

*Addis Ababa  
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# ***ADDIS ABABA UNIVERSITY***

SCHOOL OF GRADUATE STUDIES

SCHOOL OF INFORMATION SCIENCE

## **Identifying Factors Influencing Customers' Behavioral Intention to the Adoption of Mobile Banking: The Case of Commercial Bank of Ethiopia**

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**JUNE 2017**

**ADDIS ABABA**

**ADDIS ABABA UNIVERSITY**  
**COLLEGE OF NATURAL AND COMPUTATIONAL**  
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**Intention to the Adoption of Mobile Banking:**  
**The Case of Commercial Bank of Ethiopia**

A Thesis Submitted to the School of Information Science of Addis  
Ababa University in Partial Fulfillment of the Requirements for the  
Degree of Master of Science in Information Science

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## **DEDICATION**

*Dedicated to my Beloved wife Tujube Terfassa and to my daughter Melal Dinkissa. Thank you for your patience, love and support given to me during this journey.*

## ACKNOWLEDGEMENT

*First and foremost, I would like to express my heartfelt thanks to my almighty God, who gave me the strength, determination, endurance and wisdom to bring this thesis to completion and made me who I am today. Oh God, I would be nowhere without you.*

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*Finally, I would like to express my heartfelt gratitude to all that helped in any way, I really do appreciate what you have done.*

## **ABSTRACT**

The purpose of this study is to identify factors influencing customers' behavioral intention to the adoption of mobile banking in Ethiopia, the case of commercial bank of Ethiopia. The research question of the study is stated as "What are the factors influencing customers' behavioral intention to the adoption of mobile banking in Ethiopia?" .The study proposed a research model based on the widely used model for technology adoption, the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2).

This study was conducted based on the data gathered from customers of Commercial Bank of Ethiopia in Addis Ababa, Ethiopia. Survey was conducted using self-administered questionnaire. Out of 115 questionnaires that have been distributed to customers, 110 valid questionnaires were collected and used for data analysis. The proposed model was tested using a partial least square with the help of the SmartPLS software. The proposed model explained 35.4% of variance in behavioral intention. The empirical evidence of the study indicated that Performance expectancy, Effort expectancy and price value were found as major influencing factors of behavioral intention whereas social value, facilitating conditions and hedonic motivation were found to have insignificant effect on behavioral intention of customers for mobile banking adoption.

The study provides a comprehensive understanding of the factors which affect customers' behavioral intention to the adoption of mobile banking technology in Ethiopia which may help the commercial bank of Ethiopia to understand customers' intention and make strategy accordingly to ensure financial inclusion. This research has contributed to theory, in that considering the shortage of literature that currently exists in general about technology adoption, in particular about mobile banking adoption in Ethiopia, so that it will be used to enrich mobile banking related literatures by exploring different factors which can affect adoption process, and also help as the springboard for other researchers for the future work on the area.

**Keywords:** Mobile Banking, Adoption, Behavioral Intention, Unified Theory of Acceptance and Use Technology, Structural Equation Modeling, Partial Least Square, Commercial Bank of Ethiopia.

# ACRONYMS

BI	Behavioral Intention
CBE	Commercial Bank of Ethiopia
DTPB	Decomposed Theory of Planned Behavior
EE	Effort Expectancy
ETAM	Extension of Technology Acceptance Model
FC	Facilitating Conditions
HM	Hedonic Motivation
ICT	Information Communication Technology
IT	Information Technology
PLS	Partial Least Square
PBC	Perceived Behavioral Control
PE	Performance Expectancy
PEOU	Perceived Ease of Use
PU	Perceived Usefulness
PV	Price Value
SEM	Structural Equation Modeling
SI	Social Influence
SN	Subjective Norm
TAM	Technology Acceptance Model
TPB	Theory of Planned Behavior
TRA	Theory of Reasoned Action
UTAUT	Unified Theory of Acceptance and Use of Technology

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# CHAPTER ONE

## INTRODUCTION

### 1.1. Overview

Banks play a prominent role in improving economic efficiency by channelizing funds from resource surplus sectors to those sectors that are deficient, yet possessing better productive investment opportunities. Banks also play a vital role in trade and payment system by significantly reducing transaction costs and increasing convenience.

Banking has always been a highly information intensive activity that relies heavily on information technology (IT) to acquire, process, and deliver the information to all relevant customers. Not only information technology is critical in the processing of information, it provides a way for the banks to differentiate their products and services. Banks find that they have to constantly innovate and update to retain their demanding and discerning customers and to provide convenient, reliable, and expedient services. Driven by the challenges to expand and capture a larger share of the banking market, some banks invest in more bricks and mortar to enlarge their geographical and market coverage. Others have considered a more revolutionary approach to deliver their banking services via a new medium like mobile banking, internet banking and others.

The spread of mobile technology across the globe is one of the most remarkable achievements in the last decades. Mobile phones have increasingly become tools that customers use for performing banking transactions. Advances in mobile technology have revolutionized almost every facet of society, from information to education, granting enhanced access to an ever-growing number of people.

Mobile banking is the latest approach used by financial institutions for the provision of financial services through information and communication technology (ICT). Mobile banking is a service whereby customers use a mobile phone or mobile device to access banking services and perform financial transactions (Anderson, 2010). (Goswami and Raghavendran, 2009) argue that the broad aim of mobile banking is to fit a financial

institution on a mobile phone. (Laukkanen and Kiviniemi, 2010) define mobile banking as an interaction through which a customer is connected to a bank via a mobile device. (Crosman, 2011) reinforces this by asserting that mobile banking enables users to have a bank branch in their pocket and to be able to bank anytime and anywhere. (Steadman, 2011) advocates that technology is the enabling factor that allowed mobile banking to emerge. The always-on connectivity demand by customers coupled with the fact the internet has evolved from fixed wired through wireless to mobile connection, meant that financial institutions had to pursue alternative channels to provide their services in order to meet customers' expectations (Puschel et al, 2010).

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. Some of the services offered by mobile banking includes 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 world 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.

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

Despite these advantages and the conveniences, the use of mobile banking services is much lower than expected in both the developed and developing economies Agwu (2012). He

also stated that mobile phone and its applications are still highly under-utilized. (Akturan and Tezcan, 2012) stressed that the market of mobile banking still remains very small when compared to other electronic banking counterparts such as ATM; internet banking, etc. Furthermore, it is noted that the widespread adoption and large usage of mobile telephones did not reflect on the adoption and usage of mobile banking.

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

## **1.2. Statement of the Problem**

Traditional banking system remains the most widespread method for conducting bank transactions in Ethiopia for many years as most of other countries. However, mobile technology is rapidly changing the way personal financial services are being designed and delivered. The soaring and large mobile phone user base is pushing companies more and more towards mobile strategies. The financial services sector in particular, has responded quickly to this mobile era with many financial institutions starting to offer mobile services (Laukkanen, 2007b). Many banks around the world have launched mobile banking services in an attempt to provide ubiquitous access to banking services. With mobile banking, customers are able to have anywhere and anytime access to banking services via a mobile device; tablet or mobile phone (Crosman, 2011). Most of commercial banks in Ethiopia are trying and already started to introduce mobile-based e-banking systems which enable banks achieve effective customer's service delivery by providing high level of customer service through online delivery channel, besides operating cost minimization and revenue maximization.

Despite all their efforts aimed at developing better and easier mobile banking systems, this system remained largely unnoticed by the customers of the commercial bank of Ethiopia, and certainly were seriously underused in spite of its availability. Many studies (Barnes and Corbitt, 2003; Brown et al., 2003; Lee et al., 2003; Suoranta, 2003; Luarn and Lin, 2005; Barnes and Scornavacca, 2004; Laukkanen and Lauronen, 2005), in different countries of the world have been conducted to ascertain why uptake of mobile banking is below expectations. (Gardachew, 2010) conducted research on the opportunities and challenges of E-banking in Ethiopia, focusing on analyzing the status of electronic banking in Ethiopia and investigated the main challenges and opportunities of implementing E-banking system. (Wondwossen and Tsegai, 2005) also studied on the challenges and opportunities of E-payments in Ethiopia; their objective was studying of E-payment practices in developing countries, Africa and Ethiopia. As per the researchers' knowledge, there is no study conducted with regards to exploring factors influencing customers' behavioral intention to the adoption of mobile banking in Ethiopia.

Therefore, there is a need to investigate and understand customers' acceptance of mobile banking and to identify the factors that can affect their intention to adopt mobile banking in Ethiopia. This issue is important because the result of the study holds the clue that will help the banking industry in Ethiopia, particularly the commercial bank of Ethiopia, to formulate their marketing strategies to promote new forms to mobile banking services in the future. This study therefore aims at filling the gap by investigate factors which encourage and hinder customers' behavioral intention to the decision for the adoption of mobile banking in Ethiopia, the case of commercial bank of Ethiopia.

### **1.3. Research Question**

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

What are the factors influencing customers' behavioral intention to the adoption of mobile banking in Ethiopia?

## **1.4. Objective of the Study**

### **1.4.1. General Objective**

The main objective of this research is to identify the key determinants that influence the behavioral intention of customers to adopt mobile banking in Ethiopia, with the following specific objectives.

### **1.4.2. Specific Objective**

The specific objectives of the research are:

- ✓ To analyze the association and influence of performance expectancy on behavioral intention to adopt mobile banking.
- ✓ To analyze the association and influence of effort expectancy on behavioral intention to adopt mobile banking.
- ✓ To analyze the association and influence of social influence on behavioral intention to adopt mobile banking.
- ✓ To analyze the association and influence of facilitating conditions on behavioral intention to adopt mobile banking.
- ✓ To analyze the association and influence of hedonic motivation on behavioral intention to adopt mobile banking.
- ✓ To analyze the association and influence of price value on behavioral intention to adopt mobile banking.

## **1.5. Significance of the study**

The findings and results of this research may be of potential value to the banking industry in Ethiopia and will be used as the springboard for other researchers for the future work on the area. Based on the factors found to be influencing customers' behavioral intentions to the adoptions of mobile banking services, the study may provide recommendations for banks about changes needed in order to accelerate customer adoption of the services offered which in turn enable banks achieve effective customer's service delivery, by providing high level

of customer service through online delivery channel, besides operating cost minimization and revenue maximization.

## **1.6. Scope and Limitations of the study**

The purpose of this study is to explore factors affecting customers' behavioral intention to the adoption of mobile banking, the case of commercial bank of Ethiopia.

The scope of the research are the following:

- ✓ Due to time and cost constraints, this study has focused on customers of commercial bank of Ethiopia located in Addis Ababa only.
- ✓ This study is limited to identifying factors that influence customers' behavioral intention to adopt mobile banking, not to measure the actual adoption or actual usage.

The limitations of the research are the following:

- ✓ There is lack of previous studies in Ethiopia regarding identifying factors that can influence customers' behavioral intention to the adoption of mobile banking. Lack of previous studies on the area limited us not to have resources which can guide us to have starting point to conduct the research.

## **1.7. Organization of the Study**

The first chapter depicts background of the study, introduces the research problem, research general and specific objectives, significance of the research, scope and limitations of the study.

The second chapter starts with literature review regarding technology adoption models, this chapter describes the mobile banking situation in Ethiopia and it further describes the researches conducted on the area worldwide. It also conducts a detail assessment of various technology adoption models and suggests a suitable model for this research. It develops a research model on the key factors likely to affect customers' intention to the adoption of

mobile banking in Ethiopia. The hypotheses to be tested are generated and finally the proposed research model is presented.

The third chapter presents about the research model and hypothesis development.

The fourth chapter provides details of the research methodologies and procedures followed for data collection, data analysis and interpretations. The key measures, scales and their sources are provided.

In the fifth chapter, the results of the analysis are presented. Firstly, the demographics are presented. Secondly, the item loadings were analyzed. Thirdly, the reliability and validity of the constructs were examined; finally the predictive powers of the factors are analyzed and provide conclusions for the hypotheses.

The final chapter discusses conclusions and provides recommendations for future studies and conclude the study.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

This chapter seeks to review relevant studies and findings that are essential to improve the research and its capacity to analyze the concerns it seek to accomplish, that is, the theoretical and empirical literature. The theoretical literature presents and attempts to explain theories that relate to the subject matter, adoption of mobile banking in Ethiopia. The empirical literature describes what has been practically observed and validated objectively in relation to the subject matter.

#### **2.1. Definition of Mobile Banking**

Mobile Banking refers to provision of banking and financial services with the help of mobile telecommunication devices. (Luo, Li, Zhang and Shim, 2010), defined mobile banking as an innovative method for accessing banking services via a channel whereby the customer interacts with a bank using a mobile phone. The scope of offered services may include facilities to conduct bank transactions, to administer accounts and to access customized information (Tiwari and Buse, 2007). In the broader sense mobile banking enables the execution of financial services in the course of which - within an electronic procedure - the customer uses mobile communication techniques in conjunction with mobile devices (Pousttchi and Schurig, 2004).

Mobile Banking can be said to consist of three inter-related concepts: Mobile Accounting, Mobile Brokerage and Mobile Financial Information. Mobile accounting is characterized as transaction based banking services that revolve around a bank account and are availed using mobile devices. A more precise definition of mobile accounting would therefore characterize it as “provision of account-specific banking services of non-informational nature”. Mobile Brokerage, in context of banking services, refers to intermediary services related to the bourse, e.g. selling and purchasing of stocks. Mobile Brokerage can be thus defined as transaction based mobile financial services of non-informational nature that revolve around a securities account. At last, Mobile Financial Information refers to non-

transaction based banking and financial services of informational nature. It includes subsets from both banking and financial services and is meant to provide the customer with anytime, anywhere access to information. The information may either concern the bank and securities accounts of the customer or it may be regarding market developments with relevance for that individual customer. The information may be customized on the basis of preferences given by the customer and sent with a frequency decided by him (Tiwari and Buse, 2007).

The standard package of activities that mobile banking covers are: mini-statements and checking of account history; alerts on account activity or passing of set thresholds; monitoring of term deposits; access to loan statements; access to card statements; mutual funds/equity statements; insurance policy management; pension plan management; status on cheque, stop payment on cheque; ordering check books; balance checking in the account; recent transactions; due date of payment (functionality for stop, change and deleting of payments); PIN provision, change of PIN and reminder over the internet; blocking of (lost/stolen) cards; domestic and international fund transfers; micro-payment handling; mobile recharging; commercial payment processing; bill payment processing; peer to peer payments; withdrawal at banking agent and deposit at banking agent (Rahman, 2006).

## **2.2. Background of Mobile Banking**

In the mid 1990's, almost immediately after embracing the Internet as a channel for banking services, banks and telecommunications companies started to work together towards the development of an online banking service based on mobile telephony. Projects were developed aimed at enhancing the screen and the keyboard of the mobile phone trying to convert it into a usable, portable and foldable "pocket cash point" device (Warren, 1995). By that time banks and other financial institutions had already realized the huge potential of the Internet and the increasing need for more Internet banking, and some of them were quite appreciative about the possibilities of the future online banking services market. It was anticipated that banks would change their role from that of a finance-only provider to a financial information provider with future banking conducted through a mobile phone.

The advancement of mobile technologies has provided an opportunity for financial service 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 (Saleem and Rashid, 2011).

Customers will be able to obtain immediate and interactive banking services anytime and anywhere which, in turn, initiate great value for them (Mallat et al. 2004). Mobile banking service can also increase the amount of data processing and improve operational performance. Moreover, adoption of mobile banking has significant impact on reducing costs and facilitating change in retail banking (Laukkanen and Lauronen 2005). (Cruz et al., 2010) and (Dasgupta et al., 2011) stated that mobile banking has great potential to provide reliable services to people living in remote areas where internet facility is limited. Mobile banking helps banks to increase speed, shorten processing periods, improve the flexibility of business transactions and reduce costs associated with having personnel serve customers physically (Ayo, Adewoye and Oni 2010).

