FACTORS AFFECTING USE OF MOBILE BANKING IN COMMERCIAL BANKS, IN CASE OF JIMMA TOWN

A Thesis Submitted To The School Of Graduate Studies Of Jimma University In Partial Fulfillment Of The Requirements For The Award Of The Degree In Master Of Banking And Finance

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DECLARATION

The thesis entitled *Factors affecting use of Mobile Banking in commercial banks*, in case of Jimma town is my own effort and that all sources of materials used for the study have been properly acknowledged. This study has not been submitted for any degree in this University. It is offered for the partial fulfillment of the requirement for the degree in MSc. Program in Banking & Finance.

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ABSTRACT

The purpose of the study was to examine factors affecting the use of mobile banking in commercial banks of Ethiopia incase of Jimma town. The study tries to employ multiple regression model to identify factors affecting customer's use of mobile banking. This study was conducted based on the data gathered from customers of Commercial Banks in Jimma town. Survey was conducted using questionnaire. About 385 sample respondents was randomly selected for detailed interview .The analysis of the data was done with the help of the SPSS. The research results found relative advantage, compatibility, perceived trust, perceived usefulness, and perceived risk as main affecting factors for mobile banking acceptance whereas perceived ease of use and awareness were found to have insignificant effect on mobile banking use for bank customers located in Jimma. The study recommended banks to consider investing in campaigns and arranging information sessions to demonstrate the features of mobile banking services, and its benefits over traditional channels.

ACRONYMS

Automated Cashier Machine	(ATM)
Bottom of the Pyramid	(BOP)
Commercial Bank of Ethiopia	(CBE)
Fourth Generation	(4G)
Innovation Diffusion Theory	(IDT)
Information and Communication Technology	(ICT)
Mobile Banking Personal Identification Number	(MPIN)
National Bank of Ethiopia	(NBE)
Ordinary Least Square	(OLS)
Perceived Ease of Use	(PEOU)
Perceived Risk	(PR)
Personal Digital Assistant	(PDA)
Perceived Usefulness	(PU)
Short Message Service	(SMS)
Technology Acceptance Model	(TAM)
Theory Reasoned Action	(TRA)
Third Generation	(3G)
Wireless Application Protocol	(WAP)

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CHAPTER ONE

1. INTRODUCTION

1.1 Background of the study

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

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

With rapid advance of internet technologies and diffusion of mobile phones, mobile banking has gained attention as a viable option in delivering financial services. Recent innovations in telecommunications have enabled the launch of mobile banking as a new access method for banking services; whereby a customer interacts with a bank via mobile phone (Barnes & Corbett 2003).

Mobile banking is a term used for performing balance checks, account transactions, payments etc. via a mobile device such as a mobile phone. Mobile banking today is most often performed via SMS or the mobile internet but can also use special programs that clients download to their mobile device. It can also be understood as availing banking and financial services with the help of mobile telecommunications devices. The services offered by mobile banking included getting account information, transferring funds, sending checkbook request, managing deposits, checking transactions and so on.

Commercial banks are exploring this avenue to make their services more convenient for their customers. The growing number of mobile subscribers in the country forms the most valuable support base for the growth and success of mobile banking.

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

Some of the significant reasons that compel financial firms to provide mobile banking services are; appealing to trendy customers, reducing costs per transactions, gaining revenue from service fees, enabling new service channels, and supporting future customers (Huila and Chunfang 2011). Mobile banking services provide time independence, convenience and promptness to customers, along with cost savings. Mobile banking presents an opportunity for banks to expand market penetration through mobile services (Lee & Kim, 2007).

Despite these advantages and the conveniences, the use of mobile banking services is much lower than expected in both the developed and developing economies (Ague 2012). He also stated that mobile phones and its applications are still highly under-utilized. According to Akturan and Tezcan (2012) the market of mobile banking still remains very small when compared to other electronic banking counterparts such as ATM; internet banking, etc. additionally, it is noted that the widespread adoption and large usage of mobile telephones did not reflect on the adoption and use of mobile banking.

Paschal *et al.*,(2010) indicated that adoption and use of mobile banking will largely depend upon customer's perception of its ease of use and usefulness. However, the understanding of the underlining problems of the reasons for the low rate of mobile banking use could assist financial managers to find ways to adjust their marketing techniques and come up with the right solution to improve their mobile banking service as well as to increase the rate of mobile banking customer's usage. Therefore, this study examines factors which are affecting customer's use of mobile banking.

For the current problem of covid-19 (corona virus) using of mobile banking in our countries come up with right solution of market techniques. In this study almost of commercial banks in demarcation of Jimma town adopted and renewed use of mobile banking for it is ease of financial manage.

1.2. Statement of the Problem

When compared with the banking industry operated in developed country, without doubt the banking industry in Ethiopia is underdeveloped and therefore, there is an all immediate need to embark on capacity building arrangements and modernize the banking system by employing the technologies being used elsewhere in the world.

Over the years traditional branch based retail banking remained the most widespread method for conducting banking transactions in Ethiopia. Currently commercial banks in Ethiopia have started adoption of mobile phone based electronic banking systems to improve their operations and to reduce costs. Even though the penetration of mobile phones among the population continues to grow in significant numbers year after year still the customer's use of mobile banking service within these banks still remains low (NBE, 2020).

Despite the fact that numerous mobile banking adoption studies have been investigated by various scholars, most of them were conducted in countries such as Korea (Chung and Kwon 2009), Singapore (Rios 2010), Brazil (et al 2010), Taiwan (Lin 2005), and China (Wang et al. 2010) with relatively little attention paid to developing countries like Ethiopia.

The study undertaken by Million (2013) focused on Impact of E-banking on customers satisfaction in Ethiopian banking Industry. He came up with E-banking service as highly reduced the visits of bank, waiting time for service, and also enlighten customers who don't know what E-banking means and the banks except providing the card, they have to give the necessary awareness training on how to use ATM machine. A study undertaken by Gezahegn (2015), on assessment of customer satisfaction with ATM banking on empirical evidence from selected commercial banks in Ethiopia mentioned that, customers will have 24 hours accessibility to their money and less time spent away from their work place, and also they expect accurate and efficient services.

Both e-banking and ATM study taken place do not consider mobile banking technology adoption and expansions. Ayana (2012) has carried out study on the benefits and challenges of introducing electronic banking in Ethiopia as per the researcher knowledge there is no study conducted with regards to factors affecting use of mobile banking in commercial banks of Ethiopia. Therefore, this study aims at filling information gap by assessing the issues that affecting customer's use of mobile banking services.

