ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

ASSESSMENT OF MOBILE BANKING PRACTICES AT DASHEN BANK SHARE COMPANY

BY

BAYOUSH DEMILEW

MAY, 2018

ADDIS ABABA, ETHIOPIA

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Declaration

I, Bayoush Demilew ,here by declare that the thesis entitled Assessment of mobile banking practices at Dashen Bank share Company is the outcome of my own effort and study and that all sources of materials used for the study have been duly acknowledged. This study has not been submitted for any degree in this University or any other University. It is offered for the partialfulfillment of the requirement for the degree in MSc. Program in Accounting and Finance.

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Table of Contents

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List of Acronyms and Abbreviations

ATM - Automated Teller Machine

BOP - Bottom of Pyramid

CBE - Commercial Bank of Ethiopia

GPS - Global Positioning System

ICT - Information and Communication Technology

MBPIN - Mobile Banking Personal Identification Number

NBE - National Bank of Ethiopia

PDA - Personal Digital Assistant

PEOU - Perceived Ease of Use

PT - Perceived Trust

PR - Perceived Risk

PU - Perceived Usefulness

RA - Relative Advantage

SMS - Short Message Service

WAP - Wireless Application Protocol

Lists of Tables

ABSTRACT

The main objective of this study was to identify factors that affect the adoption of mobile banking in the case of Dashen bank. In order to achieve this objective the study adopts quantitative type of research approach using close ended questions. The data was gathered from the four selected branches of Dashen bank customers. The study use both primary and secondary data sources. The Primary data was collected by using questionnaire. 150 questionnaires were distributed for four branches operating in Addis Ababa and out of these a total of 130 respondents were fully filled and returned. The secondary data for this study was obtained from the sampled banks document and National Bank of Ethiopia. The questions distributed was mainly focused on relative advantage, perceived usefulness (PU), perceived risk (PR), perceived ease of use (PEOU), Perceived trust (PT), Compatibility, awareness and challenges of Mobile banking. Data was analysis using tables, frequency and percentage to analyze and interpret by using statistical software SPSS 20. From the findings customers find Mobile-banking is the fast tool than physically visiting the bank, it also enables them to complete banking activities more quickly and easily and customers are aware the service that they get from this technology. The study recommends Dashen bank shall promote mobile banking services to its customers using various promotional tools, the study also recommends when Dashen bank design their mobile banking products they should give due emphasis which fits their customers life style, culture and languages as well. Dashen bank shall also deploy reliable network infrastructure and system to ensure mobile banking services operate smoothly so that it can reduce the perceived risk by customers regarding mobile banking technology.

Key words: Compatibility and awareness, Mobile banking, relative advantage, perceived usefulness, perceived risk, perceived ease of use, Perceived trust.

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

The banking sector has regularly undergone changes in technology, customer preferences, competition, regulatory requirements, changing demographics and social trends.(byers and lederer,2001).

Banking services and operations have undergone a paradigm shift especially in the past decade. The changes have been catalyzed by technology advancements global commerce, competitiveness and customer demands as the important factors. As a result banking service have fast developed to adopt new delivery means which adapt to the changing commercial landscape, in order to meet customer expectations banks vie with each other to new and innovative services to ensure a competitive edge (shind lee, 2008). The evolutionary changes have significantly impacted on the corresponding strategies that the banks have adopted as a consequence.

Mobile phones have become a tool for everyday use, which creates an opportunity for the evolution of banking services to reach the previously unbanked population through mobile banking. The use of mobile banking can make basic financial services more accessible to low-income people, minimizing time and distance to the nearest retail bank branches.

The outstanding growth of mobile sector worldwide has created a unique opportunity to provide social and financial services over the mobile network. With over 4 billion mobile cellular subscriptions worldwide, mobile network has the ability to immediately offer mobile banking to 61% of the world population (Sultana 2009). But still the usage of mobile banking is a debatable issue among the educated persons and professional body because of the risk involved in such transactions. Though many of such people argue that internet and other technology based transaction is not safe, not practical and would lead to fraud, a lot of people think it safer, flexible in time and can be done anywhere and anytime (Chowdhury and Ahmmad,2011). Cost and availability are the other factors which might influence the usages of mobile banking. Thus, it is necessary to have an in-depth analysis for the mobile banking service provider to identify the factors influencing the usages of mobile banking. A clear understanding of these factors will

enable mobile banking service providers to develop suitable marketing strategies, business models, processes, awareness programmers and pilot projects (GSMA 2009).

The spread of mobile technology across the globe is one of the most remarkable achievements in the last decades. Mobile phones have increasingly become tools that consumers use for banking, payments, budgeting, and shopping. Advances in mobile technology have revolutionized almost every facet of society, from information to education, granting enhanced access to an ever growing number of people (Barnes &Corbitt, 2003).

Mobile banking is a term used for performing balance checks, account transactions, payments etc. via a mobile device such as a mobile phone. Mobile banking today is most often performed via SMS or the mobile internet but can also use special programs that clients download to their mobile device. It can also be understood as availing banking and financial services with the help of mobile telecommunications devices. The services offered by mobile banking included getting account information, transferring funds, sending checkbook request, managing deposits, checking transactions and so on. Commercial banks are exploring this avenue to make their services more convenient for their customers. The growing number of mobile subscribers in the country forms the most valuable support base for the growth and success of mobile banking (Barnes &Corbitt, 2003).

Developments in the banking sector as indicated in increased competition on account of technological developments coupled with the process of globalization have produced new challenges for banks.

Some of the significant reasons that compel financial firms to provide mobile banking services are; appealing to trendy customers, reducing costs per transactions, gaining revenue from service fees, enabling new service channels, and supporting future customers (Huili and Chunfang,2011).

Mobile banking services provide time independence, convenience and promptness to customers, along with cost savings. Mobile banking presents an opportunity for banks to expand market penetration through mobile services (Lee, Lee & Kim, 2007).Despite these advantages and the conveniences, the use of mobile banking services is much lower than expected in both the developed and developing economies (Agwu,2012). He also stated that mobile phones and its applications are still highly under-utilized (Akturan and Tezcan,2012) stressed that the market of mobile banking still remains very small when compared to other electronic banking counterparts

such as ATM; internet banking, etc. Furthermore, it is noted that the widespread adoption and large usage of mobile telephones did not reflect on the adoption and usage of mobile banking (Puschel, et al, 2010).

Adoption and usage of mobile banking will largely depend upon customer's perception of its ease of use and usefulness. However, the understanding of the underlining problems of the reasons for the low rate of mobile banking usage could assist financial managers to find ways to adjust their marketing techniques and come up with the right solution to improve their mobile banking service as well as to increase the rate of mobile banking customer's usage. Therefore, this study examines factors which affect adoption of mobile banking.

Development of banking service in Ethiopia

It was in 1905 that the first bank, the "Bank of Abyssinia", was established based on the agreement signed between the Ethiopian Government and the National Bank of Egypt, which was owned by the British. Its capital was 1 million shillings. According to the agreement, the bank was allowed to engage in commercial banking (selling shares, accepting deposits and effecting payments in cheque) and to issue currency notes. The agreement prevented the establishment of any other bank in Ethiopia, thus giving monopoly right to the Bank of Abyssinia. The Bank, which started operation a year after its establishment agreement was signed, opened branches in Harar, Dire Dawa, Gore and Dembi- Dolo as well as an agency office in Gambela and a transit office in Djibouti. Apart from serving foreigners residing in Ethiopia, and holding government accounts, it could not attract deposits from Ethiopian nationals who were not familiar with banking services.

The Ethiopian Government, under Emperor Haile Sellassie, closed the Bank of Abyssinia, paid compensation to its shareholders and established the Bank of Ethiopia which was fully owned by Ethiopians, with a capital of pound Sterling 750,000. The Bank started operation in 1932. The majority shareholders of the Bank of Ethiopia were the Emperor and the political elites of the time. The Bank was authorized to combine the functions of central banking (issuing currency notes and coins) and commercial banking. The Bank of Ethiopia opened branches in Dire Dawa, Gore, Dessie, Debre Tabor and Harrar.

With the departure of the Italians and the restoration of Emperor Haile Selassie's government, the State Bank of Ethiopia was established in 1943 with a capital of 1 million Maria Theresa Dollars by a charter published as General Notice No. 18/1993 (E.C). The Bank which, like its predecessor, combined the functions of central banking with those of commercial banking opened 21 branches, including one in Khartoum (the Sudan) and a transit office in Djibouti.

In 1963, the State Bank of Ethiopia split into the National Bank of Ethiopia and the Commercial Bank of Ethiopia S.C. with the purpose of segregating the functions of central banking from those of commercial banking. The new banks started operation in 1964.

The first privately owned company in banking business was the Addis Ababa Bank S.C., established in 1964. 51% of the shares of the bank were owned by Ethiopian shareholders, 9% by foreigners living in Ethiopia and 40% by the National and Grind lays Bank of London. The Bank carried our typical commercial banking business. Banco Di Roma and Banco Di Napoli also continued to operate.

Following the 1974 Revolution, on January 1, 1975 all private banks and 13 insurance companies were nationalized and along with state owned banks, placed under the coordination, supervision and control of the National Bank of Ethiopia. The three private banks, Banco Di Roman, Banco Di Napoli and the Addis Ababa Bank S.C. were merged to form "Addis Bank." Eventually in 1980 this bank was itself merged with the Commercial Bank of Ethiopia S.C. to form the "Commercial Bank of Ethiopia," thereby creating a monopoly of commercial banking services in Ethiopia.

The Ethiopian banking sector is currently comprised of a central bank (The National Bank of Ethiopia or NBE), two government owned banks and sixteen private banks. In September 2011, NBE issued a regulation that increased the minimum paid up capital required to establish a new bank from 75 million Birr ($3.4 million) to 500 million Birr ($22 million), which effectively stopped the entry of most new banks to the market. Under the Growth and Transformation Plan II (GTP II) period, NBE further increased the minimum paid up capital for banks to 2 Billion Birr ($90 million) and advised all the sixteen currently operating private banks to increase their paid up capital to that amount by 2020. Foreign banks are not permitted to provide financial services in Ethiopia and the market is closed to foreign retail banks.

1.2. Statement of the problem

With the rapid growth of Electronic payment system, mobile banking is now acting as a means of carrying out banking transaction through cell phones. M-banking is the logical step in the evolution of banking transactions as m-banking replaces the bank branches and internet replaces the mail banking.

Over the years traditional branch based retail banking remained the most widespread method for conducting banking transactions in Ethiopia. Currently commercial banks in Ethiopia have started adoption of mobile phone based electronic banking systems to improve their operations and to reduce costs. Out of the eighteen operating commercial banks in Ethiopia, there are, currently, seven banks that have started providing mobile banking services as per NBE data 2017. And out of these seven banks three banks have been providing mobile banking service to customers for the past three years.

Even though the penetration of mobile phones among the population continues to grow in significant numbers year after year still the customer's adoption of mobile banking service within these banks still remains low. Despite the fact that numerous mobile banking adoption studies have been investigated by various scholars, most of them were conducted in countries such as Singapore (Riquelme and Rios 2010), Brazil (Laukkanen et al 2010), Taiwan (Luarn and Lin 2005), and China (Wang et al. 2007) with relatively little attention paid to developing countries like Ethiopia. The existing research in Ethiopia included mobile banking in electronic banking challenges and barriers (Ayana 2012), (Garedachew 2010), influencing usage of mobile banking in Ethiopia (kalkidan 2016).Hence this research paper tried to fill research gap by assessing the issues that factors affects adoption of mobile banking in specifically Dashen bank.

1.3. Research question

Based on the above statement of the problem the research question is stated as follows:-

- What are the factors that influence the level of adoption of Mobile banking in Dashen bank?
- What are the challenges in the usage of technology of mobile- banking?
- What are the level of awareness of the customers on the usage of mobile banking?

1.4. Objectives of the study

1.4.1. General objective

- The general objective of this study is to identify Assessment of mobile banking practices at Dashen bank share company.