### **2.3. Mobile Banking in Ethiopia**

Despite a rapid increase in the number of financial institutions since financial liberalization, the Ethiopian banking system is still underdeveloped compared to the rest of the world. The electronic banking service was ushered into the Ethiopian market in 2001 when the largest state owned, Commercial Bank of Ethiopia (CBE) introduced ATM to deliver service to the local users (Gardachew, 2010).

After this the electronic banking service scope was further expanded to mobile banking when Dashen Bank signed an agreement with iVery, a South African E-payment technology company, for the introduction of mobile commerce in April 21, 2009. According to the agreement, iVery Payment Technologies has licensed its Gateway and

MiCard E-payment processing solution to Dashen Bank. This enabled Dashen Bank to be the first private bank in Ethiopia to acquire E-commerce and mobile merchant transactions (Amanyehun, 2011).

Despite the very high mobile penetration rate, the use and adoption of mobile banking services remains low. The mobile banking development in Ethiopia is at its starting stage. Currently mobile banking practice in Ethiopia can be considered as accessing the core banking system within the bank. Hence, only a customer of a given bank can access some banking services via his/her mobile phone. With urban skewed branch network it is hard to ensure efficient flow of financial resources and optimize the contributions of the entire financial system to the development processes. With the advent of new mobile technologies, which serve as a catalyst, mobile banking is on the edge to draw millions of new users within the world teeming population (Agwu, 2012). The review of the existing literature showed that mobile banking has been widely researched in the developed and emerging economies; however, there is no research for the developing Ethiopian economy. This research is therefore assumed to fill this gap.

## **2.4. Benefits of Mobile Banking**

The remarkable progression of mobile sector all over the world has made an exclusive chance for delivering financial as well as social services through mobile network Kabir (2013). Mobile banking offers many benefits to banks and their customers. It is an invaluable and powerful tool driving development, supporting growth, promoting innovation, and enhancing competitiveness (Nath, R. et al., 2001).

In addition to banking customers, growth of E-banking infrastructure in general and mobile banking in particular has proved to be extremely beneficial to banks and overall bank organizations. The main benefits of mobile banking to banks are cost savings, reaching new segments of the population, efficiency, enhancement of the bank's reputation and better customer service and satisfaction (Brogdon, 1999; Jayawardhena and Foley, 2000). According to (Robinson, 2000) the cost of an electronic transaction is dramatically less when done online compare to at a branch.

Mobile banking offers also new value to customers. With the help of mobile technology, banking is no longer bound to time or geography. Mobile Banking eliminates the time as well as space shortcomings from banking operations like, balance inquire and fund transfer from one account to another account without visiting bank branches (Mishra and Sahoo, 2013). It enhances efficiency, offers access to financial and banking services, generates new opportunities for income generation and improves governance. Customers have relatively each access to their accounts 24 hours per day; seven days a week. It makes available to customers a full range of services including some services not offered at branches.

## **2.5. Review of Technology Adoption Models**

### **2.5.1. Theory of Reasoned Action (TRA)**

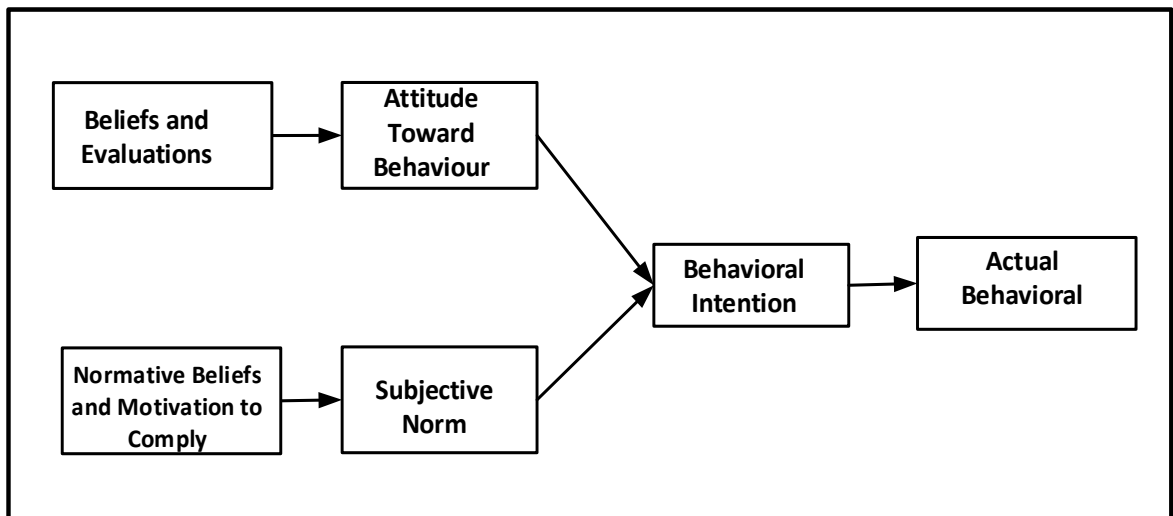
The Theory of Reasoned Action is a widely studied model from social psychology, which is concerned with the determinants of consciously intended behaviors (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). It is composed of attitudinal, social influence, and intention variables to predict behavior. It is hypothesized by TRA that the individual's Behavioral Intention (BI) to perform a behavior is jointly determined by the individual's Attitude toward performing the Behavior (ATB) and Subjective Norm (SN), which is the overall perception of what relevant others think the individual should or should not do. The importance of ATB and SN to predict BI vary by behavioral domain. For behaviors in which attitudinal or personal-based influence stronger, ATB will be the dominant predictor of BI, and SN will be of little or no predictive efficacy. While for behaviors in which normative implications are strong, SN should be the dominant predictor of BI, and ATB will be of lesser importance Ajzen and Fishbein (1980).

The Theory of Reasoned Action also hypothesizes that BI is the only direct antecedent of actual behavior. BI is expected to predict actual behavior accurately if the three boundary conditions specified by Fishbein and Ajzen (1975) can be hold: (a) the degree to which the measure of intention and the behavioral criterion correspond with respect to their levels of specificity of action, target, context, and time frame; (b) the stability of intentions between time of measurement and performance of the behavior; and (c) the degree to which carrying

out the intention is under the volitional control of the individual (i.e., the individual can decide at will to perform or not to perform the behavior).

Moreover, TRA is a general model that does not specify the beliefs that are operative for a particular behavior. Researchers using TRA must first identify the beliefs that are salient for subjects regarding the behavior under investigation. Fishbein and Ajzen (1975) and Ajzen and Fishbein (1980), suggest eliciting five to nine salient beliefs using free response interviews with representative members of the subject population. They recommend using “modal” salient beliefs for the population, obtained by taking the beliefs most frequently elicited from a representative sample of the population.

The TRA has been successfully applied to a large number of situations to predict the performance of behavior and intentions. In a meta-analysis of research on the Theory of Reasoned Action, Sheppard et al. (1988) concluded that the predictive utility of the TRA was strong across conditions.



**Figure 1: TRA. Source: Fishbein and Ajzen, (1975)**

### 2.5.2. Theory of Planned Behavior (TPB)

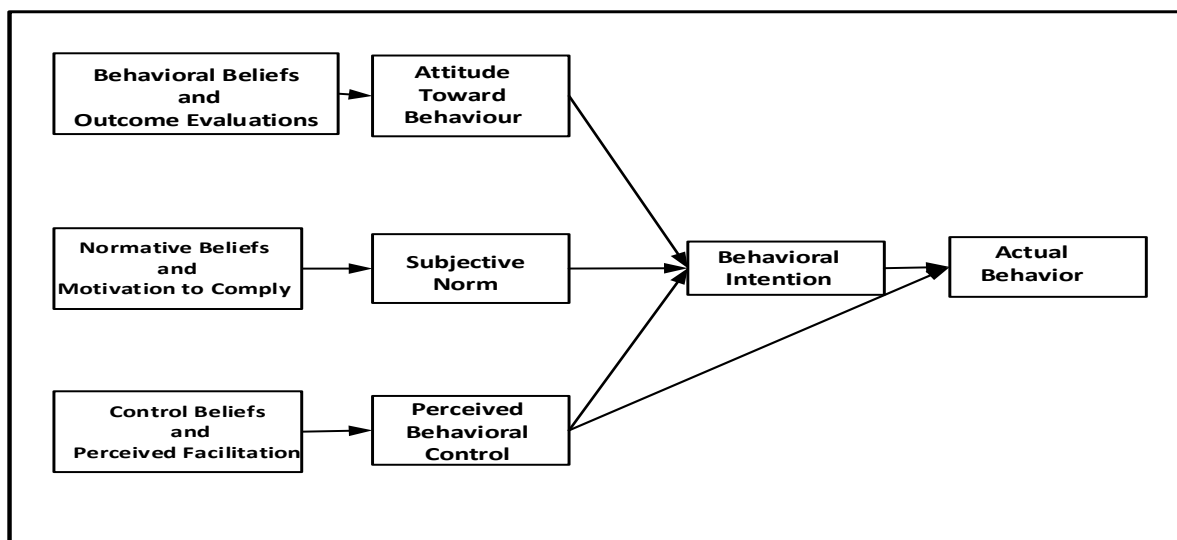
Despite the predictability of the TRA is strong across studies, it becomes problematic if the behavior under study is not under full volitional control. Sheppard et al. (1988) pointed out two problems of the theory. First, one must differentiate the difference between behaviors

from intention. This could be problematic because a variety of factors in addition to one's intentions determine how the behavior is performed. Second, there is no provision in the model for considering whether the probability of failing to perform is due to one's behavior or due to one's intentions. To deal with these problems, Ajzen (1985) extended the Theory of Reasoned Action to the Theory of Planned Behavior (TPB) by including another construct called perceived behavioral control, which predicts behavioral intentions and behavior. In both models, BI is a key factor in the prediction of actual behavior. Both theories assume that human beings are basically rational and make systematic use of information available to them when making decisions. By considering control-related factors, TRA assumes that the behavior being studied is under total volitional control of the performer Madden et al. (1992). However, TPB expands the boundary conditions of TRA to more goal-directed actions.

Attitude toward Behavior (ATB) is defined as "a person's general feeling of favorableness or unfavorableness for that behavior" Ajzen and Fishbein (1980). Subjective Norm (SN) is defined as a person's "perception that most people who are important to him/her think he/she should or should not perform the behavior in question" Ajzen and Fishbein (1980). Attitude toward behavior is a function of the product of one's salient beliefs that performing the behavior will lead to certain outcomes, and an evaluation of the outcomes, i.e., rating of the desirability of the outcome. The main difference between these two theories is that the TPB has added Perceived Behavioral Control (PBC) as the determinant of Behavioral Intention, as well as control beliefs that affect the perceived behavioral control. Though it may be difficult to assess actual control before behavior, TPB asserts that it is possible to measure PBC - "people's perception of the ease or difficulty in performing the behavior of interest" Ajzen (1991). PBC is a function of control beliefs and perceived facilitation. Control belief is the perception of the presence or absence of requisite resources and opportunities needed to carry out the behavior. Perceived facilitation is one's assessment of the importance of those resources to the achievement of the outcomes Ajzen and Madden (1986).

PBC is included as an exogenous variable that has both a direct effect on actual behavior and an indirect effect on actual behavior through intentions. The indirect effect is based on the assumption that PBC has motivational implications for behavioral intentions. When people believe that they have little control over performing the behavior because of a lack of requisite resources and opportunities, then their intentions to perform the behavior may be low even if they have favorable attitudes and/or subjective norms concerning performance of the behavior. Bandura (1977) has provided empirical evidence that people's behavior is strongly influenced by the confidence they have in their ability to perform the behavior. The structural link from PBC to BI reflects the motivational influence of control on actual behavior through intentions.

The direct path from PBC to AB is assumed to reflect the actual control an individual has over performing the behavior. Ajzen (1985) offers the following rationale for this direct path. First, if intention is held constant, the effort needed to perform the behavior is likely to increase with PBC. For example, if two people have equally strong intentions to learn to ride a bike, and if both try to do so, the person who is confident that he or she can master this activity is more likely to ride the bike than a person who doubts his or her ability. Second, PBC often serves as a substitute for actual control, and insofar as perceived control is a realistic estimate of actual control, PBC should help to predict AB.

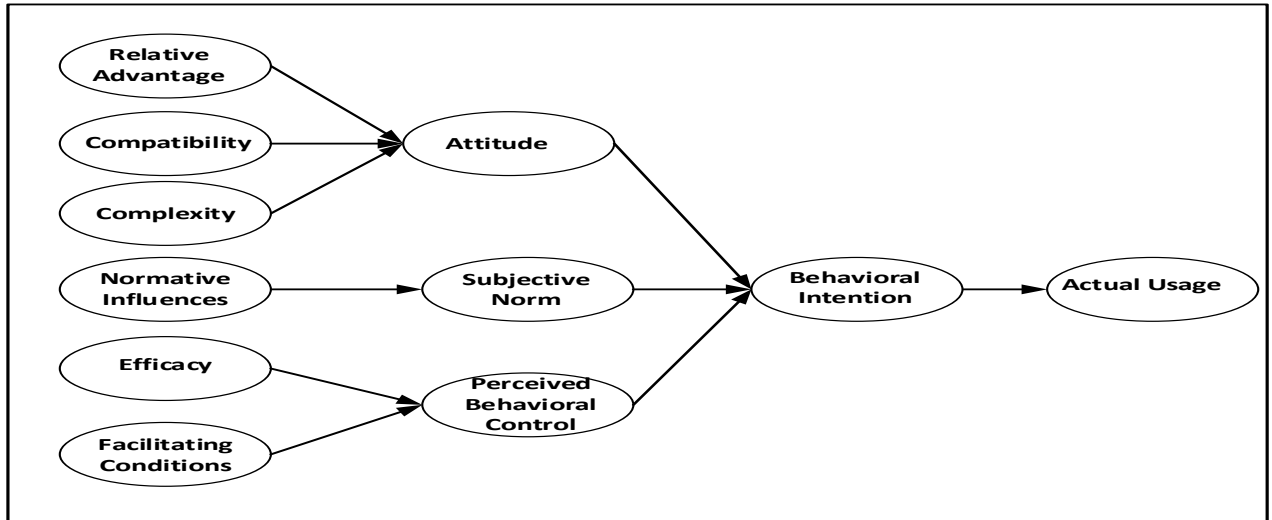


**Figure 2: Theory of Planned Behavior. Source: Adopted from Pavlou (2001)**

As with TRA, the relative importance of BI predictors varies with the behavioral domain. In some applications, it may be found that only ATB has a significant impact on BI; in others, ATB and PBC will be significant; in still others, ATB, SN, and PBC will contribute to the prediction of BI Ajzen (1985). Similarly, the ability of PBC and BI to predict AB also will vary across behaviors and situations. Both BI and PBC can make significant contributions to the prediction of goal-directed actions.

