ST. MARY'S UNIVERSITY
SCHOOL OF' GRADUATE STUDIES

FACTORS AFFECTING THE ADOPTION OF MOBILE BANKING IN COMMERCIAL BANK OF ETHIOPIA

BY

LAEKEMARIAM HAILE

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APPROVED BY BOARD OF EXAMINERS

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_____   _____

External Examiner   **Signature**

_____   _____

Internal Examiner   **Signature**

ENDORSEMENT

This thesis has been submitted to St. Mary's university, school of Graduate Studies for examination with my approval as a university advisor.

Zinegnaw Abiy (Phd)   _____

Advisor   Signature

St. Mary's university, Addis Ababa   June, 2015

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LIST OF ABBREVIATIONS AND ACRONYMS

AGFI	Adjusted Goodness Of Fit Index
AMOS	Analysis Of Moment Structure
ANOVA	Analysis Of Variance
ATM	Automated Teller Machine
C.R	Critical Ratio
CBE	Commercial Bank Of Ethiopia
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CR	Composite Reliability
DF	Degree Of Freedom
FC	Facilitating Conditions
GFI	Goodness Of Fit Index
IDT	Innovation Diffusion Theory
IFI	Incremental Fit Index
LMTS	Local Money Trasfer
MM	Motivational Model
MPCU	Model Of PC Utilization
NFI	Normed Fit Index
PCFI	Parsimony Comparative Of Fit Index
PE	Performance Expectancy
PNFI	Parsimony Normed Fit Index
RFI	Relative Fit Index
RMR	Root Mean Square Residual
RMSEA	Root Mean Square Error Of Approximation
S.E	Standard Error
SCT	Social Cognitive Theory
SEM	Structural Equation Modeling
SPSS	Statistical Package For Social Science
TAM	Technology Acceptance Model
TRA	Theory Of Reasoned Action
UTAUT	Unified Theory Of Acceptance And Use Of Technology

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ABSTRACT

The purpose of this study is to identify factors influencing the adoption and usage of mobile banking as the tool for help banks understand and improve the service in order to gather the expected benefits and can add on to the existing literature concerning mobile banking in the Ethiopian context. From the literature, six determinant factors are identifies. Each variable is measured using 5-point Likert-scale. Using primary data collection method, questionnaires were distributed to target respondents of customers of Commercial bank of Ethiopia for mobile banking users, This study is based on The Unified Theory of Acceptance and Use of Technology (UTAUT) model   specifies the causal relationships between Performance expectancy, Perceived risk, Perceived cost, Effort expectancy, Trust, Mobile banking service quality and Behavioral intention items. The data were analyzed using AMOS version 23 and SPSS version 20. The findings of this study revealed that Performance expectancy, Perceived risk, perceived cost, Effort expectancy and Trust, were the factors affecting users having intention to adopt mobile banking. Meanwhile, the Mobile banking service quality was found to be insignificant in this study. Furthermore, this study also manages to present demographic variables effects toward behavioral intention to adopt mobile banking, and found that gender is non-significant factor for mobile banking adoption. Age and occupation is found as significant factor for adoption of mobile banking but educational qualification was not a significant factor for adoption of mobile banking in Ethiopian mobile banking user context.

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

Rapid technological development in the world today, which includes introduction of mobile phones, especially 3G smart phones and advancement of wireless telecommunications, have led to creation of potential business opportunities that can be exploited. (Barnes and Corbitt, 2003). The electronic technology is playing a major role for the world in a numerous variety of business activities. Rapid development of information technology has also affected the banking industry world widely in different form. Banks seek always to achieve competitive advantage to be first in market; so they keep looking for new technology which can improve the bank services. For this mater "A clear and emerging new channel in the space of banking and payments is mobile." (Vanessa, 2012, abstract).

In fact mobile banking is in an infant stage for Ethiopian bank customers, but the need for research is essential in this stage, because previous studies which are done in mobile banking and factor affecting the adoption of mobile banking usage have result different finding. For example Roselyne, 2015, of his findings indicates that there is no significant relationship between perceived ease of use and adoption of Mobile banking technology. In other view Chian-Son, 2012, reveals the perceived financial cost and perceived credibility are two crucial factors influencing people intention to adopt mobile banking. Furthermore Hanudin et al, 2013, found that the intention to use mobile banking was influenced by the extent of security and privacy associated within the context of mobile banking. Tornatzky and Klein (Tornatzky & Klein 1982) analyzed the adoption, finding that compatibility, relative advantage, and complexity had the most significant relationships with adoption across a broad range of innovation types. (Shallone & Simon,2013) of their findings perceived usefulness, perceived ease of use, relative advantages,

personal innovativeness and social norms have significant effect on user's attitude thus influence the intention toward mobile banking, whilst perceived risks and costs deterred the adoption of the service. Another study reveals that the Security factor plays the most significant factor on the

intention to adopt m-bank services, and the Facilitating Conditions (FC) has powerful effects in the actual use of m-banking services (Feras and Mohammad, 2013). For these different findings research in mobile banking is questionable and need deep and further study.

1.2. Statement of the Problem

Researchers have been done concerning factor affecting the adoption of mobile banking overseas using different earlier models, TAM and TRA models. But still few researches have been done and published using UTAUT, the modified model, concerning adoption of mobile banking in Ethiopia. Besides in Ethiopia, since mobile banking is new phenomenon, studies in this sector still remain untouched.

The first bank to deploy mobile banking service in Ethiopia is commercial bank of Ethiopia one of the biggest governmental bank in Ethiopia. CBE have spent huge amounts in establishing mobile banking systems, but the adoption and usage rate of mobile banking is still lower than expected and remains insignificant compared to the entire banking transactions. For instance the bank has only managed to recruit 303,288 customers into using this service out of over 9.5 million accounts –holders as of December 30 2014. This amounts account to 3% of all CBE customers. Furthermore with the same period Active Mobile banking users from the total is 73,990 i.e. 24.4% total subscribers. LMTS (local money transfer) transaction number accounts 5,145 with a value of Birr 19.2 million and Fund Transfer transaction 30,285 with a value of Birr 100.5 million (CBE corporate performance, half year report, 2014/2015).

The bank had hoped that it would be able to capture most, if not all of this mobile phone

subscribers into its M-Banking platform which is available to both account and non-account holders. It's true that mobile banking is in infant stage since it was started in 2013 as pilot test for Ethiopian society but it is still important for the banking industry to understand the factors that affect the technology adoption decision of mobile banking services. CBE has implemented Mobile banking technology in order to provide convenient and affordable banking service for its customers. CBE have been slow grappling with the slow adoption rate of mobile banking when compared to total customers who already have a cell phone as stated above. In addition, there is and there will be concern that CBE effort may not bring much result if the factors affecting adoption of mobile banking technology are not established. The problem that this research investigates is what influences the adoption of mobile banking.

1.3.Research Questions

1.3.1. What are the main factors which influence the adoption of mobile banking in CBE?

1.3.2. Is there any relationship between demographic factors and adoption of mobile banking?

1.3.3. Dose perceived risk by clients has influence in adoption of mobile banking?

1.3.4. Dose performance expectancy has influence in adoption of mobile banking?

1.3.5. Dose trust for the system can influence in adoption of mobile banking?

1.3.6. Dose service quality of mobile banking has an effect on adoption of mobile banking?

1.4. Objective of the Study

1.4.1. General Objectives

This study focus on the adoption of mobile banking services by customers of commercial bank of Ethiopia the general objective of the study is **to identify factors influencing the adoption and usage of mobile banking.**

1.4.2. Specific Objectives

I. To determine the relationships between the factors (customer demographic factors i.e. gender, age, occupation and education,) and the adoption of mobile banking.

II. To examine the influence of users' perceived risk on adoption of mobile banking.

III. To evaluate the effect of trust in mobile banking by users, towards influencing their choice of adopting it.

IV. To examine how performance expectancy affects adoption of mobile banking.

V. To explore how Effort Expectancy influences adoption of mobile banking.

VI. To examine the service quality of mobile banking towards influencing their choice of adopting it.

1.5. Significance of the Study

Since mobile banking is a recent phenomenon in Ethiopia, there is need for a research on factors affecting adoption of Mobile Banking in Ethiopia to help banks understand and improve the service in order to gather the expected benefits. The study believed that it can add on to the existing literature concerning mobile banking in the Ethiopian context so that banks in Ethiopia can use the research as an indicator for what they should do. Furthermore the research can also assist top level managements and policy makers of the bank in understanding and appreciation of the factor that influence the adoption of mobile banking in commercial bank of Ethiopia and others bank that are found in Ethiopia. Studying factors influencing customer adoption of mobile banking will make the banking system to identify factors related to adoption of the technology and to strengthen relevant factors in order to encourage customers to use this service and consequently develop the electronic banking. Achieving these objectives will provide adequate answers to the research questions and insights on implementing mobile banking services to facilitate customers to cultivate adoption of mobile banking.

