanatory power of this model, numerous researchers have extended the original TAM by adding additional constructs from related models, by examining external variables, which were antecedents, to perceived usefulness and perceived ease of use or moderate the influence of these primary beliefs. (Taylor & Todd, 1995; Mathieson et al, 2001; Gefen & Straub, 1997; Venkatesh, 2000; Agarwal & Prasad, 1997; Karahana et al, 1999; Venkatesh & Morris, 2000).

2.5.5 Decomposed Theory of Planned Behavior (DTPB)
The Decomposed Theory of Planned Behavior (Taylor & Todd, 1995) was developed by modifying the TPB and integrating additional constructs within it. The attitudinal, normative and control beliefs are decomposed into multidimensional belief constructs. DTPB specifies that based on the Innovation Diffusion Theory (IDT) (Rogers, 1995), the attitudinal belief has three salient characteristics of an innovation, which are relative advantage, complexity and compatibility that influence the adoption. The normative belief structure is further decomposed into relevant referent groups. The construct called facilitating condition provides two dimensions to control beliefs: resource facilitating conditions and technology facilitating conditions.

2.5.6 Unified Theory of Acceptance and Use of Technology (UTAUT)
Venkatesh et al (2003) integrated elements from eight prominent models of IS and developed a model called Unified Theory of Acceptance and Use of Technology (UTAUT). The eight models are the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), Theory of Planned Behavior (TPB) (Ajzen, 1991), Technology Acceptance Model (TAM) (Davis, 1989), Decomposed Theory of Planned Behavior (DTPB) (Taylor & Todd, 1995), Model of PC Utilization (MPCU) (Thompson et al, 1991), Motivational Model (MM) (Davis et al, 1992), Innovation Diffusion Theory (IDT) (Rogers, 1995) and Social cognitive Theory (SCT) (Bandura, 1986). The four core constructs that are determinants of intention and usage are performance expectancy, effort expectancy, social influence and facilitating conditions. The four moderators used in this model were age, experience, gender, voluntariness of use.
2.6 Previous adoption studies of Mobile Banking

Based on the literature review, mobile banking studies and the various theories adapted were summarized in Table 2.1.

TABLE 2.1: SUMMARY OF MOBILE BANKING ADOPTION STUDIES

<table>
<thead>
<tr>
<th>Authors</th>
<th>Theories adapted</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lee et al (2003)</td>
<td>IDT</td>
<td>UK</td>
</tr>
<tr>
<td>Suronta and Matila (2004)</td>
<td>Bass model of diffusion</td>
<td>Finland</td>
</tr>
<tr>
<td>Brown and Molla (2005)</td>
<td>TAM and Perceived characteristics of innovation</td>
<td>South Africa</td>
</tr>
<tr>
<td>Laforet and Li (2005)</td>
<td>Attitude, behavior, and motivation</td>
<td>China</td>
</tr>
<tr>
<td>Leon and Lin (2005)</td>
<td>Extended TAM</td>
<td>Taiwan</td>
</tr>
<tr>
<td>Laukkanen (2007a)</td>
<td>Means-end approach</td>
<td>Finland</td>
</tr>
<tr>
<td>Lee et al (2007)</td>
<td>Extended TAM model</td>
<td>South Korea</td>
</tr>
<tr>
<td>Laukkanen and Pasanen (2008)</td>
<td>Diffusion of innovation model</td>
<td>Finland</td>
</tr>
<tr>
<td>Chung and Kwon (2009)</td>
<td>TAM with moderator variables mobile experience and technical support</td>
<td>Korea</td>
</tr>
<tr>
<td>Lee and Chung (2009)</td>
<td>IS success model</td>
<td>Korea</td>
</tr>
<tr>
<td>Cruz et al (2010)</td>
<td>TAM and Diffusion of Innovation</td>
<td>Brazil</td>
</tr>
<tr>
<td>Wessel and Drennan (2010)</td>
<td>SST Attitude/Intention to Use Model</td>
<td>Australia</td>
</tr>
<tr>
<td>Dasgupta et al (2011)</td>
<td>Extended TAM model</td>
<td>India</td>
</tr>
<tr>
<td>Ketkar et al (2012)</td>
<td>Interpretive structural modeling</td>
<td>India</td>
</tr>
<tr>
<td>Rejikumar and Ravindran (2012)</td>
<td>Extended TAM model</td>
<td>India</td>
</tr>
<tr>
<td>Singh and Srivastava (2014)</td>
<td>Extended TAM model</td>
<td>India</td>
</tr>
</tbody>
</table>
2.7 Internet Banking

Internet banking has experienced tremendous growth and playing an important role in the banking sector, and therefore, has gained much attention in the academic literature (Daniel, 1999; Jayawardhena & Foley, 2000; Ibrahim et al, 2006; Pikkarainen et al, 2006; Shamdasani et al, 2008; Wong et al, 2008). Internet banking services allow customers to carry out a wide range of banking operations at their convenient time and location. Daniel (1999) defined electronic banking as “the provision of information and/or services by banks to its customers via computer, telephone or television”. Using internet banking, customers are allowed to conduct financial transactions electronically via the bank’s website.