### **2.5.3. Decomposed Theory of Planned Behavior (DTPB)**

Taylor and Todd (1995) indicated that a better understanding of the relationships between the belief structures and antecedents of intention requires the decomposition of attitudinal beliefs. Shimp and Kavas (1984) argued that the cognitive components of belief could not be organized into a single conceptual or cognitive unit. Taylor and Todd (1995) also specified that, based on the diffusion of innovation theory, the attitudinal belief has three salient characteristics of an innovation that influence adoption namely relative advantage, complexity and compatibility. Taylor and Todd (1995) showed that the decomposed model of the TPB has better explanatory power than the pure TPB and TRA models. Relative advantage refers to the degree to which an innovation provides benefits which supersede those of its precursor and may incorporate factors such as economic benefits, image, enhancement, convenience and satisfaction Rogers (1983). Relative advantages should be positively related to an innovation's rate of adoption (Rogers, 1983; Tan and Teo, 2000). Complexity represents the degree to which an innovation is perceived to be difficult to understand, learn or operate Rogers (1983). It is also defined as "the degree to which an innovation is perceived as relatively difficult to understand and use". Innovative technologies that are perceived to be easier to use and less complex have a higher possibility of acceptance and use by potential users. Thus, complexity would be expected to have negative relationship to attitude. Complexity has been found to be an important factor in the technology adoption decision Davis et al. (1989).

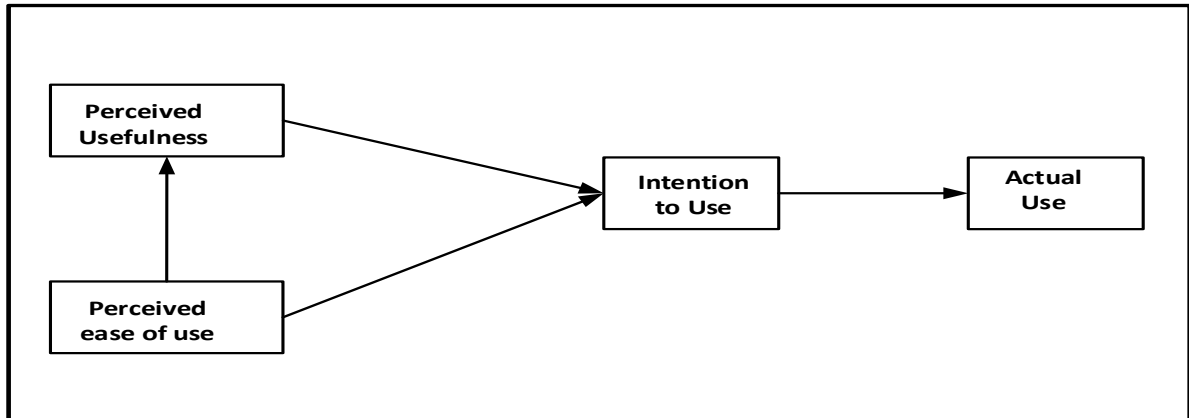


**Figure 3: Decomposed model of theory of planned behavior. Source: Shih and Fang, 2004**

Compatibility is the degree to which the innovation fits with the potential adopter’s existing values, previous experience and current needs Rogers (1983). Tornatzkey and Klein (1982) find that an innovation is more likely to be adopted when it is compatible with the job responsibilities and value system of the individual. Therefore, it may be expected that compatibility relates positively to adoption.

#### **2.5.4. Technology Acceptance Model (TAM)**

Technology Acceptance Model (TAM) introduced by Davis (1989) is an adaptation of the theory of Reasoned Action (TRA) specifically tailored for modeling user acceptance of information systems. The goal of TAM is to provide an explanation of the determinants of computer acceptance that is general, capable of explaining user behavior across a broad range of end-user computing technologies and user populations. A key purpose of TAM is to provide a basis for tracing the impact of external factors on internal beliefs, attitudes, and intentions. TAM was formulated in an attempt to achieve these goals by identifying a small number of fundamental variables suggested by previous research dealing with the cognitive and affective determinants of computer acceptance, and using TRA as a theoretical backdrop for modeling the theoretical relationship among these variables.



**Figure 4: TAM, Source: Davis (1989), Davis, Bagozzi and Warshaw (1989)**

As shown in the diagram, TAM posits that two particular beliefs, perceived usefulness (PU) and perceived ease of use (PEOU) are the primary relevance for computer acceptance behavior. PU is defined as the degree to which a prospective user believes that using a particular system would enhance his or her job performance. This follows from the definition of the word “useful”: “capable of being used advantageously”. Within an organizational context, people are generally reinforced for good performance by raises, promotions, bonuses, and other rewards (Pfeffer, 1982; Vroom, 1964). A system high in perceived usefulness, in turn, is one for which a user believes in the existence of a positive use-performance relationship. PEOU refers to the degree to which a prospective user believes that using a particular system would be free of effort. This follows from the definition of “ease”: “freedom from difficulty or great effort”. Effort is a finite resource that a person may allocate to the various activities for which he or she is responsible. All else being equal, an application perceived to be easier to use than another is more likely to be accepted by users. In the past decade, TAM has become well established as a robust, powerful, and parsimonious model for predicting user acceptance.

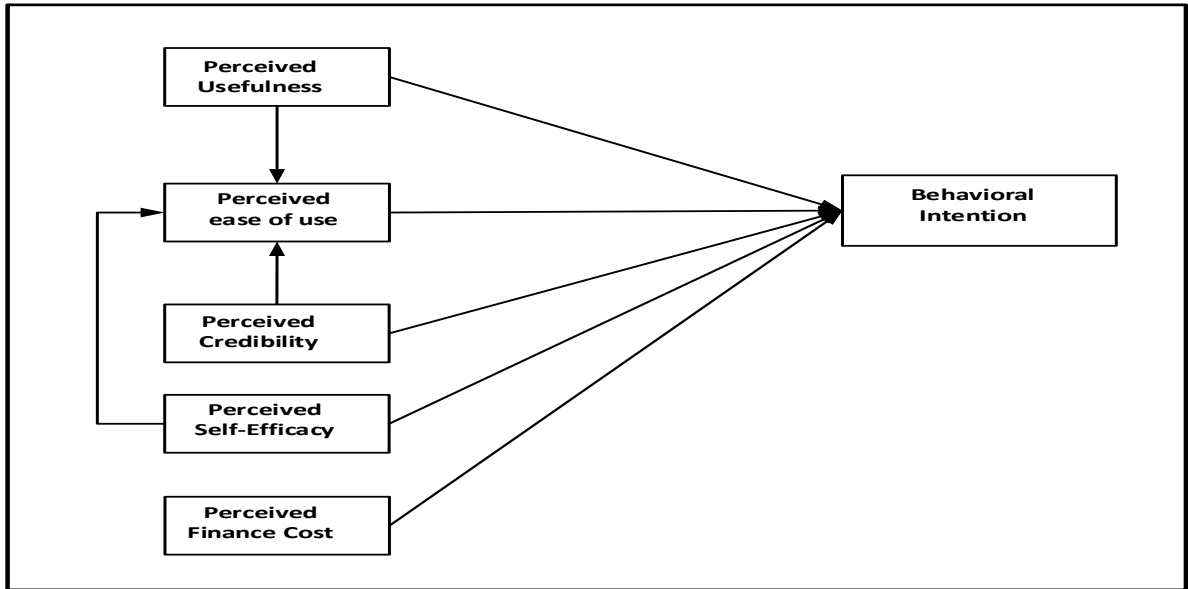
### **2.5.5. Extension of Technology Acceptance Model (ETAM)**

A study of the adaption of telemedicine technology by physician using TAM has found relatively low explanation power of TAM of attitude and intention Hu et al. (1999). The researchers suggested that integration of TAM with other IT acceptance models or

incorporating additional factors could help to improve the specificity and explanatory utility in as specific area.

IS researchers have begun to use TAM to examine the possible antecedents of perceived usefulness and perceived Ease of Use toward microcomputer usage (Igarria, Guimaraes, and Davis, 1995; Igarria, Iivari, and Maragahh, 1995). However, one criticism of TAM studies was that there are very few investigations target at the study of the factors (i.e., the external variables) that affect the PU and PEOU Gefen and Keli (1998). In order to address this issue, Venkatesh and Davis (1996) used three experiments to investigate the determinants of Perceived Ease of Use. The results showed that general computer Self-Efficacy significantly affects Perceived Ease of Use at all time, while objective usability of the system affects users' perception after they have direct experience with the system.

Venkatesh and Davis (2000) developed and tested a TAM2 model by including a number of determinants to Perceived Usefulness into the new model .It is a theoretical extension of the Technology Acceptance Model that explains Perceived Usefulness and Usage Intentions in terms of social influence processes (Subjective Norm, Voluntariness, and Image) and cognitive instrumental processes (Job Relevance, Output Quality, Result Demonstrability and Perceived Ease of Use). Longitudinal data were collected from four different organizations that spanned a range of industries, organizational contexts, functional areas, and types of system being introduced. The results showed that all the above-mentioned social influences and cognitive instrumental processes have significantly influenced user acceptance of the systems.



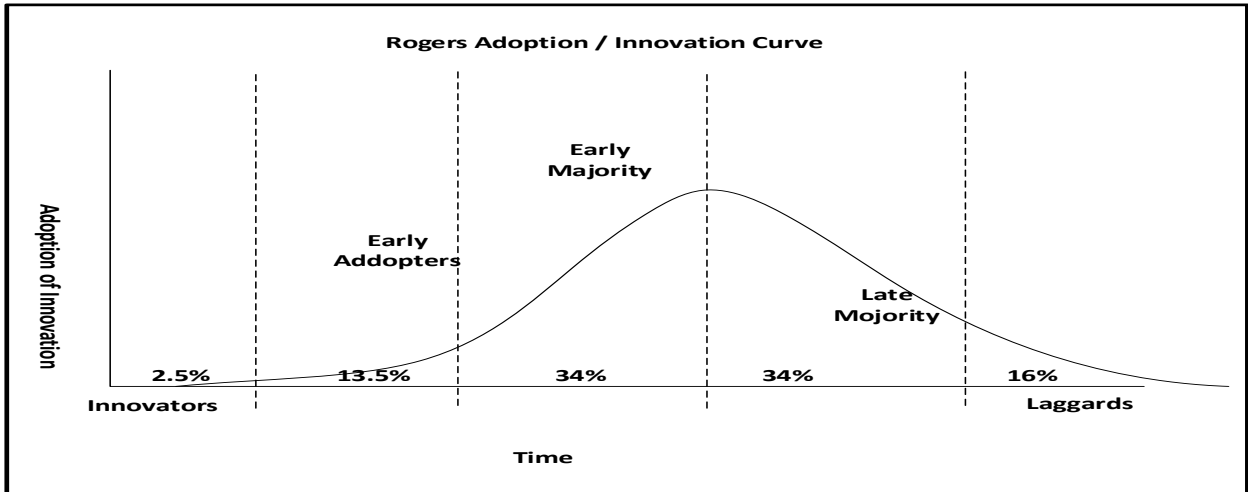
**Figure 5: Extended TAM: Luarn and Lin (2004)**

### 2.5.6. Diffusion of Innovations Theory (DOI)

Diffusion of Innovations Theory (DIT) was developed by Rogers (1995) to explain how the diffusion of innovations takes place in the social system. As defined by Rogers (1995), there are five stages of adoption process: knowledge, persuasion, decision, implementation and confirmation. Also Rogers (1995) stated that three valuable insights, the quality of an innovation, peer to peer communication and understanding of the need of different user segments might be useful to diffuse and adopt the innovation. Adopters of an innovation were classified into five categories: innovators (3.4%), early adopters (12.5%), early majorities (34%), late majorities (34%) and laggards (16%). DIT has been widely used to address the issues about the individuals' adoption of various innovations (Moore & Benbasat, 1991; Tan & Teo, 2000). According to Rogers (1995), innovation compatibility with one's usual way of working and behaving is a factor to make individuals more likely to adopt the innovation.

### **2.5.7. The Social Cognitive Theory (SCT)**

The social cognitive theory (SCT) stemmed from the social learning theory (SLT) which was launched in 1941 by Miller and Dollard's publication of *Social Learning and Imitation* when they introduced the principle of learning through "Models". Currently, subsets of theories based on SLT with emphasis on cognitive variables assert that human cognition mediates between stimulus and response, placing individual control over behavioral responses to stimuli. Although there are several versions of SLT, they all share three basic tenets: Response consequence such as reward / punishment influences an individual's behavior, observational learning (vicarious learning) whereby humans can learn by observing others, in addition to learning by personally participating in an act, and identification: individuals likely to model behavior observed by others they identify with or are emotionally attached to. Social cognitive theory encompasses a large set of factors that operate as regulators and motivators of established cognitive, social, and behavioral skills. Among the key factors are: Reciprocal Determinism, Vicarious Capacity, Forethought, Self-Regulatory Capability, and Self-Reflective Capability. SCT is considered a valid model of individual behavior, widely accepted and empirically validated (Igarria & Iivari, 1995; Compeau & Higgins, 1995). Of specific interest is the role of self-efficacy judgment in inducing or deterring certain behaviors. This factor has been researched along with other factors in the IS / IT domain to explain individuals' acceptance or adoption of various technologies. Based on this theory, a new promising model evolved, this new model makes ties with Davis' technology acceptance model and self-determination theory (SDT) and known as the motivational model.



**Figure 6: Adopters of Innovation curve. Source: Diffusion of Innovation, Rogers (1995)**

### 2.5.8. The Motivational Model (MM)

Motivation research has yielded many theories. Self-Determination Theory (SDT) by Deci & Ryan (1985) posits that self-determination is a human quality that involves the experience of choice, having choices and making choices. Deci et al. (1991) differentiate between the tenet of SDT and other theories claiming that SDT distinguishes between self-determined and controlled types of intentional regulation. In 2000, Vallerand expanded Self-Determination Theory into the Hierarchical Model of Motivation. This model defined motivation along the same SDT continuum, but posited that motivation operated at three levels: global (personal) level, the contextual (domain) level, and the situational (state) level. The motivation model posits that motivation must be considered from multidimensional perspectives (IM = Intrinsic Motivation, EM = Extrinsic Motivation, AM = Amotivation).

Many researchers found that the motivational model can be linked to technology acceptance. For instant, Igbaria et al. (1996) integrated and examined the relative influence of the three motivators, perceived usefulness, perceived playfulness or fun and social pressures, on an individual's decisions to use microcomputers. Their conceptual model was based on the motivational model; the findings confirmed previous results regarding the key motivating role of PU in promoting technology usage. The results also indicated the

incentive properties of anticipated enjoyment and normative social pressures in stimulating usage. Additionally, results indicated moderate to strong support for the proposed linkages among the model variables. In a successive study, Venkatesh, Speier, and Moris (2002), reanalyzed the data from both earlier studies (Venkatesh, 1999; Venkatesh & Speier, 1999) to develop an integrated model of technology acceptance. The integration aimed at extending the knowledge by integrating core concepts of technology acceptance and motivational models and examining them longitudinally; understanding the role of pre-training and training interventions, “user acceptance enablers” (UAEs) as termed by authors, in the context of the integrated model; and, empirically testing the new model to compare its explanatory power with existing models. The authors, building on previous research, built their research model based on the motivational model but the IS domain has yet another theory to explain technology acceptance: the Model of PC Utilization.