1.6. Scope of the Study

The study covers only CBE client's user of mobile banking service. The population defined for this study is limited to the four districts of CBE that are found in Addis Ababa namely North, South, East, West districts. Addis Ababa is selected because it has much diverse population than the other and also Addis Ababa is one of the largest and commercial cities in Ethiopia which ensures a wide spread of potential respondents to the study.

1.7. Organization of the Paper

The study is organized under four chapters. The introductory part bears background information, Statement of the problem, objectives, significance of the study, Scope of the study and the methodology used to conduct the study, the second chapter deals with review of related literature and the proposed model based on the literature review. The third chapter presents the findings from the respondents wherein the data gathered are analyzed and interpreted and covers the statistical analysis methods and details the results of this research that include demographic statistics, reliability analysis, factor analysis, correlation and regression analysis for testing the direction, path model and model fit, t-tests, and ANOVA tests. Discussion and implication on relevant findings are presented in this chapter as well. Finally, the last chapter attempt to summarize or conclude and recommend possible solutions to the problems and assesses the limitations and future research.

1.8. Operational Definitions

I. **Perceived Usefulness,** Customer tends to use or not use a system to the extent they believe it will help them do their task well. Ali and Hayat 2014. The degree to which a person believes that using a particular system would enhance his or her job performance. Davis 1989; Davis et al. 1989

II. **Perceived Ease of Use** Perceived ease of use refers to the degree to which a person believes that engaging in online transactions via Mobile banking would be free of effort Davis et al. 1989

III. **Ease of Use** The degree to which using an innovation is perceived as being difficult to use.

IV. **Complexity** The degree to which a system is perceived as relatively difficult to understand and use. Thompson et al. 1991)

V. **Performance Expectancy** Performance expectancy is defined as the degree to which an individual believes that using the system will help him or her to attain gains in job performance. Venkatesh et al,2003

VI. **Perceived risk** The risk regarded to the service. It also refers to the users' expectation of suffering a loss in the outcome of using Mobile Banking. Ali and Hayat 2014.

VII. **Effort Expectancy** Effort expectancy is defined as the degree of ease associated with the use of the system. Venkatesh et al,2003

VIII. **Attitude toward Behavior** An individual's positive or negative feelings about performing the target behavior. Davis et al. 1989

IX. **Behavioral Intention** refers to the user's likelihood to use online transactions through Mobile banking. Ali and Hayat 2014. And its definition is a person's perceived likelihoods or subjective probability that he or she will engage in a given behavior. Davis et al. 1989

X. **Active Mobile banking users** according to the bank procedures active mobile banking users are those customers that use mobile banking technology at-list once after registration. It might be for checking the customer accounts balance and for other services.

CHAPTER TWO

2.1.Review of Related Literature

Innovations in technology have affected the way how people live. Change in society, technology and world events have influenced and been affected by events in history of banking. The growth of banking industry leads innovation of new technology time to time. In now a day's commercial banks offer a wider range of products and services than ever before and deliver their customer faster and more efficiently. Furthermore the rivalry between banks leads the availability of up to date technology to satisfy their clients. Consequently In banking industry, customers have everything they need available in their hand with a mobile. Mobile banking service is one of the technologies that commercial banks are using in this point in time.

2.2. The Concept of Mobile Banking

Mobile Banking refers to provision of bank-related financial services with the help of mobile telecommunication devices. The scope of offered services may include facilities to conduct bank transactions, to administer accounts and to access customized information Tiwari, R. and S. Buse, 2004. Mobile Banking, the aliment of bank-related financial services via mobile devices comprises of services in the field of accounting, brokerage and financial information. Mobile Banking is increasingly being employed by many banks around the world to generate additional revenues, reduce costs or to increase customer satisfaction, often with very promising results. Rajnish et.al. 2006.

Mobile banking service

Today most banks in the world offer a basic mobile banking solution for their customers (Mobile marketing association, 2009). The most common services available today are:
- ❖ Account alert and security alert
- ❖ Account balance, update and history
- ❖ Branch or ATM location information
- ❖ Fund transfer

    And other services will likely include in mobile banking service in any kind of cell phone depending on the bank service.

2.3. Theoretical Reviews

2.3.1. Theory of Reasoned Action (TRA)

As a part of social psychology, TRA is one of the most fundamental and influential theories of human behavior. Theory of Reasoned Action is a psychological theory that tries to explain an individual's action that is determined by his/ her behavioral intention to perform it. Ajzen and Fishbein (1975). It has been used to predict a wide range of behaviors According to their theory, behavioral intention (use technology), is explained by people's attitudes toward that behavior and subjective norms. People's attitude toward a behavior includes behavioral beliefs; assess the consequences of behavior, subjective norms, normative beliefs and motivations that must be answered Riivari, (2005). Puschel et al, (2010). According to their theory, behavioral intention is explained by people's attitudes toward that behavior and subjective norms. People's attitude toward a behavior includes behavioral beliefs; assessment of the consequences of behavior, subjective norms, normative beliefs and motivations that must be answered. Riivari (2005). This theory, as long as the behavior is voluntarily controlled by the individual, can accurately explain the factors influencing technology adoption (Laukkanen and Cruz, 2009). Thus, TRA is a useful model that will be used to investigate factors affecting adoption of mobile banking.
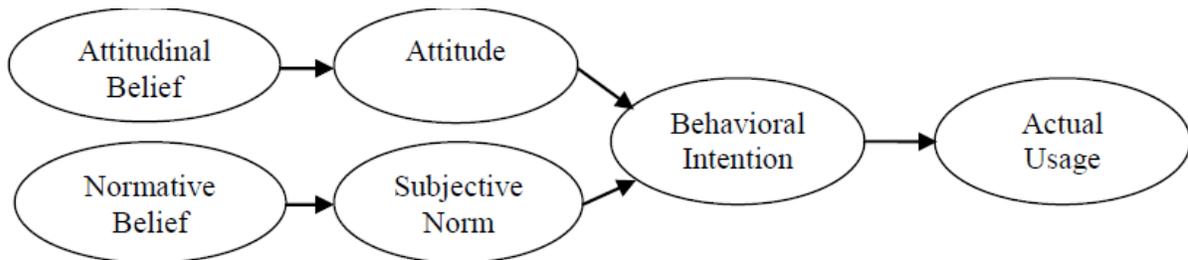
Figure 1: Theory of Reasoned Action (TRA) Hossien et al. 2013

Limitation of Theory of Reason Action (TRA)

TRA was criticized for neglecting the importance of social factors that ral life could be determinates for individual behavior (Grandon & PETER p. Mykytyn 2004; Werner 2004). Social facto mean all the influences of the environment surrounding the indivdal such as norms which may influence individual behavior (Ajzen 1991). TRA and TPB have some limitations in predicting behaviour (Werner, 2004). The first limitation is that intention determinants are not

limited to attitudes, subjective norms, and perceived behavioural control (Ajzen 1991). There may be other factors that influence behavior. Empirical studies showed that only 40% of the variance of behavior could be explained using TRA (Ajzen 1991; Werner 2004). The second limitation is that there may be a substantial gap of time between assessment of behavior intention and the actual behavior being assessed (Werner 2004). In that time gap, the intention of an individual might change. The third limitation is that TRA is predictive models that predict an individual's action based on certain criteria. However, individuals do not always behave as predicted by those criteria (Werner 2004).In terms of IT adoption, TRA have been used to explain the adoption process from individual perspectives. TRA was modified into TAM to predict user acceptance of new technology (Chin& Marcolin 2001; Karahanna & Straub 1999; Legris, Ingham & Collerette 2003). TAM uses the same principles as TRA in predicting acceptance of IT (behavior) from an individual's intention to accept IT. Furthermore Voluntariness was not included in the original TRA.

2.3.2. Technology Acceptance Model (TAM)

In 1989, Fred Davis proposes the technology acceptance model (TAM), TAM is an information system theory that models how users come to accept and use a technology. The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it. But TAM itself is an extension of theory of reasoned action (TRA) model. TRA was developed by developed by Fishbein and Ajzen 1975, 1980. TAR is a model for the prediction of behavioral intention, spanning predictions of attitude and prediction of behavior.