1.3. Research Question

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

- What is the effect of perceived ease of use, in commercial banks of Jimma town?
- What is the effect of perceived usefulness, in use of mobile banking in commercial banks of Jimma town?
- What perceived risk, customers has in use of mobile banking commercial banks of Jimma town?
- What is advantage of mobile banking usage in commercial banks of Jimma town?
- What is the perceived trust, in commercial banks of Jimma town?
- What is the influence of awareness on use of mobile banking?

1.4. Objectives

1.4.1GeneralObjective

- The general objective of the study is to examine the factors affecting use of mobile banking in commercial banks, in Jimma town particularly, with the following specific objectives.

1.4.2 Specific Objectives

- To examine the effect of perceived ease of use on use of mobile banking.
- To determine the effect of perceived usefulness on use of mobile banking.
- To assess the relationship perceived risk has with use of mobile banking.
- To find out how relative advantage influence customer's use of mobile banking.
- To assess the effect of perceived trust on use of mobile banking.
- To determine the influence of awareness on use of mobile banking
- To examine the association of compatibility with use of mobile banking.

1.5 Significance of the study

Introduction of new technologies allowed banking institutions to offer new channels of service outlets like ATM facility, Internet Banking, Mobile Banking. The results of this study, is believed to give knowledge for improving the service. It may be meaningful for researchers and banks' management to understand the factors affecting customer's to either adopt or not adopt mobile banking services. Identifying such variables may help to improve the likelihood of increasing the use rate of these services, by deepening the knowledge about the variables which facilitate the use of this technology. Therefore, the finding of the study is believed to support bank managements by providing information on how to increase use of mobile banking to increase profitability that will be obtained from delivering this service. The study may cover the way for further and detail investigation for future researchers on banking and information technology.

1.6 Scope of the study

Vast commercial banks are currently providing mobile banking service, however ccommercial Bank of Ethiopia and other private banks that have adopted mobile banking technology in the study were covered, but the study focus on the commercial banks that found in Jimma town.

1.7 Limitation of the Study

The limitation of the study was the lack of continuous previous studies in the same of geographical area regarding mobile banking and factors that affect its uses. And also it was not possible to include all factors that affect use of mobile banking in one study only selected factors were considered for the study. So this study has limitation in including all factors that prohibit the mobile banking.

1.8 Organization of the Study

The paper consists five chapters. The first chapter deals with the introduction part that consists of background of the study, statements of the problem, objectives of the study, significances of the study, scope of the study. Chapter 2 contains a review of the related literature. The research design and methodology is presented in chapter 3. In chapter four, the results and findings of the study is discussed. Finally, the last chapter deals with the conclusions and recommendations that are forwarded based on the result obtained.

CHAPTER TWO

2. LITRATURE REVIEW

This chapter explains the basic terminology of mobile banking and background of mobile banking technology. Second, it provides insight into mobile banking in our country banking industry as well as on the benefits for using mobile banking for both banks and customers. Available services on mobile banking and technologies employed to provide mobile banking services are described. The views of other authors and previous researches on mobile banking implementation are discussed. Technology Acceptance framework for mobile banking adoption and innovation diffusion theory and their constructs which includes perceived usefulness, perceived ease of use, relative advantage, compatibility along with other specific factors that are identified as significant factors of mobile banking such as perceived risk, perceived trust and awareness are discussed to develop a research model to help investigate factors affecting use of mobile banking in commercial banks, in Jimma town.

2.1 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). Lou, 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 ,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 2008 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.

2.2 Background of Mobile Banking Technology

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; Salaam 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 (Mallet *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 Laurence 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).

2.3 Mobile Banking In Ethiopian Banking Industry

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 ivory, a South African E-payment technology company, for the introduction of mobile commerce in April 21, 2009. According to the agreement, ivory Payment Technologies has licensed its Gateway and MiCard E-payment processing solution to Dashen Bank. Dashen'sModbirr users can transfer 500 birr to other Modbirr users in 24 hours a day. This would make Dashen Bank the first private bank in Ethiopia to acquire E-commerce and mobile merchant transactions (Amanyehun,2011).

However, mobile banking came into full practice after several years of trials and errors as well as wait-and-see attitude by customers. Since then, mobile banking has shown a gradual growth across many various parts of Ethiopia.

Despite the very high mobile penetration rate, the use and adoption of mobile banking services remains low. With the advent of new mobile technologies, such as Blackberry, siphoned, Androids, etc, which serves as a catalyst, mobile banking is on the edge to draw millions of new users.

Within the world teeming population (Agwu, 2012). Many customers who are tired of the old banking systems are looking for time saving alternatives. The review of the existing literature showed that mobile banking has been widely researched in the developed and emerging economies; however, there is no research for the developing Ethiopian economy. This research is therefore believed to fill this gap.

2.4 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 (Eckhart *et al.*, 2009).

2.4.1 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 Dorgan 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. Go swami 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.

2.4.2 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 (Raquel and Rios 2010).

2.5 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:

2.5.1 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.

2.5.1.1 Account Operation

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

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

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

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

- 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.

2.5.2 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).

2.5.2.1 Account Information

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

- Balance inquiries: - mobile devices may be employed to check the current financial status of own bank or securities accounts (Sunil and Durga2013).

- 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 (Crossman 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 webpage.

- Information on the completion statutes of an order: - the bank may use "push" services to inform the customer via his mobile device regarding whether or not his orders could be carried out. This ensures that urgent information can be provided to the customer while on the move.
- Product information and offers: - the bank can provide information about its products and new offers to a customer on the move. A customer can "pull" the information that he wishes to access. On the other hand the bank can "push" the information or offers that the customer has identified as interesting and is willing to receive.

2.5.2.2 Market Information

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

2.6 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).

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), M- PESA in Tanzania (Camner&Sjöblom 2009), M-PESA in South Africa (Ned bank 2010) 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:-

Dialingto889 → Inserting the command and the PIN → Navigation of the financial or non-financial information → Logging off

2.6.1 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.

2.6.2 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.,

2.7 Factors Influencing Use 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.

2.7.1 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 (Massinger 2016) and its usage has captured the attention of IS community attested by the authors in (Matheson et al,2001). Massinger (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 (Lunar 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 (Lunar and Lin2005).