#### **2.5.9. The Model of PC Utilization (MPCU)**

Inspired by the lack of consensus or synthesis among different disciplines in describing the relationship of attitude, values, and other acquired behavioral dispositions to act or behave, Triandis (1979) presented a framework to describe how behavior occurs and what variables induce human behavior. The framework included variables that are general and abstract enough to be relevant to any investigation in any culture. According to Triandis (1979), behavior has many actual consequences and only some of them are perceived by the individual. He distinguished between perceived consequences and actual consequences. The first are those anticipated by the individual and the second are those that occur after the behavior has taken place and are interpreted by the individual as desirable or undesirable depending on the total evaluation of the situation. Based on Triandis’ framework, Thompson et al. (1991) conducted an initial test of a model of personal computer (PC) utilization using a subset of Triandis’ framework. In their model, the authors implied that utilization of a PC would be influenced by individuals’ feelings (affect) toward using PCs, social norms, habits, the expected consequences, and the facilitating conditions. They examined the direct effects of social factors, affect, perceived consequences, and facilitating conditions on behavior. Later in 1994 Thompson et al. extended their work of 1991 by

considering the role of experience with personal computer usage. Experience was modeled with direct, indirect, and moderating influences. The limitations acknowledged in the previous study were rectified in the latter, and gradually other researchers examined the model and modified it when needed. The Model of PC Utilization is only a subset of Triandis' model of value, attitude and behavior, that is, behavior is determined by peoples' beliefs, affect toward the object (cognitive and affective components of attitude), by what people think they should do (social norms), and by the expected consequences of the behavior. Facilitating conditions and habit are also good predictors of behavior. The MPCU is best used to understand and explain computer usage behavior in a voluntary environment.

#### **2.5.10. Unified Theory of Acceptance and Use of Technology (UTAUT)**

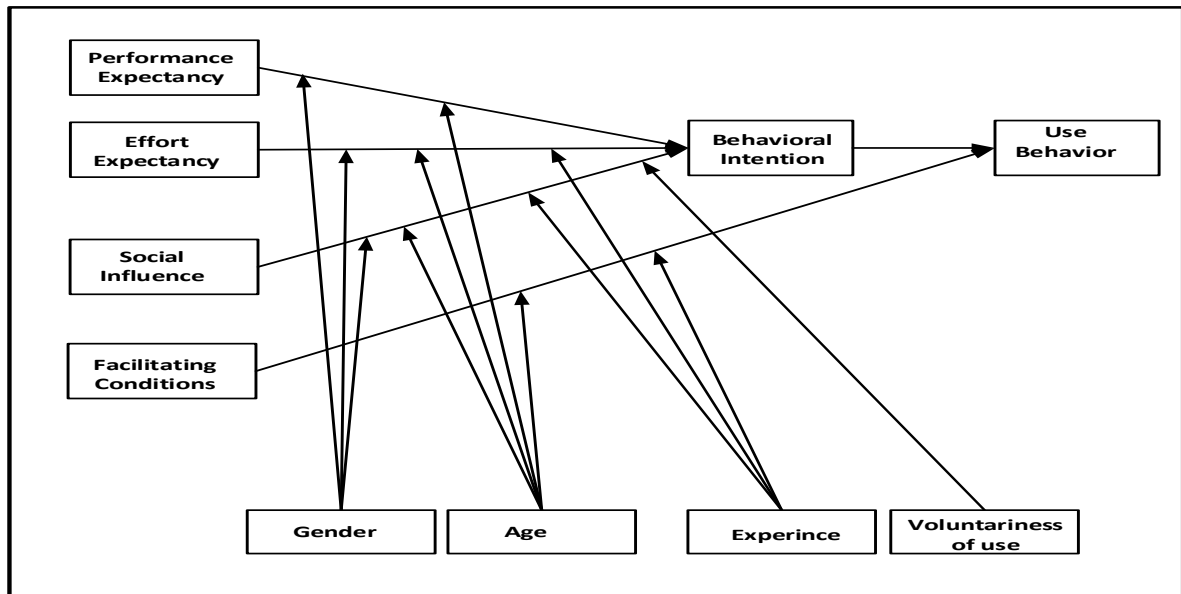
Unified Theory of Acceptance and Use of Technology or UTAUT is a framework developed by Venkatesh et.al. (2003) to predict technology acceptance in organizational settings. UTAUT advances on the basis of integrating the dominant constructs of eight prior prevailing models that range from human behavior to computer science. The eight models are: Theory of Reasoned Action (Fishbein & Ajzen, 1975), Theory of Planned Behavior (Ajzen, 1991), Technology Acceptance Model (Davis, 1989), Motivational Model (Davis, et al. 1992), Combined TAM and TPB (Taylor and Todd, 1995), Model of PC Utilization (MPCU) (Thompson, et al., 1991), Innovation Diffusion Theory (Moore and Benbasat, 2001), and Social Cognitive Theory (Compeau, et al., 1999).

Based on a review of the extant literature, Venkatesh et al. (2003) developed UTAUT as a comprehensive synthesis of prior technology acceptance research. UTAUT has four key constructs (i.e., performance expectancy, effort expectancy, social influence, and facilitating conditions) that influence behavioral intention to use a technology and/or technology use. Performance expectancy is defined as the degree to which using a technology will provide benefits to consumers in performing certain activities; effort expectancy is the degree of ease associated with consumers' use of technology; social influence is the extent to which consumers perceive that important others believe they should use a particular technology; and facilitating conditions refer to consumers' perceptions of the resources and support available to perform a behavior (Brown and Venkatesh 2005; Venkatesh et al. 2003).

According to UTAUT, performance expectancy, effort expectancy, and social influence are theorized to influence behavioral intention to use a technology, while behavioral intention and facilitating conditions determine technology use. Also, individual difference variables namely age, gender, experience, and voluntariness are theorized to moderate various UTAUT relationships.

Upon review, Venkatesh et.al. (2003) reported five limitations of prior model tests and comparisons and addressed them in their work. They concluded: the technologies studied were simple and individual-oriented as opposed to complex and sophisticated organizational technology, most participants in these studies were students except for few studies, time of measurement was general and in most studies well after acceptance or rejection of the usage decisions so individuals' reactions were retrospective, the nature of measurement was in general cross-sectional, and most of the studies were conducted in voluntary usage contexts making it rather difficult to generalize results to mandatory settings. The authors then empirically compared the eight models in longitudinal field studies conducted in four different organizations among individuals that were introduced to a new technology in the workplace. The measurement was carried out at three different points in time: post training, one month after implementation and three months after implementation; while actual usage behavior was measured over the six-month post-training period. The data was divided into two samples for the eight models according to the mandatory and voluntary settings.

The authors also studied the effect of some moderating variables that have been reported in previous researches to effect the usage decision. These were experience, voluntariness, age, and gender. Results showed that, with exception to MM and SCT, the predictive validity of the models increased after including the moderators. The authors then examined commonalities among models and found seven constructs to be significant direct determinants of intention or usage in one or more of the individual models. They hypothesized that four of them play a significant role as direct determinants of user acceptance and usage behavior and after filtering the variables the authors presented the new theory of all eight theories, the unified theory of acceptance and use of technology as shown in Figure below.



**Figure 7: The unified theory of acceptance and use of technology, Source: Venkatesh et al. (2003)**

The constructs in the model were defined and related to similar variables in the eight models as follows:

**Performance Expectancy (PE):** is the degree to which an individual believes that using the system will help him/her attain gains in job performance. The constructs in the other models that pertain to performance expectancy are: perceived usefulness (TAM, and combined TAM-TPB), extrinsic motivation (MM), job-fit (MPCU), relative advantage (DOI), and outcome expectancy (SCT). This construct within each individual model was the strongest predictor of intention and remained significant at all points of measurement in both voluntary and mandatory settings.

**Effort Expectancy (EE):** is the degree of ease associated with the use of system. The constructs in the other models that capture the same concept are: perceived ease of use (TAM), and complexity (DOI and MPCU). The construct in each individual model was significant in both voluntary and mandatory settings

**Social Influence (SI):** is the degree to which an individual perceives that important others believe he/she should use the new system. Similar constructs are represented in existing

models: subjective norms (TRA, TAM2, TPB/DTPB, and combined TAM-TPB), social factors (MPCU), and image (DOI). The comparison between models found that this construct behaved similarly; it is insignificant in voluntary contexts and becomes significant when use is mandatory. The literature explained that in mandatory contexts the effect is attributed to compliance and appears to be important only in the early stages of individual experience and when rewards/punishment are applicable; in contrast, social influence in voluntary contexts operates by influencing perceptions about the technology (what is known as internalization and identification).

**Facilitating Conditions (FC):** is the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system. This definition captures three different constructs in existing models: perceived behavioral control (TPB/DTPB and combined TAM-TPB), facilitating conditions (MPCU), and compatibility (DOI). The comparison between models revealed that the relationship between intention and this construct in each model is similar in both voluntary and mandatory settings in the first training period but such influence disappears in the second period (one month after implementation). Based on the literature, when both performance expectancy and effort expectancy constructs are present, facilitating conditions become insignificant; and consistent with TPB/DTPB facilitating conditions are also direct antecedents of usage (an attribute found also in MPUC). This effect is expected to increase with experience with technology as users find multiple avenues for help and support.

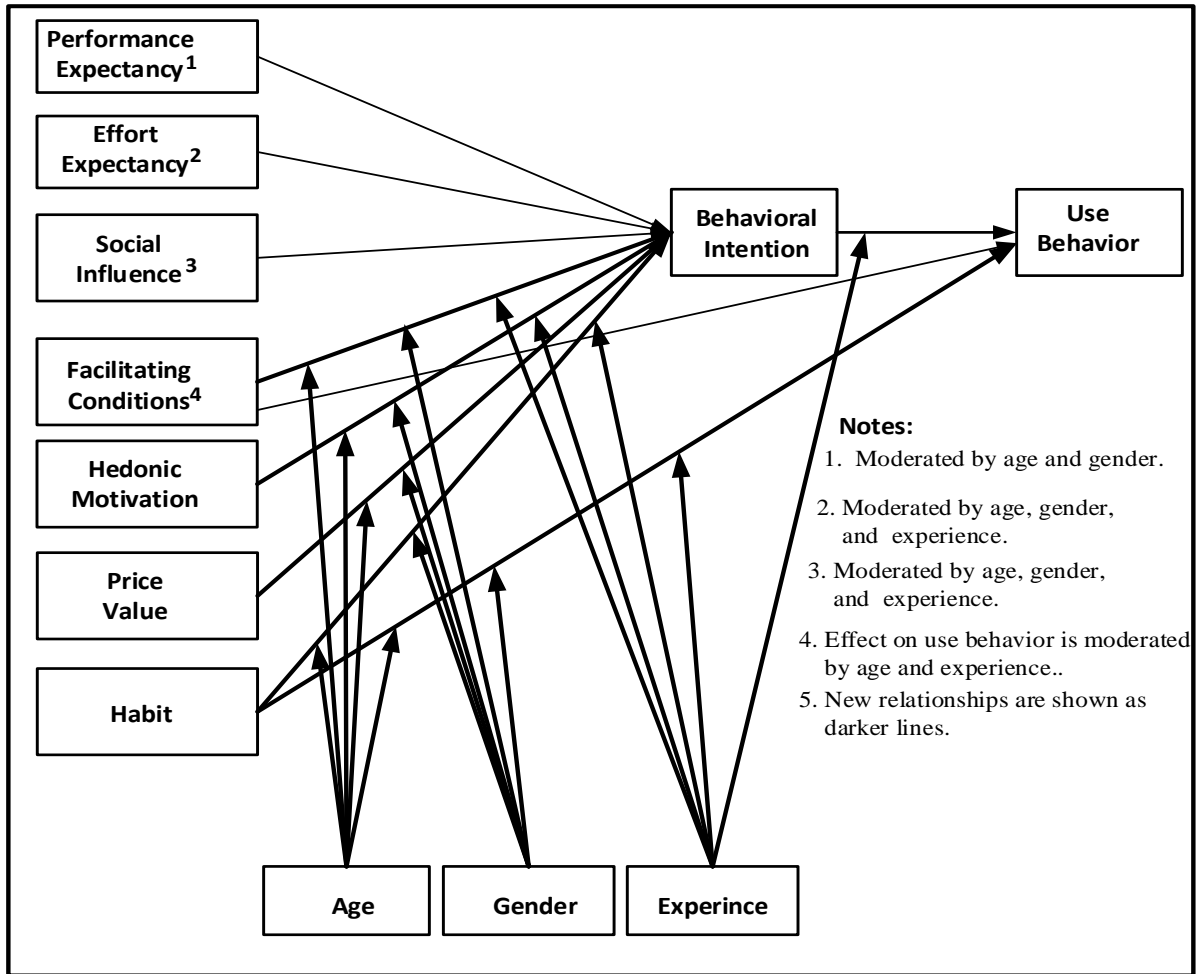
The accumulated UTAUT model was able to account for 70 percent of the variance in usage intention, which is considered a measure improvement over any of the original models where the maximum was around 40 percent. However, UTAUT authors acknowledged a limitation of content validity due to measurement procedures and recommended that future research should be targeted at more fully developing and validating appropriate scales for each of the constructs with emphasis on content validity and revalidating or extending UTAUT with the new measures Venkatesh et al. (2003).

The UTAUT model development took into consideration the impact of moderators in improving the explanation power of the model. Authors recommended that future research may reconsider the moderators in the original UTAUT to supplement the model.

### **2.5.11. Unified Theory of Acceptance and Use of Technology 2 (UTAUT2)**

While the previous UTAUT model developed by Venkatesh et al. (2003) had targeted users mainly in the context of employees of an organization that intended to deploy new technology, a few years later in 2012, the same researchers proceeded to re-evaluate their previous work on the UTAUT in the light of extending it towards a consumer context. Venkatesh et al. (2012) developed an extension of the UTAUT model called UTAUT2 to study acceptance and use of technology in a consumer context. Compared to UTAUT, the extensions proposed in UTAUT2 produced a substantial improvement in the variance explained in Behavioral intention (56 percent to 74 percent) and technology use (40 percent to 52 percent) Venkatesh et al. (2012).

The UTAUT2 model, developed by Venkatesh et al. (2012) incorporated three new constructs into UTAUT: hedonic motivation, price value and habit. Individual differences namely age, gender, and experience are hypothesized to moderate the effects of these constructs on behavioral intention and technology use. Various constructs related to hedonic behavior (for example: enjoyment) are important in consumer product and/or technology use (Brown & Venkatesh 2005; Holbrook & Hirschman, 1982; Nysveen et al. 2005; van der Heijden, 2004). According to Venkatesh et al. (2012), hedonic motivation will complement UTAUT's strongest predictor that emphasizes utility. Furthermore, contradictory to workers in an organization, consumers have to pay the costs and these can be of an influence to the consumer's decisions (Brown & Venkatesh, 2005; Chan et al., 2008; Coulter & Coulter, 2007). By adding a construct that is related to price and costs will complement UTAUT's existing resource considerations that focus only on time and effort. Finally, habit as another critical predictor of technology use will complement the focus on intentionality as the overarching mechanism and key driver of behavior Venkatesh et al. (2012). As regards to the moderators, the moderator voluntariness from the UTAUT model is dropped, because the most consumer behaviors are completely voluntary Venkatesh et al. (2012).



**Figure 8: UTAUT2 Model. Source: Venkatesh et al. (2012)**

## 2.6. Related Works

Literature reveals that abundant research on electronic banking has focused on Internet banking (also called online banking), whereas research focusing on mobile banking is relatively little and receives underrated attention (Puschel et al., 2010; Laukkanen & Pasanen, 2008; Suorantia & Mattila, 2004).

By employing innovation diffusion theory (IDT) and the decomposed theory of planned behavior (DTPB), Brown et al. (2003) surveyed 162 respondents and discovered that perceived advantages, the opportunity to try out cell phone banking, the number of banking services required by respondents and perceived risk significantly influenced people to adopt mobile banking. Lee et al. (2003) performed eight interviews to collect transcripts from participants and concluded that relative advantages and compatibility were positive factors affecting the adoption of mobile banking, perceived risk was negative factor affecting the adoption of mobile banking, and consumer previous experience and self-efficacy generalized their beliefs (a negative or positive attitude) toward the adoption of mobile banking.