2.8 E-Service Quality

Electronic service quality has a key role to attract and maintain customers in the B2C e-commerce environment. Zeithmal et al (2002) defined e-service quality as “the extent to which a website facilitates efficient and effective shopping, purchasing and delivery of product and services”. Fassnacht & Koese (2006) defined e-service quality as “the degree to which an electronic service is able to effectively and efficiently fulfill relevant customer needs”. Gummerus et al (2004) defined e-service quality as “the consumer’s evaluation of process and outcome quality of the interaction with a service provider’s electronic channels”.

2.9 Previous e-service quality studies of Internet Banking

Based on the literature review, internet banking service quality studies and the various dimensions proposed were summarized in Table 2.2.

<table>
<thead>
<tr>
<th>Studies</th>
<th>Dimensions Identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors</td>
<td>Key Factors</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Han and Baek (2004)</td>
<td>Tangibles, reliability, responsiveness and empathy.</td>
</tr>
<tr>
<td>Bauer et al (2005)</td>
<td>Security and trust, basic services quality, cross-buying services quality, added value, transaction support and responsiveness.</td>
</tr>
<tr>
<td>Al-Hawari et al (2005)</td>
<td>Availability, easy to use, secure, error free transactions, attractiveness, interface accuracy and information updating.</td>
</tr>
<tr>
<td>Sohn and Tadisina (2009)</td>
<td>Trust, customized communications, ease of use, website contents and functionality, reliability and speed of delivery.</td>
</tr>
<tr>
<td>Herington and Weaven (2009)</td>
<td>Personal needs, site organization, user-friendliness and efficiency.</td>
</tr>
<tr>
<td>Ho and Lin (2010)</td>
<td>Customer service, web design, assurance, preferential treatment, and information provision.</td>
</tr>
<tr>
<td>Al-Tarawneh (2012)</td>
<td>Reliability, responsiveness, ease of use, personalization, security and web site design.</td>
</tr>
</tbody>
</table>
2.10 Gap Analysis

Mobile banking has recently been introduced in India. The extensive review of existing literature shows diverse antecedents for the construct ‘intention to use mobile banking’. In view of the mixed results of prior studies, an inconclusive status regarding the mobile banking adoption studies found in the literature. A great number of mobile banking acceptances’ studies were done in developed countries. However, a few studies were conducted in India and that too was in certain cities. These findings were insufficient to provide significant insight into predicting and explaining what factors influence the customers to use mobile banking. Past empirical studies of mobile banking adapted different theories to study the adoption intentions, which disclosed diverse results, make it difficult for bankers and researchers to identify the drivers/inhibitors of mobile banking adoption. Mobile banking is an emerging technology in India, therefore, it is important to study mobile banking adoption, which will enhance the diffusion of mobile banking. This shows a pressing need for developing a model which demonstrates the factors leading to the mobile banking adoption.

The existing literature revealed that lack of empirical studies, which measured the present Internet banking customers’ perceptions towards mobile banking. It was also evident that limited studies have been conducted in India about the current Internet banking service quality and the degree of satisfaction in the process. It is important to measure the satisfaction level of existing Internet banking customers to understand their willingness to use mobile banking. The literature also identified that there was no consensus regarding the dimensions of Internet banking service quality.
CHAPTER 3
THEORETICAL FRAMEWORK

3.1 Introduction

This chapter demonstrates the theoretical model developed for the current study based on the gaps identified from the literature review. Prior studies on mobile banking pointed out the need to develop a robust and integrated model that explains more variance and better predictive power to the behavior intention to use mobile banking (Laurn & Lin, 2005; Wessel & Drennan, 2010; Dasgupta et al, 2011). Mobile banking is a new technology channel to the consumers. It is important to understand their perception towards this technology, by studying the intention towards using mobile banking. The study proposes to integrate the best-known elements of technology adoption models, to predict the intention to use mobile banking.

During this research study, mobile banking usage was at a nascent stage, whereas Internet banking was hitherto established as an electronic channel. Many studies were earlier identified that, attracting and retaining customers was largely depending on the quality of service delivered, which leads to the measurement of service quality (Jayawardhana, 2004; Siu & Mou, 2005; Herington & Weaven, 2009). For this purpose, the study identified the service quality attributes and measured the user satisfaction of Internet banking. The study also determined the current Internet banking customer’s intention to use mobile banking. Research constructs formulated for the present study is discussed below.

3.2 Factors affecting Mobile Banking Adoption

3.2.1 Dependent Variable- Behavioral Intention

Fishbein and Ajzen (1975) defined behavioral intention as “the strength of one’s intention to perform a specified behavior”. The theories such as TRA, TPB, and TAM explain that the behavioral intention has an influence on the actual behavior. If the intention is stronger to engage in a behavior, the more likely, it affects the actual behavior (Ajzen, 1991).