1.4.2. Specific objective

- To determine those factors that influences the level of adoption of mobile banking in Dashen bank.
- To identify challenges in the usage of technology of mobile banking.
- To determine the influence of awareness on usage of mobile banking.

1.5. Significance of the study

Introduction of new technologies allowed banking institutions to offer new channels of service outlets like ATM facility, Internet Banking, Telephone Banking, SMS banking and Mobile Banking. Ethiopian consumers are also having access to many new channels to interact with their bank. Banks are racing against each other to bring the latest technology like mobile banking for the benefit of their customers and themselves. Among the existing literatures it was discovered that not many studies have been conducted to evaluate if mobile banking channel is utilized by the customers in Ethiopia and factors affecting customer's usage of mobile banking channel.

Therefore, this study tries to determine the Assessment of mobile banking practices at Dashen bank share company.

The results of this study, is believed to provide knowledge for improving the service. It may be meaningful for researchers and banks' management to understand the factors influencing customer's to either adopt or not adopt mobile banking services. Identifying such variables may help improve the likelihood of increasing the usage rate of these services, by deepening the knowledge about the variables which facilitate or hinder the usage of this technology. Therefore, the finding of the study is believed to assist bank managements by providing them with information on how to increase usage of mobile phone banking to increase profitability that will be obtained from delivering this service.

1.6. Scope of the study

Currently the numbers of banks operating in Ethiopia were eighteen out of these two are commercial and the remaining sixteen are private. Out of these banks the researcher selects one private bank that is Dashen bank. The reason for selection of this bank is because of the pioneered in the adoption of technology, specifically mobile banking technology. Based on the level of business activities and large number of customers four branches operating in Addis Ababa were selected, these are, Mexico, Saris, Arat killo and kea branches.

1.7 Limitation of the Study

The study is conducted in the selected Dashen bank branches. The sample respondents are selected in convenience sampling method because of the difficulty of accessing sample customers. These may limit the representative of the research work.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter presents the literature related with mobile banking .Accordingly the review of the literature is divided in two parts. The first part discusses the theoretical literature review for the study, while the second part presents the empirical literature review. The over views of authors and previous researches on mobile banking adoption are discussed. Technology Acceptance framework for mobile banking adoption and Innovation Diffusion theory and their constructs which includes perceived usefulness, perceived trust, perceived risk, perceived ease of use, relative advantage, compatibility and awareness.

2.1. Theoretical literature

The theoretical framework of this study is built around the models of branchless banking. Branchless banking is a type of banking model that allows financial institutions and other commercial actors to offer financial services outside the traditional bank premises. The customer does not need to visit a branch or central location of a bank. Transactions may be completed through technological platforms such as the mobile phone, internet and automatic teller machine (ATM). Branchless banking has emerged as a promising new approach to accelerating financial transactions by changing the cost and risks of distributing financial services, like mobile network operators to contemplate reaching a large number of unbanked people.

With the increasing penetration of telecommunication globally and its greater reach, mobile-based business models are proving to be instrumental in realizing branchless banking. This is also taking financial inclusion to higher level by enabling low-cost, real-time transactions and over secure networks.

2.2. Definition of Mobile Banking

Mobile banking is the ability to conduct bank transactions via a mobile device, or more broadly to conduct financial transactions via a mobile terminal. This definition is a suitable working one as it includes not only basic services such as bank account statements and funds transfer but also

electronic payment option as well as information based financial services such as alerts on account limit or account balance, access to stock brokering. (Drexelius and Herzig 2001:22)

Kiesonski (2000:41 in Petrova 2013:2), defines mobile banking as the ‘’ability to bank virtually anytime anywhere’’. This definition needs to be expanded to include the two different types of customer account access, a web based interface and simple text- messaging interface.

Mobile banking is an application of mobile commerce which enables customers to access bank accounts through mobile devices to conduct and complete bank related transactions such as balancing cheques, checking account statuses, transferring money and selling stocks (Tiwari& Stephan, 2007).

Luo, Li, Zhang and Shim (2010), defined mobile banking as an innovative method for accessing banking services via a channel whereby the customer interacts with a bank using a mobile phone. Mobile banking also means performing banking activities which primarily consist of opening and maintaining mobile/regular accounts and accepting deposits; furthermore, it includes performing fund transfer or cash-in and cash-out services using mobile devices (NBE Directive, FIS-01-2012). In the broader sense mobile banking enables the execution of financial services in the course of which - within an electronic procedure - the customer uses mobile communication techniques in conjunction with mobile devices (Pousttchi and Schurig, 2004 as cited in Singh 2011).

Mobile Banking can perform various functions like mini statement, checking of account history, SMS alerts, access to card statement, balance check, mobile recharge etc. Banks are constantly updating their technology and want to increase their customer base by reaching to each and every customer. There are many advantages of using mobile banking, such as people in the rural or remote areas can also get an easy access to mobile banking whenever required. (Vinayagamoorthy and Sankar, 2012).

2.3. The evolution of mobile banking

For the first time, in 1999, U.S. bank to use SMS banking services, it was not unique to bank. So that same year the U.S. the post office using SMS technologies to be aware of the position of the customer letter .Since, according to the law Klein Cohen many organizations and governmental agencies America In order to Used to reduce the cost of Internet and mobile services. WAP

system was introduced to the business world in 1999, and led to the reduction in the cost of information technology to develop use and innovation new methods, and lead to reduction and control services (Farnood, 2008). In the past, the use of Internet banking by providing access to the bank at any time, have a great impact on the bank services to Customer. Therefore, those customers were able to review the status of your bank account, carry out other transactions such as deposit accounts, and pay bills from home or office easily. Major restrictions of this model electronic banking are computer and internet access. Therefore, mobile banking has been introduced as a model of e-banking provides customers who need only a mobile phone. The reasons for the superiority of this approach to banking with internet banking are no restrictions in space, using the minimum facilities and another reason is the great growth of mobile phone use among users. This way has provided the development of mobile banking. (PoorniCk, 2010).The evolution of mobile banking continues as the following:

- The introduction of GPRS technology in late 1999 and in 2000
- The introduction of Personal Office Mobile Services
- The introduction of mobile money (In 2000)
- The introduction of Third Generation Mobile (In late2001)

2.4. Mobile Banking In Ethiopian Banking Industry

Ethiopia is an under banked country and a lot needs to be done in the banking sector to mobilize resources and to assure sustainable development. There is a big gap between the banking service coverage and the banking service demand by the society. In today's world, there are many banking channels – bank branch, ATM, Internet, and mobile to avail banking services. However, all banking channels are not cost effective for developing countries due to high initial investment requirement. 67% of the world population has mobile handsets which make mobile the largest consumed electronic device in the world.

The electronic banking service was ushered into the Ethiopian market in 2001 when the largest state owned, Commercial Bank of Ethiopia (CBE) introduced ATM to deliver service to the local users (Gardachew, 2010). After this the electronic banking service scope was further expanded to mobile banking when Dashen Bank signed an agreement with iVery, a South African E-payment technology company, for the introduction of mobile commerce in April 21, 2009. According to the agreement, iVery Payment Technologies has licensed its Gateway and MiCard E-payment

processing solution to Dashen Bank. Dashen'sModbirr users can transfer 500 birr to other Mod birr users in 24 hours a day. This would make Dashen Bank the first private bank in Ethiopia to acquire E commerce and mobile merchant transactions (Amanyehun, 2011). However, mobile banking came into full practice after several years of trials and errors as well as wait-and-see attitude by customers. Since then, mobile banking has shown a gradual growth across many various parts of Ethiopia. Despite the very high mobile penetration rate, the use and adoption of mobile banking services remains low. With the advent of new mobile technologies, such as Blackberry, iphone, Androids, etc, which serves as a catalyst, mobile banking is on the edge to draw millions of new users within the world teeming population (Agwu 2012). Many customers who are tired of the old banking systems are looking for time saving alternatives. The review of the existing literature showed that mobile banking has been widely researched in the developed and emerging economies.

2.5. Benefits of Mobile Banking

Mobile banking allows anytime, anywhere (within the network coverage) banking with all the inherent advantages (Pousttchi&Schurig, 2007).

The high penetration of mobile phones across the strata of society makes it a natural tool for taking electronic banking to its next level. It is more than likely that Internet banking and mobile banking would exist as allies rather than competitors for each other. Convenience is one of the benefits of mobile banking as banking transactions and other related activities can be performed in the comfort of customer's home or offices. The usefulness of conducting banking transactions at home or from the office eliminates the difficulties that are associated with driving to the bank, the cost of petrol, and parking. Mobile banking also allows customers to perform banking transactions 24 hours a day, 7 days a week, and 365 days a year (Eckhardt, et al 2009).

2.5.1. Benefits of Mobile Banking to Banks

Banks can utilize the time saved by the channel migration of customers to mobile banking for expansion of business through better marketing and sales activities. Mobile banking enables banks to reduce cost of courier, communication, paper works, etc and also it reduces costs in setting up a branch and the resources to process transactions (Sunil and Durga 2013). Also banks providing mobile banking services can have competitive advantage over those banks, which are not providing this service. It has also been found to increases customer loyalty that is using

mobile banking customers need not to go in banks braches for fund transfer or for information, which creates a good relationship between banks and customers which helps in increasing loyalty towards the banks. Goswami and Raghavendran (2009) point out, mobile banking services will enable banks to not only increase fee-based income but also enable significant cost savings, improve service quality and provide cross-selling opportunities.

2.5.2. Benefits of Mobile Banking for Customers

Customers don't need to stand at the bank counter for various enquiries about their account. Customers can save their valuable time and travelling cost in reaching the bank for their financial transactions (Sunil and Durga, 2013). Customers can pay their utility bills on time and save themselves from paying penalties, since alerts are received from the bank. Ubiquitous access, convenience and mobility are the main benefits that mobile banking confers to customer (Laforet and Li, 2005). Deloitte (2010) points out that with mobile banking customers no longer need to use scarce time and resources to travel to bank branches. Nevertheless, despite the widespread proliferation of mobile phones and the numerous advantages that mobile banking offers, mobile banking is still not widely adopted (Riquelme and Rios, 2010).

2.5.3. Reducing Costs of Distribution

Due to increased competition a distribution channel must organize business processes efficiently so as to reduce distribution costs. This pressure can be coped with by rationalizing organizational structures to increase productivity. Mobile Banking can contribute to achieve this goal since the manual collection, processing, transmission and archiving of data by bank employees in branch offices is substituted, as in the Internet-based banking, by automated processes.

1. Always on- mobile phone can be always or is always portable due to inherent design, allow users to interact in activities such as travel or meeting people, while transactions via mobile devices are equipped with Internet.

2. Location-centric-Not only is mobile phone in all places, Global Positioning System (GPS) may be created to recognize phone and tries to personalize based on existing services. Identifying the location of Internet users, provides a special advantage for mobile commerce over wired e-commerce. Using this technology, the mobile commerce providers will enable to receive and send information to a particular place.

3. Convenience- Other people are not limited by time or space, access tom electronic activities. For example, people who are stuck in traffic or waiting in the queue Will be enable to buy their favorite Internet-based activities or managing their daily transactions through mobile commerce applications .Consumers can know a special comfort that can improve their quality of life. By making services more comfortable, the customer will be more loyal.

4. Customization - Mobile phone is much higher influence than personal computers. For example, using demographic data collected by wireless service providers, and information on the current location of the mobile users can do more targeted advertising. Advertising messages can be customized based on the information provided through consultation with the user's initial or previous users' shopping habits.

5. Identify ability - Mobile phone provides to support the secure mobile phone transactions where personal computers are almost unknown (no name). One person always uses mobile devices and it is ideal for Personal -based target marketing, through the technology of Global Positioning System (GPS), service providers can recognize a user carefully Personalize opportunity to deliver messages to different parts of space and time through sound and look. (Skinner, 2010).