- Perceived Usefulness

Perceived usefulness is defined as the extent to which an individual believes that he or she would benefit from using mobile banking. (Bhatt, 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; Venkates, 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 (Porto us, 2011, Ezeoha, 2005). (Bong-Keung& 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).

2.7.2 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 Via (2017) 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 trainability 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). Garrard 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 (Nudism and Santa 2006). Compatibility has further been found influential in the adoption of virtual store, mobile payment and mobile banking (Koenig-Lewis 2010; Lin 2011). Al-Gaitanis (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 (Leader *et al.*,1999).

Customers will reject an innovation if it is very complex and not user friendly. In this

context, Cooper and Zmud (1997) 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.

- Trainability

Tradability 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 (Pacole*t al.* 2010). Tan and Tao (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. Trainability can also be viewed as the degree to which an innovation may be experimented with on a limited basis (Heisman 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" (Garrard and Cunningham 2003).Perceived risk as defined by (Pavlov 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 (Bah and Pavlou2002).

On a study conducted by (Massinger 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 (Dines war 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 (Cheetah, 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 (Geffen 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 (How croft Hamilton & Hewer 2002; Husain 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 (Pavlov2003).

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 &Suhl 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 (Sather 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 (Sarthe 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 (Sather 1999).

Awareness creation speeds the sales of products and evidences from different participants, lay credence to this. The level of awareness (Pal via 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 (Sarthe 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.

2.8 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; Gum, Lee and Suh, 2009; Lunar and Lin, 2005; Mantilla, 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, Mantilla (2003) focused on the drivers and inhibitors of mobile banking services. The author found that complexity, compatibility, relative advantage, observability, and friability 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.

Leflore 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 (2017) 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.

Wessel's and Denman (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. Dines war and Steven (2013), the researchers investigated the complex factors that prevent customers from adopting and using mobile banking services in Mauritius. The researchers used a quantitative approach, they also combined the TAM and IDT together with perceived risk and cost construct to investigate perception of mobile banking in Mauritius. The study revealed that age, gender and salary had no influence on adoption but rather, Convenience, compatibility and banking needs influenced banking adoption. On the other hand, Perceived security risk and reliability were found to be the only obstacles to mobile banking usage but also that mobile banking usage is not associated with age, gender and salary. Mohammad RokibulKabir (2013) the researchers investigated on the factors that influence the use of mobile banking in Bangladesh. The approach for this study was quantitative. During the course of the research a self-administrated questionnaire was given to the clients of two full- fledged mobile banking service providers of Bangladesh called Brac Bank Limited and Dutch Bangle Bank Limited. 100 questionnaires were distributed but only 64 useable questionnaires were returned giving a response rate of 64 percent. The data was analyzed using multiple regressions and the outcome of the research was that, Variables such as ability, integrity, benevolence, perceived usefulness, perceived ease of use relative cost and time advantages were found to influence the adoption of mobile banking.

Kazi and Muhammad (2013) Pakistan inspected those factors that affect Pakistan customers from adopting mobile banking services. Data collection was done by surveying 372 respondents from the two largest cities (Karachi and Hyderabad) of the province Sindh by use of judgment sampling method. The researcher used 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 Isfahan an 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. Cheetah et al (2011), this was an empirical study that was conducted with the aim of investigation on the factors that affect the Malaysian customers from adopting mobile banking services. From the study, variables such as perceived ease of use, Perceived usefulness and relative advantage were found to be positively and significantly related to the intention to adopt mobile banking services while a constructs such as perceived risk was found to be negatively correlated with the adoption of mobile banking.

2.6 Justification of model used

Many researches on the acceptance of electronic-banking services have used Davis's (1989) technology acceptance model (TAM). It is argued that using TAM only is insufficient to explain the adoption or non-adoption of technologies (Chong *et al.*,2010).
Several researches on mobile banking adoption have combined the Diffusion of Innovation Theory and Technology Acceptance Model (Riquelme& Rios 2010). Puschel *et al.,* (2010) affirm that taken individually the models have limited predictive power but integrating the two into a single framework results into more predictability. In their investigation on mobile banking, Puschel*et al.,* (2010) has integrated elements of the Technology acceptance model (TAM) of Davis with Roger's innovation diffusion theory. Chong *et al.,* (2010) affirm that it is better to use TAM as a base model and extend it by including additional variables based on the study that is being carried out.Akturan and Texan (2012)

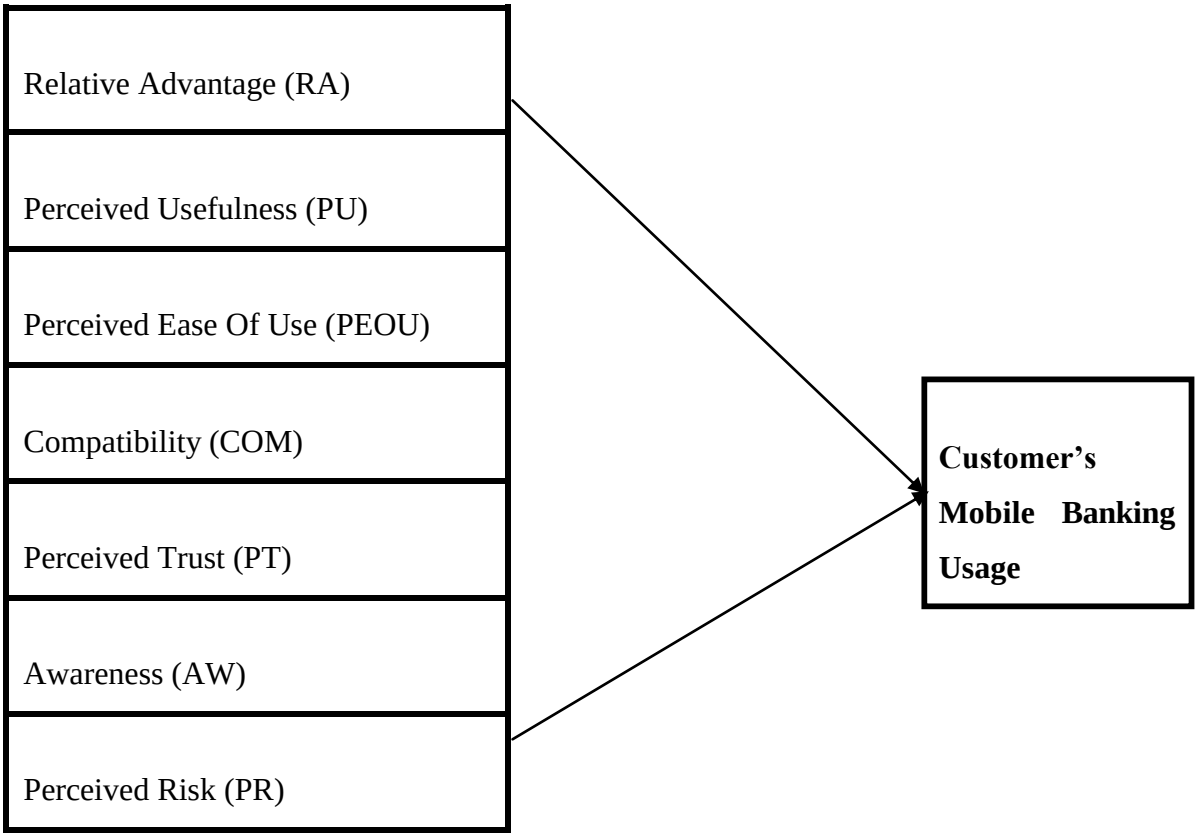
have integrated TAM, perceived benefits and perceived risks to investigate mobile banking adoption. Weasels and Denman (2010) extended TAM by adding compatibility and perceived risk as constructs for their examination on customer's acceptance of mobile banking.