TAM replaces many of TRA's attitude measures with the two technology acceptance measures: ease of use, and usefulness. This means that the attitude of any technology user mainly influenced by simplicity of the technology or usefulness of the technology (Davis, 1989). The original TAM proposed by Davis is illustrated as follows in figure 2.
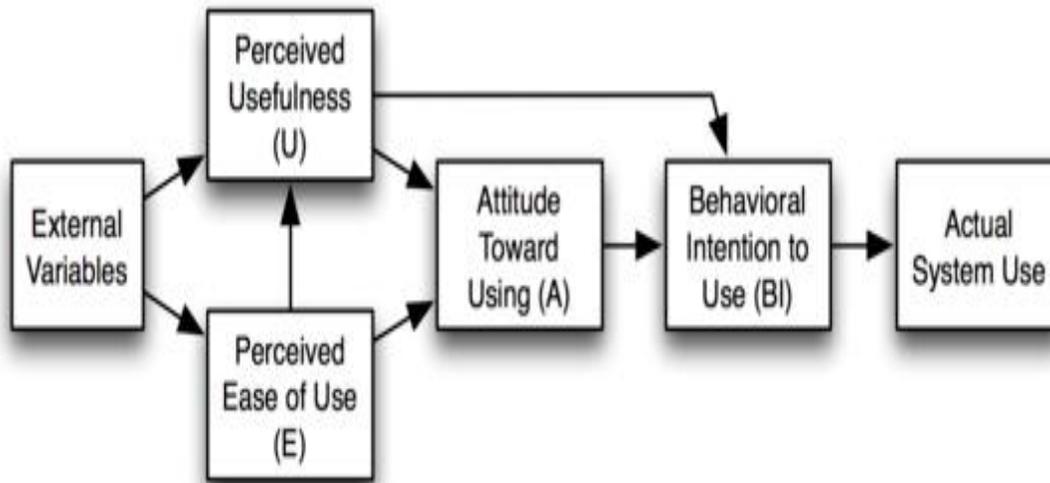
Figure 2. TAM model by Davis 1989

If the technology is not easy to use it or if it is complex to understand then it will probably not be perceived as useful. According to devise model the behavioral intention to use or not to use the technology is determined by usefulness of the technology and easiness of the technology.

In fact So many researches' have been done using TAM model for the study of factor affecting the adoption of mobile banking in different countries. For instance, in Taiwan 180 respondents surveyed at an e-commerce exposition and symposium using the extended TAM model and the researcher found that Perceived self-efficacy, financial costs, credibility, easy-of-use, and usefulness had remarked influence on intention to adopt mobile banking Luarn and Lin [2005]. In Malaysia also 156 respondents obtained via convenience sampling the finding indicates Perceived usefulness, easy-of-use, credibility, amount of information, and normative pressure significantly influence the adoption of mobile banking using TAM model for the study Amin et al. [2008]. Furthermore in Brazil the cost barrier and perceived risk are highest rejection motives, following are unsuitable device, complexity, and lack of information were the finding by surveying 3585 in online using TAM and theory of resistance to innovation Cruz et al.2010. In Africa specifically in Sudan 181 bank's customers were sampled the results revealed that customers' intention to use M-banking in Sudan is influenced strongly by perceived trust,

perceived ease of use and perceived risk. Perceived usefulness was found to be with no influence on the intention to use M-banking service among customers of Sudanese banks. By surveying of 67 customer in Kenya using TAM model researcher revealed that The risks found to have the greatest influence were fear of sending money to wrong account or phone number and loss of personal or account information. On the other hand, perceived convenience was found to positively affect adoption of M-banking by being easy to use and being useful in various ways Hannah Wangari, 2014.

Limitation of TAM

TAM are model applicable to a variety of technologies, yet they have been criticized for not providing adequate information on individuals' opinions of information systems (Mathieosn, 1991b; Moon and Kim, 2001; Monsuwe et al., 2004). TAM make assumptions related to the use of technology that may not apply outside of the workplace (e.g., university); such as, all individuals have access to adequate equipment and an information system and are mandatorily required to use the system. In other words, TAM are designed for measuring usage in the workplace where voluntariness of use may not be under an individual's control or Voluntariness was not explicitly included in the TAM . As to external variables, Davis et al. (1989) observed that external variables enhanced the ability of TAM to predict acceptance of future technology, which means the constructs of TAM need to be extended by incorporating additional factors depending on the target technology, main users, and context (Moon and Kim, 2001). Also, Wang et al. (2003) noted that variables relating to individual differences played a vital role in the implementation of technology. Another commonly reported limitation of TAM is the measurement of usage by relying on respondents' self-reporting usage and assuming that self-reported usage reflects actual usage (Mathieosn, 1991b). Other limitations, such as a variety of types of respondents or the sample choices that made generalization difficult, and, limited guidance about how to influence usage through design and implementation. Furthermore perceived ease of use and perceived usefulness may not fully explain behavioral intentions towards the use of mobile banking, necessitating a search for additional factors that can better predict the acceptance of mobile banking. Because Davis (1989) noted, future technology acceptance research must address how other variables affect usefulness, ease of use and user acceptance.

Finally this research are not going to use the TAM model; because TAM have no moderate factors which was found to be useful and handy in studying the factors affecting the intention toward mobile banking services adoption by customers.

2.3.3. The Unified Theory of Acceptance and Use of Technology (UTAUT) Model

Venkatesh et al. (2003) proposed and tested a unified information technology acceptance and use research model, called the Unified Theory of Acceptance and Use of Technology (UTAUT). The model integrates significant elements across eight prominent user acceptance models and formulates a unique measure with core determinants of user behavioral intention and usage. In this model the original UTAUT aims to explain user intentions to use an IS and subsequent usage behavior. Furthermore UTAUT model suggests that there are a set of factors that influence the intention of the individual user acceptance (Feras, Mohammad, 2012). Venkatesh 2003, pp 446, in their research article theorized that, four constructs play a significant role as direct determinants of user acceptance and usage behavior:

1. *Performance expectancy*,
2. *Effort expectancy*,
3. *Social influence*, and
4. *Facilitating conditions*.

Gender, age, experience, and voluntariness of use are said to mediate the impact of the four key constructs on usage intention and behavior. Venkatesh et al. (2003)

Research Model proposed by *Venkatesh et al*, 2003 illustrated below in figure 3.
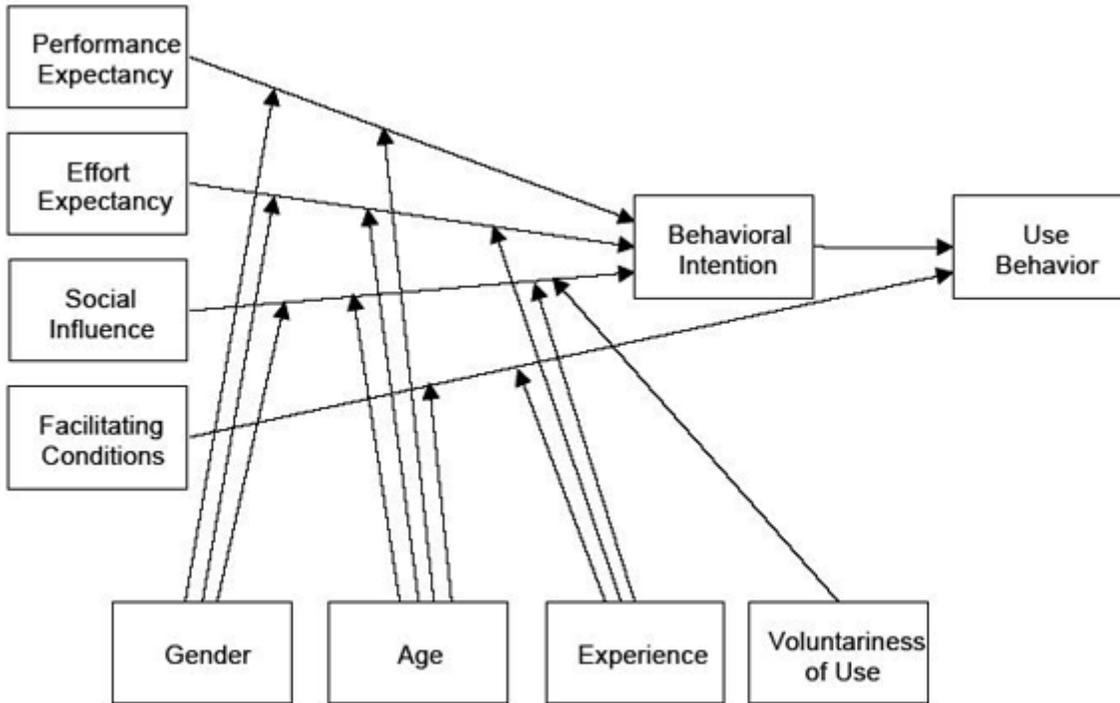
Figure 3: Research Model proposed by *Venkatesh et al*, 2003

I.   Performance Expectancy (PE)

Performance expectancy (PE) is defined as "the degree to which an individual believes that using the system will help him or her to attain gains in job performance". Venkatesh et al, 2003. PE Is the strongest predictor of intention and remains significant at all points of measurement in both voluntary and mandatory settings however from a theoretical point of view, there is reason to expect that the relationship between performance expectancy and intention will be moderated by gender and age. Perceived usefulness, relative advantage, outcome expectation, job fit, and extrinsic motivation are the constructs of performance expectancy (PE) from different models TAM, Innovation Diffusion Theory (IDT), Social Cognitive Theory (SCT), Model of PC Utilization (MPCU), and Motivational Model (MM) respectively. Venkatesh et al, 2003. Researchers have demonstrated a positive relationship between performance expectancy and behavioral intention (Venkatesh et al., 2003). Hence, adapting performance expectancy to the context of mobile learning suggests that individuals will find mobile learning useful due to convenient access to information without the restriction on physical locations and time.