2.6. Services Available On Mobile Banking

Mobile Banking, as defined above, includes a wide range of services. According to (Tiwari& Stephan, 2007) these services may be categorized as follows:

2.6.1. Account Operation

The term Account Operation, as used in this study, refers to an activity that involves monetary transactions. Such transactions may involve an external account and/or internal account. Mobile services that are used to operate an account are (Tiwari& Stephan 2007).

Money remittances: - Mobile devices may be used to instruct the bank to remit money in order to conduct one-time transactions, such as paying bills or transferring funds. This service can also include the facility to cancel an ordered remittance.

Issue standing orders: - The house bank may be entrusted with standing orders for payment of regularly recurring payments such as payment of standing payments, monthly rent or telephone

bill.Transfer funds to and from sub-accounts: - Funds from one sub-account may be transferred to another as and when needed, for instance from a savings account to checking or other types of account and vice versa (Sunil and Durga, 2013)

2.6.2. Account Administration

The term Account Administration refers to tactical situations, for instance, if a bank customer has to set out on an urgent, unplanned journey, he may still be able to subscribe to a travel insurance policy offered by his house bank. This may involve activities like access administration and cheque book request. Mobile Accounting services that are used to administer the account are (Tiwari& Stephan, 2007), (Sunil and Durga, 2013):

Access administration: - Mobile devices may be used to administer the access to an account, for example to change the individual PIN or to request new transaction numbers.

Change operative accounts: - Through this service a customer can change his default operative account and do transactions using a different account. This option is attractive for customers holding several sub accounts. Funds of sub-accounts may be hereby utilized in a targeted manner without first transferring the amount to the default account.

Blocking lost cards: - Mobile non-voice telecommunication systems such as Wireless Application Protocol, Short Message Service (WAP, SMS) can be used round the clock to speedily block lost credit and debit cards irrespective of the current geographic location.

Cheque book request: - Instead of going personally to the bank, the customer can request for a cheque book to be mailed to his or her address as per the records of the bank. This saves his/ her valuable time (Sunil and Durga, 2013).

Change of Primary Account: - the customer has the option to change the primary account to another new account number for carrying out transactions (Sunil and Durga, 2013).

2.6.3. Mobile Financial Information

Mobile Financial information refers to non-transaction based banking- and financial services of informational nature (Tiwari& Stephan, 2007). This sub-application may be divided into two

2.6.3.1. Account Information

The term Account Information refers to information that is specific to a customer and his bank, even though it does not necessarily involve a monetary transaction. Mobile services that belong to this category are:

Balance inquiries: - mobile devices may be employed to check the current financial status of own bank or securities accounts (Sunil and Durga ,2013).

List of latest transactions: - mobile devices may be used to request a list of the latest transactions performed on an account. This service works with a standard, pre-specified number of latest transactions that are reported, as and when demanded. Most of the banks provide a list of transactions.

Statement request: - unlike the request for a list of latest transactions, it generates a list of all transactions in a given period, for instance in a week or in a month. Statements may be requested either manually, as and when needed electronically. With Mobile Banking the account statements can be requested via and/or delivered on mobile devices (Cruz et al. 2010).

Transaction and balances: - the bank may be instructed to automatically alert the customer via SMS whenever transactions (credits as well as debits) exceeding a certain amount are performed on the account. In addition, a similar threshold alert may be activated for the balance status of the account. The customer may be informed via SMS whenever the balance falls below a certain predefined level. This service may be useful to help the customer avoid unpleasant situations by not being able to honor his commitments (Cruz et al. 2010).

Threshold alerts for stock prices: - the bank may be instructed to send an alert on mobile devices, via SMS, when prices of some particular stocks fall or jump to a predefined threshold value and ask for further instructions (Suoranta and Matila, 2003).

Returned cheques or cheque status: - the customer may be informed without time delay if one of her or his deposited cheques has not been honored and corrective steps are required.

Credit card information: - the customer may check anytime and anywhere the current status of his credit cards and the amount that he may utilize at that given point of time.

Branch and ATM locations: - mobile devices may help finding the nearest branch or ATM affiliated with a bank. The current location of the customer may be determined by positioning the mobile device. This service may be particularly useful while travelling (Crosman, 2011).

Helpline and emergency contact: - mobile devices may be provided with content that is required in emergency situations, for instance to block a lost credit card and cheque book. The information may be either embedded in the telephone menu, for example in cooperation with a network carrier or the information may be provided on a WAP page analogue to a web page.

Information on the completion statutes of an order: - the bank may use "push" services to inform the customer via his mobile device regarding whether or not his orders could be carried out. This ensures that urgent information can be provided to the customer while on the move.

Product information and offers: - the bank can provide information about its products and new offers to a customer on the move. A customer can "pull" the information that he wishes to access. On the other hand the bank can "push" the information or offers that the customer has identified as interesting and is willing to receive.

2.6.3.2 Market Information

The term Market Information as opposed to Account Information refers to information with a macro scope. This information is not directly related to the customer account. It is generated either externally like exchange rates or central bank's interest rates, or internally by the individual bank (Tiwari& Stephan, 2007) for example bank-specific interest rates. The individual bank customer does not play a direct role in this process. The information may be later sorted out to cater the individual needs and preferences of a particular customer, if so desired by him, and subsequently delivered to a mobile device of his choice, or a PDA. Information in this category generally concerns: Foreign exchange rates, interest rates, Stock market news and reports and Commodity prices (For example: - Gold and raw materials)

2.7. Challenges and Prospect of Mobile Banking

The key challenges in developing a sophisticated mobile banking application are**;**

a) Handset operability: There are a large number of different mobile phone devices and it is a big challenge for banks to offer mobile banking services on any type of device. Some of these devices support Java Me and other support SIM application Toolkit, a WAP browser, or SMS

only. This is because of the manner in which mobile phones applications evolved over time and the device manufacturers focused on particular standard and this led to a proliferation of applications (Okoegwale, 2008:2)

b) Mobile banking security: Security of financial transactions, being executed from some remote location and transmission of financial information over the air, is the most complicated challenges that need to be addressed jointly by mobile application developers, wireless network services providers and the bankers' IT departments. The above aspects need to be addressed to offer a secure infrastructure for financial transaction over wireless network: If the bank is offering a smart-card based security, the physical security of the device is more important. There should be authentication of the device with service provider before initiating a transaction. This would ensure that unauthorized devices are not connected to perform financial transactions.

c) Scalability and Reliability: Another challenge for the banks is to scale-up the mobile banking infrastructure to handle exponential growth of the customer base. With mobile banking, the customer may be sitting in any part of the world (anytime, anywhere banking) and hence banks need to ensure that the systems are up and running in a true 24x7 fashion.

d) Application Distribution: Due to the nature of connectivity between bank and its customers it would be impractical to expect customers to regularly visit banks or connect to website for regular upgrade of their mobile banking application. It will be expected that the mobile application itself check the upgrades and updates and download necessary patches (so called ''Over the Air'' Updates). However, there could be many issues to implement this approach such as upgrade/synchronization of other dependent components. Caller-id-display. This number is familiar and looks like it came from legitimate source, which is not an origination source actually.

e) Lost and stolen phones: This is one of the biggest threats for mobile banking. Mobile phones are small and portable and could be easily lost or stolen. Authentication, authorization and confidentiality are the areas to be considered when mobile devices are lost or stolen. In 2001, 1.3 million devices were lost or stolen in UK. In 2006, over 1 billion phones were sold worldwide Of these, 80 million were smart phones, which have operating system and store all kinds of

information. A survey found that 34 percent of users did not even use a PIN. This threat increases with the increase in the number of phones.

F) Man-In-the Middle attack (MIM): MIM is considered a threat to the confidentiality and integrity of phone users. It is a form of active eavesdropping in which attacker makes independent connections to victims by positioning him/herself in between two victims to take control of communication between them with the intention of interception and alteration of information and relays it to others, making them believe that it came from the other person and not from the attacker. The attacker must be able to intercept all messages and alter them while it is in transit. It is also known as active wiretapping or traffic intercepting. The chances of this kind of attack increases with the use of wireless connection compared to other more secured connections.

g) Viruses, malware and malicious code: Malicious code is software in the form of viruses, malware or worms. These kinds of software can be inserted into a system without the knowledge of the user. The primary intent of inserting the software is to gain private, personal and financial information of the user and compromises the integrity and confidentiality of the system. It affects the victims' private data, applications, operating or sometimes just annoys the users. Mobile browsers are susceptible to the same kind of security risks as home or office computers. Mobile browsers are little safer at this point compared to computers. With the increase of mobile banking, the numbers of these kinds of software will increase. However, at present, the increasing number of viruses and Trojan horses is the biggest concern to mobile banking security. The mobile devices running windows operating system are a favorite target for the hacker community.

2.8. Factors Influencing Usage of Mobile Banking

Several theories are offered in order to identify factors that cause people accept new technologies and information systems and use them (Rao and Troshani, 2007). The next section presents some of these theories and based on that conceptual frame work for this particular study is formulated.

2.8.1. Technology Acceptance Model (TAM)

TAM was first introduced by Fred Davis in 1989 to predict user acceptance of new technologies. According to (Davis 1989), TAM suggests that perceived usefulness (PU) and perceived ease of

use (PEOU) are the two most important factors in explaining individual user's adoption intentions and actual usage. Davis (1989) defines perceived usefulness as the degree to which a person believes that using a particular system will enhance his or her job performance. Perceived Ease of Use refers to the degree to which the person believes that using the system will be free of effort. TAM has been extensively tested and validated and is a widely accepted model, which can be modified or extended using other theories or constructs according to author in (Masinge 2010) and its usage has captured the attention of IS community attested by the authors in (Mathieson et al 2001). Masinge (2010) conducted a study on the factors influencing the adoption of mobile banking services at the bottom of the pyramid (BOP) in South Africa, and added perceived cost, trust and perceived risk constructs to TAM. The results of the study revealed that perceived usefulness (PU), perceived ease of use (PEOU), perceived cost, and customer's trust had a significant effect on the adoption of mobile banking at the BOP while perceived risk (PR) was found to have no significant effect. As a result of this many other models of extension have been suggested by the authors in (Luarn and Lin, 2005).The perceived credibility, perceived financial cost and perceived self-efficacy has been adopted based on the literature, as an extension of Technological Acceptance Model (TAM) to investigate and understand the behavioral intention of users of mobile bankers (Luarn and Lin, 2005).

- **Perceived Ease of Use**

Perceived ease of use is defined as the degree to which a person believes that using a particular system would be free of effort. Prior studies show that perceived ease of use has a significant effect on usage intention, either directly or indirectly through its effect on perceived usefulness(Davis 1989; Venkatesh 2000; Venkatesh and Davis 2003). A system perceived to be easier to use will facilitate more system use and is more likely to be accepted by users (Venkatesh and Morris 2003).TAM points that perceived ease of use influence the innovation acceptance. It decrease the effort paid in learning and applying new technologies. Many researches give support to TAM that perceived ease of use has positive impact on perceived usefulness and mobile services adoption (Porteous 2011, Ezeoha 2005). (Bong-Keun & Tom 2013) stated on their empirical investigation that perceived ease of use has a major significance on the adoption of mobile banking. This finding suggests that customers seek a simple, easier, faster process and environment for banking transactions. It was also showed that perceived ease of use is a major determining factor explaining the attitude difference between adopter and non-

adopters toward mobile banking .In the context of mobile banking, customers may find mobile banking services uneasy when the system is not easy to learn and easy to use. Information such as details of products or services, their benefits, and usage guidelines needs to be provided as it will make it easier for customers to adopt mobile banking. Furthermore, perceived ease of use helps in building trust with banks as it may send a signal that banks have really put in thought about their end users (Wang, Lin and Tang 2003). Many previous empirical studies further show that perceived ease of use has a positive influence in the adoption of mobile commerce (Khalifa and Shen 2008, Kim et al 2009; Wei et al.2009).