Suoranta & Mattila (2004) took the Bass model of diffusion to separate 1253 respondents into non-users, occasional users, and regular users according to their mobile banking usage experience and density. The Bass diffusion model assumes that potential adopters of an innovation are influenced by two types of communication channels: mass media and interpersonal word-of-mouth, and the adoption rate can be described by S-shaped diffusion curves. Accordingly, Suoranta & Mattila (2004) empirically identified that interpersonal influence was over mass media in affecting users to adopt mobile banking. Contrasting to the study of Suoranta and Mattila (2004), Laforet & Li (2005) surveyed 128 respondents randomly selected in the city streets and indicated that awareness significantly influenced the adoption of online and mobile banking, while consumer awareness was effectively increased through mass media rather than word-of-mouth communications. Given that the reference group did not significantly affect the adoption of online and mobile banking, Laforet & Li (2005) thus contended that mass media was much more important than interpersonal word-of-mouth in affecting people to adopt mobile banking.

By adding one trust-based construct (Perceived credibility) and two resource-based constructs (perceived financial cost and perceived self-efficacy) into the model, Luarn and Lin (2005) employed the extended technology acceptance model (TAM) to explore human behavioral intention to use mobile banking. They collected 180 respondents in Taiwan and discovered that perceived self-efficacy, financial cost, credibility, easy-of-use and usefulness had positive effects on the behavioral intention to use mobile banking. Subsequent to the study of Luarn & Lin (2005), Amin et al. (2008) used an extended TAM containing five constructs - perceived usefulness, perceived ease-of-use, perceived credibility, the amount of information, and normative pressure to explore the adoption of mobile banking. They gathered 158 valid questionnaires in Malaysia and supported that perceived ease-of-use markedly influenced perceived usefulness and credibility, and human intentions to adopt mobile banking was significantly affected by perceived usefulness, perceived ease-of-use, perceived credibility, the amount of information, and normative pressure.

Drawing from the theory of innovation resistance proposed by Ram & Sheth (1989), Laukkanen et al. (2007) summarized 18 factors into five barriers, namely Usage, Value, Risk, Tradition, and Image barriers. The theory of innovation resistance, adapted from Roger's psychology and IDT Rogers (2003), aims to explain why customers resist innovations even though these innovations were considered necessary and desirable. Through investigating 1525 usable respondents from a large Scandinavian bank, Laukkanen et al. (2007) uncovered that the value and usage barriers were the most intense barriers to mobile banking adoption, while tradition barriers (such as preferring to chat with the teller and patronizing the banking office) were not an obstacle to mobile banking adoption.

Yang (2009) employed the Rasch measurement model and item response theory to survey 178 students from one of largest university in south Taiwan. He found that the speed of transactions and special reductions in transaction fees encouraged mobile banking adoption, while factors inhibiting mobile banking adoption were safety and initial set-up fees. Similar to the finding of Yang (2009), Cruz et al. (2010) surveyed 3585 online respondents in Brazil and supported that the cost of Internet access and service and perceived risk were top two barriers for adopting mobile banking services.

By performing an empirical study in Brazilian major cities, Puschel et al. (2010) integrated TAM, TPB, and IDT to investigate main factors influencing mobile banking adoption. Via collecting 666 usable samples, they found that relative advantages, visibility and compatibility significantly impacted attitude, self-efficacy and technology facilitating condition significantly impacted perceived behavioral control, and perceived behavioral control, attitude, and subjective norm significantly impacted Intention to use mobile banking. Drawing from TAM and IDT, Riquelme & Rios (2010) surveyed 681 Singaporean consumers and concluded that perceived usefulness, social norms and risks were three crucial factors influencing the adoption of mobile banking. Built on TAM and IDT, Koenig-Lewis et al. (2010) collected 155 consumers aged 18-35 in Germany and uncovered that perceived usefulness, compatibility, and risk significantly affected consumer intention to adopt mobile banking, while perceived costs, easy-of-use, credibility, and trust were not salient factors influencing behavioral intention to adopt mobile banking.

Based on TAM and TPB research structure, Sripalawat et al. (2011) collected 195 respondents and found subject norms to be the most influential factor, perceived usefulness to be the second influential factor, and self-efficacy to be the third influential factor in mobile banking adoption. Based on the extended TAM and through collecting 325 valid responses from MBA students in India, Dasgupta et al. (2011) first employed the exploratory factor analysis to identify seven antecedents to behavioral intention toward the adoption of mobile banking. Thereafter, they utilized the regression technique to examine the effects of these antecedents on behavioral intention. Their empirical results supported six of seven antecedents, except for risk. The six antecedents were perceived image, perceived usefulness, perceived ease-of-use, perceived value, self-efficacy, perceived credibility, and tradition, which significantly influenced the behavioral intent to use mobile banking. Recently by using interpretive structure modeling and mapping of mobile banking influences in India, Ketkar et al. (2012) systematically plotted key mobile banking barriers and enablers on the two dimensional map. By treating driving power of enablers as positive and that of barriers as negative, their work identified “facility to get quick updates”, “time and cost saving”, “reach of telecom distribution” and “need for telecoms to improve customer retention” as the crucial drivers for the adoption of mobile banking.

By investigating 325 MBA students in India Dasgupta et al. (2011) applied extended TAM to realize influential factors in adoption of mobile banking. First, they used exploratory analysis in order to recognize important influential factors. Afterwards, they practiced regression analysis. As a result they perceived six out of seven dimensions have significant effects on mobile banking adoption. These dimensions are perceived usefulness, perceived value, perceived ease of use, perceived image, perceived credibility and self-efficacy except risk. Furthermore, Riquelme & Rios (2010) uncovered by sampling 681 users in Singapore that perceived usefulness; social norms and risk significantly affect the adoption of mobile banking respectively.

Puschel et al. (2010) conducted their study in Brazil by collecting 666 consumers. By combining TAM, TPB and IDT, they recognized that relative advantages, visibility and compatibility are the most three important factors, significantly influencing attitude and self-efficacy. Technology facilitating condition significantly affected perceived behavioral control. Perceived behavioral control and attitude in addition of subjective norm influenced adoption for mobile banking users.

Laforet & Li (2005) questioned 128 individuals in China, and they discovered that most important barriers to mobile banking adoption are lack of awareness and perception of benefits provided by mobile banking. Referring to Laforet & Li (2005) study, among two ways of increasing awareness of users which are advertising and word of mouth, it was determined that mass media increases awareness of adopters in comparison with interpersonal communication (word of mouth). In contrast Suoranta & Mattila (2004) employed Bass model of diffusion and divided 1,253 respondents into 3 categories: nonusers, regular users and occasional users. Accordingly, they discovered that between two types of communication channels, interpersonal communication, which has more influence on people who are users of a new technology and mass media, is next.

Based on an empirical research via collecting 195 usable samples, which has been done by Sripalawat et al. (2011) through utilizing TAM and TPB, it has discovered that the three key factors, which have most influence on intension to use mobile banking, are subjective norms, perceived usefulness and self-efficacy respectively.

According to Yang (2009) survey conducted in one of the universities in south Taiwan with 178 students by utilizing the Raschl measurement model and item response theory, he realized that good transaction speed and fees of mobile banking service provide easier acceptance for mobile banking users.

Brown et al. (2003), by conducting a research of 162 participants and applying the innovation diffusion theory found out perceived relative advantages, perceived risk, chance of testing mobile banking and the number of bank services required by respondents are significantly determining the factors for users' adoption of mobile banking. Based on the study which is done by Lewis et al. (2010), via questioning 155 participants aged between 18-35 and implementing TAM and IDT models they figured out that perceived usefulness, compatibility and risk have significant influence on the adoption of mobile banking. Moreover Lee et al. (2003) interviewed 8 people, and observed that the risk factor has negative effect and relative advantage has positive effects on people's perception of MB.

Ram and Sheth (1989) introduced the Innovation Resistant Theory. This theory has 18 dimensions of barriers, which explain why people resist new technologies even if these technologies are useful and necessary. Laukkanen et al. (2007) conducted a survey on 1,525 customers of a large Scandinavian bank by employing a narrow version of innovation resistant theory in 5 factors: usage, value, risk, tradition, and image barriers. Through this research they detected that usage and value barriers have more influence on the adoption of new innovations rather than other barriers.

Among the research about the effects of gender in mobile banking adoption, Pijpersa et al. (2001) found that males are more likely to accept mobile commerce rather than females. Wan et al. (2005) supported that male is more positive to adopt mobile banking. Yang (2005) found that despite of expectation, gender has negative impacts on perceived usefulness and perceived ease of use. Laforet & Li (2005) discovered that compared to western countries, the majority of Chinese mobile bank users are males. Moreover Amin et al. (2006) detected that effectiveness of a mobile service is more important for males rather than females. Contrary degree of risk and safety of mobile banking service is more significant for female users. In addition age, social influence, mobile technology readiness

and computer skills are other important individual factors, which have influence on mobile banking adoption (Kleijnen et al. (2004).

There are limited numbers of studies conducted in Ethiopia on the adoption of technological innovation. Gardachew (2010) conducted research on the opportunities and challenges of E-banking in Ethiopia. The aim of his study was focused on analyzing the status of electronic banking in Ethiopia and investigated the main challenges and opportunities of implementing E-banking system. The author conducted a survey on the existing operating style of banks and identified some challenges of using E-banking system, such as, lack of suitable legal and regulatory frame works for E-commerce and E- payments, political instability in neighboring countries, high rates of illiteracy and absence of financial networks that links different banks.

Wondwossen & Tsegai (2005) also studied on the challenges and opportunities of E-payments in Ethiopia; their objective was studying of E-payment practices in developing countries, Africa and Ethiopia. The authors employs interview and on site observation to investigate challenges to E-payment in Ethiopia and found that, the main obstacles to the development of E-payments are, lack of customers trust in the initiatives, Unavailability of payment laws and regulations particularly for E-payment, Lack of skilled manpower and Frequent power disruption. According to Wondwossen & Tsegai (2005), an adequate legal structure and security framework could foster the use of E-payments.

Ayana (2010) conducted a research to identify factors that affect adoption of E-banking in the Ethiopian banking industry. The study was conducted based on the data gathered from four banks; three private banks (Dashen, Zemen and Wegagen banks) and one state owned bank (Commercial Bank of Ethiopia). A mixed research approach was used to answer the research questions that emerge through the review of existing literature and the experiences of the researcher in respect of the E-banking system in Ethiopia. The study statistically analyzed data obtained from the survey questionnaire. A research framework was developed based on technology-organization environment model (TOE) developed by Tornatzky and Fleischer. The result of the study indicated that, the major barriers Ethiopian banking industry faces in the adoption of Electronic banking are: security risk, lack of trust, lack of legal and regulatory frame work, Lack of ICT infrastructure and absence of

competition between local and foreign banks. The study suggested a series of measures which could be taken by the banking industry and by government to address various challenges identified. These measures include: Establishing a clear set of legal framework on the use of technology in banking industry, supporting banking industry by investing on ICT infrastructure and banks needs to be focused on technological innovation competition rather than traditional bases of retail bank competition.

## CHAPTER THREE

### RESEARCH MODEL AND HYPOTHESIS DEVELOPMENT

#### 3.1. Hypothesis Development

After considering the basic concept of technology acceptance models, and examining the best known and used technology acceptance models, the TAM, TAM2, UTAUT and UTAUT2 models can be described as the leading technology acceptance models. Since the TAM, TAM2 and the first UTAUT model were less customer oriented, whereas the UTAUT2 was specifically developed for customer usage prediction, the UTAUT2 model can be argued to be the best applicable technology acceptance model to identify factors that influence the usage intention of mobile banking in Ethiopia, and will therefore be functions as the basis for the developed research model.

The behavioral intention, i.e. the degree to which individuals intend to use the technology (Venkatesh et al., 2012), is determined by various factors. This study draws from the literature and posits the following factors as determinants preceding the use intention of mobile banking in Ethiopia: performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and price value.

##### **Performance Expectancy (PE)**

Performance expectancy is the degree to which users gain benefits in using a technology while carrying out activities (Venkatesh et al. 2012). Sun, Cao and You (2010) found that perceived usefulness has a positive influence on Behavioral Intention to use m-commerce in China, based on an online survey collected and validated using structural equation modeling (SEM). This result was in accordance with Leong et al. (2013) who found that perceived usefulness has a positive effect on BI to use m-credit card. This is further supported by empirical studies of AbuShanab and Pearson (2007) in Jordan that customers with high PE has high BI to use internet banking based on the questionnaires collected and evaluated using multiple linear regressions (MLR). These empirical studies reveal that PE as a significant factor to influence the BI to adopt mobile technology.

**H1:** PE has positive impact on customers' behavioral intention to adopt mobile banking.

### **Effort Expectancy (EE)**

Effort expectancy is the degree to which a technology is easy to use Jambulingam (2013). Teo and Noyes (2012) carried out a survey questionnaire among Singapore trainee teachers and found that EE significantly influence individual BI to use information technology, using SEM approach. Besides, Tan, Sim, Ooi and Phusavat (2011) found using multiple regressions that perceived ease of use significantly influences the BI in adopting m-learning based on the data collected via questionnaire from university students in Perak, Malaysia. The similar results from these empirical studies show that EE has positive influence on the BI to the adoption of technology.

**H2:** EE has positive impact on customers' behavioral intention to adopt mobile banking.

### **Social Influence (SI)**

Social influence is an individual's perception that significant others believe the individual should adopt the information system (Leong, Hew, Tan and Ooi, 2013). Akour (2009) found that extrinsic influence (superior and peer influence) of freshman students in Oklahoma State University is the most influential factor of m-learning acceptance in tertiary education evaluated using MLR and analysis of variance (ANOVA). This is further supported by Taylor et al. (2011) who surveyed U.S. Midwest universities found that students' adoption and usage of mobile apps is strongly influenced by their friends compared to family members, tested using logistic regression models. Furthermore, Leong et al. (2013) proved that SI has an essential role in influencing the BI to use m-entertainment, based on survey questionnaires collected from users of mobile devices in Malaysia using SEM. These empirical studies agree that SI is a significant factor in influencing the BI to adopt mobile technology.

**H3:** SI positively affects customers' behavioral intention to adopt mobile banking.

### **Facilitating Conditions (FC)**

Facilitating conditions is the perception that organizational and technical infrastructure exists to support the use of technology (Venkatesh et al. 2003). Yeoh & Chan (2011) found using MLR that FC significantly influences the BI to adopt internet banking, based on questionnaires collected from respondents aged 21-50 years in Malaysia. In the consumer setting, it can be expected that the users who have favorable facilitating conditions are also more likely to possess higher intention to use the respective technology (Venkatesh et al., 2012). These empirical studies agree that FC is a significant factor in influencing the BI to adopt technology.

**H4:** FC positively affects customers' behavioral intention to adopt mobile banking.

### **Hedonic Motivation (HM)**

According to Venkatesh et al. (2012), hedonic motivation is defined as the fun or pleasure derived from using a technology. Hedonic motivation plays an important role in determining technology acceptance and use Brown & Venkatesh (2005). Research on IS (van der Heijden, 2004; Thong et al., 2006) showed that hedonic motivation (conceptualized as perceived enjoyment) can be of an influence on the technology acceptance and use. Also in consumer context, hedonic motivation is an important determinant of technology acceptance and use (Brown & Venkatesh, 2005, Childers et al., 2001). Thus, hedonic motivation is added as a predictor of consumers' behavioral intention to use a technology.