II.   Effort Expectancy

The concept of Effort expectancy is developed from perceived ease of use, complexity, and ease of use from existing models which are TAM, MPCU, and IDT respectively. Effort expectancy found to be significant in the early time periods, but became insignificant over time (Venkatesh et al., 2003). As individuals became more familiar with the technology, the effort needed to use the technology declined. Previous research supported that the effort necessary to learn and use a new technology affected its acceptance and use (Gefen & Straud, 2000). In other word the easier a system is to use, the more likely it will be accepted and used. Sungwoo, 2009. To the extent that promoted effort expectancy leads to improved performance, previous studies indicated that effort expectancy had a direct effect on performance expectancy and intention to use mobile learning (Carlsson et al., 2006).

III.   Social Influence

Social influence is defined as the degree to which an individual perceives that important others believe he or she should use the new system. Social influence has an impact on individual behavior through three mechanisms: compliance, internalization, and identification. Venkatesh and Davis, 2000. Previous models showed that gender moderated this relationship as the effect was stronger for females than males. Sungwoo, 2009. However, current results showed that gender failed to moderate this relationship when testing the proposed model. Experience also was not a significant moderator of this relationship, which fails to support the UTAUT findings in which non-users showed a stronger effect than users. Venkatesh et al., 2003.

IV.   Facilitating Conditions

Facilitating conditions are defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system Venkatesh et al., 2003. This definition captures concepts embodied by three different constructs: perceived

behavioral control from (TAM), facilitating conditions from (MPCU), and compatibility from (IDT).

V.   Trust In Mobile Banking

In fact trust is not included in Venkatesh et.al… model but Trust is a variable that has attracted attention of many scholars playing mysterious role in the adoption of mobile payments (Misra & Wickamasinghe 2004). Trust is a fundamental component for establishing and maintaining successful relationships between customers and businesses (Garbarino & Johnson, 1999). It can be understood as "the belief that vendors will perform some activity in accordance with customer's expectations" (Gefen & Straub 2004; Pavlou & Gefen 2004). Basically trust in mobile payment system can be formed by maintaining anonymity, security and most importantly reliability of the service model (Egger, 2001). According to Gefen et al, (2003), it is trust variable that plays crucial role in facilitating adoption of e-commerce adoption. Gefen was the scholar used trust widely to explore behavioral intention or adoption of technologies. When it comes to mobile payments, Pousttchi (2003) arrives at a conclusion after his survey revealed that over 96% of the respondents he surveyed wanted confidentiality of data they exchange with the service provider otherwise trust was very difficult to develop among people.

VI.   Perceived Risk

According to Kabir (2013), Perceived risk may be seen from various perspectives such as privacy risk, financial risk, system risk and physical security risk. As defined by Lee et al (2009), these three risks can be described as follows; Privacy risk: is defined as a potential loss due to fraud or a hacker interfering with the security of a mobile banking user (disclosure of personal and financial information). Financial risk is defined as the potential for monetary loss. System risk refers to deficiencies or malfunctions of mobile banking system. Lastly, physical security risk refers to any exposure to attacks and threats to the user of mobile banking that may result to physical bodily harm or injury and loss of money.

VII.   Service Quality

Service quality refers to reliability, content quality, personalization. Daft and Lengel (1986) suggested that accuracy, reliability, and quality of information exchanged across a medium were critical to the effectiveness. In the context of mobile, the content refers to information, features, or functions that are offered via mobile banking services. Such content should be constructed logically to help user find information and incorporate features such as accuracy, timeliness, relevance, and flexible presentation (Huizingh, 2000). A reliable mobile system should ensure the effectiveness of mobile banking, and therefore service quality is included in the study.

VIII.   Perceived cost

The degree to which an individual views that utilizing mobile banking will incur cost s defend as perceive cost (luarb & lin 2005). These costs could typically include the cost of the mobile device, network charges, and transaction charges for bank costs as well as costs for data sent via the network infrastructure. The factor that had the least impact on mobile banking adoption in comparison to the other variables which includes perceived usefulness, perceived risk and compatibility, was perceived cost (wu and wang, 2005).

IX.   Moderator variables

The original UTATU model proposed by Venkatesh et al.. Uses four moderators as determinants of intention and behavior with four core determinants, the moderators are gender, age, experience, and voluntariness of use.

A. Gender

Previous research showed that gender differences have shown to exist in technology acceptance (Venkatesh & Davis, 2000; Wolin & Korganmkar, 2003; Gefen & Straudb, 1997). Wolin and Korganmkar (2003) found that males and females differ significantly in several dimensions with

males exhibiting more positive beliefs and attitudes about E-commerce than females. In the UTAUT model, Venketash et al. (2003) proposed that gender would moderate the relationship between performance expectancy, effort expectancy, and social influence on intention to utilize the technology. Venkatesh et al. (2003) reported that men are more likely to have higher performance expectancies than females. They suggested that such differences stem from gender roles and socialization processes. Effort expectancy on intention was also moderated by gender. Previous studies have found a stronger proportion of perceived usefulness of mobile services among men than among women [Nysveen et al. 2005]. The reason is men appear more task-oriented than women and electronic banking services are typically motivated by goal achievement [Cruz et al. 2010]. Additionally, many empirical studies have revealed the statistical difference between female and male respondents in the mobile service/banking setting.

B. Age

Numerous studies have discussed the effects of demographics on new technology adoption. However, compared to traditional innovation diffusion studies [Rogers 2003] that reveal earlier adopters of technological innovations as typically younger in age, having higher incomes, better educated, and having higher social status and occupation, research findings in the context of electronic banking are not consistent. Similar to gender, age is theorized to play a moderating role in the UTAUT model. In looking at gender and age effects, it is interesting to note that gender differences can be misleading without reference to age, Levy (1988). Venketash et al. (2003) proposed that the influence of performance expectancy will be moderated by both gender and age. Furthermore Age is confirmed as integral features of UTAUT. Venketash et al. (2003)

C. Experience

Several studies showed that prior similar experience, such as computer or internet use, strongly influence intention to use and usage behavior of a specific system (Venkatesh et al, 2003; Wu, Tao, & Yang, 2007). Venkatehs et al. (2003) suggested that an increase in experience would decrease the influence of effort expectancy and social influence on behavior intention to use. Kim and Malhotra (2005) confirm Venkatesh et al. (2003) by showing that when user experience increase, effort expectance and social influence decrease. People who have more experience

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using similar system are more relying on instrumental basis rather than social basis because experience users of mobile devices or wireless internet are more skillful and easy to use M-commerce. Wang and Yang's (2005)

D. Voluntariness of use

Voluntariness is the level to which an individual can choose to use a system; image is the extent to which individuals believe the use of a system will increase their social status within a group or how well others perceive them; (Venkatesh and Davis, 2000).

X.   Behavioral Intention

Consistent to all models drawing from psychological theories, which argue that individual behavior is predictable and influenced by individual intention, UTAUT contended and proved behavioral intention to have significant influence on technology usage [Venkatesh et al. 2003; Venkatesh & Zhang 2010]. Given that the ultimate goal of businesses (i.e., banks) is to attract consumers to adopt their services, extensive research has examined the relation between behavioral intention and actual use.

Limitation of UTAUT model

Research results for the UTAUT relationships have shown many inconsistencies. Some find a positive effect of performance expectancy on behavioral intention (Al-Gahtani et al. 2007; Bandyopadhyay & Fraccastoro 2007; Im, Hong, & Kang 2011; Nassuora 2012; Wang & Shih 2009), but Jairak et al. (2009) find no such effect. There is more general agreement on a positive impact of effort expectancy (Bandyopadhyay & Fraccastoro 2007; Im et al. 2011 ; Jairak et al. 2009; Nassuora 2012; Wang & Shih 2009). In addition, whereas some report a positive effect of social factors (Bandyopadhyay & Fraccastoro 2007; Im et al. 2011 ; Jairak et al. 2009; Wang & Shih 2009), Nassuora (2012) finds no such effect. Venkatesh et al. (2003) also indicate that the interaction terms are necessary for a significant effect of social factors to emerge. This is confirmed by Al-Gahtani et al. (2007), but contradicted by Jairak et al. (2009) who find a positive impact of social factors without including the interactions. The reported inconsistencies

in the explanatory powers and the effects of the UTAUT variables may be due to variety in the data analysis techniques employed or to culture and country level differences. It is therefore always important to re-evaluate even popular models whenever they are applied to a different country/cultural context: both the measurement of the constructs and the relationships among them should be re-evaluated. By evaluating the UTAUT measures and relationships, this study aims to include other variables to the Ethiopian population contexts.

2.4.Empirical review

Building on the above literature review, empirical mobile banking studies were summarized below. And to be more focused the empirical review emphasis on those models where frequent scholars use for their studies i.e. TAM and UTAUT models.