- **Perceived Usefulness**

Perceived usefulness is defined as the extent to which an individual believes that he or she would benefit from using mobile banking. (Bhatti 2007; Kim, Chan and Gupta 2007) argued that an individual often evaluates the consequences of their behavior and makes a choice based on the desirability of perceived usefulness. Therefore, perceived usefulness will influence their intention to accept and adopt a system. In the context of mobile banking, one of the reasons people use mobile banking is that they find the systems useful to their transactions and saves their time as well. Benefits are also observed by banks in the form of declining the number of branches which reduces the cost per transaction. Perceived usefulness is found to be the most significant factor influencing the intention to use mobile banking. This finding suggest that if mobile banking is to be accepted by users, they should perceive it as a useful and quicker way of doing banking transactions compared with the traditional banking system.

2.8.2. Innovation Diffusion Theory (IDT)

Rogers (2003) identifies three characteristics of innovations: relative advantage, compatibility, and complexity. Adopters have invariably been found to have different perceptions about these characteristics in comparison with non-adopters. The characteristics of an innovation affect its rate of adoption. Some products catch on immediately, whereas others take a long time to gain acceptance.

If the innovation is perceived to be better than the existing system (a measure of its relative advantage), is consistent with the needs of the potential adopter (a measure of its compatibility), and is easy to understand and use (a measure of its complexity), it is more likely that a favorable attitude towards the innovation will be formed (Ching and Ellis, 2004).

Lee et al. (2005) found that the perceived relative advantage, compatibility and complexity of the innovation played a key role in the adoption of mobile banking.

Therefore this study identifies how these characteristics of innovation influence the adoption of mobile banking in Ethiopia. The remaining parts of this section identify these characteristics of innovations as established in prior studies. Chaipoopirutana, Combs, Chatchawanwan, and Vij (2009) and Lin (2011), claimed that the adoption of mobile banking is 'complex' as it has the negative relation with intention to adopt mobile banking. In this paper they have discussed the (Rogers 2003) innovation diffusion model's attributes: complexity, compatibility, relative advantage and triability and found that Relative advantage, compatibility, ease of use (opposite of complexity) has a significant effect on attitude to adopt mobile banking services. They have also suggested that compatibility has a positive relation with the adoption of mobile banking. Customers have a favorable attitude towards adopting mobile banking services, if they have positive belief about the relative advantage of mobile banking.

On the other hand (Lee et al. 2005) performed eight interviews to collect transcripts from participants and concluded that relative advantages and compatibility were positive factors affecting the adoption of mobile banking.

- **Relative Advantage**

Relative advantage describes the degree to which an innovation is perceived as being better than its precursor (Rogers 2003). Gerrard and Cunningham (2003) identify a perceived relative advantage as being a significant factor driving the adoption of mobile banking.

According to when individuals pass through the innovation-decision process, they are motivated to seek information in order to decrease uncertainty about the relative advantage of an innovation. Potential adopters want to know the degree to which a new idea is better than an existing practice. Hence relative advantage is often the content of network messages with regard to an innovation.

Relative advantage also refers to the comparative benefits that a user of mobile banking may avail which he/she could not get from other traditional banking services as mentioned by (Pikkarainen et. al 2004) that users are more likely to adopt mobile banking if they believe using

mobile banking will gain more relative advantages as compared to other traditional banking channels such as ATM or non-mobile internet banking. It includes perceived cost and time.

- **Compatibility**

Compatibility refers to the degree to which a service is perceived as consistent with users' existing values, beliefs, habits and present and previous experiences (Chen et al. 2004).

Compatibility is defined as the degree to which an innovation is perceived as being consistent with the existing values, past experiences and the needs of potential adopters. An innovation can be compatible or incompatible with socio-cultural values and beliefs; with previously introduced ideas; or with client needs for innovations (Rogers 2003).The compatibility of an innovation, as perceived by members of a social system, is positively related to its rate of adoption.

- **Perceived Trust**

According to (Gefen 2003), trust is defined as ''a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another "

Trust is important because it helps customers overcome perceptions of uncertainty and risk and helps build appropriate favorable expectations of performance and other desired benefits. In any business or commerce deal trust is an important element. When dealing with technological and information technology enabled system for commerce activities like electronic commerce and mobile commerce then it is important to comprehend about the security and privacy concerns (Howcroft Hamilton & Hewer 2002; Hosein 2011). Trust can be developed through spreading the right information and giving customers or users of mobile banking furnished details about the mobile commerce system to ensure the easily manageable use of mobile banking system (Pavlov 2009).

- **Perceived Risk**

Perceived risk is the "uncertainty about the outcome of the use of the innovation"(Gerrard and Cunningham 2003).Perceived risk as defined by (Pavlou 2009), "It is the user's subjective expectation of suffering a loss in pursuit of a desired outcome". On a study conducted by (Masinge 2010) on the factors influencing the adoption of mobile banking services at the bottom of the pyramid (BOP) in South Africa, perceived risk, perceived cost, trust were added to constructs of TAM. In the study, the risk factor as perceived by bank customers in electronic transactions may comprise of five facets of security/privacy risk, performance risk, time/convenience risk, financial risk and social risk.

According to (Lee 2009), performance risk refers to the loss incurred by malfunctioning of mobile banking servers. Time risk refers to the loss of time and any inconvenience incurred due to the delays of receiving payments or the difficulty of navigation.

- **Awareness**

The level of information customers have on mobile banking is one of the major factors impacting the adoption and usage of online banking according to the author in (Sathye 1999). The research further states that the adoption rate of an innovation could be determined by level of awareness of the customers. The use of mobile banking services is new to many customers and the banks need to create enough awareness to capture the attention of the customers. Adoption is the acceptance and continued use of a product, service or idea. According to (Sathye 1999), customers go through "a process of knowledge, persuasion, decision and confirmation" before they are ready to adopt a product or service.

The adoption or rejection of an innovation begins when "the customers becomes aware of the product". Hence for adoption of mobile banking it is necessary that the banks offering this service make the customers aware about the availability of such a product and explain how it adds value relative to other products of its own or that of the competitors. Customers must become aware of the new brand or technology. An important characteristic for any adoption of innovation service or product is creating awareness among the customers about the service or product (Sathye 1999).

Awareness creation speeds the sales of products and evidences from different participants, lay credence to this. The level of awareness (Palvia 2009) is an important factor in encouragement of consumers to adopt related self service facilities. The amount of information customer's have about online banking has been identified the major factor impacting the adoption. According to (Sathye 1999) while the use of online banking service is fairly new experience to many people, low awareness of online banking is major factor in causing people not to adopt online banking.

2.9. Security countermeasures

Security of mobile banking is an important and a crucial issue. In addition to that, wireless communication increases the vulnerability of the system. Therefore, more robust security system is necessary to protect the private personal and financial information of the users. The most plausible and effective of security measures is user authentication.

- **User authentication**

Authentication is the process of identification of something or someone as authentic. There are three different ways by which someone can be authenticated. Clarke and Furnell (2005:6) stated that the three categories are based on the factors of authentication: what you know, what you have or what you are. Each of these factors has a range of elements. Research according to them, reveals that for better security, at least two or preferably three factors be verified. If two elements are required for authentication it is called a two-factor authentication while two or more than two factors authentication is known as multi-factor authentication. Authentication techniques based on what the user knows including a combination of the pin number, the user name, the password and the one time password for mobile banking. Research has shown security concerns with this technique as user uses weak password write it down or share with others. Therefore, to increase the protection of the mobile device pin protection or distributed pin verification scheme has been suggested in which one-half of the pin is stored in the mobile device and rest of the half is stored in a remote machine in the network. So the attacker can get only half of the pin from the phone's memory.

2.10. Empirical Literature

There is a growing body of academic research examining the determinants of mobile banking acceptance and its utilization (Crabbe, Standing, Standing and Karjaluoto, 2009; Donner and Tellez, 2008; Gu, Lee and Suh, 2009; Luarn and Lin, 2005; Mattila, 2003; Riquelme and Rios, 2010). Studies have been conducted in various countries to better understand customer's attitudes toward this emerging mobile technology. For example, Mattila (2003) focused on the drivers and inhibitors of mobile banking services. The author found that complexity, compatibility, relative advantage, observability, and triability are the significant factors influencing customer decision making in mobile banking adoption. Also, security and confidentiality of information are fundamental pre-requisites for any mobile banking services to be successful.

Laforet and Li (2005) carried out a research to examine the online/mobile banking in China. Purposive sampling technique was adapted to a sample of five hundred (500) customers who transact their banking business online. Analysis was done quantitatively through a regression model. Based on this research it was established that lack of understanding and awareness of mobile banking benefits are the main factors hindering the adoption of mobile banking usage in China though perceived risk, culture and technological skills are also barriers to online banking in China. Luarn and Lin (2005) conducted a survey in Taiwan in order to understand user's behavioral intention to use mobile banking service based on the extension of technology acceptance model (TAM). It was observed that the financial cost, perceived usefulness, self-efficacy, credibility and perceived ease of use were the factors influencing the behavioral intention to use mobile banking. In this finding, it was also observed that credibility was a major issue, which has a stronger influence on user's behavioral intention than the technology acceptance model (TAM) of perceived ease of use and perceived usefulness.

Cruz et al. (2010) studied the factors inhibiting the adoption of mobile banking among internet users in Brazil. Based on their finding they concluded that most users never use mobile banking services. They identified risk, cost, complexity, and lack of understanding about the relative advantages of these services as the main barriers of using mobile banking services. Laukkanen

and Kiviniemi (2010) tested the factors affecting the adoption of mobile banking in their study. They intended to find barriers of adoption of mobile banking. These factors included use, value, risk, tradition, and image.

The findings of this study indicated that providing information and guidance on the part of the bank have significant effect on reducing the barriers of use, image, value, and risk in mobile banking, but do not reduce the barriers of tradition. Wessels and Drennan (2010) conducted a study to identify and test the key factors stimulating and hindering the adoption of mobile banking, as well as the effect of user's attitude on the intention of use. They found out that perceived usefulness, perceived risk, cost, and compatibility have significant effect on the adoption of mobile banking. In this study, attitude toward mobile banking was considered as a moderating variable.

Koenig-Lewis et al. (2010) conducted a study on predicting the continuation of the use of mobile banking services by young users in England, aiming at investigation of barriers of mobile banking adoption. Their findings revealed that compatibility, perceived usefulness, and risk are significant factors affecting the adoption of mobile banking. Compatibility not only has a strong positive effect on the adoption of mobile banking, it is also identified as one of the most important independent variables affecting perceived ease of use, perceived usefulness, and credibility. The variables of trust and credibility were identified as having significant effect on reducing the total perceived risk. A study by (Sripalawat et al. 2011) examined positive and negative factors affecting mobile banking acceptance in Thailand. Subjective norms, perceived usefulness, perceived ease of use, were considered as the positive factors, and device barrier, perceived risk, lack of information, and perceived financial cost as the negative factors. They found that the positive factors have more influence than negative factors towards the acceptance of mobile banking. Dineshwar and Steven (2013), the researchers investigated the complex factors that prevent customers from adopting and using mobile banking services in Mauritius. The researchers used a quantitative approach, they also combined the TAM and IDT together with perceived risk and cost construct to investigate perception of mobile banking in Mauritius. The study revealed that age, gender and salary had no influence on adoption but rather, Convenience, compatibility and banking needs influenced banking adoption. On the other hand, Perceived security risk and reliability were found to be the only obstacles to mobile banking

usage but also that mobile banking usage is not associated with age, gender and salary. Mohammad RokibulKabir (2013) the researchers investigated on the factors that influence the use of mobile banking in Bangladesh. The approach for this study was quantitative. During the course of the research a self-administrated questionnaire was given to the clients of two full-fledged mobile banking service providers of Bangladesh called Brac Bank Limited and Dutch Bangla Bank Limited. 100 questionnaires were distributed but only 64 useable questionnaires were returned giving a response rate of 64 percent. The data was analyzed using multiple regressions and the outcome of the research was that, Variables such as ability, integrity, benevolence, perceived usefulness, perceived ease of use relative cost and time advantages were found to influence the adoption of mobile banking. Kazi and Muhammad (2013) Pakistan inspected those factors that affect Pakistan customers from adopting mobile banking services. Data collection was done by surveying 372 respondents from the two largest cities (Karachi and Hyderabad) of the province Sindh by use of judgment sampling method. The researcher used a correlation research design and the analysis was done using multiple regressions in order to come up with the findings. TAM model played a big role in this research, variables such as social influence, perceived risk, perceived usefulness, and perceived ease of use to study whether they affected the adoption of mobile banking in Pakistan. Kazi, A. K., & Mannan, M. A. (2013). this research investigated those factors that affect Isfahanian Mobile Banking Adoption in Iran, Based on the Decomposed Theory of Planned Behaviour. The result of this study suggested that there were only two important factors which are Attitude and perceived behavioural control under which factors such as perceived usefulness, perceived ease of use, compatibility and trust have an influence on behavioural attitude to adopt mobile banking. Koenig et al (2010) they investigated on the barriers towards Mobile Banking System adoption among young people in Germany. This study was based on the Technology acceptance model (TAM) model. They received 155 responses from all the questionnaires that were sent, they also used a structure equation modelling (SEM) approach to tests the hypothesis. The results of the study indicated that compatibility, perceived usefulness, and risk are significant indicators for the adoption of Mobile banking systems in Germany.