**H5:** HM positively affects customers' behavioral intention to adopt mobile banking.

### **Price value (PV)**

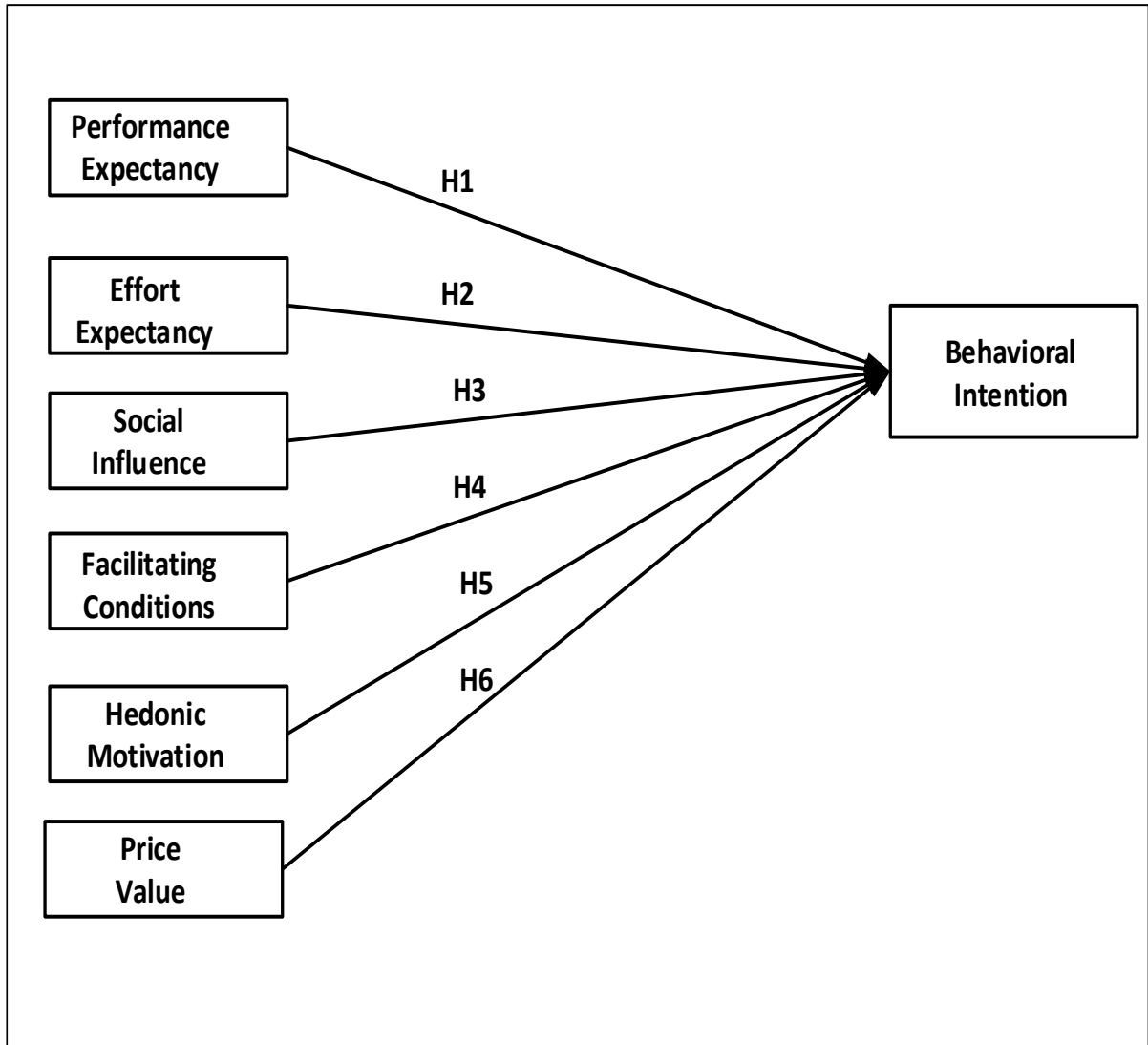
An important difference between a consumer use setting and the organizational use setting is that consumers usually bear the monetary cost of such use whereas employees do not. According to Chan et al. (2008), cost and price may have a convincing impact on consumers' technology use. Venkatesh et al. (2012) defined price value as consumer's monetary cost for using them. (Dodds, Monroe & Grewal, 1991), defined price value as

consumers' cognitive trade-off between the perceived benefits of using technology and the monetary cost for using them. Venkatesh et al. (2012) highlights that PV in consumer decision making regarding technology use is an important factor influencing behavioral intention which is tested using partial least square (PLS). The price value is positive when the benefits of using a technology are perceived to be greater than the monetary cost and such price value has a positive impact on intention. Thus, price value is added as a predictor of behavioral intention to use a technology.

H6: Price Value positively affects customers' behavioral intention to adopt mobile banking.

### **3.2. Proposed Research Model**

As the current study aims to explore factors determining customers' behavioral intention of mobile banking, the impact of behavioral intention to actual use is left out of the research scope. The habit construct was left out of the research scope since it is expected to influence directly to actual use, not the behavioral intention (Venkatesh et al., 2012). With these modifications to preceding research models, the following research model is developed with the respective hypothesis to be tested. The research model is presented in Figure 9 below.



**Figure 9: Research Model, extracted from UTAUT2, Venkatesh et al. (2012)**

# **CHAPTER FOUR**

## **RESEARCH METHODOLOGY**

### **4.1. Chapter Overview**

This chapter discusses the research design, population and sampling procedures of the study. It also explains the data collection methods, variables and measurements as well the techniques used to analyze the data in order to test the hypotheses developed in previous chapter.

### **4.2. Research Design**

The nature of any research problem should drive the research methodology to be adopted. Before undertaking a research exercise an understanding of the underlying assumptions behind ‘valid research’ is essential in order to justify the methodologies and methods to be employed in the research design (Myers, 1997). The methodology to be used should be justifiable whether it is related to the research’s theoretical theme and philosophy (Myers, 1997).

Two paradigms characterize much of the research in the Information System discipline: behavioral science and design science. The behavioral science paradigm seeks to develop and justify theories (i.e. principles and laws) that explain or predict human or organizational behavior (Hevner et al 2004). The design-science paradigm seeks to extend the boundaries of human and organizational capabilities by creating new and innovative artifacts (Hevner et al 2004). Both paradigms are foundational to the IS discipline, positioned as it is at the confluence of people, organizations, and technology (Hevner et al 2004). IS researchers state that “IS research must be both proactive and reactive with respect to technology. It needs a complete research cycle where design science creates artifacts for specific information problems based on relevant behavioral science theory and Behavioral Science anticipates and engages the created technology artifacts” (Hevner et al, 2004). The purpose of this

research is to identify the key factors which can influence the behavioral intention of customers, so it follows the behavioral science approach.

### **4.3. Research Approach**

According to (Ghauri, Gronhaug & Kristianslund, 1995) research methods refer to the systematic, focused and orderly collection of data for the purpose of obtaining information from it, to solve/answer research problems or questions. The objective of the research is best achieved with a suitable methodology and method (Hirsjärvi, Remes, & Sajavaara, 2014). Basically, there are two differing ways to conduct research: empirical and theoretical. This study takes the path of empirical research. Furthermore, empirical studies may be divided into quantitative and qualitative.

Qualitative research is commonly referred to as research which extensively utilizes description, concepts and/or theories to investigate the nature of and the relationship between variables (Rusli and Ali, 2003). This research method is utilized when there is a need to understand how issues or factors are related and to obtain in depth details to answer research objectives (Catterall, 1998). Qualitative research methods provide more emphasis on interpretation and providing consumers with complete views, looking at contexts, environmental immersions and a depth of understanding of concepts. It is more suitable for studying a new problem in its early stage or for exploring new factors of an existing problem (Creswell, 2002).

Quantitative research is typically considered to be the more “scientific” approach to doing social science. It entails the collection of numerical data as exhibiting a view of the relationship between theory and research as deductive, a preference for a natural science approach (and of positivism in particular) and as having an objectivist conception of social reality, this type of research can be characterized as linear series of steps moving from theory to conclusions, and its measurement process entails the search for indicators (Bryman, 2004). A quantitative approach also requires the use of standardized measures so that the varying perspectives and experiences of people can be fit into a limited number of

predetermined response categories to which numbers are assigned (Bryman and Burgess, 1999).

The purpose of this research is to describe customers' acceptance of mobile banking by identifying factors that influence their intention to use mobile banking services. To achieve this purpose, we chose a framework and developed a research hypothesis. (Ghauri et al., 1995) noted that quantitative method is best suited when emphasis is on testing and verifying a hypothesis. Therefore, quantitative research method is used in conducting this study.

#### **4.4. Population of the Study and Sampling**

According to (Zikmund, 2003) a population is any complete group of people, companies, hospitals, stores, college students or the like that share some set of characteristics. For the purposes of this study, the population is individuals with a mobile phone and normal bank account holders in Commercial Bank of Ethiopia in Addis Ababa. More than 11 million people are estimated to have a bank account in commercial bank of Ethiopia in the country according to the information we get from commercial bank of Ethiopia.

The basic idea of sampling is that by selecting some of the elements in a population, conclusions can be drawn about the entire population (Zikmund, 2003). There are four districts of Commercial Bank of Ethiopia (CBE) in Addis Ababa namely EAAD, WAAD, NAAD, and SAAD. Under each district, branch grades ranging from grade I to grade IV are located. In CBE, branches grade categorization (grade I, grade II, grade III and grade IV) is done based on their capacity, total number of customers and size of transactions they process from small to large respectively. This study categorized all districts in Addis Ababa into four using stratified sampling technique according to their location. The sampling technique used to select sample grade IV branches from each district (stratum) is the stratified random sampling. Customers at the selected branches are asked whether they are aware of mobile banking service or not, and also if they already started using the service or not. Those customers aware of mobile banking, but not started yet to use the service are given the questionnaire to fill.

According to (Zikmund, 2003), sample size has a direct influence over the accuracy of the research findings. To determine a suitable sample size, it is necessary to specify the variation or standard deviation of the population, magnitude of acceptable error and confidence level. Based on the recommendations of (Hair, et al. 2014), assuming the commonly used level of statistical power of 80% and a specific level of complexity of the PLS path model (i.e., the maximum number of arrows pointing at a construct in the PLS path model), and assuming the minimum  $R^2$  values of 0.25 in any of the endogenous constructs in the structural model, at a significance level of 5%, a minimum of 75 questionnaires were recommended. Putting into consideration, there might be incomplete and invalid responses from respondents, a total of 115 sample size was selected.

#### 4.5. Method of Data Collection

The collection of data for this research was held via self-administered structured questionnaires. It is a set of questions used to gather information from customers with close-ended type of questions (Kothari, 2004). An advantage of using questionnaires is that it can cover a large sample at a modest cost and representative of its population (Akbarak, 2000). The final questionnaire consists of two sections. The first section gathers general information about respondents demographic data like age, gender...The second section is perception of respondents about mobile banking. The five point likert scale is used for statements of the second ranging from [1= strongly disagree, 2= disagree, 3= neutral, 4= agree, and 5= strongly agree]. The constructs and the corresponding item measurements are adopted from (Venkatesh et al., 2012).

**Table 1: Constructs and Corresponding Items (Independent Variables)**

Independent Variables	Items	Description
Performance Expectancy	PE1	I think that using mobile banking would enable me to accomplish banking transactions quickly.
		I think using mobile banking increases my chances of

	PE2	achieving things that are important to me.
	PE3	I think that using mobile banking would make it easier for me to carry out my tasks.
	PE4	I think that Mobile banking is useful in my daily life for my banking needs.
Effort Expectancy	EE1	I think that learning how to use mobile banking would be easy for me.
	EE2	I think that my interaction with mobile banking does not require a lot of mental effort.
	EE3	I think that it is easy to use mobile banking to accomplish my banking tasks.
	EE4	It would be easy for me to become skillful at using mobile banking.
Social Influence	SI1	People who are important to me think that I should use mobile banking.
	SI2	People who influence my behavior think that I should use mobile banking.
	SI3	People whose opinions that I value prefer that I should use mobile banking.
Facilitating Conditions	FC1	I have the resources necessary to use mobile banking.
	FC2	I have the knowledge necessary to use mobile banking.
	FC3	Mobile banking is compatible with other technologies I use.
	FC4	I can get help from others (service provider) when I have difficulties using mobile banking.
Hedonic	HM1	Using mobile banking is fun.

Motivation	HM2	Using mobile banking is enjoyable.
	HM3	Using mobile banking is entertaining.
Price Value	PV1	Mobile banking is reasonably priced.
	PV2	Mobile banking is a good value for money.
	PV3	At the current price, mobile banking provides good value.
	PV4	To the best of my knowledge, there are no bank charges for mobile banking services.

**Table 2: Constructs and Corresponding Items (Dependent Variable)**

Dependent Variable	Items	Description
Behavioral Intention	BI1	I intend to use mobile banking in the future.
	BI2	I am determined to use mobile banking soon
	BI3	I plan to use mobile banking in the future frequently

#### 4.6. Reliability and Validity

In order to reduce the possibility of getting wrong answer, attention need to be paid to: Reliability and validity (Saunders and Thornhill, 2003).

Reliability is defined as the degree to which measurements are free from error and, therefore, yield consistent results.

Traditionally, “Cronbach’s alpha” is used to measure internal consistency reliability in social science research but it tends to provide a conservative measurement in PLS-SEM. Prior literature has suggested the use of Composite Reliability as a replacement (Bagozzi and Yi, 1988; Hair et al., 2012).

Validity according to Saunders et al. (2009) is concerned with whether the findings are really about what they appear to be about. Validity is defined as the extent to which data collection methods accurately measures what they were intended to measure (Sounders and Thornhill, 2003). As suggested by Lee et al. (2009) and Yu (2011), factor loadings, composite reliability, and the average variance extracted (AVE) were used to assess the convergent validities, while the discriminant validity was assessed by examining whether or not the squared roots of AVE exceed the correlations between constructs, and the reliability was evaluated by examining internal consistency reliability (ICR) as suggested by Venkataesh et al. (2003) and Venkataesh and Zhang (2010).

## **CHAPTER FIVE**

### **DATA ANALYSIS AND PRESENTATION**

#### **5.1. Chapter Overview**

This chapter deals with the analysis of data and presentation of the result. To find the major out puts of the study and to give important recommendations, the collected data should be analyzed and discussed, accordingly the analysis and important findings from the collected data are discussed below.

#### **5.2. Data Analysis Method**

Data analysis consists of examining, categorizing, tabulating, or otherwise recombining the evidence to address the initial proposition of a study (Yin, (1989). The purpose of analyzing data is to find answers to questions and link information from a mass of data.

In total, 115 questionnaires were distributed to customers in Addis Ababa, 110 of them were returned and are valid. All the collected questionnaires were used to conduct data analysis, resulting in a response rate of 95.7%. In this study, a Partial Least Square (PLS) analysis is used to test the proposed research model and hypotheses. Structural Equation Modeling (SEM) technique such as LISREL and Partial Least Square (PLS) are second generation data analysis techniques of Structural Equation Modeling (Bogazi and Fornell, 1982) that can be used to test the extent to which IS research meets recognized standard for high quality statistical analysis.

Partial Least Squares (PLS), developed in 1960s by Herman World, that enables researchers to answer a set of interrelated research questions by modeling the relationships among multiple independent and dependent constructs simultaneously (Gefen et al., 2000). PLS is widely used in social sciences and information systems research to test the statistical quality and standard of result.