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: The conceptual framework



Source: own sketch based on literatures (2020)

CHAPTER THREE

3. RESEARCH METHODOLOGY

This chapter discusses the processes and techniques used in carrying out the study. It also gives a description of 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 data collection procedure and data analysis.

3.1 Research Design

The general objective of the study is to examine the factors that affecting use of mobile banking in commercial banks existing in Jimma town. This study adopted a quantitative research approach by using a primary data source. Quantitative approach uses statistical methods in describing patterns of behavior and generalizing findings from samples to population of interest, and employs strategies of inquiry such as experiments and surveys (Creswell2003).

3.2 Population and Sampling

- 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 considered of customers of commercial banks in case of Jimma town.

- Sample Design and Size

In order to conduct the survey out of the commercial banks located in Jimma town convenience sampling was used for banks, to conduct the survey from the those banks.
From the total number of customers within each bank simple random sampling is used to took samples of customers that were randomly selected from the various branches of the banks. Based on below formula with 95% confidence level a minimum of 385 respondents were needed as a sample size. $n_0 = \frac{Z^2 pq}{e^2} = \frac{(1.96^2)(0.5)(0.5)}{(0.05)^2}$ ----------(1)

3.3 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.

The literature reviewed in the chapter two, identified the main factors affecting use of mobile banking and a model that would help to examine the relationship of the main factors and use of mobile banking is designed.
The multiple linear regression line based on previous model designed by (Rokibul, 2013) is modified using the variables from the above conceptual framework and is stated as follows:

UMB = $\beta_0 + \beta_1$ RADVANTAGE + β_2 PU + β_3 PEOU + β_4 PR + β_5 PT+ β_6 COM+ β_7 AW +s

Where,

UMB = Use of Mobile Banking

β_0 = Use 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 use of Mobile Banking due to one unit change in Perceived Usefulness variable while other things remain constant.

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

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

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

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

Table 1: Measurement of variables

	Notation	Variables	Measure
Dependent Variable	UMB	Usage of Mobile Banking	Question No. 21-27
Independent Variables	RADVANTAGE	Relative Advantage	Question No. 1-2
	PU	Perceived Usefulness	Question No. 3-5
	PEOU	Perceived Ease of Use	Question No. 6-8
	PR	Perceived Risk	Question No. 9-13
	PT	Perceived Trust	Question No. 14-15
	COM	Compatibility	Question No. 16-17
	AW	Awareness	Question No. 19-20

Source: Own design based on literature (2020).

3.4 Data Collection Method

- Primary Data Collection

A questionnaire was designed for sampled customers of Commercial Banks in Jimma town. The questionnaire was developed based on previous empirical literature and its consistency is tested using Cranach Alpha. 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 for academic only. Respondents were encouraged to be objective in their responses since they were assured of confidentiality. The study used secondary data that is obtained from published and unpublished document.

3.5 Data Analysis

Descriptive statistics such as frequency distribution was used to assess the demographic profile of the respondents 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.

The data collected from the field was sorted for completeness, checked for any errors and omissions. Also the data obtained from the study was entered into the computer and was statistically analyzed using the Statistical Package for Social Sciences (SPSS) the descriptive statistics' as well as the validity test were conducted as for the regression part OLS (ordinary least square) method. Descriptive statistics by percentages, figures and tables were generated from the software to establish relationship among variables.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter covers the, analysis and interpretation of data collected from primary sources. A total of 385 questionnaires were distributed to customers of Commercial Banks and private banks of S.C. located in Jimma town, in order to collect data about the factors affecting use of mobile banking. Out of the questionnaires distributed 385 usable responses were obtained. This chapter presents the descriptive analysis on variables of the study and results of regression analysis that constitute the main findings of this study.

4.2 Reliability of Study

To ensure internal consistency among the items included in each of the scales, Cronbach's coefficient alpha is estimated. Higher Alpha coefficients indicate higher scale reliability. Specifically, (George &Mallory 2003) suggested that scales with 0.60 Alpha coefficients and above are considered acceptable.

As shown in table 2 for the reliability test Cronbach's Alpha coefficients for use of mobile banking factors range from 0.620 to 0.775. And the overall Cronbach's Alpha coefficient for expected-scale items is 0.772. Based on the examination of the research scales and constructs, it can be concluded that each variable represents a reliable and valid construct.

Table 2: Reliability Test (Cronbach's Alpha)

Dimensions	Alpha coefficients for dimensions
Relative Advantage	0.643
Perceived Usefulness	0.624
Perceived Ease of Use	0.681
Perceived Risk	0.775
Perceived Trust	0.688
Compatibility	0.638
Awareness	0.620
Reliability of total scale	0.706

Source: own computation from survey data (2020)

4.3 Demographic Characteristics of Respondents

As is shown in table 3 below, out of 385 respondents 222 of them were male which represent 57.66% of the total respondents, while the 163 were females which are 42.34% of the total respondents. Considering the age groups of the respondents, the higher number of respondents was in the range of 35-45 years, which represent 38.9%, followed by age groups of 25-35 years, less than 25, 46-55 and 56 or above years, which represent 26.9%, 22.5%, 8.6% and 3.1% respectively. The study revealed that the higher number of the respondents were employed representing majority of the respondents with 75.2% of the total response and 14.4% of the respondents were students while 9.1% of the respondents were self-employed and the remaining 1.3% were unemployed.