The study was about an analysis of the factors that influence mobile banking adoption in the rural Zimbabwe through extending the technology acceptance model. The researcher adopted use of stratified random sampling and the results of the study suggested that factors such as

perceived usefulness, PEOU, relative advantage, personal innovativeness and social norms influenced the intention to accept and use mobile banking. (Chitungo, S. K., &Munongo, S. (2013) Zimbabwe)

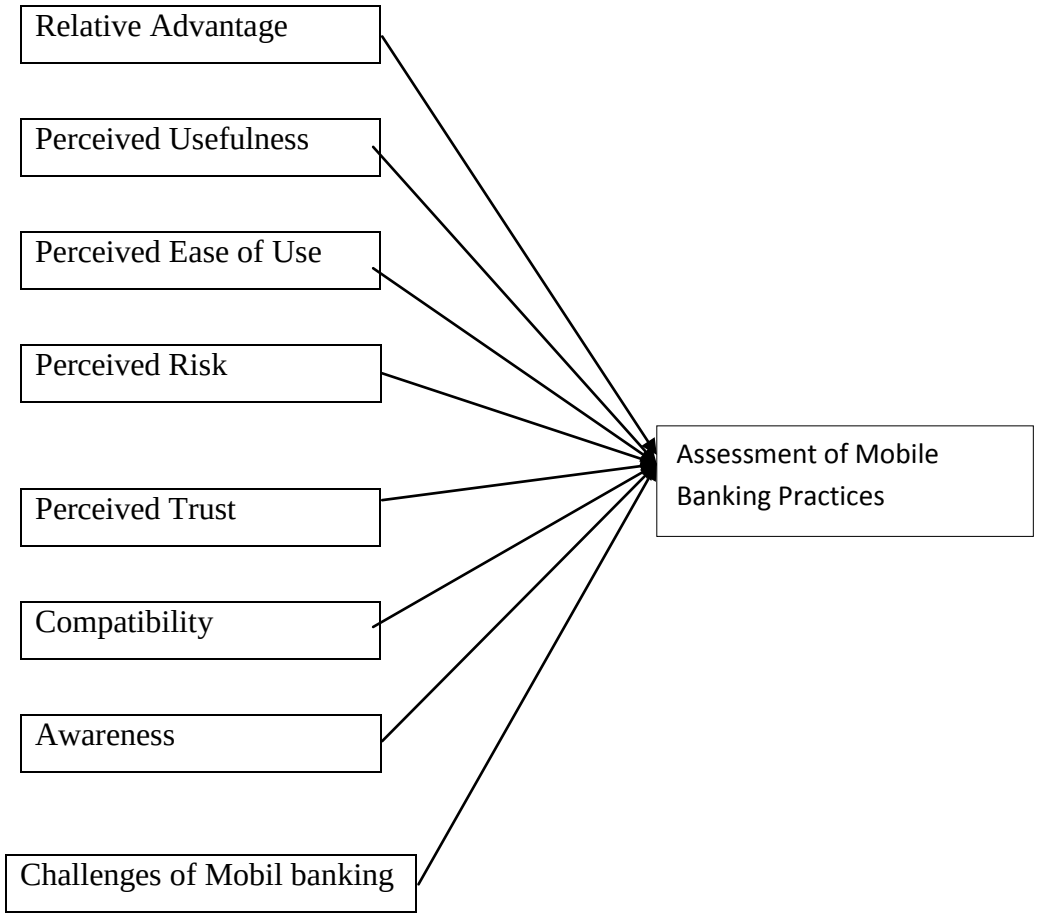
Cheah et al (2011), this was an empirical study that was conducted with the aim of investigation on the factors that affect the Malaysian customers from adopting mobile banking services. From the study, variables such as perceived ease of use, Perceived usefulness and relative advantage were found to be positively and significantly related to the intention to adopt mobile banking services while a constructs such as perceived risk was found to be negatively correlated with the adoption of mobile banking.

2.11. Research Gap

There have been a number of valuable studies in the area of mobile banking over the years back in North America, Europe, Asia and some from African countries such as Kenya, Ghana, Nigeria and Zimbabwe. The existing research in Ethiopia included mobile banking in electronic banking challenges and barriers (Ayana 2012), (Garedachew 2010). Influencing usage of mobile banking in Ethiopia (kalkidan 2016).As per the researcher knowledge there is insufficient study conducted with regards to factors affecting adoption of mobile banking in the case of Dashen bank. This study therefore aims at filling that gap by shedding light on issues that influence customer's adopt of mobile banking services in order to create an understanding of this new technology in the banking sector.

2.12. Conceptual Framework

A theoretical framework is a conceptual frame work of how one theorizes or makes logical sense of the several factors that have been identified as important to the problem (Sekaran, 2003). This will help the researcher: to understand the different variables of interest to the research.In this research paper since the variables of interest are highly technology related and technology related conceptual frameworks is used. Despite the growing interest by organizations to use technology in their business, user acceptance of the technology becomes a problem. The researcher used the conceptual frameworks to assessment of mobile banking practices at Dashen Bank share Companies are


Relative Advantage
Perceived Usefulness
Perceived Ease of Use
Perceived Risk
Perceived Trust
Compatibility
Awareness
Challenges of Mobil banking
Assessment of Mobile Banking Practices

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1. Introduction

This chapter covers the following sub-topics which relate to how the project was carried out. These include, the research design used to conduct the study, the population, data collection methods and the analysis of data in order to generate the findings of the research.

3.2. Research Design

The choice of research design depends on objectives that the researcher wants to achieve (John, 2007). To meet the main objective of this paper descriptive type of research design was adopted. Descriptive type of research is useful in describing the characteristics of a large population (Kothari, 2004). This study also adopts quantitative type of research approach by using primary data source. Convenience sampling is used to select sample respondents from the selected branches by way of approaching customers by visiting the bank's branch with the help of branch staffs and managers.

3.3. Population and Sampling

3.3.1. Target Population

In research methods, population means the entire aggregation of items from which samples can be drawn. In this study, the target population is comprised of customers of Dashen bank which are found in four branches (Mexico, Saris, Arat killo and kera branches) which are located in Addis Ababa.

3.3.2. Sample Design and Size

The bank which is selected for this research paper is Dashen bank which is found in Addis Ababa. The sampling design adopted for this research is two level sampling. Initially purposive sampling is used to select the bank branches based on business activities and large number of customers. These are Mexico, Saris, Arat killo and kera branches. Then convenience sampling is

used to select sample respondents from the selected branch by means of providing the questioners to the branches staffs and managers as well to be filled by the customers.

The total number of customers needed for the study from the selected branches was 150 respondents, and out of these 130 samples were randomly selected.

3.4. Data Collection Method

3.4.1. Primary Data Collection

The study use both primary and secondary data. The primary data collect by use of questionnaires as the primary instrument of data collection.

The questionnaire began with an introductory statement, which specified the purpose of the research as purely academic. Respondents were encouraged to be objective in their responses since they were assured of confidentiality.

3.4.2. Secondary Data Collection

The secondary data for this study obtained from the sampled bank documents and National Bank of Ethiopia.

To test the data internal consistency acrobat's Alpha test is conducted and the finding of the test indicates Cronbach's Alpha statistics of 0.954 which implies high reliability because it is higher than 0.7 which is the standard. According to Joseph A.G and Rosemary R.G, 2003, if α is greater than 0.7, it means that it has high reliability.

3.5. Data analysis

For the purpose of achieving the objective of the study, the collected data are processed and analyzed with descriptive statistics using Statistical Package for Social Science (SPSS 20).Throughout the analyzing process, frequencies, percentages, Mean and Standard Deviation more over tables are used to present the findings of the study.

CHAPTER FOUR

RESULTS & DISCUSSION

4.1. Introduction

This chapter presents the analysis and findings of the study as set out in the research methodology. This study targeted 150 respondents; questionnaires were dropped and picked to all targeted respondents. A total of 130 respondents fully filled and returned the questionnaires. This constituted 87% response rate which is satisfactory and can be used in drawing conclusions

In the following topics various demographic variables such as age, gender, Occupation, etc. of the sample respondents are analyzed. Factors affecting the adoption of mobile banking have been seen on varies variables like relative advantage, perceived usefulness (PU) ,perceived risk (PR),perceived ease of use (PEOU), Perceived trust (PT),Compatibility and Awareness are analyzed and discussed using descriptive and inferential statistics.

4.2. Demographic Characteristics of Respondents

As is shown in table 4.2 below, 76 of the respondents were male which represent 58.5% of the total respondents, while 54 were females which are 41.5% of the total respondents. As the result indicates more respondents are male .

Considering the age groups of the respondents, the higher number of respondents was in the rage of 36-45 years, which represent 39.2%, followed by age groups of 26-35years, 18- 25, 46-55 and 56 or above years, which represent 26.9%, 22.3%, 8.5% and 3.1% respectively. The result implies that productive age groups are actively using this technology.

According to table 4.2, the higher number of the respondents were employed representing majority of the respondents with 84.6% of the total response and 13.8% of the respondents were students and the remaining 1.6% were unemployed. The results indicate that most of respondents are employed. This shows that, employees can use this technology in their office for various services (paying bills, for student tuition, transfer the balance for other beneficiaries) without abusing their regular working time.

Table 4.1 Demographic characteristics of respondents

Items	Responses	Frequency	Percentage
Gender	Male	76	58.5%
	Female	54	41.5%
	Total	**130**	**100%**
Age group	18-25	29	22.3%
	26-35	35	26.9%
	36-45	51	39.2%
	46-55	11	8.5%
	Above 56	4	3.1%
	Total	**130**	**100%**
Occupation	Student	18	13.8%
	Employed	110	84.6%
	Unemployed	2	1.6%
	Total	**130**	**100%**

Source: Own Survey (2018)

4.3. How M-Banking works in Dashen bank

4.3.1. Views of customer respondents about M-banking

The different factors that can affect usage of mobile banking in the country including relative advantage, perceived usefulness, perceived ease of use, perceived risk, perceived trust, compatibility and awareness have been stated in the literature review and were analyzed as presented here below. And the following descriptive result was obtained as presented in the table Shown.