Dasgupta et al. [2011] found that in their study Perceived usefulness, easy-of-use, image, value, self-efficacy, and credibility significantly affect intentions toward mobile banking. The model employed for the study was TAM, distributing 325 questionnaires and gathered from MBA students of Indians. In the same country i.e. India a study of adoption behavior of mobile banking services by Indian consumers by Nitin et al. (2014) reviewing the literature, found that Trust, Perceived ease of use and perceived usefulness are found to be important factors to influence the consumer intention to adopt mobile banking, furthermore they also found that customers will adopt mobile banking if they find it easy to use and understand. An Investigation of Factors Affecting Usage and Adoption of Internet & Mobile Banking in Pakistan by Rizwan, (2014) Using TAM model and distributing 150 questionnaires for bank customer's reveals the effects of trust and compatibility with life style were both found insignificant in the study; these results oppose previous researches who claimed a significant effect of these variables on attitude. In other study180 respondents surveyed at an e-commerce exposition and symposium in Taiwan in 2005 the researchers Luarn and Lin reveals that Perceived self-efficacy, financial costs, credibility, easy-of-use, and usefulness had remarked influence on intention to adopt mobile banking the model for the study they used were TAM. Using the same model i.e. TAM Amin et al.(2008) found in their research Perceived usefulness, easy-of-use, credibility, amount of information, and normative pressure significantly influence the adoption of mobile banking, for the study 156 respondents were obtained via convenience sampling in Malaysia. In another

research in Brazil by Cruz et al. the cost barrier and perceived risk are highest rejection motives, following are unsuitable device, complexity, and lack of information, and for the study 666 respondents surveyed on an online questionnaire by the same research model.

Gefen et al. (2003) studied the relationship between trust and usage frequency of E-commerce. They found that trust is a major component in the acceptance of Ecommerce. They also suggested that propensity to trust is essential for first time users of E-commerce. However, it had little effect on building trusting relationships. Continuing trust is based on the consumer's perception of trustworthiness gained through experience with the trust. Siau, Lim & Shen (2003) described necessity for building a trusting relationship in M-commerce. According to them, developing trust is essential to the success of Mcommerce. If the M-commerce businesses fail to establish trust, customers may not choose M-commerce to purchase goods and services.

Of the mobile banking adoption literature, some research indicated typical users of electronic banking were relatively young [Joshua & Koshy, 2011] or discovered that the elderly had more resistances to change and negative attitude toward using mobile banking services [Laukkanen et al. 2007]. However, certain studies found that respondents aged 50 or over were mostly eager to use mobile banking services [Suoranta & Mattila 2004], typical mobile banking users were aged between 30 and 49 [Laukkanen & Pasanen 2008], and middle-aged or older customers were the main users of electronic banking [Laforet & Li 2005; Dasgupta et al. 2011]. Additionally, Laforet and Li [2005] randomly interviewed 300 respondents in the streets in six major Chinese cities and reported that mobile banking main users were not necessarily young and highly educated. Laukkanen et al. [2007] used age (over 55 or not) to separate Finnish respondents into two groups and identified that two groups differed in the risk, tradition, and image barriers. Cruz et al. [2010] investigated 3585 respondents in Brazil and claimed that older people perceived mobile banking as more difficult to use than younger people did. Likewise, by collecting 666 respondents in Brazil, Puschel et al. [2010] observed that typical users of mobile banking were less than 30 years old.

women perceive more risk in an online purchase than men do [Garbarino & Strahilevitz 2004], peer opinions have a higher effect on females in mobile services [Nysveen et al. 2005], men are more likely to use mobile banking than women are [Laukkanen & Pasanen 2008; Koenig-Lewis 2010], and men are more concerned on the cost of Internet access and

service fees than women are when using mobile banking services [Cruz et al. 2010]. By using gender as a moderating variable in an extended TAM, Riquelme and Rios [2010] sampled 681 respondents in Singapore and found that the influence of social norm on intention to adopt and perceived ease-of-use on the perception of perceived usefulness were stronger among women than among men. In contrast, Puschel et al. [2010] collected 666 respondents in Brazil and discovered that mobile banking users were predominantly males. Likewise, through gathering 553 respondents in India, Joshua and Koshy [2011] observed that men might use electronic banking services more than women would. For these different findings in different country and sample sizes what affect mobile banking adoption is questionable and need research in Ethiopian context.

1.1.Research Gap

Since much of literatures are not found related to mobile banking in Ethiopia, this paper is an endeavor to mitigate the research gap in this regard. Thus on the basis of the above literatures the study aims at identifying the factors affecting the adoption of Mobile Banking in Ethiopia. Therefore, there is need to carry out this research in order to help financial institutions understand the factors affecting the adoption of Mobile Banking service hence then it will make Mobile Banking service into a form acceptable to customers. This will mitigate the research gap in this regard. Secondly, since most research studies are based on TRA and TAM theories, which consist of two constructs; perceived ease of use and perceived usefulness which are not sufficient to explain factors affecting adoption of Mobile Banking there is need to adopt more theories in this study in order to include more variables namely; perceived risk, trust, quality and other variables. Lastly given that much of existing research relevant to this study are on online banking or internet banking, Mobile commerce and electronic commerce, this research study shed light on adoption of Mobile banking in Ethiopia and on factors influencing it. Hence fill the research gap in this regard.

2.1.The Proposed Model

The goal of the present study is not to replicate the UTAUT study as in Venkatesh et. al. Instead, this paper aims to ascertain what factors considerably influence people to adopt mobile banking. Therefore, additional constructs selected from mobile banking literature are taken into the research structure, which are addressed as follows. Based on revising different scholarly literature review the following proposed model is adopted. Thus Figure showed the proposed model in which examine the relationship between dependent and independent variable which is adopted from Sungwoo Song, 2010 and a minor modification to fit with objective of the study. The study also aims to now the effect of gender, age, educational qualification and occupation indirectly to behavioral intention to adopt mobile banking.
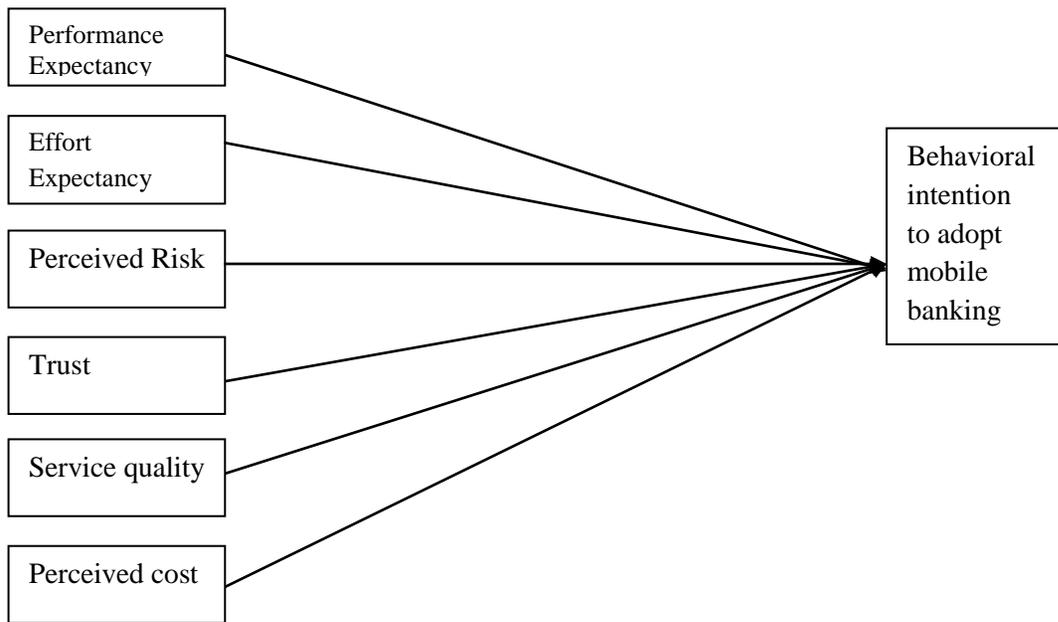
Figure 4: proposed Model

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1. Research Design

This research employed a quantitative design method. It contained a quantitative component to examine customers' acceptance and use of mobile banking. The quantitative component was derived from the survey data collected from the customers of commercial bank of Ethiopia in four selected branches from different districts. Since this research was quantitative in nature, the quantitative methods were applied to analyze survey data, discover factors affecting the adoption of mobile banking in commercial bank of Ethiopia and relationships between the factors, and compare similarities and differences across customers groups based on gender, age, education qualification and occupations.

3.2. Population And Sampling Technique

The population of study consisted of 141,536 customers belonging to banks which are classified as registered customers for mobile banking in all Addis Ababa districts, according to CBE half year performance report 2015. Based on the performance report active mobile banking users are 34,230. Furthermore According to the bank active mobile banking users are those customers who are at least use mobile banking service for single time or several times. In contrary registered customers are those customers who did not use mobile banking at once for any type of the service that mobile banking is giving. Hence the respondents are customers of CBE who have mobile phones and registered to use mobile banking but yet to adopt mobile banking service.