Table 3: Demographic characteristics of respondents

Variables	Category	Frequency	Percent
Gender	Male	222	58%
	Female	163	42%
Age	<25	86	22.5%
	26-35	103	26.9%
	36-45	149	38.9%
	46-55	33	8.6%
	>55	12	3.1%
Occupation	Student	55	14.4%
	Employed	285	75.2%
	Unemployed	5	1.3%
	Self-employed	35	9.1%

Source: Compiled from questionnaire through SPSS, 2020

4.4 Access to Mobile Phone and Bank Account and Use of Mobile Banking

To determine whether the respondents were in possession of a mobile phone and bank account, the respondents were requested to indicate whether they currently possess a mobile phone and bank account. On the mobile phone question, 100% of the respondents had a mobile phone and regarding bank accounts, 87.5% of the respondents had a bank account at Ethiopian commercial banks, and the remaining 12.5% maintained bank account at other private banks in Jimma town.

4.5 Information about mobile banking and Current use of mobile banking services

To determine whether the respondents knew about mobile banking and whether they were currently using a mobile banking service, the respondents were asked to indicate whether they have heard about mobile banking and currently use mobile banking. The response was that 44.93% of the respondents was using mobile banking and the majority (55.06%) was not using mobile banking service.

Table 4: Access to Mobile banking and Bank Account

	Response	Frequency	Percent (%)
Do you have mobile phone			
Valid	"Yes"	385	100.0
Do you have Bank account			
Valid	"CBE"	336	87.27
	"other private banks"	49	12.73
	Total	385	100.0
Do you use mobile banking			
Valid	"Yes"	173	44.93
	"No"	212	55.06
	Total	385	100.0

Analysis of Survey data 2020, using SPSS.

4.6 Factors affecting use of Mobile Banking System in Jimma town

The different factors that can affect use of mobile banking in the country including relative advantage, perceived usefulness, perceived ease of use, perceived risk, perceived trust, compatibility and awareness have been stated in the literature review and were analyzed as

presented here below. And the following descriptive result was obtained as presented in the table below.

4.6.1 Relative Advantage

Out of the total respondents 61.4% strongly agreed, that mobile banking is faster than visiting a bank and 58.5% responded by strongly agreeing to the inquiry if they find mobile banking more accessible than other banking).

This indicated that majority of the customers found mobile banking to have a relative advantage over other banking options. This showed that mobile banking has relative advantages compared to other traditional banking services which may attract customers towards using it. This concurs with results of a research done by (Puschel *et al.,* 2010) who found out that relative advantages in mobile banking service positively affected its use.

Table 5: Summary of Survey data Findings for Use Factors

	Statement to evaluate	Rating points				
		1	2	3	4	5
RA	Mobile banking is faster than visiting a bank .	2.9%	-	12.0%	23.8%	61.4%
RA	Mobile banking is more accessible than other banking.	-	2.3%	17.8%	21.4%	58.5%

Analysis of Survey data 2020, using SPSS.

4.6.2 Perceived Usefulness

As it is shown on table below 37.9% (strongly agreed) of the respondents replied that mobile banking would enable them to complete banking activities more quickly and easily. About 29.8% of the respondents replied they strongly agreed that finding mobile banking useful for my Banking needs Respondents were also asked whether there is no time limit to access their bank account and information and 45.4% of them strongly agreed.

Table 6: Findings of Survey for Factors Perceived Usefulness

	Statement to evaluate	Rating point					
		1	2	3	4	5	Remark
Perceived Usefulness							
PU	I think that using mobile banking would enable me to complete banking activities more quickly and easily	1.8%	4.7%	35.2%	20.4%	37.9%	Strongly Agree
PU	I find Mobile banking useful for my Banking needs.	8.1%	15.7%	29.0%	17.5%	29.8%	Strongly Agree
PU	There is no time limit to access my bank account and information	6.0%	3.9%	9.9%	34.7%	45.4%	Strongly Agree

Analysis of Survey data 2020, using SPSS

4.6.3 Perceived Ease of Use

The study revealed that 35.0% of the respondents strongly agreed that learning to use mobile banking would be easy. About 33.2% of the respondents responded that is easy for them to use mobile to carry out their tasks. In addition when they were further asked if they think it will take them lots of time to learn how to use mobile banking services 50.4% of the respondents strongly disagreed.

Table7: Summary of Survey Findings for Use Factors

	Statement to evaluate	Rating point					
		1	2	3	4	5	Remark
Perceived Usefulness							
PEOU	I think that learning to use mobile Banking would be easy.	24.0%	25.3%	3.9%	11.7%	35.0%	Strongly Agree
PEOU	I think that it is easy to use mobile Banking to accomplish my banking tasks.	4.2%	8.1%	33.2%	32.9%	21.7%	Neutral
PEOU	It would take me lots of time to learn how to use mobile banking services.	50.4%	21.7%	10.7%	15.7%	1.6%	Strongly Disagree

Source: Analysis of Survey data, using SPSS 2020

4.6.4 Perceived Trust

The respondents were asked if they believe mobile network service providers and banks are trustworthy 36.4 %(disagree) and they also replied that 35.2% disagreed to the question regarding trusting the use of mobile banking. Therefore, as long as customers distrust the overall mobile banking technology their adoption rate will remain at low level.

Table 7: Summary of Survey Findings for affecting factors

	Statement to evaluate	Rating point					
		1	2	3	4	5	Remark
Perceived Trust4							
PT	I believe mobile network service Providers and banks are trustworthy.	19.6%	36.4%	5.5%	13.9%	24.6%	Disagree
PT	I trust the use of mobile banking	18.5%	35.2%	12.0%	15.8%	18.5%	Disagree

Source: Analysis of Survey data, using SPSS 20

4.6.5 Perceived Risk

The study sought to determine if customers, perceived risk towards mobile banking affect their adoption of the service. According to (Kabir 2013), perceived risk may be seen from various perspectives such as privacy risk, financial risk, system risk and physical security risk. The respondents were asked mobile banking services may not perform well and may process payments incorrectly because of network problems which is system risk 25.8% agreed and 37.6% disagreed when asked if they believe that they can get compensation from banks when and if transaction errors occur. As for the privacy concerns of the respondents when asked if they are concerned about other people accessing their account when using mobile banking 24.3% of them strongly agreed. And 48.0% customers agreed that if they decided to use mobile banking and something went wrong with the transactions, my friends, family and colleagues would think less of me which Indicates their fear over the social risk. Finally respondents were neutral when asked if they think that it take them lots of time to learn how to use mobile banking services. The results obtained could imply that the perception of the risks regarding mobile banking is expected to influence its adoption and further growth. The finding also concurs with (Chitungo and Munongo 2013)

who discovered that presence of any perceived risk negatively affects adoption of mobile banking service.