The PLS procedure, as one of the SEM techniques, has been gaining interest and use among researchers in recent years because of its ability to model latent constructs under conditions of non-normality and small to medium sample sizes. It allows the researchers to both

specify the relationship among the conceptual factors of interest and the measures underlying each construct. The demographic profile of target respondents (gender and age) are described in frequency and percentage using tables to make the analysis more meaningful, clear and easily interpretable.

The survey data were manually typed into Microsoft Excel and saved as .xlsx format. To ensure SmartPLS can import the Excel data properly, the names of those indicators (PE1, PE2, PE3, PE4, EE1...) are placed in the first row of an Excel spreadsheet. Since SmartPLS cannot take native Excel file format directly, the data set was converted into .csv file format.

### 5.3. Measurement Model Results

#### 5.3.1. Reliability Test

Reliability can be assessed in terms of composite reliability or Cronbach’s Alpha, which measure the degree to which items are free from random error and therefore yield consistent results. Composite reliabilities in our measurement model ranged from 0.804 to 0.924 (see Table 4). In this cases the scores are above the recommended cutoff of 0.70 (Fornell and Larcker 1981; Nunnally and Bernstein 1994), so high levels of internal consistency reliability have been demonstrated among all reflective latent variables.

**Table 3: Composite Reliability**

Construct	Composite Reliability
Behavioral Intention	0.874
Effort Expectancy	0.848
Facilitating Conditions	0.804
Hedonic Motivation	0.900
Performance Expectancy	0.898

Price value	0.857
Social Influence	0.924

### 5.3.2. Validity Test

Validity is concerned with whether the findings are really about what they appear to be about. The two elements convergent validity and discriminant validity are components of a larger scientific measurement concept known as construct validity (Straub et al., 2004).

Convergent validity is shown when each measurement item correlates strongly with its assumed theoretical constructs. Convergent validity requires a factor loading greater than 0.70 and an AVE not less than 0.50 (Fornell and Larcker 1981). For all the constructs with multiple reflective measures, all items have high loadings, except the fourth item of items (FC4) used to assess facilitating conditions construct whose outer loading value was 0.375. Accordingly, this item was removed from the model due to its outer loading below 0.7. Thereafter, the SmartPLS is executed again and the generated results were summarized in (Table 5, Table 6 and Table 7) with all values above the threshold values, therefore demonstrating convergent validity.

**Table 4: Summary for Reflective Outer Loadings**

Construct	Indicator	Outer Loadings
Behavioral Intention	BI1 <- BI	0.731
	BI2 <- BI	0.868
	BI3 <- BI	0.900
Effort Expectancy	EE1 <- EE	0.742
	EE2 <- EE	0.752
	EE3 <- EE	0.762
	EE4 <- EE	0.797
	FC1 <- FC	0.787

Facilitating Conditions	FC2 <- FC	0.761
	FC3 <- FC	0.732
	FC4 <- FC	0.375
Hedonic Motivation	HM1 <- HM	0.838
	HM2 <- HM	0.891
	HM3 <- HM	0.870
Performance Expectancy	PE1 <- PE	0.858
	PE2 <- PE	0.845
	PE3 <- PE	0.846
	PE4 <- PE	0.768
Price value	PV1 <- PV	0.705
	PV2 <- PV	0.875
	PV3 <- PV	0.793
	PV4 <- PV	0.716
Social Influence	SI1 <- SI	0.895
	SI2 <- SI	0.927
	SI3 <- SI	0.863

Discriminant validity is shown when each measurement item correlates weakly with all other constructs except for the one to which it is theoretically associated. In general, discriminant validity is shown when two things happen:

1. The correlation of the latent variables score with measurement item need to show an appropriate pattern of loading, one in which the measurement item load highly on their theoretically assigned factor and not highly on other factors.

**Table 5: Factor structure matrix of loadings and cross-loadings**

Indicators	BI	EE	FC	HM	PE	PV	SI
BI1	<b>0.731</b>	0.337	0.251	0.200	0.270	0.165	0.181
BI2	<b>0.868</b>	0.412	0.318	0.306	0.433	0.301	0.329
BI3	<b>0.900</b>	0.409	0.266	0.299	0.470	0.249	0.200
EE1	0.325	<b>0.742</b>	0.381	0.231	0.341	0.105	0.198
EE2	0.355	<b>0.752</b>	0.324	0.250	0.370	-0.030	0.280
EE3	0.304	<b>0.762</b>	0.245	0.178	0.481	0.061	0.265
EE4	0.416	<b>0.797</b>	0.412	0.287	0.416	0.165	0.454
FC1	0.275	0.304	<b>0.787</b>	0.114	0.318	0.067	0.171
FC2	0.237	0.502	<b>0.761</b>	0.200	0.332	0.104	0.277
FC3	0.247	0.237	<b>0.732</b>	0.246	0.228	0.256	0.305
HM1	0.204	0.164	0.118	<b>0.838</b>	0.115	0.229	0.227
HM2	0.359	0.347	0.272	<b>0.891</b>	0.214	0.256	0.244
HM3	0.242	0.258	0.197	<b>0.870</b>	0.158	0.313	0.360
PE1	0.414	0.469	0.292	0.103	<b>0.858</b>	0.212	0.185
PE2	0.322	0.484	0.268	0.176	<b>0.845</b>	0.072	0.350
PE3	0.438	0.522	0.353	0.109	<b>0.846</b>	0.090	0.260

PE4	0.398	0.262	0.351	0.278	<b>0.768</b>	0.237	0.206
PV1	0.123	0.114	0.079	0.091	0.069	<b>0.705</b>	0.018
PV2	0.321	0.145	0.103	0.319	0.188	<b>0.875</b>	0.133
PV3	0.198	0.077	0.203	0.177	0.153	<b>0.793</b>	0.113
PV4	0.186	-0.039	0.206	0.281	0.132	<b>0.716</b>	-0.028
SI1	0.240	0.324	0.284	0.314	0.295	0.084	<b>0.895</b>
SI2	0.294	0.398	0.260	0.264	0.219	0.077	<b>0.927</b>
SI3	0.235	0.359	0.340	0.276	0.293	0.097	<b>0.863</b>

2. Establishing discriminant validity requires an appropriate Average Variance Extracted (AVE) analysis, the square root of each construct's AVE (diagonal values in bold) are much larger than any correlation among any pair of latent constructs. As a rule of thumb, the square root of each constructs' AVE should be much larger than the correlation of the specific construct with any of the other constructs in the model Chin (1998) and should be at least 0.5 (Fornell and Larcker,1981). This study fills the criterion, as can be seen from Table 6.

**Table 6: AVEs, Square rooted AVEs and Correlation of latent variables**

	AVE	BI	EE	FC	HM	PE	PV	SI
BI	0.700	<b>0.837</b>						
EE	0.583	0.464	<b>0.764</b>					
FC	0.578	0.333	0.452	<b>0.761</b>				
HM	0.751	0.327	0.315	0.242	<b>0.866</b>			
PE	0.689	0.480	0.524	0.385	0.198	<b>0.830</b>		
PV	0.601	0.292	0.104	0.184	0.306	0.188	<b>0.775</b>	
SI	0.801	0.289	0.404	0.326	0.315	0.296	0.095	<b>0.895</b>

From the above analysis made on indicators of each constructs, this study has reached a satisfactory level regarding reliability and validity. The following section explains the next step, where the calculated case values are used as input in a set of regression equations. This method provides the way to determine parameters for structural relations. Results of the calculations are presented in the structural model.

#### **5.4. Respondents Demographic Characteristics**

The demographic variables used in this study are Age and Gender of respondents. Based on the demographics and other personal background information obtained, the majority (65.5%) of the respondents were male, 34.5% were female. The highest number of respondents (65.5.0%) comprise of the age group of 21 to 30 years.

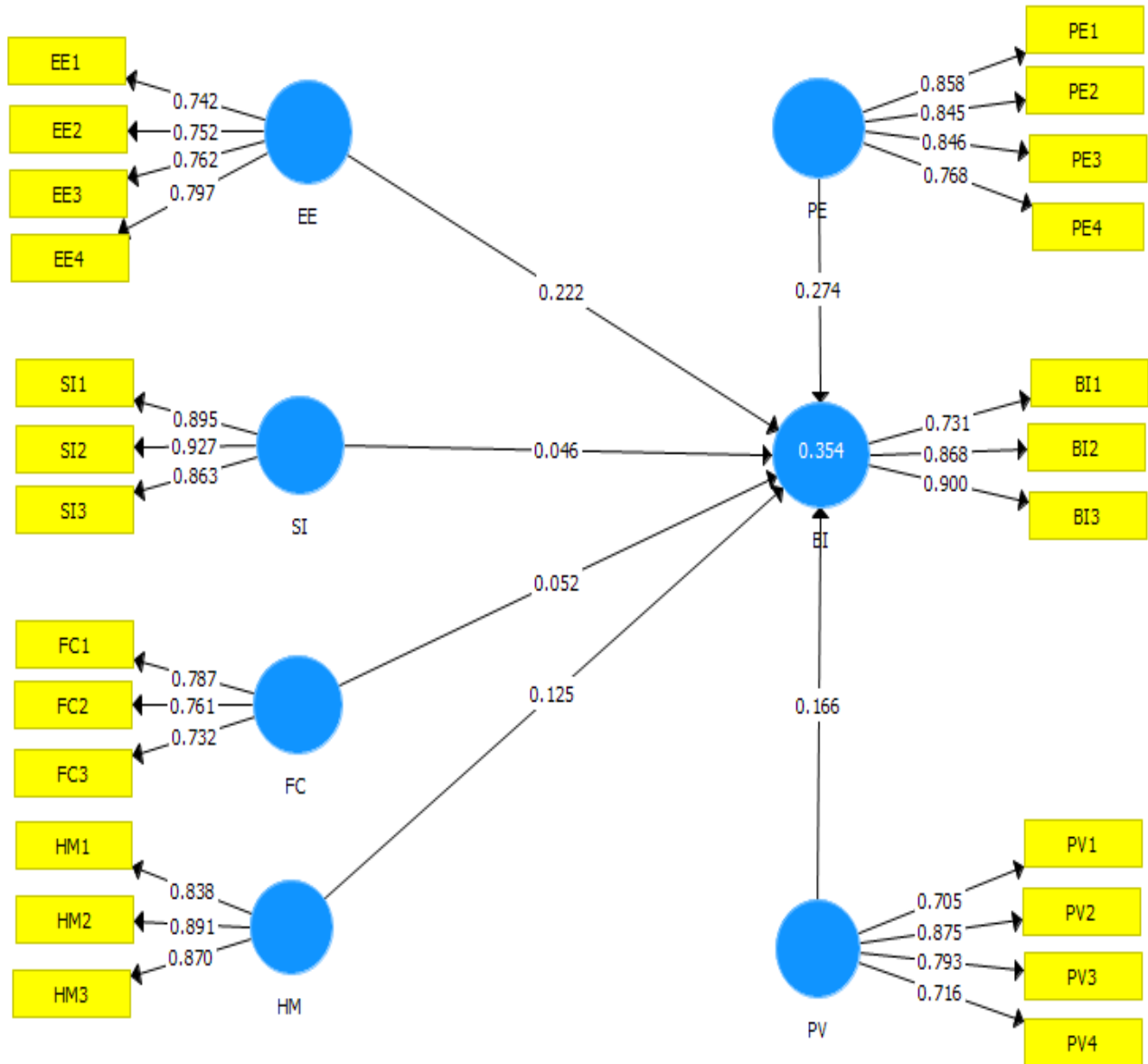
**Table 7: Demographic characteristics**

Variables	Classification of Variables	Frequency	Percentage
Gender	Male	72	65.5%
	Female	38	34.5%
Age	20 years or less	0	0%
	21 to 30 Years	63	57.3%
	31 to 40 Years	40	36.3%
	41 years and above	7	6.4%

### **5.5. Structural Model and Hypothesis Test**

Following the process described above in the proposed research model, a structural model for data analysis was created and tested with SmartPLS software. The model indicates the relationships between the variables, i.e. relationships present in the proposed research model. The applicability of the structural model is estimated for each path coefficient present in the model.

To determine statistical significance, a complete bootstrapping was carried out in SmartPLS. The bootstrap had a sample size of 5000 cases and 300 iterations of re-sampling. Measurement item FC4 was excluded from the model due to low item loading. The structural model is presented in Figure 10 below. Values for the estimated path coefficients of variables, item loadings of each measurement items, and the coefficient of determination ( $R^2$ ) of the dependent variable are illustrated in the figure 10 below. Most of the coefficients are significant at the 5% significance level providing strong support for some of the hypothesized relationship. The suggestion is followed, and the final results of the model fit analysis are presented in Table 8.



**Figure 10: Combined Structural and Measurement Models**

**Table 8: Structural Model Results**

Hypothesis	Direct Effects	Path Coefficient	T-Statistics	Remarks
H1	PE→BI	0.274	2.627	Supported
H2	EE→BI	0.222	1.979	Supported
H3	SI →BI	0.046	0.480	Not Supported
H4	FC →BI	0.052	0.500	Not Supported
H5	HM →BI	0.125	1.304	Not Supported
H6	PV →BI	0.166	2.006	Supported

Path coefficients illustrate the strength of the relationship between factors: the further the value is from 0, the stronger the correlation (Hair et al., 2014). The scale is between -1 and 1: negative values indicate negative correlation while above zero signals positive correlation. T-values again justify the significance of relations: only relations possessing significant correlation should be taken in to account (Hair et al., 2014). This study sets a limit to significance at 5%, thus, only relations exceeding 1.96 in t-values are considered significant.

As shown in figure 10 and Table 8 above, the behavioral intention of customers to adopt mobile banking was significantly impacted by performance expectancy, effort expectancy and price value, in their order of influencing strength. These variables jointly explain 35.4% of the variance on behavioral intention ( $R^2=0.354$ , coefficient of determination). This is an indication of the good explanatory power of the model for behavioral intention. The results shows that the behavioral intention to use mobile banking is predicted by Performance Expectancy ( $\beta=0.274$ ,  $T >1.96$ ), Effort Expectancy ( $\beta=0.222$ ,  $T >1.96$ ), and Price Value ( $\beta=0.166$ ,  $T > 1.96$ ), whereas Social Influence ( $\beta=0.046$ ,  $T <1.96$ ), Facilitating Conditions

( $\beta=0.0521$ ,  $T<1.96$ ) and Hedonic Motivations ( $\beta=0.125$ ,  $P<1.96$ ) are not influencing the behavioral intention of customers to adopt mobile banking.

### **5.5.1. Discussion of Major Findings**

This section discusses in detail the analysis of the results for each independent variable and their significance in influencing customers' behavioral intention to the adoption of mobile banking. Furthermore, the discussion analyzes the statistical findings of the study in relation to the previous empirical evidences. The result for each set of factors is discussed as follows.

In the above figure 10, the structural model presents how much of the variance in mobile banking usage intention is explained by the underlying factors. The model variables have accounted for ( $R^2$  value, coefficient of determination of 35.4%) of the variability. This means 35.4% of variations in behavioral intention to the adoption of mobile banking in the case of commercial bank of Ethiopia, were explained by independent variables included in the model. However, the remaining 64.6% changes in mobile banking usage in commercial bank of Ethiopia are caused by other factors that are not included in the model.