3.2.2 Independent Variables

The independent variables used for this study is discussed below in detail.
3.2.2.1 Perceived Ease of Use (PEOU)
Perceived ease of use is defined by Davis (1989) as “the degree to which a person believes that using a particular system would be free of effort”. Perceived ease of use is the extent to which a customer believes that a system is easy to learn or to use. This construct is similar to the complexity construct used in the IDT (Rogers, 1995).

3.2.2.2 Social Influence (SI)
The Theory of Reasoned Action (TRA) and its extensions (Fishbein & Ajzen, 1975) specifies that human behavior is preceded by intentions, which are formed based on the individual's attitude toward the behavior and on perceived subjective norms. Venkatesh et al (2003) represents subjective norms as social influence, which is derived from the theories such as TRA, TPB, DTPB, TAM2, C-TAM-TPB, MPCU, and image in IDT. Social influence refers to an individual's perception of other people's opinions on if he/ she should perform a particular behavior.

3.2.2.3 Computer Self-Efficacy (CSE)
The origin of self-efficacy is from the Social Cognitive Theory (SCT) (Bandura, 1986). Self-efficacy expectation is the “conviction that one can successfully execute the behavior required to produce the outcomes” (Bandura, 1977). “Expectations of self-efficacy determines whether coping behavior will be initiated; how much the effort will be expended, and how long it will be sustained in the face of obstacles and aversive experiences” (Bandura, 1977). Self-efficacy belief is extended in IS research, referred as computer self-efficacy (CSE) defined as one’s perception of his or her ability to use a computer (Compeau & Higgins, 1995).

3.2.2.4 Perceived Financial Cost
The cost incurred in conducting mobile banking is one of the reasons that could slow down the adoption of mobile banking. In mobile commerce context, the cost has been found a major barrier of adoption (Wu & Wang, 2005; Khalifa & Shen, 2008; Wang et al, 2006; Wei, et al, 2009). The cost incurred includes initial purchase price, equipment cost, subscription charges and transaction cost. Perceived financial cost is the extent to which a person believes that using mobile banking would be costlier (Luarn & Lin, 2005).
3.2.2.5 Security

Security is a serious concern when conducting financial transactions through electronic channels. It can be one of the major barriers to the adoption of mobile banking, for personal or monetary information can be exposed and used for fraudulent activities. Kalakota and Whinston (1997) defined security as “a threat which creates circumstances, condition, or event with the potential to cause economic hardship to data or network resources in the form of destruction, disclosure, modification of data, denial of service and/or fraud, waste, and abuse”.

3.2.2.6 Trust

Trust is a multidisciplinary construct is defined in many disciplines ranging from business to psychology, and the perspectives are different in different disciplines (Doney & Cannon, 1997; Jarvenpaa et al, 2000; Gefen et al, 2003; Pavlou, 2003). Trust can be defined as the willingness to make one vulnerable to actions taken by the trusted party based on the feeling of confidence or assurance (Gefen, 2000). Mayer et al (1995) defined trust as “trustor’s intention to take a risk and proposed the trustor’s perception about a trustee’s characteristics”. Masrek et al (2012) defined trust in mobile banking as “the belief that allows individuals to willingly become vulnerable to the bank, the telecommunication provider, and the mobile technology after having the banks, and the telecommunication provider’s characteristic embedded in the technology artifact”.

3.3 Theoretical Model

Drawing from the existing body of literature, it identified six constructs, which posit to have an influence on intention to use mobile banking (Figure 3.1). The independent variables/factors which were used for this study include perceived ease of use, self-efficacy, social influence, perceived cost, trust, and security. The research model developed for the present study derived the constructs from the existing technology adoption models such as Technology Acceptance Model (TAM) (Davis, 1989), Decomposed Theory of Planned Behavior (DTPB) (Taylor & Todd, 1995), and Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al, 2003). The study added the constructs such as trust, security, and perceived financial cost, which were relevant to understand the mobile banking acceptance.
3.4 Internet Banking

3.4.1 E-service quality of Internet Banking

Service quality is conceptualized by Parasuraman et al (1988) as the difference between the customer expectations and perceptions of the service quality. Santos (2003) conceptualized e-service quality as “consumer's overall assessment and judgment of the excellence and quality of e-services in the virtual environment”. In this study, the e-service quality of Internet banking was measured using the dimensions, namely access, web interface, attention, and credibility of Jayawardhana (2004) scale, which was a modified version of original SERVQUAL (Parasuraman et al, 1988) scale. The dimension access as “it empowers customers to utilize the service through a number of points of entry and the ability to carry out a wide range of transactions”. The web interface is “maintenance of a website that enhances the overall browsing experience of customers”. Attention is “provision of an accurate, personalized service to customers”. Credibility refers as “delivering the promised service to customers at all times”.

3.4.2 Customer Satisfaction

Satisfaction according to Oliver (1997) perspective is “an ongoing evaluation of the surprise inherent in a product acquisition and/or consumption experience”. Anderson & Srinivasan (2003) defined e-satisfaction as “the contentment of the customer with respect to his or her prior purchasing experience with a given electronic-commerce firm”. In the IS research Delone and McLean (2003) defined user satisfaction as “it covers the entire customer experience cycle from information retrieval through purchase, payment, receipt, and service”.