4.3.1.1. Relative Advantage

Table 4.2 Summary of Survey Findings for Usage Factors

	Statement to evaluate	**Rating point**						
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total	Remark
	Relative advantage							
RA	Mobile banking is faster than visiting a bank	2 1.6%	_ _	9 6.9%	23 17.7%	96 73.8%	130 100%	Strongly agree
RA	Mobile banking is more accessible than other banking	_ _	_ _	26 20%	32 24.6%	72 55.4%	130 100%	Strongly agree

Source: Own Survey (2018)

Out of the total respondents 73.8% strongly agreed that mobile banking is faster than visiting a bank. 55.4% of the respondent strongly agrees that mobile banking is more accessible than other emerging technology banking services .This indicates that majority of the customers found mobile banking have a relative advantage over other banking options. And yet mobile banking is preferable due to ease of use and accessible than other technologies. So the researcher found that most people prefer mobile banking services than other services.

4.3.1.2. Perceived Usefulness

Table 4.3 Summary of Survey Findings for Usage Factors

	Statement to evaluate	Rating point						
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total	Remark
	Perceived Usefulness							
PU	I think that using mobile banking would enable me to complete banking activities more quickly and easily	1 0.8%	7 5.4%	28 21.5%	27 20.8%	67 51.5%	130 100%	Strongly agree
PU	I find Mobile banking useful for my banking needs.	3 2.5%	8 6.5%	28 21%	53 41%	38 29%	130 100%	Agree
PU	There is no time limit to access my bank account and information	3 2.3%	14 10.8%	21 16.2%	38 29.2%	54 41.5%	130 100%	Strongly agree

Source: Own Survey (2018)

As it is shown on table above 51.5% of the respondents strongly agreed that using mobile banking would enable them to complete banking activities more quickly and easily. This implies that, mobile banking service helps them to accomplish their tasks more quickly. And also the respondents found that it is relatively easy to operate mobile banking services than other emerging technologies. Out of the total respondents the significant number (41%) of them agrees that mobile banking is useful for their activities. Respondents were also asked whether

there is no time limit to access their bank account and information and 41.5% strongly agreed. These result implies, that using mobile banking system helps to perform banking activities within a short period of time and also customers can access their account any time with no time limit.

4.3.1.3. Perceived Ease of Use

Table 4.4 Summary of Survey Findings for Usage Factors

Statement to evaluate		Rating point						
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total	Remark
	Perceived ease of use							
PEOU	I think that learning to use mobile banking would be easy.	2 1.5%	7 5.4%	37 28.5%	55 42.3%	29 22.3%	130 100%	Agree
PEOU	I think that it is easy to use mobile banking to accomplish my banking tasks	3 2.3%	14 10.8%	56 43.1%	19 14.6%	38 29.2%	130 100%	Neutral
PEOU	It would take me lots of time to learn how to use mobile banking services.	54 41.5%	42 32.3%	26 20%	8 6.2%	_ _	130 100%	Strongly Disagree

Source: Own Survey (2018)

As it is shown in table 4.5, when asked if they agree that learning to use mobile banking would be easy 42.3% of the respondents agreed and when asked if mobile banking would make it easier for them to carry out their tasks 43.1% were neutral. In addition when they were further asked if they think it will take them lots of time to learn how to use mobile banking services 41.5% of the

respondents strongly disagreed. Therefore; from the above responses it can be seen that customers found that it is easy to adapt and learn the technology and also it is perceived easy to accomplish banking services. This result is in line with (Hoppe et al. 2001) which suggest that the more complex a new technology is perceived to be, the less likely it will be used and the more ease of use the more likely to be used by customer.

4.3.1.4. Perceived Trust

Table 4.5 Summary of Survey Findings for Usage Factors

	Statement to evaluate	**Rating point**						
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total	Remark
	Perceived trust							
PT	I believe mobile network service providers and banks are trustworthy	28 21.5%	49 37.7%	16 12.3%	24 18.5%	13 10%	130 100%	Disagree
PT	I trust the use of mobile banking	31 23.8%	40 30.8%	14 10.8%	33 25.4%	12 9.2%	130 100%	Disagree

Source: Own Survey (2018)

As it show the above table the respondents were asked if they believe mobile network service providers and banks are trustworthy 37.7% disagree and also 30.8% disagreed when asked if they trust the use of mobile banking. This indicates that customers are yet to embrace and fully trust the mobile banking services and the network providers. Therefore, as long as customers trust the overall mobile banking technology their adoption rate will remain at low level.

4.3.1.5. Perceived Risk

Table 4.6 Summary of Survey Findings for Usage Factors

	Statement to evaluate	**Rating point**						
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total	Remark
	Perceived risk							
PR	Mobile banking services may not Perform well and may process payments incorrectly because of network problems.	_ _	33 25.4%	20 15.4%	44 33.8%	33 25.4%	130 100%	Agree
PR	When and if transaction errors occur, I will get compensation from banks.	65 50%	14 10.8%	32 24.6%	16 12.3%	3 2.3%	130 100%	Strongly disagree

Source: Own Survey (2018)

The study sought to determine if customers, perceived risk towards mobile banking affect their adoption of the service. According to (Kabir 2013), perceived risk may be seen from various perspectives such as privacy risk, financial risk, system risk and physical security risk. The respondents were asked mobile banking services may not perform well and may process payments incorrectly because of network problems which is system risk 33.8% agreed and 50% strongly disagreed when asked if they believe that they can get compensation from banks when and if transaction errors occur. The results obtained could imply that the perception of the risks

regarding mobile banking is expected to influence its adoption and further growth. The finding also concludes that presence of any perceived risk negatively affects adoption of mobile banking service.

4.3.1.6. Compatibility

Table 4.7 Summary of Survey Findings for Usage Factors

	Statement to evaluate	**Rating point**						
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total	Remark
Compatibility								
COM	Using mobile banking fits well with the way I like to control and manage my banking transactions	14 10.8%	_ _	41 31.5%	53 40.8%	22 16.9%	130 100%	Agree
COM	I use the current banking service (e.g.; phone banking) now because these are already a part of my daily life.	11 8.5%	14 10.8%	39 30%	50 38.5%	16 12.2%	130 100%	Agree

Source: Own Survey (2018)

As it is shown the above table regarding the compatibility of mobile banking with the way customers like to control and manage their banking transactions 40.8% agreed and 38.5% agreed to the statement I use the current banking service (For Example:- phone banking) now because

these are already a part of my daily life. This implies that when customers feel mobile banking being consistent with their existing life style and trend then its adoption will eventually increase. This indicated that compatibility to be influential in the adoption of virtual store, mobile payment and mobile banking.

4.3.1.7. Awareness

Table 4.8 Summary of Survey Findings for Usage Factors

	Statement to evaluate	**Rating point**						
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total	Remark
	Awareness							
AW	I am aware that my bank offers mobile banking services	11 8.5%	16 12.3%	20 15.4%	58 44.6%	25 19.2%	130 100%	Agree
AW	I am aware of all the various available services on mobile banking	16 12.3%	20 15.3%	27 20.8%	47 36.2%	20 15.4%	130 100%	Agree

Source: Own Survey (2018)

To determine the level of awareness of the respondents about mobile banking two statements were stated and respondents were asked to state their level of agreement and 44.6% agreed to the statements that I am aware of my bank offers mobile banking services and 36.2% of the respondents agreed that they are aware of all the various available services on mobile banking. This result indicates that customers are aware about availability of mobile banking and its advantage and disadvantage.

Table 4.9 Strategic Challenges of M-Banking

Statement to evaluate	**Rating point**						
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total	Remark
System failure and processing error	_ _	_ _	15 11.5%	73 56.2%	42 32.3%	130 100%	Agree
Software defects and operating mistakes	_ _	13 10%	42 32.3%	65 50%	10 7.7%	130 100%	Agree
Data loss caused by things such as viruses	_ _	_ _	_ _	29 22.3%	101 77.7%	130 100%	Strongly agree
Network vulnerabilities and fraudulent actions	_ _	_ _	_ _	39 30%	91 70%	130 100%	Strongly agree
Need for staff to have the relevant technological expertise	_ _	22 16.9%	_ _	57 43.8%	51 39.3%	130 100%	Agree
Cost challenges associated with high implementation cost of technology installations	_ _	_ _	_ _	88 67.7%	42 32.3%	130 100%	Agree

Source: Own Survey (2018)

Cost challenges associated with high implementation cost of both infrastructure and technology installations were also experienced to a great extent as given by percent of 67.7%. Network vulnerabilities and fraudulent actions also occurred as demonstrated by a percent of 70%. Other

challenges that occurred in the Ethiopian commercial banks to a moderate extent were software defects and operating mistakes 50%. Need for staff to have the relevant technological expertise to assess potential changes in risks 43.8%, data loss caused by things such as viruses (77.7%) and system failure and processing error (56.2%), This result indicates that Challenges of mobile banking negatively affects of adoption of mobile banking.

Table 4.10 How M-Banking Works in Dashen bank

	Rating point						
Mobile banking usage factor	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total	Remark
Relative advantage	3 2.3%	5 3.8%	7 5.4%	52 40%	63 48.5%	130 100%	Strongly agree
Perceived usefulness	7 5.4%	6 4.6%	1 0.8%	43 33%	73 56.2%	130 100%	Strongly agree
Perceived Ease of use	4 3.1%	6 4.6%	3 2.3%	71 54.6%	46 35.4%	130 100%	Agree
Perceived risk	1 0.8%	3 2.3%	2 1.5%	49 37.7%	75 57.7%	130 100%	Strongly agree
Perceived trust	- -	5 3.8%	3 2.3%	55 42.4%	67 51.5%	130 100%	Strongly agree
Compatibility	10 7.7%	52 40%	7 5.4%	39 30%	22 17%	130 100%	Disagree
Awareness	8 6.5%	10 8%	7 5.5%	46 35%	59 45%	130 100%	Agree

Source: Own Survey (2018)

To generalize the respondents were asked to rank which of the factors will highly influence their adoption of mobile banking and as it can be seen from the above table that relative advantage, perceived usefulness, perceived ease of use, perceived risk, perceived trust and awareness were

stated to have positive effect on the adoption of mobile bank among customers. As for compatibility factor 40% of the respondents disagreed that it influences their adoption which can mean that mobile banking technology is not viewed by many as being consistent with existing values of the use.

Table 4.11 Mean and Standard Deviation of Mobile banking

Descriptive Statistics			
	No of Items	**Mean**	**Standard Deviation**
Relative Advantage	2	4.49	0.797
Perceived Usefulness	3	4.007	1.027
Perceived Ease of Use	3	3.09	0.975
Perceived Trust	2	2.615	1.311
Perceived Risk	2	2.825	1.166
Compatibility	2	3.44	1.107
Awareness	2	3.405	1.216
Challenges of Mobile banking	6	4.24	0.69

Source: Own Survey (2018)

A five point liker scale is used to measure respondents' response concerning. Where: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree. As shown the above table a descriptive statics of mean such as relative advantage as of the results that Agree, Perceived Usefulness are Agree, Perceived Ease of Use as of the results Neutral, Perceived Trust as of the results Disagree, Perceived Risk as of the results Disagree, Compatibility as the the results Neutral, Awareness as the results Neutral and Challenges of Mobile banking as the result Agree.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1. Introduction

This chapter presents the summary of the data findings on factors affecting adoption of mobile banking in case of Dashen bank, conclusions and recommendations are drawn here.

5.2. Summary

As per the data gathered from the table shown in the above chapter the major findings are summarized.

- The result indicates 96 respondents (73.8%) strongly agree that mobile baking is faster than visiting a bank and 72 (55.4%) mobile banking is more accessible than other services.
- 67 respondents (51.5%) strongly agree that, using mobile banking would enable them to complete banking activities more quickly and easily. And yet 41.5% of the respondents strongly agree that they are not bounded by time limit so that they can use banking services through their phone at any time.
- In relation with perceived ease of use 56 respondents (43.1%) are neutral in the accomplishment of banking tasks by the help of mobile banking service.
- With respect to perceived trust, 40 (30.8%) of the respondent disagree, that customers have trust in the use of mobile banking.
- In the case of perceived risk, much number of the respondents, that is 65 (50%), strongly disagree that, when ever transaction error occurs, customers do get compensation from the bank. Much of the respondents 44(33.8%) agree that net work problem is not as such a big challenge in transaction error occurrences.
- The response shows 58 (44.6%) of them are aware that their banks provide mobile banking services. And yet 47 (36.2%) are aware in all the various available service on mobile banking.
- In relation with the challenges of mobile banking, 73 (56.2%) agree that there is system failure and processing error. 65 respondent (50%) agree that there exist software defect

and operating mistakes. Much number of respondents 101 (77.7%) strongly agree that customers data are lost due to viruses. 91 (70%) strongly agrees that, they are victims of fraudulent actions in their mobile banking services. Majority of the respondents 88 (67.7%) agree that there is a cost challenge in the adoption of this technology.

