Addis Ababa University

Department of Project Management

Factors that affect the use of Mobil Banking in the Commercial Bank of Ethiopia

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A Research Project Submitted In Partial Fulfillment of the Requirements for the Award of Master of Arts Degree in Project Management

Advisor: Mengistu Bogale (PhD)

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DECLARATION

I, the undersigned, declare that this research project is my own work and effort and it has not been submitted anywhere for any award. Where other sources of information have been used, they have been duly acknowledged.

Name of Candidate: Bosena Sewalem Signature: _____

Place: Addis Ababa, Ethiopia Date: June, 2018

CERTIFICATION

This is to certify that Bosena Sewalem Ambaw has carried out her research work on the topic entitled **"Factors that affect the use of Mobile Banking in the Commercial Bank of Ethiopia."** The study is an original work and is suitable for the submission for the reward of MA Degree in Project Management.

Advisor: Mengistu Bogale (PhD):_____

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Approved by the Board of Examiners:

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ABSTRACT

The purpose of this study is to identify the factors that affect the use of mobile banking project in Commercial Bank of Ethiopia. The study used descriptive statistics and regression model to assesse factors that affect usage of mobile banking. This study was conducted based on the data gathered from customers of Commercial Bank of Ethiopia within four district and eight branches using questionnaire from sample size of 400. Dependent variable was customer mobile banking usage, and independent variables were Relative Advantage (RA), Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Compatibility (Com), Perceived Trust (PT), Awareness (AW), and Perceived Risk (PR) The analysis of the data was done with the help of the SPSS version 20. The regression result found that PR and PEOU were found statistically significant to affect the mobile banking usage in the study area. The research recommended CBE to 1) work on innovative technology and promotion to minimize perceived risk and low trust, 2) make MB more easier to use, 3) develop innovative projects to enhance the participation of people with low level of education. This is due to the fact that less educated ones felt that mobile banking is not easy to understand and might create wrong transfer, 4) expand MB in other branches by targeting business owners as they were higher users of MB, and 5) more emphasis on the benefits that customers will obtain in the aspects of cost savings, convenience, flexibility, and mobility when using mobile banking services.

Keywords: Mobile banking, Perceived Trust, Perceived risk, Awareness, Compatibility.

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ACRONYMS AND ABBREVIATION

AA- Addis Ababa

ATM-Automotive Teller Machine

BOP- bottom of the pyramid

CBE- Commercial Bank of Ethiopia

ICT-Information Communication Technology

IDT-Innovation Diffusion Theory

IT-Information Technology

MB- Mobile Banking

NBE-National Bank of Ethiopia

PEOU- perceived ease of use

PIN-Personal Identification Number

PR-perceived risk

PU- perceived usefulness

SMS- Short Message Service

TAM-Technology Acceptance Model

USSD-Unstructured Supplementary Service Data

WAR-Wireless Application Protocol,

CHAPTER ONE: INTRODUCTION

1.1. Background of the study

Today's business environment is very dynamic and intense as a result of technological advancement and introduction of information and communication technology as a competitive advantage of any organization. In the last few decades, application of information technology in business strategies has become at the very heart of the competitive process. As the economy move from lower to higher stages of development, business processes are shifting from simpler to modern and complex techniques of production. In this regard information technology has played a great role in changing the input-output relationship of production activities. Business organization especially the banking industry is operating in a complex and competitive environment characterized by changing condition and highly unpredictable economic climate with ICT being at the center of the change curve (Agbolade, 2011).

Mobile Banking integrated with Information technology has gradually converged with telecommunication technologies to give us Information and Communication Technology (ICT), hence the integration of telecommunications, data communications and mass communications into a single medium (Lucey, 2005). According to Chafey (2003), the manner in which wireless devices (such as mobile phones) are being used has also changed in a relatively short period of time. Consumers are gradually embracing their portable wireless devices as an alternative means to access their bank accounts. The mobile and wireless market has been one of the fastest growing markets in the world and is still growing at a rapid pace like to banking business.

However, there is no universal form of mobile banking; rather, purposes and structures vary from country to country. The systems offer a variety of financial functions, including micro payments to merchants, bill-payments to utilities, money transfers between individuals, and long-distance remittances. Currently, different institutional and business models deliver these systems. Some are offered entirely by banks, others entirely by telecommunications providers, and still others involve a partnership between a bank and a telecommunications provider (Poreteous, 2006).

1.2. Statement of the Problem

Ethiopia like other developing countries is a country where the majority of its population is unbanked for various reasons among which one of the main reasons is low level of banks presence throughout the country one bank branch per every 39,402 customers. According to the National Bank of Ethiopia (NBE) annual report (2013/14) 2,208 bank branches are available for around 90 million people. Developed countries have 89 percent of the adult population with bank account whereas in Africa only 23 percent of the adult populations own bank account (ADB, 2013) or 20 percent at family level. Ethiopia is not an exception in Sub-Saharan Africa.

As, compared to other African countries like Kenya where the mobile banking services accessibility reach higher level, the level of adoption in Ethiopia is very low. For instance Commercial Bank of Ethiopia the pioneer bank in mobile banking adoption has very low users (167,000) as of March 31, 2015 (CBE, 2015). Kenya stands out in several respects, according to the Safaricom's half year results for 2013 2014; M-PESA was reported to have 18.2 million active customers (KARIUKI NYAGA, 2014). M-PESA started operating in Kenya in 2007, and has taken the lead in terms of innovation for providing more inclusive access to finance for a

large part of the population who hitherto had been without a bank account (KARIUKI NYAGA, 2014).

When we look at the growth in mobile phone penetration in Africa in general and in Ethiopia in particular it is moving up at higher rate. In Ethiopia the number of mobile phone subscribers has now reached more than 38 million in Ethiopia as of July 07, 2015 as per unpublished annual performance report of Ethio telecom. The challenges we have seen previously in providing access to banking services in Sub-Saharan Africa in general and Ethiopia in particular can be addressed by using mobile phone and mobile banking technology as witnessed empirically in the neighboring country Kenya. Hence, mobile banking is an opportunity for the banks in Ethiopia to address the potential market in the country where access to banking services is very low.

Various researches have been conducted in Africa to identify factors that affect mobile banking adoption such as: N.G. Karama, (2014), N.Solomon et al, (2014), and R. A. Oluoch, (2012). As result of their research they identified different factors as determinant factors in the adoption of mobile banking like perceived usefulness, perceived ease of use, perceived risk and trust. The mobile banking usage at Commercial Bank of Ethiopia is a recent phenomenon and there are also some related researches done on this particular issue in the banking industries, but still there remains a lot of work to be done to make this technology to be used in the proper manner by customers. The things that have been done in this area were limited for identifying the customers' perception towards the mobile banking usage. So researches to be done like this will have a contribution to what have been done and also to what will be done next regarding technologies to be born out in relation to the mobile banking industry and customer perception.

Hence, this research paper tried to fill research gap in the area about factors that affected the use of mobile banking in commercial banks specially in the Commercial Bank of Ethiopia.

1.3. Research Questions

To gain a comprehensive understanding of the phenomenon under investigation, and in order to be able to provide a sufficient justification for answering that question, the following specific questions needs to be addressed. For the purpose of the present research, these questions are:

1. Does awareness affect mobile banking usage in CBE?
2. Does perceived risk affect mobile banking usage in CBE?
3. Does perceived trust affect mobile banking usage in CBE?
4. Does relative advantage affect mobile banking usage in CBE?
5. Does compatibility affect mobile banking usage in CBE?
6. Does perceived ease of use affect mobile banking usage in CBE?
7. Does perceived usefulness mobile banking usage in CBE?

1.4. Objective of the Study

1.4.1. General Objective: To identify the factors that affects the use of mobile banking in Commercial Bank of Ethiopia.

1.4.2. Specific Objective

- To identify the major challenges for the implementation of mobile banking service in CBE.
- To find some of the benefits realized by CBE in the implementation and practice of mobile banking technology.

1.5. Scope of the study

There are seven branches of commercial banks that have adopted mobile banking as per NBE data and out of those commercial banks that are currently providing the service, CBE has a wider range of customers and perform financially well. The study was carried out in four district out of fifteen districts, namely East, West, North and South Addis Ababa districts.