3.4.3 Relationship with E-Service quality and Customer Satisfaction

Existing studies have found that there is a positive relation between service quality and satisfaction (Cronin & Taylor, 1992; Zeithaml et al, 2002; Collier & Bienstock, 2006; Cristobal et al, 2007; Carlson & O'Cass, 2010; Saunders & Petzer, 2010). Prior research has proven that customer perceptions of service quality and satisfaction positively influence behavior intention (Bitner, 1990; Zeithmal et al, 1996; Lee & Lin, 2005; Kuo et al, 2009; Kassim & Abdullah, 2010; Carlson & O'Cass, 2010). The positive or negative consumer perceptions of e-service quality of Internet banking led to satisfaction (or dissatisfaction) with the Internet banking services provided by the banks. Past studies of Internet banking empirically proved that the customers' overall satisfaction of Internet banking depends on the quality of Internet banking services provided to the customers (Han & Baek, 2004; Herington & Weaven, 2009; Luc et al, 2011).

3.4.4 Relationship with Customer Satisfaction and Behavioral Intention

According to the theory of reasoned action (TRA) proposed by Ajzen and Fishbein (1980) intention is considered to be the strongest predictor of behavior. Behavioral intention is a critical metric of the success of a new information system or the service it enables (Lee & Lin, 2005; Hu et al, 2009). Carlson & O'Cass (2010) suggests that the customer satisfaction of a service is strongly associated with positive behavioral intentions towards the same service provider. Existing studies found that satisfied customers are likely to re-purchase goods or services at the same firm and in the case of e-retailing or online shopping, it means revisiting the website, and recommending the site to others (Zeithmal et al, 1996; Collier & Bienstock, 2006; Cristobal et al, 2007). The satisfaction and usage link were empirically
validated with prior work on user behavior in the IS research (Wang, 2003; Lin & Wang, 2006; Wang, 2008).

In order to understand the consumer adoption of mobile banking in India, the study identified the factors which determined the intention to use mobile banking and proposed a theoretical model which captured the significant effects of all these factors on intention to use mobile banking.
CHAPTER 4
RESEARCH METHODOLOGY

4.1 Research Design
This study was conducted to understand the impact of various consumer adoption factors and
explore their relationships on intention to use mobile banking. The study used exploratory
research at the initial stage to formulate the research questions. The hypotheses were
formulated by comprehensive investigation of the literature, regarding the studies done in
mobile banking adoption. The next stage was a descriptive research followed by an
explanatory research which specified the relationship between variables used in the
theoretical model. The current study used a cross-sectional design which involved the
collection of information from the sample only once. The present study used the quantitative
data collection method by employing a structured questionnaire to collect responses from the
existing bank customers.

4.2 Pre-testing/Pilot Study
The questionnaire for the present study was pre-tested for measurability, context, and
respondents' perceptions of the topic of the study. Based on the feedback from respondents,
sequencing of the questionnaire was modified, ambiguous questions were deleted, and some
of the wording was changed as needed. A pilot study was conducted with a sample size of
128 respondents drawn from bank customers of various public sectors, private, and foreign
banks from Mumbai city. This was used to test the reliability and validity of the scales in the
study. Some items with lower factor loadings (<0.5) and cross loadings were deleted after the
pilot study.

4.3 Questionnaire and Scale Validation
The theoretical constructs used in this study, which was presented in Chapter 3, were
measured by applying the validated multi-item scales from prior research. The adapted scales
were reworded to fit the need for the current study. These scales had shown reliability and
validity in their respective studies from which it was adapted. Reliability and validity tests
were conducted to verify the suitability of the adapted scales used in the present study.
Cronbach Alpha was used to calculate the reliability of the constructs and only those items,
having a Cronbach Alpha value of 0.7 or more had been used in this study (Hair et al, 2005). Content validity had been ensured by adapting the constructs from validated prior studies based on well accepted theoretical models. The construct validity was established through exploratory factor analysis.

4.4 Final Questionnaire Design

The questionnaire consisted of three parts. Part one contains the title of the study and an explanation of the purpose of the questionnaire. It also included questions pertaining to Internet banking details and was to be answered by the users of Internet banking. Part two of the questionnaire included the description of mobile banking and the three forms in which the mobile banking services were offered to Indian banking customers. Part two of the questionnaire consisted of statements measuring the intention to adopt mobile banking. Part three consisted of seven questions about their demographic profile. The demographic information included gender, age, city/town/village, education, occupation, employment status, and income. The present study used a 7-point Likert scale from 1-7 where 1 = strongly disagree and 7 = strongly agree, for measuring all the theoretical constructs.

4.5 Sampling Procedure

The target population identified for this study was the bank customers who have operational bank accounts from various public, private, co-operative, and foreign banks in India. The population group of bank centers was classified as rural, semi-urban, urban, and metropolitan based upon the population of the centers as available in the 2001 census. The population less than 10000 are considered as rural, 10000 and above less than 1 lakh as semi-urban, 1 lakh and above less than 10 lakh as urban, and 10 lakh and above as metropolitan (RBI, 2010). The sample frame for this research study was the bank customers in India from various public, private, co-operative, and foreign banks.