5.3. Conclusion

In this section based on the above summary the following recommendations are drawn.

- Significant number of respondents found that mobile banking service is more convenience and fast methods than physically visiting the bank. Thus it can be concluded that commercial banks have to work aggressively in providing mobile banking service in order to save customers time and energy.
- Significant number of respondents prefer using mobile banking services because they found it can enable them to undertake numerous activities more easily and quickly and yet they are satisfied in this technology because they are not bounded by time; that is time will not become a challenge while customers are using this technology.
- The study concludes that sustained introduction of mobile based banking services, tend to complement existing services thus those without access to physical banks can conveniently access banking services from the comfort of their homes, offices, etc. These services are money transfer, paying bills, balance enquiry, making payments and depositing.
- There are also customers who are not comfortable to accomplish their tasks by using mobile phones; meaning in the perceived use of this technology there are customers who fears to use this system.
- The study also concludes that one of the benefits that banks experience when using m-banking is increased customer satisfaction. This is because customers can access their accounts from anywhere, and they get involved more, thus creating relationships with banks.
- One of the main challenges in the adoption of mobile baking, as shown in the summary section, it incurred cost for purchasing smart phones and needs internet connection.

- To realize the full benefits afforded by M-banking it's imperative to move beyond the traditional and limited approaches and instead explore innovative and value oriented application.
- The study further concludes that technological costs such as system failure, network vulnerabilities, software defects and operating mistakes, system failure and processing error and data loss due to virus are also experienced by Dashen bank.

5.4. Recommendations

Based on the above conclusions the researcher recommends issues which are stated as follows:

- Dashen bank shall promote mobile banking services to its customers using various promotional tools appropriate to the target market so that it can increase the awareness and perception of potential customers about the technology's usefulness, ease of use as well as its rise.
- When Dashen bank design their mobile banking products they should give due emphasis which fits their customers life style, culture and languages as well.
- With regards to perceived risk it is important for banks and service providers to project thighs security when providing mobile banking services in order to yield higher customers acceptance. In fact, banks and service providers should continuously innovate and offer better security and reliable applications to enhance users confidence towards mobile banking services.
- Dashen bank shall deploy reliable network infrastructure and system to ensure mobile banking services operate smoothly so that it can reduce the perceived risk by customers regarding mobile banking technology.
- And finally although, this research is conducted based on the case of Dashen bank customers the researcher believes that the finding and the recommendation of the research can be applied to other commercial banks taking in to account the specific context of the organizations.
- This study further recommends that Dashen bank should innovate and give solutions to customers to use in any phone cells instead of restricting the service in smart phones.
- The study recommends that banks need to integrate their existing bank platforms including core banking, customer relationship management, and payment hubs with

mobile banking solutions as it will help in significantly reduce the cost of manual operation.

- Banks also need to manage the challenges that come as result of adoption of the mobile banking technology by investing in stable systems with minimal errors, thorough training of staff to manage the systems, managing a multitude of partners, such as telecommunication providers, social media outlets, data analytics providers, retailers, payment networks, mobile device manufacturers, and many other stakeholders.
- The study also recommends on the need for banks to educate their customers on the benefits of mobile banking and make sure they differentiate themselves from other competing solutions, such as account aggregation services by providing advanced features.

5.5. Future Research

The main objective of this research is to determine factors affecting the adoption of mobile banking. This research is undertaken in Dashen bank on the selected four branches, so the researcher advises to do research on similar topics by considering other branches. The researcher also advises to consider other variables which are not covered on this study.

Reference

Agwu, E., 2012, ‘Generations X and Y Adoption of Internet and Internet Banking in Nigeria: a qualitative study’, International Journal of Online Marketing, October-December, (2), 4,68-81.

Akturan, U. & Tezcan, N. (2012). Mobile Banking Adoption of the Youth Market: Perceptions and Intentions. Marketing Intelligence and Planning, 30(4), 444-459.

Amanyehun, R.2011,Mobile Commerce First from Dashen http//:www.addisfortune.com/archive accessed March 21, 2016.

Ayana.G, 2012, ‘Adoption of Electronic Banking System in Ethiopian Banking Industry: Barriers and Drivers’, AAU Repository, 11-15.

Ba, S. and Pavlou, P., 2002, ‘Evidence of the Effect of Trust Building Technology in Electronic Markets: Price Premiums and Buyer Behavior’, *MIS Quarterly26 (3), pp243–268.*

Barnes, S.J. and *Corbitt*, B. (*2003*) ‘Mobile Banking Concept and Potential’, International Journal of Mobile Communications, 1, 273-288.

Bhatti, T.,2007, ‘Exploring Factors Influencing the Adoption of Mobile Commerce’, Journal of Internet Banking and Commerce, 12(3), 1-13.

Bong-Keun.J&Tom.E, 2013, ‘An Empirical Investigation on Consumer Acceptance of Mobile Banking Services’, *Business and Management Research,2*(1), 37-38.

Byers, R., Lederer, P.J. (2001), "Retail bank services strategy: a model of traditional, electronic, and mixeddistribution choices", Journal of Management Information Systems, Vol. 18 No.2, pp.13356.

Chaipoopirutana,S., Combs,H., Chatchawanwan,y. and Vij,V, 2009, ‘Diffusion of Innovation in Asia: A study of Internet Banking in Thailand and India, 27-31.

Cheah, C. M., Teo, A. C., Sim, J. J., Oon, K. H., and Tan, B. I. ,2011, ‘Factors Affecting Malaysian Mobile Banking Adoption: An Empirical Analysis’, International Journal ofNetwork and Mobile Technologies,2(3),149-160.

Clarke, N.L. and Furnell, S.M. (2005), ‘’Authentication of users on Mobile telephones. A survey of attitudes andpractice. Computerised and security 24(7).

Chen, L., M. Gillenson, and D. Sherrell, 2004, ‘Consumer Acceptance of Virtual Stores: A Theoretical Model and Critical Success Factors for Virtual Stores’, ACM SIGMIS Database Database,35(2), 8-31.

Ching, H.L. and Ellis, P. (2004) Marketing in Cyberspace: What Factors Drive E-Commerce Adoption? Journal of Marketing Management, 20, 409-429.

Chowdhury, S and Ahmmad, N 2011, ‘Factors Affecting Consumer Participation in Online Shopping in Malaysia: The Case study of University Students’, European Journal of Business and Economics,vol .5 No.4, pp 49-53.

Crosman ,P.(2011).Q&A ;How citi staff use social media to collaborate ,bank system and Technology Retrieved from http**;** //www.banktech.com.

Cruz, P., Neto, L. B. F., Munoz-Gallego, P., and Laukkanen, T, 2010, ‘Mobile Banking Rollout in Emerging Markets: Evidence from Brazil’, *International Journal of BankMarketing*,28 (5), 342-371.

Davis, F.D., 1989, ‘Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology’ *MIS Quarterly*,13(3), pp 319-340.

Deloitte,2010, Mobile Banking- A catalyst for Improving Bank Performance, Viewed on 23 March 2016, from http://www.deloitte.com

Dineshwar, R., and Steven, M., 2013, ‘an Investigation on Mobile Banking Adoption and Usage: A Case Study of Mauritius’, *Proceedings of 3rd Asia-Pacific Business Research Conference 25 - 26 February 2013, Kuala Lumpur, MalaysiaISBN: 978-1-922069-19-1.*

Donner, J. and Tellez, C. A., 2008, ‘Mobile Banking and Economic Development: Linking Adoption, Impact and Use’, Asian Journal of Communication,18 (4), 318-322.

Drexelius, K., Herzig, M. (2001), ‘Mobile banking and mobile brokerage successful applications of mobile business’, International management and Consulting, 16(2), 20-23.

Eckhardt, A., Laumer, S. and Weitzel, T. (2009), 'Who influences whom? Analyzing Workplace references social influence on IT adoption and non-adoption', *Journal of Information Technology*, 24 (1), 11-24.

Ezeoha, A.E., 2005, 'Regulating Internet Banking in Nigeria: Problems and Challenges Part1'Journal of Internet Banking and Commerce, 10.

Farnood ,H (2008).Sultanate.Soheila, ' mobile banking 'Journal of Information Technology Era,No. 38.

Gardachew, W (2010), 'Electronic -Banking in Ethiopia: Practices, Opportunities and Challenges', Journal of Internet Banking and Commerce, 15(2), 2-9.

Gefen, D., Karahanna, E. and Straub, D. 2003, 'Trust and TAM in Online Shopping: An Integrated Model', MIS Quarterly, 27(1), 51-90

Gerrard P., & J. Cunningham, 2003, 'The Diffusion of Internet Banking among Singapore Consumers', *International Journal of Bank Marketing,21(1), 16-28.*

Goswami D, Raghavendran S (2009) Mobile-banking: can elephants and hippos tango? Journal of Business Strategy 30: 14-20.

Gsma 2009,'Mobile money for the unbanked' Annual report.

Gu, J.C., Lee, S.C., and Suh, YH ,2009 , 'Determinants of Behavioral Intention to Mobile Banking', Expert Systems with Applications, 36(9), 11605-11616

Hosein, N. Z., 2011, 'Internet Banking: An Empirical Study of Adoption Rates Amon Midwest Community Banks', Journal of Business & Economics Research (JBER), 7(11).

Howcroft, B., Hamilton, R., & Hewer, P., 2002, 'Consumer Attitude and the Usage and Adoption of Home-Based Banking in the United Kingdom', *International Journal of BankMarketing*20(3), 111-121.

Huili, Y. and Chunfang Z., 2011, 'The analysis of influencing factors and promotion strategy for the use of mobile banking', Canadian Social Science,7(2): 60-63.

Joseph A.G and Rosemary R.G, 2003, 'calculating and interpreting and reporting Cronbach's Alpha reliability coefficient for Likert-Type Scales.

Kalkidan.G(2016), 'Factors influencing usage of mobile banking in Addis Ababa Ethiopia', Journal of Internet Banking and Commerce.

Kazi, A. K., & Mannan, M. A. (2013). Factors affecting adoption of mobile banking in Pakistan: Empirical Evidence. International Journal of Research in Business and Social Science, 2(3), 54-61.

Khalifa, M. and Shen, K. 2008, 'Explaining the Adoption of Transactional B2C Mobile Commerce', *Journal of Enterprise Information Management*,21(2), 110-124.

Kothari C.R.,2004, Research Methodology: Methods and Techniques, 2nd ed., new age International limited publishers, New Delhi.

Kim, H.W., Chan, H.C., & Gupta, S., 2007, 'Value-based Adoption of Mobile Internet: An Empirical Investigation', *Decision Support Systems*,43(1), 111-126.

Kim, G., Shin, B. and Lee, H.G. 2009, 'Understanding dynamics between initial trust and usage intentions of mobile banking', *Information Systems Journal,19 (3), 283-311.*

Kiesnoski, K (2000), ''Wireless Banking''. Banking strategies: Online Copy, Vol.37, No 2.