1.6. Limitation of the study

The study is conducted only in selected CBE branches found in Addis Ababa. Customers filled questionnaire when they visited the bank and had limited time to complete the survey with full attention. The four districts were selected due to the fact that all branches have better customer number and transactions. There for the finding does not represent Addis Ababa as a whole.

1.7. Significant of the Study

The research is expected to have significances like showing directions of improvements and also the things to be done towards the perception of customers on mobile banking usage. The findings will lead one step forward to what will be done in terms of customers perceptions in the area of mobile banking usage. The workers will be aware of customers' perception towards this mobile banking usage. Again it helps Commercial Bank of Ethiopia to implement the mobile banking service in an improved way to its customers. It also contributes to the users of the mobile banking to suggest their view to the bank to improve bank's approach to MB. Government also will use the findings to develop appropriate policy and strategy. The university can use it as one of the references for knowledge data base. The findings and recommendations will inform bank's technology innovation and marketing strategy to be viable in the competitive market

1.8. Organization of the Study

The research paper is organized into five chapters: Chapter one deals with the introduction part of the paper. And second chapter discussed the review of related literatures about the subject matter followed by chapter three deals with research methodology used in the research. Chapter four result and discussion. Finally, in chapter five of the document covers conclusions and recommendations of the research.

CHAPTER TWO: LITERATURE REVIEW

2.1-Theoritical Literature

2.1.1 Introduction

This chapter contains the literature review which begins with the introduction of mobile banking, Mobile banking in Ethiopia, and customers' perception towards mobile banking services in the literature of mobile banking with other related researches conducted in the past years and the recent once. Similarly, different models used for customers' perception and technology adoption will be discussed. Again, related works on customers' perception of and mobile Banking adoption using those models and the challenge and benefit of implementation of mobile banking will also be discussed. The PMT (Protection Motivation) with its constructs will also be clarified. Finally trust and perceived risk, perceived ease of use and perceived usefulness will also be discussed in detail. This will serve as a frame work for our research work.

2.1.2. Definition of Mobile Banking

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 (Kim et al. 2009; 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. via mobile phones (Vinayagamoorthy and Sankar 2012). 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.

Mobile banking is a developing mobile technique that has combined information technology and commerce applications together. Since mobile banking was introduced, consumers have been able to use it to obtain special services 24 hours a day without having to visit the traditional bank branch for personal transactions.

2.1.3. Background of Mobile Banking

Currently, the advancement of mobile technologies has provided an opportunity for financial providers in introducing new financial innovations. One of the emerging financial innovations introduced by financial providers in an effort to increase customer satisfaction and efficiency is mobile banking.

More recent developments in Information Communication Technology (ICT) have provided the opportunity for customers to access banking services without necessarily going to the bank branches. This technological development has intensified in recent years and has led to the reduction of financial institutions' costs (Mari 2003; Saleem and Rashid 2011). Customers will be able to obtain immediate and interactive banking services anytime and anywhere which, in

turn, initiate great value for them (Mallat et al. 2004). Mobile banking service can also increase the amount of data processing and improve operational performance.

Moreover, adoption of mobile banking has significant impact on reducing costs and facilitating change in retail banking (Laukkanen and Lauronen 2005). Cruz et al. (2010) and Dasgupta et al. (2011) stated that mobile banking has great potential to provide reliable services to people living in remote areas where internet facility is limited.

Mobile banking "helps banks to increase speed, shorten processing periods, improve the flexibility of business transactions and reduce costs associated with having personnel serve customers physically" (Ayo, Adewoye and Oni 2010). The use of mobile phones has facilitated the expansion of markets, social business, and public services in both developing and developed countries (Spence and Smith 2010). Lin (2011) claims that rapid advances in mobile technologies have made mobile banking increasingly important in financial services. The use of mobile banking offers a way of lowering the cost of moving money from place to place (Donner and Tellez 2008; Anyasi and Otubu 2009). Porteous (2006) classified mobile banking into two; firstly, transformational mobile banking, which is the provision of banking services using a mobile phone to reach the unbanked population. Secondly, additive mobile banking, in which the mobile phone is simply an additional channel that is used to provide banking services to those already banked.

This opens a whole new world of opportunities for businesses and retailers to market their goods and services for customer. Customers today are 'on-the-go' they appreciate things that are readily available to them and banking is one example. Gone are the days when customers would line up in banks to do their banking needs. Today by a touch of a button using electronic banking they can transfer funds to and from their accounts. However, even though mobile technology is

widely available amongst customers, there are proportionately few adopters for mobile banking (Deloitte 2010).

2.1.4. Mobile banking in Ethiopia

Despite a rapid increase in the number of financial institutions since financial liberalization, the Ethiopian banking system is still underdeveloped compared to the rest of 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 Mi Card E-payment processing solution to Dashen Bank. This enabled Dashen Bank to be the first private bank in Ethiopia to acquire E-commerce and mobile merchant transactions (Amanyehun, 2011).

Despite the very high mobile penetration rate, the use and adoption of mobile banking services remains low. The mobile banking development in Ethiopia is at its starting stage. Currently mobile banking practice in Ethiopia can be considered as accessing the core banking system within the bank. Hence, only a customer of a given bank can access some banking services via his/her mobile phone. With urban skewed branch network it is hard to ensure efficient flow of financial resources and optimize the contributions of the entire financial system to the development processes. With the advent of new mobile technologies, which serve as a catalyst, mobile banking is on the edge to draw millions of new users within the world teeming population (Agwu, 2012). The review of the existing literature showed that mobile banking has been widely

researched in the developed and emerging economies; however, there is no research for the developing Ethiopian economy. This research is therefore assumed to fill this gap.

2.1.5. 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).

2.1.5.1 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.

2.1.5.2 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). Delport (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).

2.1.6. 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:

2.1.6.1 Mobile Accounting

Tiwari & Stephan (2007) defined mobile accounting as transaction-based banking services that revolve around a standard bank account and are conducted and/or availed by mobile devices. Not all mobile accounting services are however necessarily transaction based. Mobile accounting services may be divided into two categories to differentiate between services that are essential to operate an account and services that are essential to administer an account (Renju 2014). Moreover, additional services are required that inform a customer about his/her transactions and

other activities involving their account. It is for this reason that Mobile Accounting is offered almost regularly in combination with services from the field of Mobile Financial Information.

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).

Subscribing insurance policies: - Standardized, low-cost insurance policies like travel insurance policy may be purchased via mobile devices. This service could be particularly attractive in time-critical 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.

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).

Bill Payment: - for those companies which register with the bank for this service, the payment is made on request on mobile phone banking.

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).

2.1.6.2 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 categories: Account information and Market information (Cruz et al. 2010).

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 2004).

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.

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)

2.1.7. Technologies Employed to Provide Mobile Banking Services

Customers can use mobile banking technologies for various banking services ranging from planning to pay their bills via their cell phones. Mobile technologies used in the mobile banking include the browser-based applications, messaging-based applications and client-based applications (Kim et al. 2009; Tiwari & Buse 2007).

2.1.7.1. SMS (Short Message Service)

On the messaging-based applications, the communication between the bank and the customer is carried out via text messages. For example, by using a registered mobile number, the customer sends a predefined command to the bank, and then uses text messages to conduct transactions with the bank. An example of messaging-based applications is the Unstructured Supplementary Service Data (USSD), which has compatibility with most mobile phones. Existing mobile banking applications based on USSD includes WIZZIT in South Africa (WIZZIT 2005), MPESA in Tanzania (Camner & Sjöblom 2009), M-PESA in South Africa (Nedbank 2010b) and FNB mobile banking (FNB 2010).

The term "SMS Banking" refers to the provision of banking and financial services via means of text messaging service, known as SMS. SMS allows the financial institutions to communicate with their customers. Almost all mobile phones have the ability to use SMS; SMS is so suitable for sending messages from banks for a number of banking operations. In order to create a query,

the customer sends an SMS containing the service request to a special number which is considered for this purpose.