Table 8: Summary of Survey Findings for Use of Factors

	Statement to evaluate	Rating point					
		1	2	3	4	5	Remark
Perceived Risk							
PR	Mobile banking services may not perform well and may process payments incorrectly because of network problems.	-	16.7%	20.6%	36.8%	25.8%	Agree
PR	When transaction errors occur, I Will get compensation from banks.	37.6%	3.7%	23.2%	19.6%	15.9%	Strongly Disagree
PR	I'm worried about using mobile Because other people may be able to access my account.	15.1%	24.3%	18.0%	21.9%	20.6%	Disagree
PR	I'm sure that if I decided to use mobile banking and something went wrong with the transactions, my friends, family and colleagues would think less of me.	18.8%	13.6%	17.8%	48.0%	1.8%	Agree
PR	It would take me lots of time to learn how to use mobile banking services.	16.4%	30.5%	32.1%	12.8%	8.1%	Neutral

Source: Analysis of Survey data 2020, using SPSS 2020

4.6.6 Compatibility

As it is shown in the table below regarding the compatibility of mobile banking with the way customers like to control and manage their banking transactions 47.3% agreed and 42.6% strongly agreed to the statement I use the current banking service (For Example:- phone banking, and internet banking) now because these are already a part of my daily life. This implies that when customers feel mobile banking being consistent with their existing life style and trend then its adoption will eventually increase. This is indicated by (Koenig-Lewis 2010; Lin 2011) that stated compatibility to be affected in the implementation of

virtual store, mobile payment and mobile banking.

Table 9: Summary of Survey Findings for Use Factors

	Statement to evaluate	Rating point					
		1	2	3	4	5	Remark
Compatibility							
COM	Using mobile banking fits well with the Way I like to control and manage my banking transactions.	3.7%	-	22.7%	47.3%	26.4%	Agree
COM	I use the current banking service (e.g.; phone banking, and internet banking) now because these are already a part of my daily life.	6.8%	5.2%	23.0%	42.6%	22.5%	Agree

Source: Analysis of Survey data 2020, using SPSS

4.6.7 Awareness

To determine the level of awareness of the respondents about mobile banking three statements were stated and respondents were asked to state their level of agreement and 55.9% agreed to the statements I am aware that my bank offers mobile banking services and 38.1% of the respondents agreed that they are aware of all the various available services on mobile banking. This result indicates that customers are aware about availability of mobile banking and its advantage and disadvantage. As stated on (Sather 1999) an important characteristic for any adoption of innovation service or product is creating awareness among the customers about the service or product.

Table 10: Summary of Survey Findings for Using Factors

	Statement to evaluate	Rating point					
		1	2	3	4	5	Remark
Awareness							
AW	I am aware that my bank offers mobile banking services	6.5%	3.2%	9.6%	55.9%	24.8%	Agree
AW	I am aware of all the various available services on mobile banking	11.5%	12.9%	31.1%	38.1%	6.5%	Agree

Source: Analysis of Survey data 2020, using SPSS

Finally the respondents were asked to rank which of the factors will highly influence their use of mobile banking and as it can be seen from the below table that relative advantage, perceived usefulness, perceived ease of use, perceived risk, perceived trust and awareness were stated to have strong influence on their mobile banking using. As for compatibility factor 40.5% of the respondents disagreed that it influences their adoption which can mean that mobile banking technology is not viewed by many as being consistent with existing values of the users.

Table 11: factors that affect usage of mobile Banking

Mobile Banking Usage Factor	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Remark
Relative Advantage	5.2%	5.2%	4.4%	35.0%	50.1%	Strongly agree
Perceived Usefulness	6.3%	3.9%	0.3%	34.5%	55.1%	Strongly agree
Perceived Ease of Use	5.5%	8.9%	5.0%	41.8%	38.9%	Agree
Perceived Risk	-	8.6%	1.6%	27.2%	62.7%	Strongly agree
Perceived Trust	0.3%	0.3%	0.8%	28.5%	70.2%	Strongly agree
Compatibility	9.7%	40.5%	3.9%	28.7%	17.2%	Disagree
Awareness	5.0%	4.7%	4.7%	43.9%	46.5%	Strongly agree

: Analysis of Survey data 2020, using spss

Test results for the Classical Linear Regression Analysis

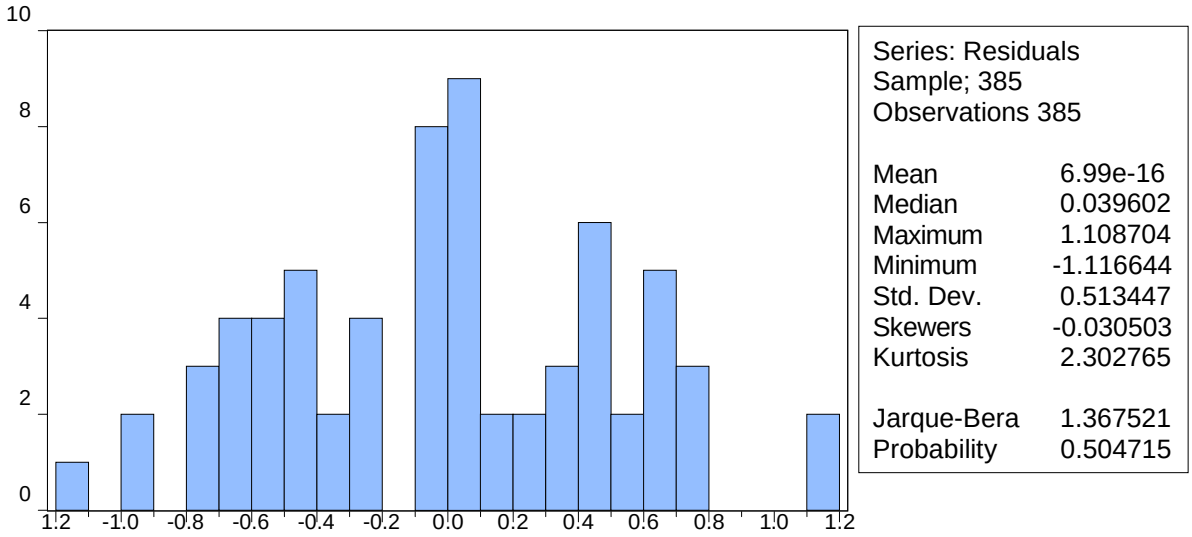
Model Assumptions

Normality

For the determination of whether the error term is normally distributed around the mean nnormality test is used.