This research study used convenience sampling, one of the non-probability sampling methods as the choice for selecting the respondents to collect the sample elements. Due to the unavailability of the total banking customer list, and it was expensive and time constraint to collect the response from every bank customer, this study used convenience sampling as a method to collect the responses from the survey questionnaire. The choice of a respondent was very specific such as a computer literate that uses the Internet banking facility or a
customer who has a mobile phone wishes to enable mobile banking facility. For this reason, getting such a customer profile was really difficult, which led to the sampling method as convenience sampling.

The present study used multivariate techniques such as exploratory factor analysis, regression analysis, and SEM analysis. The research study used 42 continuous variables and based on the calculation of 10 observations per variable suggested by Hair et al (2006), the minimum sample size required was 420 observations. Based on the guidelines of the sample size calculations (Krejcie & Morgan, 1970), the sample size required for the population of one lakh was 384 observations. The prior studies on mobile banking adoption (Luarn & Lin, 2005; Amin et al, 2008; Laukkanen & Pasanen, 2008; Cruz et al, 2010; Koenig-Lewis et al, 2010) used varied sample size ranging from smaller samples below 200 to larger samples above 1000 using various data collection methods. In conclusion, the sample size estimated for the current research study was 1000 bank customers.

The sampling elements or the target respondents were the individual bank customers from the public sector, private sector, co-operative, and foreign banks. The sample was collected from all over India, which consists of metro, urban, and rural population. A total of 1000 questionnaires were distributed using a combination of self-administered method and by sending e-mail through personal contacts. 875 filled questionnaires were collected from bank customers in which 855 were used at a response rate of 85.5%. The sample size was considered robust by Nunnally (1978) as cited by Hinkin (1998). Kaiser-Meyer-Olkin (KMO) and Bartlett’s test of sphericity test was used to measure sample adequacy. The KMO statistic value is in the range of 0 and 1. A value close to 1 indicates that patterns of correlation are relatively compact so factor analysis yielded distinct and reliable factors (Field, 2009). According to Field (2009), the KMO values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great, and values above 0.9 are superb. The KMO value obtained was 0.839 indicating great (Field, 2009), verified the sampling adequacy of the analysis.

4.6 Statistical Analysis Techniques
The primary data collected from the questionnaire were tabulated and analyzed using SPSS (Statistical Package for Social Sciences) version 12.0. The data obtained were analyzed and
interpreted using various statistical techniques employed in social science research. Descriptive statistics such as frequencies, percentages, mean values, and standard deviations were performed on the data for getting the overall structure of the sample. Reliability test was conducted using Cronbach Alpha to assess the internal consistency of the scales. The validity of the measures was conducted using factor analysis. To measure the relationships between the variables and test the theoretical model, appropriate univariate, bivariate, and multivariate analyses were used.

4.7 Ethical Consideration

Ethical aspects regarding the confidentiality, privacy, and consent of the data were seriously considered during the research process. During the data collection process, the respondents were briefed about the objectives of the study, and ensured data were not being used for any other purpose than the academic research objectives. To ensure the confidentiality and privacy of the respondents, only aggregate results were used. No respondent was forced to answer any question in which they were not comfortable. Respondents’ personal information such as name, address, contact information, and bank name was not used in this study.
CHAPTER 5
DATA ANALYSIS & FINDINGS OF THE RESEARCH

5.1 Introduction

To test the theoretical model presented in Chapter 3, the study dealt with respondents drawn from banking customers from various public, private, and foreign banks in India. The study used these responses to determine the impact of consumer adoption, trust, and security challenges on mobile banking.

This chapter conducted the reliability and validity of the scales, by administering factor analyses and Cronbach Alpha tests. This was followed by testing the hypotheses, by applying correlation, regression, t-test, and ANOVA tests. It also comprised of descriptive statistics reflecting the characteristics of the sample. Standard Statistical Package for Social Sciences (SPPSS) version 12.0 software was used for analyzing the data. Structural Equation Model (SEM) using AMOS 16.0 was employed to test the theoretical model.

5.2 Summary of Hypotheses Testing Results

The results of hypothesis testing by using bivariate and multivariate techniques had been described in this chapter. Table 5.1 provides the summary of the various tests used in this study for testing the hypotheses.