Koenig-Lewis, N., A. Palmer, and A. Moll, 2010, 'Predicting Young Consumers' Take up of Mobile Banking Services', *International Journal of Bank Marketing,28(5) ,410-432.*

Laforet, S. and Li, X., 2005 'Consumer Attitudes towards Online and Mobile Banking in China', *International Journal of bank marketing,23(5), 362-380.*

Laukkanen, T. and Lauronen, J., 2005, 'Consumer Value Creation in Mobile Banking Services', *International Journal of Mobile Communication,3(4),325-338.*

Laukkanen, T. and Kiviniemi, V., (2010) The role of information in mobile banking resistance International Journal of Bank Marketing Vol. 28 No. 5, 2010 pp. 372-388.

Lee, M-C., 2009, 'Factors Influencing the Adoption of Internet Banking: An Integration of TAM and TPB with Perceived Risk and Perceived Benefit', *Electronic Commerce Research and Applications,8(3),130-141.*

Lee, E., Kwon, K., and Schumann, D., 2005, 'Segmenting the Non-adopter Category in the Diffusion of Internet Banking', *Int. J. Bank Mark,*23 (5), 414–437.

Lee, David S., *2008*. "Randomized experiments from non-random selection in U.S. House elections," Journal of Econometrics, Elsevier, vol. 142(2).

Lin, H., 2011, 'an Empirical Investigation of Mobile Banking Adoption: The Effect of Innovation Attributes and Knowledge-based Trust', *International Journal of Information Management,* 31,252-260.

Luarn, P. and Lin, H.-H., 2005, 'Toward an Understanding of the Behavioral Intention to Use Mobile Banking', *Computers in Human Behavior, 21, 873-891.*

Luo, X., Li, H., Zhang, J., and Shim, J. P., 2010, 'Examining Multi-Dimensional Trust and Multi-Faceted Risk in Initial Acceptance of Emerging Technologies: An empirical Study of Mobile Banking Services, Decision Support Systems,49(2), 222-234.

Masinge, K., 2010, Factors Influencing the Adoption of Mobile Banking Services at the Bottom of the Pyramid in South Africa Gordon Institute of Business Science (GIBS), University of Pretoria, 38.

Mathieson, K., Peacock, E. and Chin, W.W., 2001, 'Extending the Technology Acceptance Model: The Influence of Perceived User Resources', *Database for Advances in* Information Systems,32,86-112.

Mattila, M., Karjaluoto, H. & Pento, T. (2003). Internet banking adoption among mature customers: early majority or laggards? Journal of Services Marketing, 17 (5), 514-28.

M Crabbe, C Standing, S Standing, H Karjaluoto,(2009),'An adoption model for mobile banking', International Journal of Mobile Communications 7 (5), 515-543.

Mohammad,R. K.,2013, Factors Influencing the Usage of Mobile Banking: Incident from a Developing Country,World Review of Business Research, 3.(3), Pp. 96 – 114.

National Bank of Ethiopia, 2012, Regulation of Mobile and Agent Banking Services Directives No. FIS /01/2012.

OkoegwaleR.(2008),'ChallengesofNigeriaMobileBankingPhones.'Nairaland.(http://www.nairaland.com/153205/challenges Nigeria mobile-banking.

Palvia, P., 2009, 'the role of trust in e-commerce relational exchange: a unified model', *Information & management,46(4), 213-220.*

Pendharkar, P. 2004, 'Human–computer interaction issues in mobile computing' *International journal of Human–Computer Studies,771-797.*

Petrova, K (2014), ''Mobile Banking: Background, Services and Adoption'', Auckland University. (Retrieved from the internet.)

Porteous, D., 2011, 'The Enabling Environment for Mobile Banking in Africa; Bankable frontier.

Pousttchi, K. & Schurig, M. , 2007, 'Assessment of Today's Mobile Banking Applications From the View of Customer Requirements;http://mpra.ub.unimuenchen ,accessed April 10, 2016.

Pousttchi, K.,& Schurig, M. (2004), 'Assessment of today's mobile banking applications from the view of customer requirements', European Journal of Information Systems, 5(1), 36–46.

Poor Nick, A.(2010).'The role of mobile banking services to its citizens', Telecommunication World Magazine,No 78

Pikkarainen, T., 2004, 'Customer Acceptance of Online Banking: An Extension of the Technology Acceptance Model', *Internet Research,* 3, 224-235.

Puschel, J., Mazzon, J. and Hernandez, J., 2010. 'Mobile banking: proposition of an integrated adoption intention framework'. *International Journal of bank marketing,*28 (5), 389-409.

Rao.S and Trashani,(2007),'A conceptual frame work and proposition for the acceptance of mobile services', *Journal of theoretical and applied electronic commerce research,2(2),61-73.*

Riquelme, H., and Rios, R. E., 2010, 'The Moderating Effect of Gender in the Adoption of Mobile Banking', *International Journal of Bank Marketing,28(5),328-341.*

Rogers, E.M., 2003, Diffusion of Innovations. 5th Edition, *Simon & Schuster,* Inc., New York

Sathye, M., 1999, 'Adoption of Internet Banking by Australian Consumers: An Empirical Investigation', *International Journal of Bank Marketing, 17, 324-334.*

Skinner.Ch&AlaviLangerouS.H(2010).'Mobilebanking and branch banking' Journal of Economics data base,No.112.

S. K. Chitungo and *S. Munongo*,(2013) 'Extending *the* Technology Acceptance Model'. Journal of Business Administration and Education, Vol. *3*, No. 1.

Sripalawat, J., Thongmak, M. and Ngramyarn, A., 2011, M-banking in Metropolitan Bangkok and a Comparison with other Countries, The Journal of Computer Information Systems, 51(3), 67-76.

Sultana, R 2009, 'Mobile Banking: Overview of Regulatory Frame Work in Emerging Market' World Journal of Information Technology Vol. 4, No.1, pp 124-131.

Sunil K.M.,and Durga P.S.,2013,'Mobile Banking Adoption and Benefits towards CustomersService',Modern engineering Management Studies (MEMS),2(1),2319-2526.

Suoranta, M., 2003, 'Adoption of Mobile Banking in Finland, Jyväskylä University Printing House, Jyväskylä and ER-Paino, Lievestuore.

Tiwari, R. and Buse, S., 2007, 'the Mobile Commerce Prospects: A Strategic Analysis of Opportunities in the Banking Sector', *Hamburg University Press, Hamburg.*

Venkatesh, M., Morris, G. and Davis, F.D., 2003, User Acceptance of Information Technology: Toward a Unified View, *MIS* Quarterly, 27(3), 425-478.

Venkatesh, V., 2000, 'Determinants of Perceived Ease of Use: Integrating Control, Intrinsic Motivation, and Emotion into the Technology Acceptance Model', *Information SystemsResearch,* 11 (4), 342-365.

Vinayagamoorthy A and Sankar C., 2012, 'Mobile Banking –An Overview', Advances *in Management*, 5, 24-29.

Wang, S. and Barnes, S., 2007, 'Exploring the Acceptance of Mobile Auctions in China Proceedings of the Sixth International Conference on the Management of Mobile Business,Toronto, Canada.

Wang, Y.-S., Wang, Y., Lin, H.-H. and Tang, T.-I., 2003, 'Determinants of User Acceptance of Internet Banking': An Empirical Study, International Journal of Service Industry Management, 14, 501-519.

Wei, T.W., Marthandan, G., Chong, A.Y.L., Ooi, K.B. and Arumugam, S., 2009, ‘What Drives Malaysian Commerce Adoption? An empirical Analysis’, Industrial Management & Data Systems, 109(3), 370-388.

Wessels, L., Drennan, J., 2010. An investigation of consumer acceptance of M-banking International Journal of Bank Marketing 28 (7), 547‑568.

APPENDIX I

Questionnaire

Dear Respondent,

The aim of this questionnaire is to identify the factors that affect the adoption of mobile banking in the case of Dashen bank. I would like to assure you that the information you provide will be used only for the purpose of achieving academic award.

Thank you for your participation

Best Regards,

Section A: Demographic Factors:

1. Age Group

□ *< 25* □ *25-35* □ *35-45* □ *46-55*
□ *>55*

2. Gender

□ *Male* □ *Female*

3. Occupational status

□ *Student* □ *Employed* □ *Unemployed* □ *Other*

4. Do you have mobile phone?

□ *Yes* □ *No*

Section B

Questioner for customer of Dashen bank

Please indicate the extent of your level of agreement and disagreement with the following Statement. Please tick (_) your appropriate answer based on the following rating.

1= strongly disagree 2= disagree 3= uncertain 4= agree 5= strongly agree

	Statement to evaluate	Rating point					
		1	2	3	4	5	Remark
Relative advantage							
RA	Mobile banking is faster than visiting a bank						
RA	Mobile banking is more accessible than other banking						
Perceived Usefulness							
PU	I think that using mobile banking would enable me to complete banking activities more quickly and easily						
PU	I find Mobile banking useful for my banking needs.						
PU	There is no time limit to access my bank account and information						
Perceived Ease Of Use							
PEOU	I think that learning to use mobile banking would be easy.						
PEOU	I think that it is easy to use mobile banking to accomplish my banking tasks						

PEOU	It would take me lots of time to learn how to use mobile banking services.						
Perceived trust							
PT	I believe mobile network service providers and banks are trustworthy						
PT	I trust the use of mobile banking						
Perceived Risk							
PR	Mobile banking services may not Perform well and may process payments incorrectly because of network problems.						
PR	When and if transaction errors occur, I will get compensation from banks.						
Compatibility							
COM	Using mobile banking fits well with the way I like to control and manage my banking transactions						
COM	I use the current banking service (e.g.; phone banking) now because these are already a part of my daily life.						
Awareness							
AW	I am aware that my bank offers mobile banking services						
AW	I am aware of all the various available services on mobile banking						

SECTION C: STRATEGIC CHALLENGES OF M-BANKING

The following are the main challenges experienced in commercial banks in Ethiopia. To what extent do they occur in your bank? 1=Strongly Disagree 2=Disagree 3=Uncertain 4=Agree 5=Strongly Agree

Statement to evaluate	Rating point					
	1	2	3	4	5	Remark
System failure and processing error						
Software defects and operating mistakes						
Data loss caused by things such as viruses						
Network vulnerabilities and fraudulent actions						
Need for staff to have the relevant technological expertise						
Cost challenges associated with high implementation cost of technology installations						

APPENDIX II

List of banks in Ethiopia

	Bank Name	Web Site	Year Est.	No of Branches	SWIFT
1	Abay Bank S.C.	http://www.abaybank.com.et/	2010	159	ABAYETAA
2	Addis International Bank	http://www.addisbanksc.com/	2011	54	ABSCETAA
3	Awash International Bank	http://www.awashbank.com/	1994	191	AWINETAA
4	Bank of Abyssinia	http://www.bankofabyssinia.com/	1996	111	ABYSETAA
5	Berhan International Bank	http://berhanbanksc.com/	2010	46	BERHETAA
6	Bunna International Bank	http://www.bunnabanksc.com/	2009	72	BUNAETAA
7	Commercial Bank of Ethiopia	http://www.combanketh.et/	1963	1192	CBETETAA
8	Cooperative Bank of Oromia(s.c.)	http://www.coopbankoromia.com.et/	2005	190	CBORETAA
9	Dashen Bank	http://www.dashenbanksc.com	2003	146	DASHETAA
10	Debub Global Bank	http://www.debubglobalbank.com/	2012	32	DEGAETAA
11	Development Bank of Ethiopia	http://www.dbe.com.et/home/	1909	43	DEETETAA
12	Enat Bank	http://www.enatbanksc.com/	2013	7	ENATETAA
13	Lion International Bank	http://www.anbesabank.com/	2006	67	LIBSETAA
14	Nib International Bank	http://www.nibbank-et.com/index.php	1999	98	NIBIETTA
15	Oromia	http://www.orointbank.com/	2008	115	ORIRETAA

	International Bank				
16	United Bank	http://www.unitedbank.com.et/	1998	108	UNTDETAA
17	Wegagen Bank	http://www.wegagenbanksc.com/	1997	98	WEGAETAA
18	Zemen Bank	http://www.zemenbank.com/	2009	1	ZEMEETAA
	Total			2357	

Source of the data NBE