#### ***5.5.1.1. The Relationship between PE and BI to Adopt Mobile Banking***

In this research, Performance expectancy (PE) refers to the extent to which customers believe using mobile banking will help improve their performance on banking activities. Performance expectancy was hypothesized to have a significant positive effect on customers' behavioral intention (H1). The empirical evidence of the study indicates that Performance Expectancy is the most powerful factor in affecting customers' behavioral intention to adopt mobile banking ( $\beta=0.274$ ,  $T >1.96$ ), there by supporting Hypothesis H1. This aligns with the initial findings of Sun et al. (2010), Leong et al. (2013b), and AbuShanab et al. (2007). This suggests that customers find that mobile banking are advantageous and increases productivity in performing activities in their daily life which justifies the usefulness of mobile banking.

Moreover, the result of this study suggests that Performance expectancy (PE) is more important than effort expectancy (EE). This means that no matter how easy it is to use the

mobile banking, it will not be adopted if it is not deemed useful. Users will adopt mobile banking when they believe mobile banking is useful to them.

Therefore, H1 is supported.

#### ***5.5.1.2. The Relationship between EE and BI to Adopt Mobile Banking***

In this research, Effort Expectancy (EE) refers to the extent to which customers believe mobile banking is easy to use. Effort expectancy was hypothesized to have a significant positive effect on customers' behavioral intention (H2). The empirical evidence of the study indicates that effort expectancy is the second most powerful factor to positively influence customers' behavioral intention to adopt mobile banking ( $\beta=0.222$ ,  $T >1.96$ ), there by supporting Hypothesis H2, which is in agreement with Teo et al. (2012), and Tan et al. (2011). Users believe that mobile banking is easy to use, understandable and can become skillful at using it. It can be inferred that when customers find it easy to get mobile banking to do what they want, it helps customers accomplish things faster. Alternatively, if using mobile banking requires great efforts, customers may be discouraged from adopting the technology (Tan et al. 2011). Thus, H2 is supported because the adoption intention is fostered by customers' perception of how easy mobile banking is to use.

Hence H2 is supported.

#### ***5.5.1.3. The Relationship between SI and BI to Adopt Mobile Banking***

In this research, Social Influence (SI) is the degree to which significant others (relatives and friends) believe that the individual should adopt mobile banking. From the empirical evidence shown above, social influence has been verified not to influence the Behavioral Intentions of customers ( $\beta = 0.046$ ,  $T < 0.480$ ) to adopt mobile banking, there by not supporting Hypothesis H3. The result indicates that customers are not influenced by the opinions, suggestions and recommendations of important others who think they should adopt mobile banking.

Hence H3 is not supported.

#### ***5.5.1.4. The Relationship between FC and BI to Adopt Mobile Banking***

In this study, Facilitating conditions (FC) refers to the degree to which external infrastructure affects customers' behavioral intention to adopt mobile banking. The empirical evidence of the study indicates that facilitating conditions has been verified not to influence the behavioral intention of customers ( $\beta = 0.052$ ,  $T < 1.96$ ), to the adoption of mobile banking, which is in agreement with Teo et al. (2012) and Jambulingam (2013). Customers are confident that they couldn't get help from external body like service providers whenever they face problems while using mobile banking. As put forth by Islam et al. (2013), the younger population possesses the IT knowledge to use advanced mobile phone services.

Hence H4 is not supported.

#### ***5.5.1.5. The Relationship between HM and BI to Adopt Mobile Banking***

In this research, Hedonic motivation (HM) refers to the fun or pleasure customers experience from using mobile banking. Hedonic motivation was hypothesized to have a significant positive effect on behavioral intention (H5). But results in this study suggested that hedonic motivation is not influencing the behavioral intention ( $\beta = 0.125$ ,  $P < 1.96$ ), to adopt mobile banking, there by not supporting Hypothesis H5. The direct effect ( $\beta = 0.125$ ) on behavioral intention is not in line with the findings of Venkatesh et al. (2012), To et al. (2007) and Magni et al. (2010). The results obtained indicate that, customers experience pleasure, enjoyment and entertainment when using new technology. To et al. (2007) exerts in his study regarding internet shopping that users love to shop due to the enjoyment of the shopping process and not about obtaining the physical objective or completing a mission. For this reason, user's behavior is driven by the aspiration of being engaged in pleasurable, enjoyable and entertaining activities.

Hence H5 is not supported.

#### ***5.5.1.6. The Relationship between PV and BI to Adopt Mobile Banking***

In this research, price value (PV) refers to whether customer's view of mobile banking is worth its value. The empirical evidence from the study indicates that price value is the third most powerful factor in affecting customers' behavioral intention to the adoption of mobile banking ( $\beta = 0.166$ ,  $T > 1.96$ ). The obtained result is consistent with the findings of Venkatesh et al. (2012) which highlighted that price value in consumer decision making regarding technology use is an important factor influencing the behavioral intention of customers. On the other hand, the obtained result is inconsistent with the findings of Chong (2013) and Toh et al. (2009). In their study, users believe that the prices of mobile apps do not reflect its relative value because the benefits of apps are not high enough to justify the price.

Therefore, H6 is supported.

## CHAPTER SIX

### CONCLUSION AND RECOMMENDATIONS

#### 6.1. Conclusion

This study aimed at exploring factors that influence customers' behavioral intention to the adoption of mobile banking in Ethiopia, in the case of commercial bank of Ethiopia. Therefore, the investigation aimed at answering the question: What are the factors influencing customers' behavioral intention to the adoption of mobile banking in Ethiopia? To answer the above research question, the study mainly focused on the effect of the following factors or constructs on customers' behavioral intention to the adoption of mobile banking: Performance expectancy of mobile banking service, Effort expectancy of mobile banking service, Social influence of mobile banking service, Facilitating conditions of mobile banking service, Hedonic motivation of mobile banking service, and Price value of mobile banking service.

In this research, the key determinant factors that influence customers' behavioral intention to the adoption of mobile banking has been successfully examined using the proposed research model developed for this research basing the UTAUT2 model. This study was conducted based on the data gathered from customers of Commercial Bank of Ethiopia in Addis Ababa, Ethiopia. Survey was conducted using self-administered questionnaire. Out of 115 questionnaires that have been distributed to customers, 110 valid questionnaires were collected and used for data analysis. The proposed model was tested using a partial least square with the help of the SmartPLS software. The proposed model explained 35.4% of variance in behavioral intention.

Findings revealed that Performance expectancy was found to be the most significant factor to positively influence customers' behavioral intention to the adoption of mobile banking, followed by effort expectancy and price value. This result suggests that for mobile banking technology to be adopted by customers, they should perceive it as a useful and quicker way

of doing banking transactions compared with the traditional banking system, they should believe that mobile banking is easy to use, understandable and can become skillful at using it, they should also ensure that the cost of mobile banking service is reasonable and affordable. Therefore; it can be concluded that customers will adopt mobile banking services when the value and benefit of mobile banking is evident.

On contrary, social influence, facilitating conditions and hedonic motivations are found to be insignificant to influence customers' behavioral intention to adopt mobile banking. This result indicates that for mobile banking to be adopted by customers the impact of relatives and friends is negligible, customers are not expecting as if using mobile banking give them pleasure and make them fun, they don't expect that there is sufficient help from service providers and others whenever they need help regarding the usage of mobile banking. Overall, the result of this study is indeed helpful to the banking industry in Ethiopia and will be used as the springboard for other researchers for the future work on the area.

## **6.2. Recommendation**

Based on the above findings of the research, the following suggestions are put forward for the commercial bank of Ethiopia to improve customers' behavioral intention to use or adopt mobile banking.

- ✓ The commercial bank of Ethiopia could consider taking advantage of value-adding characteristics of mobile banking in promoting perceived usefulness. In addition, the bank should continue to innovate and invest in mobile banking services which allow customers to have more alternatives and get more values from mobile banking services.
- ✓ Commercial bank of Ethiopia 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, it 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.

### 6.2.1. Future Research

This study was conducted to explore factors that influence the customers' behavioral intention to adopt mobile banking services. As such, there are still rooms for further investigation into the adoption of mobile banking services. The following are areas that could be considered for future research

- ✓ The contribution of demographic factors such as age and gender toward moderating the effect of the mentioned independent variables to the adoption of mobile banking services was not given much emphasis in this study; future researchers may investigate the influence of moderating factors in customer adoption of mobile banking services.
- ✓ Furthermore, this research was conducted in Addis Ababa, Ethiopia. Further studies may also consider selecting respondents from other areas outside of Addis Ababa, as well as incorporating additional factors in understanding the intention to adopt mobile banking services.
- ✓ From the result obtained on the analysis of the structural model, the research model demonstrates an explanation power (coefficient of determination:  $R^2$  value of 35.4% (see chapter 4-the data analysis and presentation part of this research)). The unexplained 64.6% of the overall research model indicates that some important factors influencing customers' behavioral intention to the adoption of mobile banking may have been ignored in the research. Thus searching for additional new variables may improve the accuracy relating to the expected use of mobile banking in the further studies.
- ✓ As Perceptions of customers may change over time when customers have gained more experience (Mathieson et al., 2001; Venkatesh & Davis, 1996), it may be useful to redo and re-evaluate this research and the study after a certain period of time by incorporating additional variables as the results may be expected to be affected by time.

### **6.3. Implications of the study**

Technology is changing rapidly, so this study is only a milestone in continuous long journey, not a final conclusion. The following implications are recommended to banking industry, to bank customers and to researchers regarding mobile banking service to help them assess success factors for giving efficient mobile banking service.

#### **6.3.1. Theoretical Implication of the Research**

This study proposed and tested a research model, with which customers' behavioral intention to the adoption of mobile banking is analyzed. Generally, the empirical findings contribute to how customers' behavioral intention are affected. The question of which factors are driving the intention of customers to adopt mobile banking is addressed.

This research has contributed to theory, in that considering the shortage of literature that currently exists in general about technology adoption, in particular about mobile banking adoption in Ethiopia, so that it will be used to enrich mobile banking related literatures by exploring different factors which can affect adoption process, and also help as the springboard for other researchers for the future work on the area.

#### **6.3.2. Practical Implication of the Research**

The results are of relevance to commercial bank of Ethiopia, and to its customers in general. This study will help commercial bank of Ethiopia to understand and implement strategy towards providing better customer service to create suitable environment to speed customer adoption process. Results may support decision makers on which factors should be considered, and to what extent, when increased use intention is desirable. The study made a significant contribution in understanding the nature of the customers' mindset when making decision to adopt or not to adopt mobile banking based on the data analysis made with the proposed research model. The results obtained from data analyzed indicated the importance of variables such as performance expectancy, effort expectancy and price value in explaining customers' behavioral intention to adopt mobile banking in the case of commercial bank of Ethiopia. For customers, the results provide insights on which factors seem to contribute to accept the system.

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## Appendix I

### Addis Ababa University College of Natural Science

#### School of Information Science

#### Survey Questionnaires

Dear respondent,

I am conducting research on the adoption of mobile banking services in Ethiopia, the case of Commercial Bank of Ethiopia, for partial fulfillment of the requirements for the degree of Master of Science in Information Science at Addis Ababa University, college of Natural Science School of Information Science. The research is for academic purpose only. You are asked to complete a survey about this research. Your input to this research will be of great value. To complete the survey it might take no more than 20 minutes of your time. Your participation is voluntary and you can withdraw at any time. Your answers will be kept confidential. The outcome of this research may be used for academic and general purposes such as research reports, conference papers or books. By completing the survey, you indicate that you voluntarily participate in this research. If you have any concerns, please contact me or my advisor. Our details are provided below.

**Researcher:** Dinkissa Merga

**Research Advisor:** Getachew M. (PhD)

**Place of Assignment:** IS

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**Tel:** +251-911-307410 (Mobile)

## Section A: Demographic Profile

In this section, I would like you to fill in some of your personal details. Please tick your answer with (✓) and your answers will be kept confidential.

1: Gender:  Female  Male

2: Age:

20 years or less

21 to 30 years

31 to 40 years

41 years and above

## Section B: Mobile banking adoption factors

This section is seeking your opinion regarding factors influencing customers' intention to the adoption of mobile banking. Respondents are asked to indicate the extent to which they agree or disagree with each statement using five-point Likert scale [(1) = **strongly disagree**; (2) = **disagree**; (3) = **neutral**; (4) = **agree** (5) = **strongly agree**;] response framework. Please select your choice by putting tick sign (✓) per line to indicate the extent to which you agree or disagree with the following statements.

1. The following items are intended to measure the extent to which **Performance Expectancy** can influence customers' behavioral intention to the adoption of mobile banking.

Items	Performance Expectancy Construct Measures	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
PE1	I think that using mobile banking would enable me to accomplish banking transactions quickly.					
PE2	I think that using mobile banking increases my chances of achieving things that are important to me.					
PE3	I think that using mobile banking would make it easier for me to carry out my tasks.					
PE4	I think that Mobile banking is useful in my daily life for my banking needs.					

2. The following items are intended to measure the extent to which **Effort Expectancy** can influence customers' behavioral intention to the adoption of mobile banking.

Items	Effort Expectancy Construct Measures	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
EE1	I think that learning how to use mobile banking would be easy for me.					
EE2	I think that my interaction with mobile banking does not require a lot of mental effort.					
EE3	I think that it is easy to use mobile banking to accomplish my banking tasks.					
EE4	It would be easy for me to become skillful at using mobile banking.					

3. The following items are intended to measure the extent to which **Social Influence** can influence customers' behavioral intention to the adoption of mobile banking.

Items	Social Influence Construct Measures	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SI1	People who are important to me think that I should use mobile banking.					
SI2	People who influence my behavior think that I should use mobile banking.					
SI3	People whose opinions that I value prefer that I should use mobile banking.					

4. The following items are intended to measure the extent to which **Facilitating Conditions** can influence customers' behavioral intention to the adoption of mobile banking.

Items	Facilitating Conditions Construct Measures	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
FC1	I have the resources necessary to use mobile banking.					
FC2	I have the knowledge necessary to use mobile banking.					
FC3	Mobile banking is compatible with other technologies I use.					
FC4	I can get help from others (service provider) when I have difficulties using mobile banking.					

5. The following items are intended to measure the extent to which **Hedonic Motivation** can influence customers' behavioral intention to the adoption of mobile banking.

Items	Hedonic Motivation Construct Measures	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
HM1	I think that Using mobile banking is fun.					
HM2	I think that Using mobile banking is enjoyable.					
HM3	I think that Using mobile banking is entertaining.					

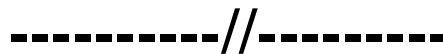
6. The following items are intended to measure the extent to which **Price Value** can influence customers' behavioral intention to the adoption of mobile banking.

Items	Price Value Construct Measures	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
PV1	Mobile banking is reasonably priced.					
PV2	Mobile banking is a good value for money.					
PV3	At the current price, mobile banking provides good value.					
PV4	To the best of my knowledge, there are no extra bank charges for mobile banking services.					

7. The following items are intended to measure customers' Behavioral Intention toward the usage of mobile banking.

Items	Behavioral Intention Construct Measures	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
BI1	I intend to use mobile banking in the future.					
BI2	I am determined to use mobile banking soon.					
BI3	I plan to use mobile banking in the future frequently.					

**Thank you for your unreserved cooperation**



## DECLARATION

I hereby declare that the thesis entitled *Identifying Factors Influencing Customers' Behavioral Intention to the Adoption of Mobile Banking: The Case of Commercial Bank of Ethiopia*, is my own work and all sources of materials used for the study has been duly acknowledged. It has not been submitted before for any degree or examination in any university.

_____	_____	_____
<b>Name</b>	<b>Signature</b>	<b>Date</b>

This thesis has been submitted for examination with my approval as university advisor.

_____	_____	_____
<b>Advisor's Name</b>	<b>Signature</b>	<b>Date</b>