Decision Rule: Reject H0 if P value less than significant level 0.05. Otherwise, do not reject H0. Figure below show that distribution of the panel observation is symmetric about its mean. The P-value of 0.504715 implies that the p-value for the Jarque-Bera test is greater than 0.05 which indicates that there was no evidence for the presence of abnormality in the data. Thus, we do not reject H0.

Figure 2 :Normality Test



Source: Sketch form presence data

Multicollinearity

According to Brooks (2008), multicollinearity will occur if all of the independent variables are highly correlated with one another. It shows the regression model has difficulty in explaining which independent variables are affecting the dependent variable. If multicollinearity problem is too serious in a model, either additional important variable should be added or unimportant independent variable should be dropped. This study uses high pair-wise correlation coefficients method to detect the existence of multicollinearity. High pair-wise correlation coefficients method sees the correlation of independent variables between each other. According to Joseph and Rosemary (2003) if the correlation coefficient is higher than 0.8, it is considered as the model consists of serious multicollinearity problem.

Table 12 Multicolinearity

	COM	AW	PEOU	PR	PT	PU	RADVANTAGE
COM	1.000000	0.438925	0.109052	0.382544	0.375168	0.375168	0.365382
AW	0.438925	1.000000	0.383863	-0.062163	0.338705	0.450649	0.510630
PEOU	0.109052	0.383863	1.000000	-0.253956	0.229596	0.587394	0.280745
PR	0.336240	-0.062163	-0.253956	1.000000	-0.278029	-0.017442	0.036731
PT	0.382544	0.338705	0.229596	-0.278029	1.000000	0.295936	0.311165
PU	0.375168	0.450649	0.587394	-0.017442	0.295936	1.000000	0.352796
RADVANTAGE	0.365382	0.510630	0.280745	0.036731	0.311165	0.352796	1.000000

Source: Analysis of Survey data 2020, using SPSS

Table 13. Showed that there is no strong pair-wise correlation between the explanatory variables.

Heteroskedasticity

When the distribute of the errors is different, varying depending on the value of one or more of the independent variables, the error terms are heteroskedastic (Brooks 2008). Heteroskedasticity test is very important because if the model consists of heteroskedasticity problem, the OLS (Ordinary Least Square) estimators are no longer BLUE and error variances are incorrect, therefore the hypothesis testing, standard error and confident level will be invalid. A white' test has been made, to ensure that this assumption is no longer violated.

Table 13: Heteroskedasticity Test

Heteroskedasticity Test: White

F-statistic	1.397704	Prob. F(35,346)	0.0719
Obs*R-squared	47.31927	Prob. Chi-Square(35)	0.0799
Scaled explained SS	45.63000	Prob. Chi-Square(35)	0.1077

Source: Analysis of Survey data 2020, using SPSS

As shown in table 13, all versions of the white test statistic (F-statistic Chi-Square and Scaled explained SS) gave the same conclusion that there was no evidence for the presence of heteroscedasticity in this particular study. Since the p-values of 0.0719, 0.0799 and 0.1077 for F- statistic, Chi-Square and Scaled explained SS respectively were in excess of 0.05, the null hypothesis should not be rejected.

Factors Affecting Usage Mobile Banking

Table 14: Multiple regression results

Dependent
Variable: UMB
Observations: 385
No d. f. adjustment for standard errors & covariance

	Coefficient	Std. Error	t-Statistic	Prob.
C	3.132388	0.188587	16.60976	0.0000
COM	0.082220	0.039578	2.077427	0.0384
AW	0.016435	0.029738	0.552653	0.5808
PEOU	-0.058128	0.035459	-1.639330	0.1020
PR	-0.128218	0.035405	-3.621412	0.0003
PT	-0.184110	0.034843	-5.283945	0.0000
PU	0.125348	0.032954	3.803772	0.0002
RADVANTAGE	0.321247	0.031064	10.34156	0.0000

R-squared	0.688648	Mean dependent var	4.121305
Adjusted R-squared	0.681988	S.D. dependent var	0.614266
S.E. of regression	0.416886	Akaike info criterion	1.836040
Sum squared reside	64.99901	Schwarz criterion	1.928995
Log likelihood	-203.7970	Henan-Quinn critter.	1.872917
F-statistic	103.4016	Durbin-Watson stat	1.950344
Prob(F-statistic)	0.000000		

Source: Analysis of Survey data 2020, using SPSS

Compatibility

The results in table 14 show that compatibility has a coefficient of 0.082220 and p-value of 0.0384. Holding other explanatory variables constant, compatibility was found to have a statistically significant positive effect on the use of mobile banking. Therefore, the researcher failed to reject the null hypothesis that stated compatibility to have a positive effect on mobile banking use. This result also confirms with previous researches by (Koenig-Lewis 2010; Lin 2011) that found compatibility to be influential in the adoption of mobile payment and mobile banking.

This finding could imply that when customers perceive mobile banking as consistent with their existing beliefs, values, lifestyle and past experience, they are more likely to use these services.

Awareness

As it is shown in table 14 above coefficient of awareness is 0.016435 with its p-value 0.5808. It can be seen that maintaining other explanatory variables constant awareness was found to have a positive but statistically insignificant impact on use 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 which contradicts with the prior research of Laforet and Li (2005) that indicated awareness to significantly influence customer's use of mobile banking. This result can be explained by the fact that majority of bank customers feel that they have the relevant information needed for use of mobile banking.

Perceived Ease of Use

As it can be seen in the above table 14, the coefficient of perceived ease of use is -0.058128 and the P-value is 0.1020. Holding other explanatory variables constant, perceived ease of use has emerged in this study as having a negative but statistically insignificant influence on customers use of mobile banking as its value of significance is greater than 0.05. This finding is inconsistent with the results by (Khalifa and Shen 2008, Kim *et al.,* 2009; Wei *et*

al., 2009) that stated in previous empirical studies that perceived ease of use has a positive influence on the use of mobile banking. A plausible explanation for this finding could be due to respondents' familiarity with mobile phones that may increase their expectancies of service usefulness rather than influencing their attitudes toward the easiness of the service.