The customer sends a customized SMS (a command based instructed with Arabic number) to the bank with the predefined commands for each offered service. The server of the bank receives the SMS, interprets the commands and executes commands and instructions, if the request is found to be authorized. The authentication is carried out with the help of a special Mobile Banking, Personal Identification Number (MPIN). Furthermore, the requests are only accepted from a mobile phone number that has been registered as the authorized number of operating that particular bank account. With the integration made with the mobile banking server one can get all the financial and non-financial information. After completion of the whole process, the information will be gathered in the oracle database for future reference. For example:-

Dialing to 889 → Inserting the command and the PIN → Navigation of the Financial or non-financial information → Logging off

2.1.7.2. Browser-Based

The browser-based application is essentially a Wireless Access Protocol (WAP)-based internet access (Kim et al. 2009). This requires a compatible mobile phone which is WAP-enabled. The mobile phone is used to access banking portals through the Internet.

Brower-based customer needs to be connected to the internet to use this service. The interface is generated from the server which is transported to mobile device, and this allows the content to be displayed through the browser. This method is extremely fast depending on the server that the customer is connected to but one its disadvantages is that, it requires the subscriber (customer) to stay online all through the transaction process and could lead to higher cost for the customers.

2.1.7.3. Client-Based (Downloadable Applications)

This method requires the customers to use software installation, and this will serve as a user interface that can allow customers to use the mobile device while offline to access some basic transactions before going online.

Typing details before connecting to the internet could reduce cost. This client based application is particularly useful because it allows customers to stay offline and while preparing transaction such as entry of account details and afterwards the transmission is made by sending out the data, this banking process conducted offline reduces online connection time and cost (Pendharkar 2004). These are mobile banking applications that the users should download on their phone. Using the properties of these applications, transactions can be encrypted completely in both source and destination. Since this software has been designed for special purposes, mobile banking application designers can optimize the applied interface for the financial transactions.

The independence of application is one of the advantages of these applications for financial institutions (Ming 2007). Once customers have downloaded the software on their phone, they can use the Mobile Banking application. In other words, the application should be compatible with the various needs and functions for a large number of mobile phones and this is expensive.

The phone should also support one of the environments such as the Microsoft Windows Mobile. Another problem of mobile banking applications is that the customers should download the software, install it on their devices, and update its new versions, and maybe this is a new problem for some of the customers.

2.1.8. 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.

2.1.8.1 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 users' 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 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. (Luarn and Lin 2005) found that perceived usefulness is a vital factor determining the mobile customer usage. (Wang et.al 2003) also agree that most customers choosing mobile services because they see their benefits. On another side, (Suoranta 2003) support that lack of awareness of its usefulness and benefits realization are important factors which hinder mobile banking acceptance.

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 1996). 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).

2.1.8.2. 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. According to (Kotler 2000), 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 (Kotler 2000) 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, in one sense, indicates the strength of the reward or punishment resulting from the adoption of an innovation. There are a number of sub-dimensions of relative advantage such as the degree of economic profitability; decrease in discomfort; time saving; and effort (Rogers 2003).

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.

a) Perceived Cost Savings:- refer to the transaction cost of conducting mobile banking transactions, including the airtime and bank charges. Perceived cost is defined as the extent to which a person believes that using mobile banking will cost money (Luarn & Lin 2005). The cost may include the transactional cost in the form of bank charges, mobile network charges for sending communication traffic (including SMS or data) and mobile device cost.

b) Perceived Time Saving:- refer to the time required to complete a transaction. Lee (2009) found in his study that time plays an important role in adopting mobile banking service by the users. It has been observed by researchers that when user perceives relative advantage or relative usefulness of a new technology over an old one, they tend to adopt it (McCloskey 2006; Rogers 2003). Therefore mobile banking adoption is affected by the benefits available such as immediacy, convenience and affordability to customers (Lin 2011).

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.

Compatibility is a vital feature of innovation as conformance with user's lifestyle can propel a rapid rate of adoption (Rogers 2003). Study on compatibility is a significant antecedent in determining customers' attitude towards electronic banking adoption in Malaysia (Ndubisi and Sinti 2006). Compatibility has further been found influential in the adoption of virtual store, mobile payment and mobile banking (Koenig-Lewis 2010; Lin 2011). Al-Gahtani (2003) found that compatibility had significant correlation with computer adoption and use.

Complexity

Complexity is defined as the degree to which an innovation is perceived to easy to understand and use. Adoption will be less likely if the innovation is perceived as being complex or difficult

to use (Rogers 2003). Complexity can be considered as the exact opposite of ease of use in the Technology Acceptance model, which has been found to directly impact the adoption of the Internet (Leaderer, et al. 1999).

Customers will reject an innovation if it is very complex and not user friendly. In this context, Cooper and Zmud (1990) report ease of use of innovative products or services as one of the three important characteristics for adoption from the customer's perspective. For example, the user friendliness of domain names, navigation tools and the graphical user interface are important determinants of the user-friendliness of a web page design. Research by Davis (1989) has found that perceived complexity is associated with the adoption of electronic technologies.

Since mobile banking adoption is at the early stages of adoption in Ethiopian banking industry the complexity factor will be included in perceived to ease of use factor. Observability Rogers (1995) argues that observability is the "degree to which the results of an innovation are visible and tangible to others". Liu and Li (2009) assert that the more it is easy to describe and observe an innovation the more positive impact it will have on people which will eventually encourage usage of the innovation. Cruz et al. (2010) affirm that probability of adopting an innovation increases when the benefits and usage of innovation can be easily observed.

Triability

Triability is defined as the "degree to which an innovation can be tried on a limited basis (Rogers 1995). As per Rogers, there is faster adoption of new ideas when these can be tried before their full implementation whilst adoption tend be slower where prior trial is not possible (Puscel et al. 2010). Tan and Teo (2000) assert that if given the opportunity to evaluate innovation, customer minimize the particular concerns of the unknown, which led to acceptance. Therefore, repeating the evaluation and assistance in the use of mobile banking during the trial period can reduce the

uncertainty about mobile banking, eventually creating positive customer attitudes to using mobile banking. Triability can also be viewed as the degree to which an innovation may be experimented with on a limited basis (Huisman and Iivari 2006). This research used an extended TAM containing the following constructs - perceived usefulness, perceived ease-of-use, perceived trust and awareness and also three IDT constructs- relative advantage, perceived risk and compatibility to explore the adoption of mobile banking.

Therefore; the research integrated the TAM and IDT along with trust and awareness to investigate the main factors influencing mobile banking adoption. The additional TAM constructs perceived risk, awareness and trust as indicated in different literatures are stated as follows.

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 2001), "It is the user's subjective expectation of suffering a loss in pursuit of a desired outcome". The quality of electronic services offered with the possible risk of illegal activities and fraud has always been a concern for both customer and service providers (Ba and Pavlou 2002). 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. Security/privacy risk refers to a potential loss due to fraud or a hacker

compromising the security of a mobile banking user. Time risk refers to the loss of time and any inconvenience incurred due to the delays of receiving payments or the difficulty of navigation. Social risk refers to the possibility that using mobile banking may result in disapproval by one's friends, family, or work group. Financial risk refers to the potential for monetary loss due to transaction errors or bank account misuse. According to (Dineshwar and Steven 2013), perceived risk and reliability were found to be the main obstacles to mobile banking usage in the African country of Mauritius. Risk in mobile banking is perceived to be higher than conventional banking because information exchange on wireless infrastructure, which produced inherent doubts among customers as hacking and other malicious attacks, might cause financial and personal data loss. Further an empirical analysis conducted by (Cheah, et al. 2011) on factors affecting Malaysian mobile banking adoption perceived risks was found to be negatively associated with mobile banking 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

2003). A study by (Bhattacherjee 2002) provided a definition and measurement of the customer's trust of an e-commerce service provider, based on the three dimensions or typology of trust: ability, integrity and benevolence. (Bhattacherjee 2002) defined these as follows:

a) Ability refers to the perception of the customer about the competency and salient knowledge of the mobile banking service provider to deliver the expected service;

b) Integrity refers to users' perceptions that the service provider will be fair, honest and adhere to reasonable conditions of transactions;

c) Benevolence refers to the extent to which a service provider will demonstrate receptivity and empathy towards the user. The service provider will make a good faith effort to resolve users' concerns and intends to do good to the users beyond profit motives. Customers' confidence about privacy and security of a system may significantly influence adoption and usage of mobile banking. In this study, trust is defined as the extent to which an individual believes that using mobile banking is secure and has no privacy threats. Perceived Trust therefore is an important construct which affects customer behavior and determines the success of mobile banking adoption (Wei et al. 2009). (Sadi and Noordin 2011), in an exploratory analysis of the factors influencing adoption of M-commerce in Malaysia reveals that trust identified as a key factor influencing the adoption of M-commerce. A similar study carried out by (Mashagba et al 2013) revealed that trust, risk and security had an effect on mobile banking adoption

Security and privacy are found to be the major obstacle in adoption of electronic based banking activities. Customers tend to use those facilities which they believe to be the secured one and which are from some credible source. People generally first think about the trustworthiness of communication network and then about the service provider (Yeh & Li 2009). Many researchers have found privacy and security that concerns which encompasses the trust factor, is found to be

the most important and significant factor impeding the adoption of mobile banking activities (Horton et al. 2002;Gunsaekaran&Ngai 2003;Nasri 2011).