<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Null Hypotheses</th>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1&lt;sub&gt;0&lt;/sub&gt;</td>
<td>Perceived ease of use (PEOU) has no positive effect on the behavioral intention to use mobile banking.</td>
<td>SEM Beta=.066 p-value=.022</td>
<td>Null hypothesis rejected</td>
</tr>
<tr>
<td>H2&lt;sub&gt;0&lt;/sub&gt;</td>
<td>Social influence (SI) has no positive effect on the behavioral intention to use mobile banking.</td>
<td>SEM Beta=.024 p-value=.586</td>
<td>Null hypothesis Accepted</td>
</tr>
<tr>
<td>H3&lt;sub&gt;0&lt;/sub&gt;</td>
<td>Computer self-efficacy has no positive effect on behavioral intention to use mobile</td>
<td>SEM Beta=.265</td>
<td>Null hypothesis rejected</td>
</tr>
<tr>
<td>Hypothesis</td>
<td>Description</td>
<td>Test Method</td>
<td>Beta</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
<td>-------------</td>
<td>------</td>
</tr>
<tr>
<td>H3&lt;sub&gt;a0&lt;/sub&gt;</td>
<td>Computer self-efficacy has no positive effect on perceived ease of use of mobile banking.</td>
<td>SEM</td>
<td>.597</td>
</tr>
<tr>
<td>H4&lt;sub&gt;0&lt;/sub&gt;</td>
<td>Perceived financial cost has no significant effect on behavioral intention to use mobile banking.</td>
<td>SEM</td>
<td>.069</td>
</tr>
<tr>
<td>H5&lt;sub&gt;0&lt;/sub&gt;</td>
<td>Security will have no positive effect on behavioral intention to use mobile banking.</td>
<td>SEM</td>
<td>.649</td>
</tr>
<tr>
<td>H6&lt;sub&gt;0&lt;/sub&gt;</td>
<td>Trust will have no significant effect on behavioral intention to use mobile banking.</td>
<td>SEM</td>
<td>.036</td>
</tr>
<tr>
<td>H6&lt;sub&gt;a0&lt;/sub&gt;</td>
<td>Security has no positive effect on customer trust to use mobile banking.</td>
<td>SEM</td>
<td>.327</td>
</tr>
<tr>
<td>H7&lt;sub&gt;0&lt;/sub&gt;</td>
<td>There is no significant difference exist between gender in behavioral intention to use mobile banking.</td>
<td>t-test</td>
<td></td>
</tr>
<tr>
<td>H8&lt;sub&gt;0&lt;/sub&gt;</td>
<td>There is no significant difference across different age categories in behavioral intention to use mobile banking.</td>
<td>One way ANOVA</td>
<td></td>
</tr>
<tr>
<td>H9&lt;sub&gt;0&lt;/sub&gt;</td>
<td>The user satisfaction of Internet banking has no positive effect on intention to use mobile banking.</td>
<td>Regression</td>
<td>.322</td>
</tr>
<tr>
<td>H9&lt;sub&gt;a0&lt;/sub&gt;</td>
<td>The e-service quality of internet banking is not positively related to user satisfaction of internet banking.</td>
<td>Correlation</td>
<td>.804</td>
</tr>
</tbody>
</table>
5.3 Structural Equation Modeling used for Theoretical Model Testing

The Structural Equation Modeling (SEM) was used as it tests hypothesized causal relationships among multiple variables simultaneously and estimates the strength of interrelationships among latent constructs. Amos version 16.0 was used with maximum likelihood estimation. The two-step approach recommended by Anderson and Gerbing (1988) was applied in the SEM analysis. The first step was the measurement model, was examined using Confirmatory Factor Analysis (CFA) for testing reliability and validity. Most of the item loadings were larger than the value 0.7 and all loadings were significant at 0.001 (Fornell & Larcker, 1988). The Composite Reliability (CR) value was calculated to assess the reliability of the constructs. All the constructs had CR values which exceeded the cutoff value of 0.6 (Hair et al, 2006). Thus, the validity and reliability of the scale were established. The second step in the SEM analysis was the structural model used to test the hypotheses and the model. The goodness of fit indicators demonstrated an acceptable fit for the structural model. The results for the structural model were presented in Figure 5.2.

The β values obtained were shown in Figure 5.2. The determinants namely, perceived ease of use (β = 0.07, ρ <=0.05), computer self-efficacy (β = 0.27, ρ <=0.05), perceived financial cost (β = 0.07, ρ <=0.025), and security (β = 0.65, ρ <=0.05) were significant whereas the constructs called, social influence and trust were not significant. The results showed that computer self-efficacy had a significant relationship with perceived ease of use (β = 0.60, ρ <=0.05) and security had a significant relationship with trust (β = 0.33, ρ <=0.05). The proposed model explained 76.9 % of the variance in behavioral intention to use mobile banking.
5.4 Findings of the Research

The key findings of this study were presented below. The study was mainly conducted to understand the impact of consumer adoption factors on mobile banking in India. The results obtained after the analyses of data were discussed below. The findings were discussed based on the objectives discussed in chapter 1.
5.4.1 Factors determining the Adoption of Mobile Banking

The objective of the study was to determine the factors which influence the customers to use mobile banking in India. The empirical results of the current study identified four factors, namely perceived ease of use, computer self-efficacy, perceived financial cost, and security. These four factors were consistent with the findings from the previous mobile banking adoption studies conducted in India as well as other developed and developing countries (Kleijnen et al, 2004; Laforet & Li, 2005; Luarn & Lin, 2005; Amin et al, 2008; Gu et al, 2009; Koenig-Lewis et al, 2010; Dasgupta et al, 2011; Samudra & Phadtare, 2012).