Perceived Risk

Based on table 14 of regression analysis result, the coefficient of perceived risk is -0.128218 and its P-value is 0.0003. Holding other explanatory variables constant, perceived risk was found to have a negative and statistically significant influence on use of mobile banking. Therefore, the researcher failed to reject the null hypothesis that stated perceived risk to have a negative effect on use of mobile banking. Significantly, this finding is found to be consistent with Mitchell (1999), Safeena, et al., (2011) 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 and Customers are safety seekers, and they want to keep away from risks.

Perceived Trust

As it can be seen on table 14, the coefficient of perceived trust is -0.184110 and P-value is 0.0000. Holding other explanatory variables constant, perceived trust was found to have a negative and statistically significant effect on use of mobile banking. Therefore, the researcher rejects the null hypothesis that customer's trust on the overall mobile banking service has a positive effect on use of mobile banking. This means, there is no sufficient evidence to support the positive relationship between perceived trust and use of mobile banking.

This result is inconsistent with findings of (Gu, Lee & Suh, 2009; Lee *et al.*, 2007) that indicated the higher levels of trust in a service provider will lead to a greater intention on the part of user to engage in mobile banking transactions.

Perceived Usefulness

Table 14 above depicted that, the coefficient of perceived usefulness 0.125348 and its P-value is 0.0002. Holding other explanatory variables constant perceived usefulness was

found to have a positive and statistically significant influencing on use of mobile banking. Therefore, the researcher failed to reject the null hypothesis that indicates perceived usefulness has a positive effect on mobile banking. This result is found to be in line with Luarn and Lin (2005) finding that states perceived usefulness having a positive influence in mobile banking use. The possible reason for the significant positive relationship could be most customers to choose mobile services because they see the benefits they could obtain and also the convenience and any time anywhere accessibility.

Relative Advantage

Table 14 also presented that, the coefficient of relative advantage is 0.321247 and its P-value is 0.0000. Holding other explanatory variables constant relative advantage was found to have a positive and statistically significant effect on use of mobile banking. This was also confirmed in pervious literatures (McCloskey, 2006; Rogers 2003 and Lin 2011) that when user perceives relative advantage of a new technology over an old one, they tend to adopt. This suggests that if bank customers perceive that mobile banking has a relative advantage over branch banking in accessing accounts from any location and at any time, and provides greater control and flexibility in managing their accounts, they may agree to it and use it.

CHAPTER FIVE

5. Summery and Recommendation

5.1 Summery

In this section based on the regression analysis findings outlined in chapter four the conclusion is presented followed by some recommendations to provide insight in to factors influencing the use of mobile banking in commercial banks , in case of Jimma town.

Perceived usefulness was found to have a significant and positive influence on mobile banking adoption. This result suggests that for mobile banking technology 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. Therefore; it can be concluded that people will adopt mobile banking services when the value and benefit of mobile banking is evident.

Compatibility is also found to have a significant positive association with mobile banking uses. The implication of this result is that if customers perceive mobile banking as consistent with their existing beliefs, values, lifestyle and past experience, they are more likely to use these services. Therefore, it can be concluded that when mobile banking is found to be compatible by matching with the existing values, past experiences, and needs of potential users then mobile banking using will increase.

Relative advantage was also found to have a significant and positive effect on customer's use of mobile banking this suggests that, if bank customers perceive that mobile banking has a relative advantage over branch banking in accessing accounts from any location and at any time, and provides greater control and flexibility in managing their accounts, they will use it. Practically, 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. Therefore, the more relative advantage perceived by users, the higher possibility customer will be attracted to use mobile banking services.

Perceived risk was found to have a significant and negative affecting on mobile banking use. This implies that if individuals perceived higher risks and uncertainty such as issues of loss and theft of financial information due to system hacking, this would discourage adoption of mobile banking by the consumers as they are risk averse. This can be concluded that risk involved in using mobile banking make people reluctant to use such tool for banking. Therefore, it is important for banks and service providers to project higher security when providing mobile banking services in order to yield higher consumer's acceptance. On the other hand perceived trust was found to have a significant and negative influence on mobile banking uses. This could imply that when customers do not trust mobile banking service and the service provider it will in turn lead to a less willingness to adopt mobile banking. Therefore trust will have a positive impact on mobile banking use, when the mobile banking service providers (both the banks and mobile network provider) are perceived to be trustworthy. Perceived ease of use has emerged in this study as having an insignificant negative influence on mobile banking use it contradicts the idea that a system perceived to be easier to use will facilitate more system use and is more likely to be accepted by users. This could imply that since customers are more familiar with mobile phones they are now more concerned with usefulness of the service not whether it is easy or not. Awareness was found to have an insignificant and positive impact on mobile banking usage. Having more or less awareness about mobile banking has no significant impact use of mobile banking adoption for customers in commercial banks in Jimma town.

5.2 Recommendation

Based on the above findings, the following suggestions to improve customer's use of mobile banking were forward for local banks either offering or planning to launch mobile banking services in Jimma town.

- 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.

- When designing their mobile banking products might need to emphasize that their service fits with customers' lifestyle, culture and language.
- Banks could invest in campaigns and arrange information sessions to demonstrate the features of mobile banking services, and its benefits over traditional channels.
- With regards to perceived risk it is important for banks and service providers to project higher security when providing mobile banking services in order to yield higher customers' acceptance. In fact, banks and service providers should continuously innovate and offer better security and reliable applications to enhance users' confidence towards mobile banking services.
- To change the customer's perception with regards to risk and trust issues banks could use a well structured advertisement and staff interaction in order to make them realize that the service is safe to use. This will help the customers to know the advantages and disadvantages associated with the service and as a result of this, they could weigh the costs and the benefits of using the self-service which in turn will reduce unnecessary worries and anxiety.

5.3 Future study

The following are areas that could be considered for future research: The contribution of demographic factors such as age and gender toward the adoption of mobile banking services was not given much emphasis in this study; future researchers may investigate the influence of demographic factors in customer adoption of mobile banking services. Furthermore, this research was conducted in Jimma town. Further studies may also consider selecting respondents from other areas, as well as incorporating additional factors in understanding the intention to adopt mobile banking services.

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