The trusting intention represents users' willingness to engage in subsequent transactions with the service provider (Bhattacherjee 2002). The higher levels of trust in a service provider will therefore lead to a greater intention on the part of user to engage in mobile banking transactions (Gu, Lee & Suh 2009; Lee et al. 2007).

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. In an empirical study of Australian customers found that customers were unaware about the possibilities, advantages or disadvantages involved in online banking.

2.2. 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 Rokibul Kabir (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 fullfledged 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 implementation 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. Kazemi, S.A., et al (2013) this research investigated those factors that affect Is fahanian Mobile Banking Adoption in Iran, Based on the Decomposed Theory of Planned Behavior. The result of this study suggested that there were only two important factors which are Attitude and perceived behavioral control under which factors such as perceived usefulness, perceived ease of use, compatibility and trust have an influence on behavioral 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 modeling (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.

Chitungo, S. K., & Munongo, S. (2013) Zimbabwe, 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. 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, to go as statement of the research problem.

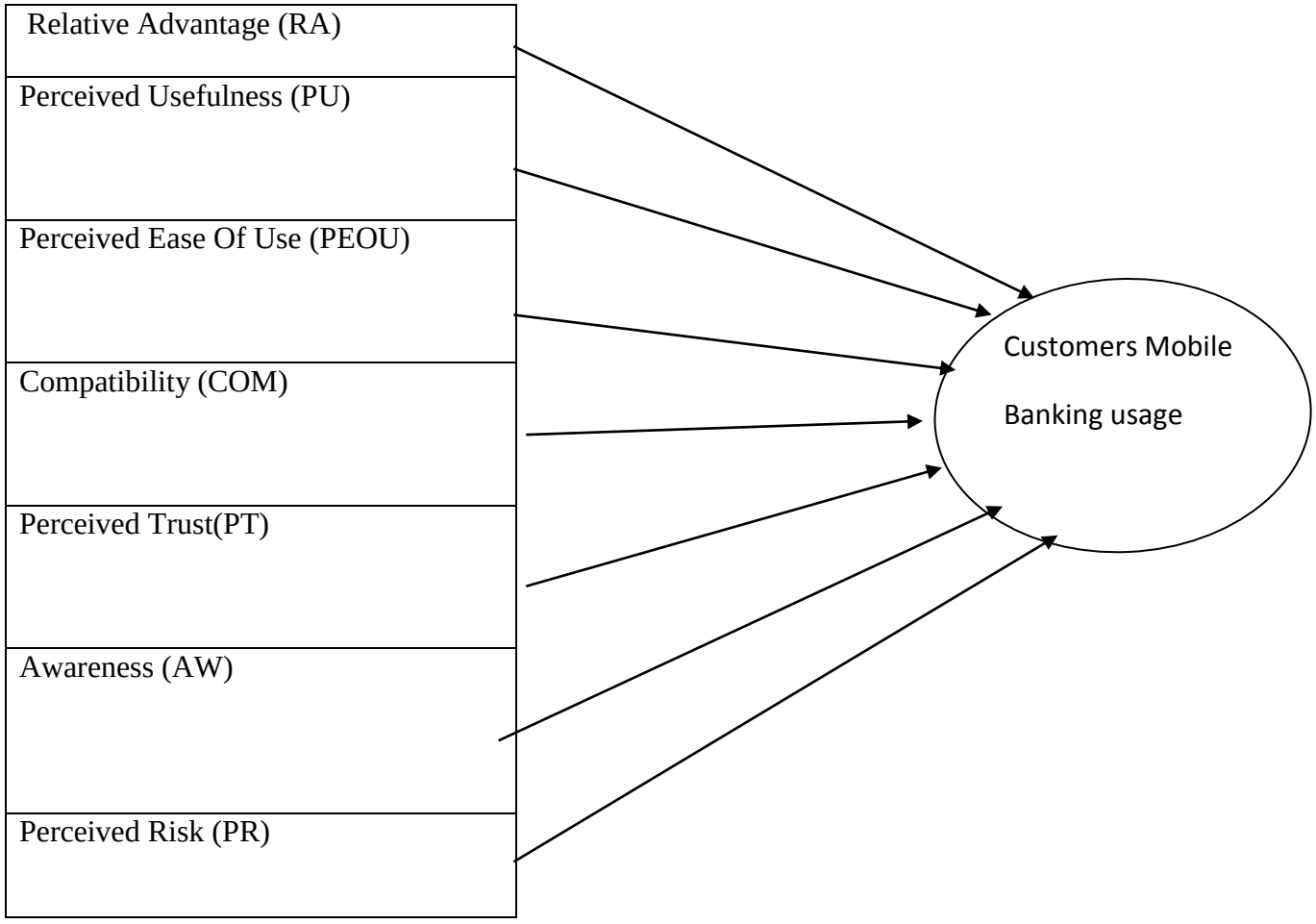
2.3. Research Gap

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. Researcher's such as (Gerrard 2003), (La foret 2005), (Masinge 2010), (Teo et al. 2011), (Al-Jabri 2012), (Dineshwar 2013) and others presented evidence for a number of variables that influenced customer behavior intention to use mobile banking, however the study of mobile banking has been given little attention in literatures in Ethiopia. The existing research in Ethiopia included mobile banking in electronic banking challenges and barriers (Ayana 2012), (Garedachew 2010). As per the researcher knowledge there is no study conducted with regards to factors influencing usage of mobile banking in Ethiopia. This study therefore aims at filling that gap by shedding light on issues that influence customer's usage of mobile banking services in order to create an understanding of this new technology in the banking sector.

2.11. Conceptual Framework

Based on the existing theories and ideas in the literature, the research formulated an inclusive research framework (Figure 1). This framework illustrates the interaction between the independent variables and the dependent variable.

Figure 1 Proposed research model or the conceptual framework



Source:-Developed by the author

CHAPTER THREE: RESEARCH METHODOLOGY

This chapter discusses the processes and techniques used in carrying out the study. It also gives a description of the respondents including information on the study population, the number of respondents and how they were selected. It also provides an outline of research design and the instruments for data collection. The methods adopted in the administration of the research instrument, data collection procedure and data analysis.

3.1. Research Approach

The general objective of this study is to examine the factors that influence usage of mobile banking implementation in Addis Ababa, Ethiopia. This study adopted a quantitative and qualitative research approach by using a primary and secondary data source. Quantitative approach used statistical methods in describing patterns of behavior and generalizing findings from samples to population of interest, and. In order to answer the statement of the problem and meet the research objectives, the design of the study used descriptive statistics and regression analysis.

3.2. Population and Sampling

3.2.1. Target Population

In research methods, population is the entire aggregation of items from which samples can be drawn. In this study, the target population is comprised of customers and worker of commercial banks in four districts of CBE based in Addis Ababa, Ethiopia.

3.2.2. Sample Design and Size

Particularly, the researcher set criteria to selecting the banks where the survey was conducted. Since the study was conducted about mobile banking usage those banks that have implemented this technology have been considered as the target population. And out of these banks

Commercial Bank of Ethiopia have the largest percentage of mobile banking user share and this bank also have been adopting mobile banking for the past four years and more.

The study sampled eight branches from four districts found in Addis Ababa purposively due to the fact that sampled branches have many customers with high transactions as compared to other branches. In Addition, mobile banking is relatively new in Ethiopia including Addis Ababa; therefore, to have good information and lesson for future recommendation and planning.