5.4.2 Theoretical model explaining the Behavioral Intention to use mobile banking in the Indian banking context

One of the objectives of this study was to develop a theoretical model which could predict the behavioral intention to use mobile banking. The researcher developed a model using constructs such as perceived ease of use, computer self-efficacy, social influence, perceived financial cost, security, and trust, which was derived from technology adoption models such as TAM, DTPB, and UTAUT. The research model was found statistically significant predicting intention to use mobile banking. This study uncovered that security, computer self-efficacy, perceived ease of use, and perceived financial cost, in their order of influencing power, were the factors influenced the customer's intention to adopt mobile banking. The study also found that, security had a stronger influence on behavioral intention than all other variables in the study. This result proved that security challenges, and privacy issues were the significant concerns while using mobile banking, which was consistent with the past studies of mobile banking (Luarn & Lin, 2005; Laforet & Li, 2005; Amin et al, 2008; Crabbe et al, 2009; Norzaidi et al, 2011; Dasgupta et al, 2011; Yu, 2012). Computer self-efficacy was identified as the second most important factor predicting consumers to adopt mobile banking. This finding proved that mobile banking is an emerging channel for Indian banking customers and their apprehension towards using this channel, which was consistent with the former adoption studies of mobile banking conducted in India (Sripalawat et al, 2011; Dasgupta et al, 2011). Moreover, the study identified that computer self-efficacy significantly influenced perceived ease of use, and this finding was supported by the prior research (Luarn & Lin, 2005; Sripalawat et al, 2011). Meanwhile, the study found that trust and social influence did not play a salient role in predicting intention to adopt mobile banking. Some of
the reasons might be the multi-dimensional nature of the trust constructs, or the ambiguity about whether respondents considering trust as trust in the bank, trust in the wireless service provider or trust in the mobile technology. The result of this research was consistent with Koenig-Lewis et al (2010) study, which also found that the trust had no major role in the adoption of mobile banking.

The proposed theoretical model explained 76.9 percent of the variance in intention to adopt mobile banking, which was similar to the predictive power of DTPB (Taylor & Todd, 1995) and higher than the value found in TAM studies (40%), TAM2 (52%), TAM3 (53%), and TPB (57%).

5.4.3 The influence of Demographic factors such as gender and age on the Adoption of Mobile Banking Services

The findings of this study revealed that males and females significantly different with regard to their intention to use mobile banking. Male were more significantly willing to adopt mobile banking than the female which was consistent with the past adoption research of mobile banking (Ainin et al, 2007; Crabbe et al, 2009; Koenig-Lewis et al, 2010; Riquelme & Rios, 2010). The study also found that the intention to use mobile banking did not depend on their age, which was consistent with the findings of Crabbe et al (2009) who found that mobile banking users and non-users intention to use did not depend on their age.

The study also found that there was significant difference exists between respondents who were willing to download an application to enable mobile banking. The respondents who were very interested and somewhat interested (mean = 5.58 and 5.01 respectively) and respondents who were either not interested or not known (mean = 4.22 and 4.58 respectively). This result showed that people were more willing to use mobile banking.

5.4.4 Dimensions of E-Service Quality of Internet Banking

Another objective of this study was to identify the key dimensions of the service quality of Internet banking as perceived by Indian banking customers. The Internet banking quality dimensions emerged from the current study did not factor out the original dimensions adapted
of Jayawardhena (2004) scale except the perceived credibility dimension. Three factors originated resulting from the research data of the present study. The study results confirmed that responsiveness, efficiency, and perceived credibility were the distinct dimensions of service quality of Internet banking. The first factor labeled as ‘responsiveness’, which includes support expected by the customer from the bank and prompt service. The second factor labeled as ‘efficiency’, which encompasses the convenience and competence of Internet banking. The third factor labeled as ‘perceived credibility’, which covers the security aspects of Internet banking. The dimensions resulted from the present study were consistent with the past Internet banking studies (Jayawardhena, 2004; White & Ntli, 2004; Siu & Mou, 2005; Sohail & Shaikh, 2008; Khan et al, 2009; Al-Tarawneh, 2012).

5.4.5 Relationship between E-Service Quality and Customer Satisfaction of Internet Banking

The study also found that there was a positive relationship exists between e-service quality and overall satisfaction of internet banking. This result was consistent with the prior research which explored the relationship between e-service quality and user satisfaction (Siu & Mou, 2005; Santouridis et al, 2009; Herington & Weaven, 2009; Rod et al, 2009). All the three dimensions had a significant positive impact on user satisfaction. Among the dimensions, responsiveness was having the stronger impact followed by efficiency and perceived credibility respectively.

5.4.6 Relationship between Internet Banking Customer Satisfaction and Intention to use Mobile Banking

The study also found that there was a positive relationship exists between user satisfaction and intention to use mobile banking. This result was consistent with the prior research which explored the relationship between user satisfaction and behavioral intention (Shamdasani et al, 2008; Kuo et al, 2009; Gounaris et al, 2010).