Table 1, Registered and active mobile banking users of CBE at Addis Ababa districts

CBE Districts in Addis Ababa	Registered Mobile banking users	Active Mobile banking users
East Addis	29,346.00	8,991.00
West Addis	36,941.00	8,336.00
North Addis	43,348.00	10,263.00
South Addis	31,901.00	6,640.00
Total	**141,536.00**	34,230.00

Source, CBE half year performance report 2015

Based on the sample size calculator formula using total population 141,536.00 a sample of 383 were believed to be the representative of the total population.

$$S = (P (1-P)) / (A2)$$

$$S = (Z2 + (P (1-P))) / (N))$$

Where S = Sample size required;

N = Number of people in the population;

P = preliminary estimate of percentage of people in the population who possess attributes of interest. The conservative estimate and one that is often used is 50%. (0.5 will be used in this formula);

A = Accuracy (or precision) desired, expressed as a decimal (0.05 for 5% is used in this formula);

Z = The number of standard deviations of the sampling distribution (Z units) that corresponds to the desired confidence level, 1.96 for 95% confidence level, 1.6449 for 90% confidence level and 2.5758 for 99%.

3.3. Types of Data And Tools

Structured questionnaires were used, to obtain data from the respondents. The questionnaires consisted of closed-ended questions. To ensure success, the questionnaires were short and simple, with questions moving from easy to more difficult ones (Kothari 2004). The questions captured data in line with the study objectives. A five point likert scale was used, where 1=strongly Disagree , 2=Disagree, 3 = Neutral 4 = Agree, and 5=strongly Agree was used to

measure the respondents' view concerning statements on Performance expectancy, Perceived risk, Perceived cost, Effort expectancy, Trust, Mobile banking service quality and Behavioral intention items.

3.4. Procedure of Data Collection

Convenience sampling method is used in selecting the sample subjects. To draw branches where questionnaires distributed convenience sampling were used, four grade-IV branches were selected from each districts, the branches are Andinet, 4-kilo, Sengatera, and Teklehimanot that make the total branches four, for distributing the questionnaires. Grade-IV is selected because it has wider customers base and diversified populations. Random sampling is not used in this research because the acquisition of lists of bank customers and their contact numbers and addresses from banking institutions is very difficult and time taking. The data collected was based on the questionnaires to bank customers in April and May 2015. The data was collected during working hours (6 days per week) over four weeks. The respondents were randomly selected in the banking halls by asking whether they use mobile banking or not and invited to complete the questionnaires, if the respondents answered that they did not have registered for using mobile banking, they were eliminated. A total of 400 questionnaires were distributed to get the minimum sample size i.e. 383. One hundred (100) questionnaires were distributed to each branch making the total 400.

In addition, 383 questionnaires were obtained from the four selected branches in Addis Ababa. The data analyzed, using SPSS version 20 and the most recent AMOS version 23, were from 383 respondents obtained from the survey.

3.5. Methods of Data Analysis

3.5.1. Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) is a statistical tool/technique which is used to verify the factor structure of a set of observed variables/constructs. It is also used to tests whether a specified set of constructs is influencing responses in a predicted way (Brown, 2006). CFA will allow us to test that there exist a good relationship between observed variables and their

underlying latent constructs. Knowledge from the literature, theories, and models has been used to postulate the relationship pattern of factors to be measured by the measuring variables (questions). CFA is used as a pre-test after collecting empirical data through pre-test questionnaires, to test whether there is significant relationship between the factors to measure and the constructs (variables/questions) used for the measurement of those factors in questionnaires. It is simply used to evaluate the contribution of each question in measuring a particular factor, and also find how well the questions measure each factor (Hair et al 2006). Results from the confirmatory factor analysis have been used to drop out the constructs with less or no relationship with the factors. With CFA, the researcher must specify both the number of factors that exist within a set of variables and which factor each variable will load highly on before result can be computed. This technique does not assign variables to the factors. Instead, the researcher must be able to make this assignment before any results can be obtained (Hair et al., 2006). In this current study, six independent variables with 25 items and one dependent variable with three items were tested for their validity in the proposed model. In this research paper Confirmatory factor analysis (CFA) using the latest AMOS version 23 is used, to test the theory of the construct and analyze the model's fit.

3.5.2. AMOS

AMOS is a powerful and graphical, easy-to-use structural equation modeling (SEM) software. It creates much realistic models than if standard multivariate statistics or multiple regression models. It is used to estimate, assess, and then present a model in an intuitive path diagram to show relationships among variables. It is very useful for testing the relationships between variables, which is the prime objective of this study. AMOS is widely used for getting confirmative and interpretive results, which can be generalized more because of its requirement for a large number of observations (sample size). The results of SEM include two competent: the measurement model and the structural model. The measurement model gives the relationship between latent variables and observed variables. The structural model studies path strength and the direction of the relationships the latent variable. For example, in this study we can see figure (5) and it shows a CFA that test the measurement model. Each construct is indicated by six indictors items, thus six latent constructs are measured by 25 measured indictor variables.

3.5.3. Correlation, Regression And ANOVA Tests

Correlation is a statistical tool, used to find the direction and strength of relationship between variables/factors. Correlation provided us the type & direction of interrelationship and intensity of relationship among our factors. And in this study ANOVA test is computed the reason for doing an ANOVA is to see if there is any difference between groups on some variable. The values for correlations and regression are provided by both AMOS and SPSS.

4.1. FINDINGS OF THE STUDY

4.1.2. Frequency Distribution of Survey Response

Sample Size and Respondent Profile

The sample sizes as discuss in chapter 3 a total of 400 questionnaires were prepared to potential respondents to fill the structured questions. Of the 400 potential respondents, a total of 383 questioners were got on hand which is the minimum of the sample size. Of the 400 respondents, 17 of them either failed to complete the entire survey or not return the questionnaires. In the end, a total of 383 respondents answered the entire survey. The overall respondent rate for survey was approximately 96%. Among the survey respondent, all of the respondents reported that they registered to use Mobile banking.

Respondent profiles

Table 2, Frequency of Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	MALE	225	58.7	58.7	58.7
	FEMALE	158	41.3	41.3	100.0
	Total	383	100.0	100.0	

Most respondents were males (58.7%), while 41.3 % were female

Table 3, frequency of AGE CATAGORY

Age		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20 TO 30	288	75.2	75.2	75.2
	31 TO 40	91	23.8	23.8	99.0
	41 TO 50	4	1.0	1.0	100.0
	Total	383	100.0	100.0	

The average respondent was 20 to 30 years old, which is; about 75 % of the respondents were from 20 years old to 30 years old. Moreover about 23% of the respondent was from 31 years old to 40 years old the rest which is about 1% were 41 years old to 50 years old.

Table 4, frequency of OCCUPATION

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	EMPLOYED	349	91.1	91.1	91.1
	NOT WORKING	9	2.3	2.3	93.5
	SELF EMPLOYED	25	6.5	6.5	100.0
	Total	383	100.0	100.0	

Furthermore respondent were asked about their educational background and about 92.7% of the respondent are university student, diploma or degree holder. Moreover about 7 % of respondent were either some high school completed or secondary school students.

Table 5, frequency of EDUCATIONAL QUALIFICATIONS

Educational Qualifications		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	UNIVERCITY/DEGREE/DIPLOMA	355	92.7	92.7	92.7
	SOME HIGH SCHOOL	26	6.8	6.8	99.5
	SECONDARY SCHOOL COMPLETE	2	.5	.5	100.0
	Total	383	100.0	100.0	

Responded also were asked about their occupational background and from the total of 383 respondent the greater portion goes to employed which accounts 91.1% of all respondent self employed not working were 9% and 25% respectively.

Respondents were also asked about their Awareness of mobile banking services about 71% the responded strongly agree knowing mobile banking service the rest 39% are either agree or neutral about knowledge of mobile banking services.

Table 6. Frequency of mobile phone experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	STRONGLY DISAGREE	8	2.1	2.1	2.1
	DISAGREE	36	9.4	9.4	11.5
	NUTRAL	45	11.7	11.7	23.2
	AGREE	99	25.8	25.8	49.1
	STRONGLY AGREE	195	50.9	50.9	100.0
	Total	383	100.0	100.0	

The question aims to know whether the mobile banking users are aware of their mobile phone and among 383. 195 or 50% of the respondents are strongly agreed that they know well their mobile phone. Furthermore 25.8 % of the respondent are agree that they know how to operate their mobile phone. 11.7% of the respondent are neutral about their knowledge regarding their own mobile banking, else, respondent are disagree or strongly disagree about mobile phone experience.