The sample size has been calculated from the sample size calculator from the link: https://www.surveymonkey.com/mp/sample-size-calculator/. According to this site, the required sample size at 95% confidence interval and 5% margin of error is 348. The study has taken 400 customers to have more sources of information. Higher sample size has possibility to represent the population.

3.3. Data Collection Method

A questionnaire was designed for sampled customers and workers of Commercial Bank of Ethiopia Addis Ababa. The questionnaire was developed based on previous empirical literature. Closed ended questionnaires were used for the study. The close-ended questions were developed on a five point Likert scales ranging from 5 (strongly agree) to 1 (strongly disagree). 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.

Qualitative data were collected using key informant interview with people who have been active players in the mobile banking project implementation (Branch Managers).

The study used secondary data that is obtained from National Bank of Ethiopia. It helped to understand the mobile banking project and to triangulate findings

3.4. Data Analysis

Descriptive statistics such as frequency distribution, cross tabulation, computation and descriptive were used to assess the characteristics of the respondents, relationship of variables, average and standard deviation of variables to make the analysis more meaningful, clear and easily interpretable. Descriptive statistics allow the researchers to present the data acquired in a structured, accurate and summarized manner. Regression analysis was applied to measure the contribution of explanatory variables on the dependent variable. The analysis of data was done with the help of the statistical software of Statistical Package for Social Sciences (Version 20).

3.5. Model specification

Hair et.al (2005) argued that for analyzing the relationship between one dependent variable and several independent variables, multiple regressions analysis can be applied. Hence, multiple regression analysis is an appropriate way to check the relationships between independent variables and dependent variable in this study. The literature reviewed in the previous chapter identified the main factors influencing usage of mobile banking and a model that would help to investigate the relationship of the main factors and usage of mobile banking is designed.

The linear multiple regression model is designed as follows:

$$\beta UMB = \beta_0 + \beta_1 RADVANTAGE + \beta_2 PU + \beta_3 PEOU + \beta_4 PR + \beta_5 PT + \beta_6 COM + \beta_7 AW + \epsilon$$

Where,

UMB = Usage of Mobile Banking

β_0 = Usage of Mobile Banking in absence of Relative Advantage, Perceived Usefulness, Perceived Ease of Use, Perceived Risk, Perceived Trust, Compatibility and Awareness variables.

β_1 = The partial change in the usage of Mobile Banking due to one unit change in Relative Advantage while other things remain constant.

β_2 = The partial change in the usage of Mobile Banking due to one unit change in Perceived Usefulness variable while other things remain constant.

β_3= The partial change in the usage of Mobile Banking due to one unit change in Perceived Ease of Use variable while other things remain constant.

β_4 = The partial change in the usage of Mobile Banking due to one unit change in Perceived Risk variable while other things remain constant.

β_5 = The partial change in the usage of Mobile Banking due to one unit change in Perceived Trust variable while other things remain constant.

β_6 = The partial change in the usage of Mobile Banking due to one unit change in Compatibility variable while other things remain constant.

β_7 = The partial change in the usage of Mobile Banking due to one unit change in Awareness variable while other things remain constant.

3.6. Research hypothesis

The study was done based on the following research hypothesis which were derived from the specific objectives and tested in this study.

H1: Relative advantage has a positive effect on usage of mobile banking.

H2: Compatibility has a positive effect on usage of mobile banking.

H3: Perceived Usefulness has a positive effect on usage of mobile banking.

H4: Perceived ease of use has a positive effect on usage of mobile banking.

H5: Perceived risk has a negative effect on usage of mobile banking.

H6: Customer's trust on the overall mobile banking service has a positive effect on usage of mobile banking.

H7: Awareness about mobile banking services has positive effect on usage of mobile banking**.**

3.7. Assumptions

Assumption 1: the liner regression model is liner in the parameters.

Assumption 2: X value are fixed in the repeated sampling. Values taken by the regression X are considered fixed in repeated sample. More technically, X is assumed to be nonstochastic.

Assumption 3: Zero mean value of disturbance u_i **G**iven the value of X the mean or expected value of the random disturbance term u_i is zero. The conditional mean value u_i is zero.

Assumption 4: Homoscedasticity or equal variance of u_i. Given the value of X , the variance of u_i is the same for all observations. That is the conditional variance of u_i are identical.

Assumption 5: No autocorrelation between the disturbance. Given any two X values X_i and X_j ($i \neq j$), the correlation between any two u_i and u_j ($i \neq j$) is zero.

Assumption 6: Zero covariance between u_i and X_i or E (u_i X_i)=0.

Assumption 7: The number of observation n must be greater than the number of parameter to be estimated. Alternatively, the number of observation n must be greater than the number of explanatory variables.

Assumption 8: Variability in X values. The X values in a given sample must no all be the same technically, var (X) must be a finite positive number.

Assumption 9: The regression model is correctly specified. There is no specification bias or error in the model used in empirical analysis.

Assumption 10: There is no perfect multicollinearity. That is, there are no prefect linear relationships among the explanatory variables. (Gujarati,2006).

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1. Respondents' characteristics

Women and men are using mobile technology in the research area. Respondent's age represents majority of the mobile users that range from 18 to 50 years. Respondents were from different level of education, varied sources and levels of income. In general, respondents represented mobile technology users and able to generate conclusion and recommendation (Table 1).

Table 1: Respondents' basic information

Variable	Response category	Frequency	Percentage
Sex	Male	219	54.8%
	Female	181	45.3%

Source: own computation 2018

As is shown in table 1 above, 219 of the respondents were male which represent 54.8% of the total respondents, while the 181 were females which are 45.3% of the total respondents.

Table 2: Age of the respondents

Variable	Response category	Frequency	Percentage
Age	18-25	128	32.0%
	26-30	192	48.0%
	31-40	62	15.5%
	41-50	18	4.5%

Source: own computation 2018

As shown the above table 2 considering the age groups of the respondents, the higher number of respondents was in the rage of 26-30 years, which represented 48%, followed by age groups of 18-25 years represented 32%, The age rang 31-40 years represented 15.5%.

Table 3: Level of education

Variable	Response category	Frequency	Percentage
Level of education	High school	17	4.3%
	First degree	320	80.0%
	Masters degree	63	15.8%

Source: own computation 2018

As show table 3, regarding the educational level of the study participants, the highest percentage of them had first degree holders were (320) which were 80.0% of the total respondents. About 15.8% of respondent were master's degree holders and the rest were high school students.

Table 4: Monthly income level and sources of income

Variable	Response category	Frequency	Percentage
Level of income	Below 10,000	337	84.3%
	10,001 to 15,000	54	13.5%
	35,100 to 40,000	9	2.3%
Source of income	Government employee	288	72.0%
	Private employee	9	2.3%
	Self-employee	18	4.5%
	House wife	68	17.0%
	Other	17	4.3%

Source: own computation 2018

As shown in the above table 4, about 84% of the respondents were receiving income below ETB 10,000 followed by 13% of the respondents that represented respondents received between 10,000 and 15,000 ETH. About 72% were from government employees

4.2. Discussion

Use of Mobile technology

Majority of the respondents (96%) have mobile phone. Trend analysis indicates that mobile use adoption has been increasing in recent year's (fig 2). Majority (67.2%) of the respondents have started using mobile phone less than five years. It was only 4.7% of the respondents who started using mobile phone before 11 years (Table 5). Out of the total mobile phone owners, about 89% are using mobile banking. It is encouraging that most mobile phone users are mobile banking users. The bank will have more opportunity to introduce different innovative mobile technology projects.