The study also found that a significant difference existed between Internet banking users’ frequency of usage on their likelihood to adopt mobile banking in which respondents who use Internet banking very often and sometimes. This result supported the view of Koenig-Lewis et al (2010) that current Internet banking users were more willing to adopt mobile banking.
CHAPTER 6
CONCLUSION AND RECOMMENDATIONS

Mobile banking is an emerging service has not been widely adopted pointed out the need to find out the various consumer adoption factors. For addressing this research need, the study identified the factors and their influence on the acceptance of mobile banking services. It focused on six constructs through which the study attempted to understand the customer perceptions of mobile banking, which recently become available in India. It specified an integrated model depicting relationships between each of these six constructs and customers’ intention to use mobile banking. The present research also investigated the service quality of Internet banking and its impact on customer satisfaction.

6.1 Theoretical Implications

This study developed and proposed a model that explained the customers’ intention to use mobile banking. This model had specified six hypotheses describing relationships between customers’ intention to use mobile banking and each of the six constructs, namely, perceived ease of use, social influence, computer self-efficacy, security, trust and perceived financial cost. It also specified one hypothesis describing the relationship between the constructs perceived ease of use and computer self-efficacy. Another hypothesis specified the relationship between the constructs’ security and trust. The constructs namely, perceived ease of use, computer self-efficacy, security, and perceived financial cost influenced the customers to use mobile banking services. The hypotheses depicted a comprehensive view of the key drivers influencing mobile banking usage intention and what aspects to highlight to increase the usage. Through the specification of these relationships, it addressed an important gap in the adoption research. The study also identified the key dimensions of Internet banking service quality and their impact on customer satisfaction. It also identified that customer satisfaction of Internet banking positively related to the intention to use mobile banking. Responsiveness, efficiency, and perceived credibility were the dimensions on which Internet banking service quality can be based. All three dimensions had a significant effect on customer satisfaction, with responsiveness being the highest predictor.
6.2 Managerial Implications

The empirical findings of this study can provide guidelines to banks and other financial institutions to know the key drivers influencing mobile banking usage intention and what aspects to highlight to increase the usage. For instance, the empirical support of the hypothesis specifying the relationship between secure transactions and intention to use received in this research suggests that for increasing the usage of these services, the device manufacturers and service providers can enhance the security features of the mobile devices. This study helps bank managers to focus on initial trust building in order to facilitate and accelerate the usage of mobile banking. The mobile banking service providers need to adopt technological structures such as third party security certificates to enhance trust. Banks should provide mechanisms to offer customer services during the transaction and after transaction. Banks can encourage customers to use mobile banking by implementing adequate security mechanisms and prompt customer service through which they can engender trust. To enhance customer trust, efforts have to be made to build relevant policies, regulations and legal framework. Business practitioner have to make a great effort to improve their services in data transmission and ensuring privacy protection to the user data. Periodical analyses of sound managerial and technical procedures are required to protect the transaction data and user information. To attract new customers to these services, a guideline for practice will be of implementing mechanisms for customer awareness and offering technical support to these services. The study findings related to Internet banking can be used by banks to improve the service quality of Internet banking and attract more customers towards using this service. In the online environment, the customer expects an accurate response and personalized attention during Internet banking transaction and post transaction. It is very important to give accurate, friendly and helpful customer service to the Internet banking users. The banking operations carried through Internet banking might vary for individual customers depend on their needs. Internet banking plays a facilitating role to conduct traditional banking operations. To attract more customers to use Internet banking, banks need to provide wide-range services through Internet banking. The Internet banking website plays a crucial role to measure the service quality of electronic banking. The customer expects a 24X7 available website to conduct banking operations. The visual layout and the up-to date information provided in the website play a major role in the quality of electronic banking. Banks need to understand the importance of a good website for the success of Internet banking and need to concentrate on the technical functionality of an e-
banking website. Moreover, it is significant for the banks to strengthen the security measures of Internet banking. It is also important for the banks to pay more attention to consumer education and consistently informs customers about security measures and policies in relation to the Internet banking operation

6.3 Future Research Potential

This study suggests certain directions for future research. First, future research can carry out empirical studies to test and validate the theoretical model. Future research can carry out further conceptual and empirical work to specify relationship between other categories of antecedents and willingness to use mobile banking. For instance, future research can focus on other antecedents like technological readiness, mobile interface quality, perceived usefulness, compatibility and their relation with the customers’ decision to use mobile banking. Second, this study focused on the constructs, which are suitable for mobile banking, which involves monetary transactions. Future research can carry out further conceptual and empirical work to measure customer perceived service quality and measuring the satisfaction level of mobile banking services. Building trust is also important to adopt mobile banking since the vulnerability of the wireless network is very high, so trust formation with the customer at the initial stage, and the continuous trust building are important which future research can focus on. Similarly, future research can also investigate the difference of characteristics between adopters and non-adopters of mobile services. When this study was conducted, mobile banking was very nascent stage; hence the study measured only the intention to use. Future studies can measure actual use and the level of adoption of mobile banking services. Future research can carry and explore different service quality dimensions, and its applicability in different technology enabled banking services. Another research potential which can be carried out in the future is measuring the automated service quality and satisfaction of self-service technologies offered by the banks.
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PUBLICATIONS/ CONFERENCES ARISING FROM THIS RESEARCH STUDY