4.1.3. Descriptive statistics for all surveyed item

This section reports each variable statistics used in this study. The respondents were asked to rate each item on a scale ranging from 1 (strongly disagree) to 5 (strongly agree), for conducting this research. The following table contains descriptive statistics for all items. Performance expectancy item means range from 3.77 to 4.19, risk expectancy item means range from 2.33 to 3.0, perceive cost item means range from 4.4 to 4.5, effort expectancy item means range from 3.1 to 4.09, rust item means range from 3.6 to 3.75, service quality item means range from 1.9 to 2.4 and behavioral intention item means range from 3.9 to 4.03. Frequency tables are presented in terms of mean, and standard deviations in the following tables.

Table 7. Performance expectancy Statistics

		perex1	perex2	perex3	perex4	perex5	perex6
N	Valid	383	383	383	383	383	383
	Missing	0	0	0	0	0	0
Mean		4.1984	4.0339	4.0705	3.8460	3.7728	3.8329
Std. Deviation		.79415	.90744	.87594	1.01805	.96975	.93129

Table 8. Risk expectancy Statistics

		risk1	risk2	risk3	risk4	risk5	risk6
N	Valid	383	383	383	383	383	383
	Missing	0	0	0	0	0	0
Mean		2.8956	2.3316	3.0104	2.8042	2.5196	2.5953
Std. Deviation		1.09714	.79410	1.09731	1.40894	.98895	1.08086

Table 9. Perceived Cost Statistics

		cost1	cot2
N	Valid	383	383
	Missing	0	0
Mean		4.4856	4.5065
Std. Deviation		.77876	.70103

Table 10. Effort expectancy Statistics

		eff1	eff2	eff3	eff4	eff5
N	Valid	383	383	383	383	383
	Missing	0	0	0	0	0
Mean		3.9112	4.0601	3.9112	3.9974	4.0940
Std. Deviation		1.04978	.80836	.93083	.85767	.76339

Table 11. Trust   Statistics

		trust1	trust2	trust3
N	Valid	383	383	383
	Missing	0	0	0
Mean		3.7546	3.6240	3.7076
Std. Deviation		.93916	1.00764	1.01719

Table 12 Service quality Statistics

		qual1	qua2	qula3
N	Valid	383	383	383
	Missing	0	0	0
Mean		2.4517	1.9687	2.136
Std. Deviation		1.35064	1.29196	1.3390

Table 13. Behavioral intention Statistics

		beha1	beha2	beha3
N	Valid	383	383	383
	Missing	0	0	0
Mean		4.0339	3.9608	4.0235
Std. Deviation		.86913	.91585	.84505
Sum		1545.00	1517.00	1541.00

4.1.4. The Measurement Model

A confirmatory factor analysis (CFA) using AMOS 23 was conducted to test the measurement model. It is necessary to test that the measurement model has a satisfactory of validity and reliability before for a significant relationship in the structural model. The psychometric properties of the measurement model in terms of reliability, were evaluated Composite reliability (CR) was used to measure the reliability of a construct in the measurement model. CR offers a more retrospective approach of overall reliability and estimates consistency of the construct itself including the stability and equivalence of construct (Hair, Black, 2010). A value of .70 or greater is deemed to be indicative of good scale reliability. Table (14) shows the results of the calculated composite's reliability to support construct reliability. The reading of composite reliability of the latent variables is above 0.70. Therefore, all latent variables have good reliability.

Table 14, reliability test

Constructs	Items	Standardized lodgings	Composite reliability
Performance Expectancy	perex1	0.75	0.900
	perex2	0.57	
	perex3	0.72	
	perex4	0.90	
	perex5	0.94	
	perex6	0.84	
Risk	risk1	0.93	0.953
	risk2	0.89	
	risk3	0.76	
	risk4	0.89	
	risk5	0.96	
	risk6	0.96	
Cost	cost1	0.85	0.931
	cost2	0.85	
Effort Expectancy	eff1	0.95	0.981
	eff2	0.94	
	eff3	0.97	
	eff4	0.98	
	eff5	0.96	
Trust	trust1	0.71	0.89
	trust2	0.97	
	trust3	0.89	
Service Quality	qua1	0.88	0.947
	qua2	0.92	
	qua3	0.99	
Behavioral Intention	beha1	0.97	0.983
	beha2	0.99	
	beha3	0.98	

4.1.5. Multicollinearity Test

A test of Multicollinearity was conducted to determine the correlation of the independent variables. Multicollinearity refers to the extent to which an independent variable can be explained by other independent variables in the analysis and if too high this can have harmful effect on regression. Multicollinearity occurs when two or more predictors in the model are correlated and provide redundant information about the response. It is a situation where the variables are too highly correlated. The correlations between constructs were checked for Multicollinearity and the results showed that the correlations between all constructs were below 0.90, which suggests that the constructs were redundant (Kline, 2005) and that Multicollinearity was not an issue. Since Multicollinearity can be handled in two ways: the first option is to combine variables in the same factor and the other option is to try to eliminate the effect of Multicollinearity.

4.1.6. AMOS Out Put

The theoretical model has been designed in AMOS, by making performance expectancy, effort expectancy, risk expectancy, cost and trust expectancy factors as independent variables and behavioral intention as dependent variables. After drawing the expected relationships and providing input values, the following figure has been obtained as result. The values with each arrow drown from left to right show the factor loading for each items. Furthermore the arrow which links independent variables with other independent variables shows the covariance between variables.

Figure 5: the measurement model shows how the variables are drawn in AMOS
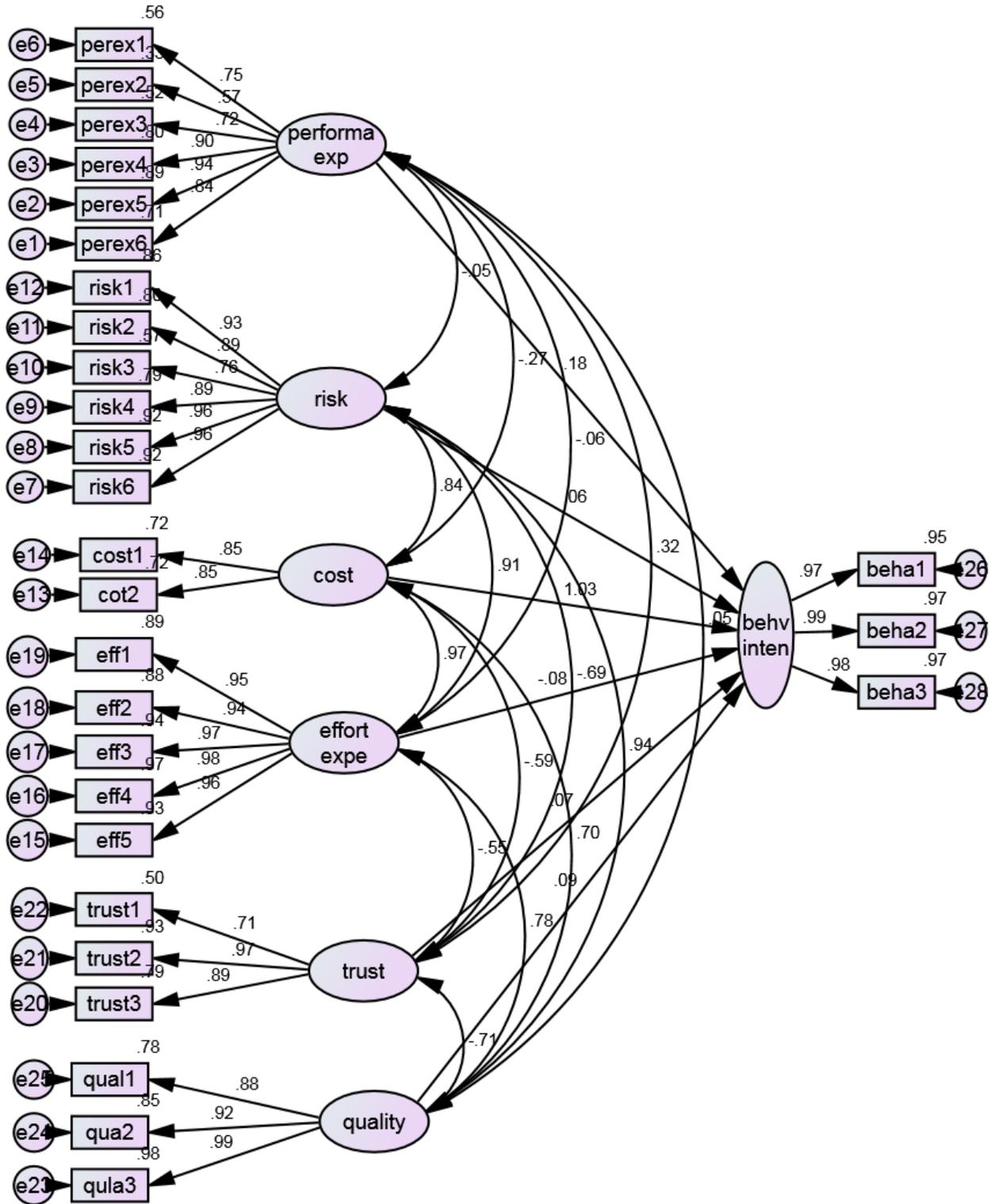
4.1.7. Goodness of Fit Indices

All confirmatory factor analysis (CFA) of constructs produced relatively good fit as indicated by the goodness of fit indices such Goodness index GFI is more than 0.90 and RMSEA value is less than 0.08. Furthermore, the test of structural model was performed using SEM in order to examine the conceptual framework by performing a simultaneous. Table (15) depicts the Goodness-of-Fit for the model was met. Chisquare\df= 389.714; CFI= 0.970, GFI= 0.910, NFI= 0.963, P=0.000, RMSEA= 0.071 and. The overall values provided evidence of a good model fit. As a result, all fitness indexes namely NFI, IFI, CFI are above than 0.90 which indicate that the model employed in the study a good fit to the data.