Table 5: Experiences on mobile phone technology

Variable	Response	Frequency	Percentage
How many years have you used mobile phone?	Less than 1 year	9	2.3%
	1-5 years	258	67.2%
	6-10 years	99	25.8%
	Above 11 years	18	4.7%
Have you heard about mobile banking?	Yes	384	96.0%
	No	16	4.0%
Do you use mobile banking?	Yes	341	85.3%
	No	59	14.8%

Source: own computation 2018

Gender

It was found that both male and female were using mobile technology; however, cross tabulation result indicates that all male respondents had mobile phones, and 91% of female respondents had mobile phones (Table 6). This is mainly due to the fact that housewives had no phones. About 92% of male and 77% of female were using mobile banking which is encouraging in a country like Ethiopia where patriarchal system is dominant. Banks in Ethiopia can develop innovative projects to enhance women's use of mobile banking

Table 6: Mobile technology use disaggregated by sex

Sex	Do you have mobile phone?			Do you use mobile banking?		
	Yes	No	Total	Yes	No	Total
Male	219 (100%)	0 (0%)	219	202 (92%)	17 (8%)	219
Female	165 (91%)	16 (9%)	181	139 (77%)	42 (23%)	181
Total	384	16	400	341	59	400

Source: own computation, 2018

Mobile banking use vs level of education

Table 7 indicates that mobile use increases as the level of education increases. As the level of education increases, people use mobile phones for different purposes including mobile banking. Better educated ones have better income to purchase phones to use for banking service

Table 7: Mobile banking use vs level of education

Do you use mobile banking?	Level of education			
	High school	First degree	Masters degree	Total
Yes	9 (53%)	269 (84%)	63 (100%)	341
No	8 (47%)	51(16%)	0 (0%)	59
Total	17	320	63	400

Source: own computation, 2018

Mobile banking use vs age

The correlation between mobile banking use and age was found significant (table 8). Possible reasons could be young people have less income, low probability to purchase mobile phones, and less responsibility to provide financial support to others as compared to older people having more responsibility to support others

Table 8: Mobile banking use vs age

Do you use MB?	Age of the respondents				
	18-25	26-30	31-40	41-50	Total
Yes	104 (81%)	157(82%)	62 (100%)	18 (100%)	341
No	24 (19%)	35(1%)	0	0	59
Total	128	192	62	18	400

Source: own computation, 2018

Mobile banking use vs profession

Areas of working have influence on the use of mobile banking. Table 9 indicates that big business owners use mobile banking 100% which is not surprising as they have capital and running business require financial transfer without time limit. Micro level self employees use

mobile banking but not 100 % which could be due to their low capital and less financial transaction.

Table 9: Mobile banking use vs profession

Do you use mobile banking?	Profession						
	Government employee	Private employee	Business (big)	Self-employee (micro)	house wife	other	Total
Yes	262 (91%)	0 (0%)	18 (100%)	44 (73%)	0 (0%)	17(100%)	341
No	26(9%)	9 (100%)	00 (0%)	16(27%)	8(100%)	0(0%)	59
Total	288	9	18	60	8	17	400

Source: own computation, 2018

Mobile banking use vs mobile phone possession

Table 10 shows that people who have no mobile phones didn't use MB. About 89% of mobile phone owners use MB which is encouraging for the bank to extend its services where appropriate

Table 10: Mobile banking use vs mobile phone possession

Do you have mobile phone?	Do you use mobile banking?		
	Yes	No	Total
Yes	341 (89%)	0 (0%)	341
No	43 (11%)	16 (100%)	59
Total	384	16	400

Source: own computation, 2018

Variables used to assess the usage of mobile banking project in Addis Ababa Ethiopia

Relative Advantage (RA)

Mobile banking has some advantages that contribute to develop users' confidence to use mobile banking even if there is no one to show them on how to use it; if there is only online instructions for reference; if there is online "help" function for assistance; and if there is time to complete the transactions. Ratings of the respondents' on each advantage is depicted in (table 11)

Table 11: Advantages of mobile banking

Rating	Variables and responses on advantages of mobile banking in %			
	Possible to use even if no one is around to show me	Possible to use by reading online instructions	Possible to use by online help	Possible to use if there is time to complete the transaction
Strongly disagree	4.3%	2.0%	8.8%	6.5%
Disagree	10.8%	15.3%	8.5%	6.0%
Undecided	6.3%	4.3%	4.3%	15.0%
Agree	32.8%	30.0%	36.8%	22.0%
Strongly agree	46.0%	48.5%	41.8%	50.5%

Source: own computation, 2018

Perceived Usefulness (PU)

Mobile banking enables users to do banking transactions quicker; enhances the efficiency of banking activities; makes banking transactions easier; and there is no time limit to access. Table 12 shows the detail information on the different dimensions of mobile usefulness.

Table 12: Perceived Usefulness

Rating	Variables and responses on usefulness of mobile banking in %			
	Quicker transaction	Enhances efficiency	Easier transaction	No time limit to access
Strongly disagree	4.5%	2.3%	8.8%	9.0%
Disagree	14.8%	8.8%	8.8%	9.0%
Undecided	4.3%	4.3%	10.8%	6.5%
Agree	35.0%	41.0%	30.3%	36.3%
Strongly agree	41.5%	43.8%	41.5%	39.3%

Source: own computation, 2018

Perceived Ease of Use (PEOU)

Respondents have perceived that mobile banking is easy to use; Table 13 shows the respondents' level of agreement on the perceived ease of use of mobile banking.

Table 13: Respondents' perceived ease of use

Rating	Variables and responses on PEOU in %			
	Mobile banking is easy to use	It does not require a lot of mental effort	Learning to use it is easy	It is easy to become skilful
Strongly disagree	4.3%	6.5%	4.0%	0%
Disagree	21.5%	4.5%	8.8%	8.7%
Undecided	6.5%	13.5%	2.3%	11.3%
Agree	28.5%	43.3%	34.8%	36.5%
Strongly agree	39.3%	32.3%	50.3%	43.5%

Source: own computation, 2018

Perceived Trust (PT)

Users of the mobile banking have perceived trust including trustworthy of mobile banking, it serves the present and future interests of users, it keeps its promises and commitments, and overall trust on mobile banking (Table 14).

Table 14: Respondents' perceived ease of use

Rating	Variables and responses on perceived trust in %			
	Trustworthy	Serves the present and future	Keeps its commitment	Overall trust
Strongly disagree	8.8%	8.8%	4.3%	4.5%
Disagree	17.3%	2.3%	13.3%	8.5%
Undecided	13.0%	13.0%	21.8%	6.5%
Agree	24.3%	39.5%	28.3%	37.5%
Strongly agree	36.8%	36.5%	32.5%	43.0%

Source: own computation, 2018

Perceived Risk (PR)

Despite the benefits of mobile banking, there are risks associated with it like monetary loss risk, there is no compensation from banks, it takes time to learn on how to use mobile banking, and overall risk. Table 15 indicates respondents' perceived risk on using mobile banking

Table 15: Respondents' Perceived Risk (PR)

Rating	Variables and responses on perceived risk in %				
	Get compensation from bank	It takes to time to learn	Rating	Monitory loss risk	Overall risk
Strongly disagree	13.3%	22.3%	Very risky	6.3%	6.8%
Disagree	20.0%	35.0	Risky	28.8%	13.3%
Undecided	17.3%	12.5%	Undecided	13.0%	21.8%
Agree	39.0%	17.3%	Safe	32.3%	47.5%
Strongly agree	10.5%	13.0%	Very safe	19.8%	10.8%

Source: own computation, 2018

Compatibility (COM)

Mobile banking users have different reasons to use it including fitness with financial management, fit with working style, enables to try new technology, to adopt new innovation, and compatible with lifestyle (Table 16).

Table 16: Compatibility of mobile banking with users

Rating	Variables and responses on compatibility in %				
	Fitness with financial management	Fit with working style	Enables to try new technology	To adopt new innovation	Compatible with lifestyle
Strongly disagree	2.3%	2.0%	2.0%	4.3%	2.0%
Disagree	13.5%	18.0%	9.0%	2.3%	2.0%
Undecided	13.0%	8.8%	17.3%	8.3%	9.0%
Agree	45.5%	51.8%	48.0%	50.3%	27.8%
Strongly agree	25.8%	19.5%	23.8%	35.0%	59.3%

Source: own computation, 2018

Awareness (AW)

Awareness assessment was done based on the information whether respondents knew that bank offers mobile banking services, availability of different services by mobile banking, future use of mobile banking, and use of mobile for banking needs (Table 17).

Table 17: Users awareness on mobile banking

Rating	Variables and responses on awareness in %			
	Bank offers mobile banking services	Availability of different services	Future use of mobile banking	Use of mobile for banking needs
Strongly disagree	8.5%	0%	8.5%	6.8%
Disagree	4.3%	8.8%	0%	11.0%
Undecided	4.3%	6.5%	4.3%	12.8%
Agree	23.8%	39.0%	34.3%	32.3%
Strongly agree	59.3%	45.8%	53.0%	37.3%

Source: own computation, 2018

Descriptive statics of independent variables

Respondents rated agreed and close to agreed points to all variables except PR which was rated undecided. Table 18 indicates that the overall average value of independent variables is 3.8 with average standard deviation of 0.78. It means the overall average mean value ranges from 3.04 to 4.61. The research evidence shows that there is good market potential to expand mobile banking as it has been rated positively.

Table 18: Mean and Standard Deviation of independent variables

Independent variable	**Mean**	**Std. Deviation**
Relative Advantage (RA)	4.0	0.95
Perceived Usefulness (RU)	3.9	0.83
Perceived Ease of Use (PEOU)	4.0	0.78
Perceived Trust (PT)	3.8	0.92
Perceived Risk (PR)	3.1	0.76
Compatibility (COM)	3.9	0.52
Awareness (AW)	4.1	0.74
Mean	3.8	0.78

Source: own computation, 2018

Interview discussions with project implementers revealed that the MB implementation were challenged by inadequate network infrastructure and internet related support services, customers' low levels of computer/mobile literacy, lack of ICT infrastructure, frequent power disruption and relative high cost of internet. In connection with technology factors, lack of confidence with the security aspects, lack of customer trust with mobile banking services provided by the bank, customers' fear of risk to use mobile banking technology and security risks were considered as technological factors challenging the adoption and growth of mobile banking technology during the early implementation phase of MB use.

The realized benefits of mobile banking technology in the Commercial Bank of Ethiopia included both operational and service benefits. Operational benefits identified in this study as agreed by the participant include reduces paper work, reduce transaction cost; enhance productivity in the banking industry. Benefits from customers' perspective were improved

customer service, reduced long queues in banking halls, increased accessibility of the bank services, created good relation among banks and clients.

4.3. Regression analysis

Before regression analysis was carried out, assumptions have been checked and there were no statistical problems prohibiting the regression. The distribution was normal, no autocorrelation, and perfect multicollenearity and heterostedasity.

The regression analysis has identified two variables out of seven independent variables. Table 19 depicts the significant and insignificant variables with its respective probabilities. R^2 was found 9%.

Table 19: Regression results

Variable	Coefficient	S td. Error	t -Statistic	Probability
Constant	1.965	0.149	13.147	0.000
RA	0.005	0.023	0.208	0.835
PU	-0.033	0.028	-1.162	0.246
PEOU	0.056	0.028	-1.988	0.048
PT	0.008	0.022	0.382	0.703
PR	-0.052	0.025	-2.061	0.040
COM	-0.037	0.041	-0.894	0.372
AW	-0.050	0.028	-1.773	0.077

Source SPSS output

Relative Advantage

Table 19 the coefficient of relative advantage is 0.005 and its P-value is 0.835. Holding other explanatory variables constant relative advantage was found to have a positive but statistically

insignificant effect on usage of mobile banking. This result was not confirmed in pervious literatures (Kalkidan Gezahegn, 2016; McCloskey, 2006; Rogers 2003 and Lin 2011)

Perceived Usefulness

Table 19 depicted that the coefficient of perceived usefulness -0.033 and its P-value is 0.246. Holding other explanatory variables constant perceived usefulness was found to have a negative and statistically insignificant influence on usage of mobile banking usage. This result is not in line with (Kalkidan Gezahegn, 2016; Luarn and Lin, 2005)

Perceived Ease of Use

Table 19 the coefficient of Perceived Ease of Use is 0.056 and its P-value is 0.048. Holding other explanatory variables Perceived Ease of Use was found to have a positive and statistically significant effect on usage of mobile banking. This finding is in line with the results by (Khalifa and Shen 2008, Kim et al 2009; Wei et al. 2009), but inconsistent with the results by Kalkidan Gezahegn (2016). Ease to use with minimum mental effort and become skillful of using MB has impact on the adoption of MB. It indicates that banks should make the MB more easier to have further adoption rate of using MB

Perceived Trust

Table 19 the coefficient of Perceived Trust is 0.008 and its P-value is 0.703. Holding other explanatory variables constant Perceived Trust was found to have a positive but statistically insignificant effect on usage of mobile banking. This result was not confirmed in pervious literatures (Kalkidan Gezahegn, 2016)

Perceived Risk

Based on table 19 regression analysis, the coefficient of perceived risk is -0.052 and its P-value is 0.040. Holding other explanatory variables constant, perceived risk was found to have a negative and statistically significant influence on usage of mobile banking. Therefore, the researcher accepted the null hypothesis that stated perceived risk to have a negative effect on usage of mobile banking. Significantly, this finding is found to be consistent with Kalkidan Gezahegn (2016); Luo et al. (2010); Mitchell (1999), Safeena, et al., (2011); Laforet and Li, (2005); Luarn and Lin, (2005); Mallat, (2007) and Gu, et al., (2009) who all perceive risk is one of the critical factors to be focused while designing and developing a mobile banking service.

The significant negative result could imply that bank customers are not confident in mobile banking services. Customers are safety seekers, and they want to keep away from risks. This is because electronic banking services are in inherently risky environment due to the absence of personal contact, physical product evaluation, warranties, or contracts and the customers usually have difficulties in asking for compensation when transaction error occurs. Thus, this may explain why many customers are hesitant to use mobile banking services.

Compatibility

Table 19 depicted that the coefficient of compatibility is -0.037 and its P-value is 0.372. Holding other explanatory variables constant perceived usefulness was found to have a negative and statistically insignificant influence on usage of mobile banking usage. Therefore, the researcher failed to reject the null hypothesis that indicates perceived compatibility has a positive effect on

mobile banking. This result is not in line with (Kalkidan Gezahegn, 2016; Koenig-Lewis 2010; Lin 2011)

Awareness

As it is shown in table 19 coefficient of awareness is -0.050 with its p-value 0.077. It can be seen that maintaining other explanatory variables constant, awareness was found to have a negative and statistically insignificant impact on usage of mobile banking as its value of significance is greater than 0.05. Therefore, the researcher failed to reject the null hypothesis that stated awareness about mobile banking to have positive effect on mobile banking usage. This implies that there is no significant relationship between awareness and mobile banking adoption in the study area. The result contradicts with the prior research of (Laforet and Li 2005) that indicated awareness to significantly influence customer's usage of online and mobile banking. The result is in line with Kalkidan Gezahegn, (2016).

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION`

5.1. Conclusion

It was found that most mobile phone users were MB users as well. Users if MB confirmed that MB is easy to use, useful and compatible with lifestyle which gives good opportunity for the bank to promote MB further. The educational level increases the mobile banking usage. Level of income has shown increased use of mobile banking. Source of income has effect on MB usage, big business owners are high level users of MB. However, the level of respondents' trust and risk on MB were found to be an area where the bank should work. They felt low trust and high risk of using MB.

Perceived usefulness contributed to MB usage. It can be concluded that people will adopt mobile banking services when the value and benefit of mobile banking is evident. Lack of adequate network and internet infrastructure limited the expansion and use of MB.

The benefits of mobile banking for the Commercial Bank of Ethiopia include both operational and service benefits. Operational benefits were reduced paper work, reduced transaction cost, and enhanced productivity in the banking industry. Service benefits were improved customer service quality/time, reduced long queues in banking halls, and increased accessibility of the bank services, created good relation among banks and clients.

5.2. Recommendations

- CBE to develop innovative projects to enhance the participation of people with low level of education. Less educated ones felt that mobile banking is not easy to understand and might create wrong transfer
- Promotional work to reduce risk and low trust perception of MB users. Find innovative technology to reduce risks of MB
- Expand MB in other branches by targeting business owners as they were higher users of MB
- Banking institutions could consider taking advantage of value-adding characteristics of mobile banking in promoting perceived usefulness. In addition, they should continue to innovate and invest in mobile banking services which allow users to have more alternatives and get more values from mobile banking services.
- Banks should emphasize on the benefits that customers will obtain in the aspects of cost savings, convenience, flexibility, and mobility when using mobile banking services. Eventually, banks might try to educate users the benefits of using mobile banking services through promotional mix such as personal selling, advertisements, sales promotions, and public relations.
- The Bank should create deep awareness to community concerning the mobile banking products they offer and the benefits associated with using mobile banking services through advertising their products and services on the internet, mass media as well as through organizing public exhibition and talk shows. Besides, the bank should attract the community to use the technology by diverse incentive campaigns. This way, customers' interest would be aroused. Banks should work to improve customers' confidence by providing adequate security of transaction back up of critical data files and alternative means of processing information.

- In collaboration with the bank, Government should educate and inform the community on the workability and effectiveness of mobile banking technology. This will increase the customer confidence levels; The bank should facilitate proper and continuous training courses for their employees to have adequate understanding of the mobile banking technology so as to achieve the desired objectives;
- Government should support banking sector by facilitating development of sufficient ICT infrastructure for the successful implementation and development of mobile banking Services.

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APPENDIX

Appendix 1: Questionnaire

Addis Ababa University, College of Commerce, Department of Project Management

DearSir/Madam

Subject: Research questionnaire prepared to collect data from the respondents in order to assess the Mobile Banking Project Implementation Practice in Commercial Bank of Ethiopia.

I am undertaking a research project on the "An Assessment of Mobile Banking Project Implementation Practice in Commercial Bank of Ethiopia" with reference to selected commercial bank branches for the partial fulfillment of the requirements of the degree of Master of Art in Project Management. The aim of this questionnaire is to identify the Mobile Banking Project Implementation Practice in Commercial Bank of Ethiopia. The results of the study will have a paramount important to the institutions, to owners, to clients, to concerned government offices and policy makers and others. To this end, this questionnaire is prepared to gather pertinent information. I sincerely assure you that the information you provide will be used only for academic purposes. Your involvement is regarded as a great input to the quality of the research results. Your honest and thoughtful response is invaluable.

Bosena Sewalem

Questionnaire for Customers / workers

Part-One

Personal information

1. Name of the Bank & Branch:_____

2. Sex: - A. Male _____ B. Female _____

3. Age A. 18 - 25 years B. 26 - 30 years B. 31 – 40 years C. 41 – 50 years D. 51 – 60 years E. Above 60 years

4. Education Status: - A. Illiterate B. High school C. First Degree E. Masters Degree F. Others (please specify)_____

5. Marital Status of respondent: A. Married B. un married C. widowed D. Divorced

6. Profession (work):- A. Gov't Employee B. Private Employee C. Business D. Self Employee E. Student F. House Wife G. Others (please specify) _____

7. Monthly Income (in birr):- A. Below 10,000 B. 10,000- 15,000 C. 15,001-20,000 D. 20,001-25,000 E. 25,001-30,000 F. 30,001 – 35,000 G. 35,001-40,000 H. 40,001-50,000 I. 50,001 and above

8. Status of usage:- A. Less than 1 year B. 1 – 5 years C. 5 – 10 years D. 10 – 15 yeas E. Above 15 years

Part-TWO

Questions Related to Usage of Mobile Banking

9-Do you have mobile phone? 1- yes 2- no

10-Have you heard about mobile banking? 1-yes 2- no

11-Do you use mobile banking? 1-yes 2- no

Part-Three

The following questions used a 1 to 5 Likert scale to study respondent's behavior in relation to conceptual framework constructs where 1 signified "strongly disagree" and 5 signified "strongly agree". Then thick (√) on your choice from the given alternatives

Relative Advantage (RA)

12- I am confident of using Mobile Banking even if there is no one around to show me how to do it :- Strongly Disagree_____ Disagree____Undecided_____ Agree ____ Strongly Agree ___

13- I am confident of using Mobile Banking even if I have only the online instructions for reference: - Strongly Disagree____Disagree____Undecided____Agree____Strongly Agree ___

14- I am confident of using Mobile Banking even if I have just the online "help" function for assistance: - Strongly Disagree___ Disagree___ Undecided ___ Agree____Strongly Agree____

15- I am confident in using Mobile Banking if I have sufficient time to complete the transactions:- Strongly Disagree____ Disagree___Undecided____ Agree___ Strongly Agree __

Perceived Usefulness (PU)

16- Using mobile banking enables me to do my banking transactions quicker:-

Strongly Disagree___ Disagree____ Undecided____ Agree____Strongly Agree_____

17- Using mobile banking enhances the efficiency of my banking activities:-

Strongly Disagree____Disagree____ Undecided_____ Agree _____ Strongly Agree _____

18- Using mobile banking makes it easier to do my banking transactions:-

Strongly Disagree____Disagree____ Undecided____ Agree_____ Strongly Agree _____

19- In Mobile banking there is no time limit to access:- Strongly Disagree_____ Disagree_____ Undecided_____ Agree_____ Strongly Agree_____

Perceived Ease of Use (PEOU)

20- Mobile banking is easy to use:-Strongly Disagree_____ Disagree_____ Undecided_____ Agree_____ Strongly Agree _____

21- Using Mobile Banking does not require a lot of mental effort: - Strongly Disagree_____ Disagree _____ Undecided _____ Agree_____ Strongly Agree_____

22- Learning to use mobile banking is easy:- Strongly Disagree_____ Disagree_____ Undecided_____ Agree _____ Strongly Agree _____

23- It is easy to become skilful in using mobile banking: - Strongly Disagree_____ Disagree_____ Undecided_____ Agree _____ Strongly Agree _____

Perceived Trust (PT)

24- Mobile Banking is trustworthy:_ Strongly Disagree _____ Disagree_____ Undecided____ Agree_____ Strongly Agree _____

25- Mobile Banking serves the present and future interests of users :- Strongly Disagree_____ Disagree _____Undecided_____ Agree_____ Strongly Agree _____

26- Mobile Banking keeps its promises and commitments:_ Strongly Disagree _____ Disagree_____ Undecided_____ Agree_____ Strongly Agree _____

27- Overall, I trust Mobile Banking: - Strongly Disagree_____ Disagree _____ Undecided _____ Agree _____ Strongly Agree _____

Perceived Risk (PR)

28- Considering the possibility of monetary loss associated with Mobile Banking, how risky do you consider mobile banking to be? Very Risky_____ Risky_____Undecided_____ Safe_____ Very Safe _____

29-When and if transaction error occurs you will get compensation from banks:-

Strongly Disagree_____ Disagree_____Undecided_____ Agree _____ Strongly Agree_____

30-It would take me lots of time to learn how to use mobile banking services:-

Strongly Disagree_____ Disagree_____Undecided_____ Agree_____ Strongly Agree_____

31- How risky do you rate Mobile Banking:- Very Risky_____ Risky_____ Undecided_____ Safe _____ Very Safe _____

Compatibility (COM)

32-. Mobile Banking fits well with the way I like to manage my finances:-

Strongly Disagree_____Disagree_____Undecided_____ Agree_____ Strongly Agree _____

33- Using Mobile Banking fits into my working style: - Strongly Disagree_____ Disagree _____Undecided_____ Agree _____ Strongly Agree _____

34- I like to try new technology:- Strongly Disagree_____ Disagree_____ Undecided_____ Agree_____ Strongly Agree _____

35- I like to adopt new innovation: - Strongly Disagree_____ Disagree_____ Undecided_____ Agree_____ Strongly Agree_____

36- Mobile Banking is compatible with my lifestyle:- Strongly Disagree_____ Disagree_____ Undecided _____ Agree_____ Strongly Agree_____

Awareness (AW)

37-I am aware that my bank offers mobile banking services:- :- Strongly Disagree_____ Disagree _____Undecided _____ Agree _____ Strongly Agree_____

38-I am aware of all the various available services on mobile banking:- :- Strongly Disagree_____Disagree_____ Undecided_____ Agree_____ Strongly Agree_____

39-I will frequently use mobile banking in the future: - Strongly Disagree_____ Disagree_____ Undecided_____ Agree _____ Strongly Agree _____

40-I will use mobile banking for my banking needs :_ Strongly Disagree_____ Disagree _____Undecided_____ Agree_____ Strongly Agree _____-

THANK YOU VERY MUCH

Appendix 2: Key Interview questions

How the mobile banking project was identified?

What were project implementation challenges?

What are benefits of mobile banking from the bank and customers' perspective?

Does the bank want to expand MB in different branches including out of Addis Ababa?

What is your bank's innovative management approach?

What are key lessons from the mobile banking project implementation and evaluation?

What were customers' complaints?

What is bank's plan to address customers' complains?

Is there any plan to reach people wit MB who are not educated and having low income?

What are promotional and learning strategies to attract more customers?