Table 15: Goodness Of Fit For Structural Model		
fit indices	Accepted Value	model value
Absolute Fit Measures		
Chi-square		389.714
Df(Degree of Freedom)		82
Probability		0.000
GFI(Goodness of Fit Index)	> 0.90	0.910
RMSEA(Root Mean Square Error of Approximation)	< 0.08	0.071
RMR		0.047
Incremental Fit Measures		
NFI (Normed Fit Idex)	> 0.90	0.963
CFI (Comparative Fit Index)	> 0.90	0.970
RFI (Relative Fit Index)	> 0.90	0.945
IFI (Incremental Fit Index)	> 0.90	0.970
parsimon fit measures		
AGFI (Adjusted Goodness of Fit Index)	> 0.80	0.824
PCFI (parsimony Comparative of Fit Index)	> 0.50	0.663
PNFI (parsimony Normed Fit Index)	> 0.50	0.658

Figure 6: The Structural Equation modeling result (Standardized path coefficients)
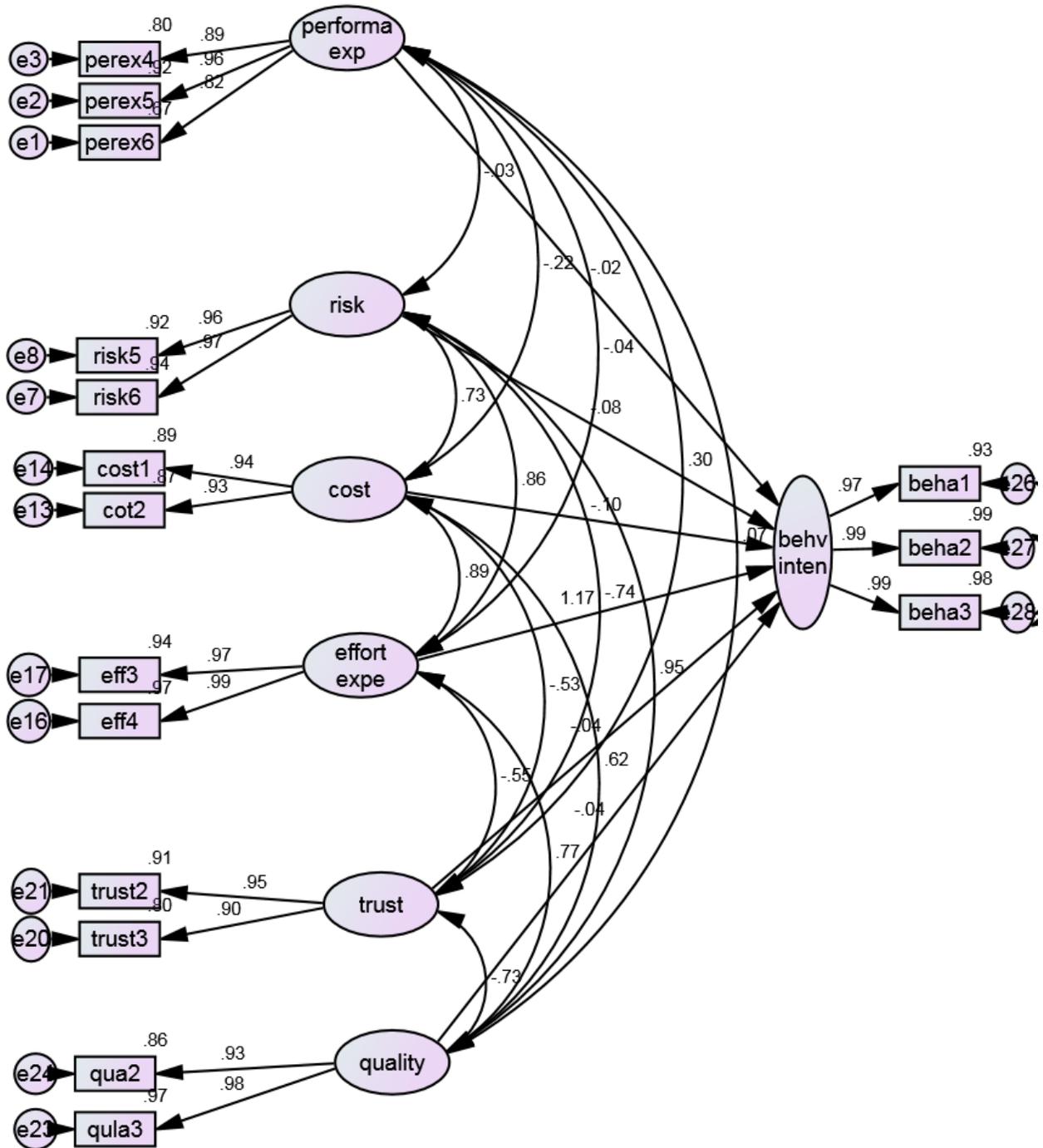
4.1.8. Correlation Between Constructs

To find the inter-relationship between the factors, correlation has been derived from AMOS. The following table shows the correlation of all the factors, representing the direction and strength of inter-relationship between these factors. Correlation matrix is shown in Table 16.

Table 16, Correlation Matrix (N=383)

	Behavioral Intention	Service Quality	Trust	Effort	Cost	Risk	Perform-expectancy
Behavioral Intention	1						
Service Quality	0.761	1					
Trust	-0.539	-0.708	1				
Effort	0.788	0.782	-0.55	1			
Cost	0.880	0.633	-0.531	0.881	1		
Risk	0.879	0.843	-0.686	0.898	0.76	1	
Perform-expectancy	-0.071	0.048	0.323	-0.064	-0.236	-0.048	1

Performance expectancy has been found as positively correlated with service quality and trust while negatively correlated with perceived cost, perceived risk, effort expectancy and behavioral intention.

Perceived risk is found as positively correlated with service quality effort and cost whereas negatively correlated with trust and performance expectancy.

Perceived cost is found as positively correlated with perceived risk, effort expectancy, service quality and behavioral intention while negatively correlated with performance expectancy and trust.

4.1.9. Regression Weights

Table 17: Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P
behv_inten	<---	performa_exp	.518	.014	1.298	.022
behv_inten	<---	risk	-.065	.045	-1.441	.042
behv_inten	<---	cost	-.128	.036	-3.550	***
behv_inten	<---	effort_expe	1.158	.041	28.315	***
behv_inten	<---	trust	.035	.016	2.134	.033
behv_inten	<---	quality	-.025	.029	-.882	.378

Note

behv_inten = Behavioral Intention,

performa_exp = Performance Expectancy,

effort_expe = Effort Expectancy

Estimate= β (beta)

S.E. =Standard Error

C.R. = Critical Ratio

P= (sig) when *** p<.000

The results show that performance expectancy has positive effect on behavioral intention to adopt mobile banking (β=.518, C.R. =1.29 and P=0.022) in fact P value is significant at 0.022 which is less comparing to significant level <.000 but as a rule of tamp if P value is less than 0.05 it is significant.

Risk has negative effect on behavioral intention to use mobile banking (β=.-065, C.R. =-1.441 and P=0.042) the analysis for risk show that perceived risk will decrease behavioral intention to use mobile banking. In other word, when the risk of mobile banking increases behavioral intention to adopt mobile banking will decreases. In fact the P value of perceived risk is lower comparing to acceptable P value which is <.005 but it has the most negative value of β from all independent variables.

Perceived cost similar effect with risk i.e. it has negative effect on behavioral intention to adopt mobile banking (β=.-128, C.R. =-3.550 and significant at P value <.0001) show that Perceived cost will decrease behavioral intention to use mobile banking. In other word, when the cost of using mobile banking increases behavioral intention to adopt mobile banking will decreases.

Effort Expectancy has the biggest positive value of beta β=1.159 from all independent variables and significant at P value <.0001. Which indicate by the fact that when bank customers are familiar and have expertise with mobile services, they perceive ease associated with the use of mobile banking,

Trust is significantly and positive influence on mobile banking adoption because of β=0.035 and P=.033 and C.R. =2.134, it shows that when trust for the service increases adoption of mobile banking also will increases.

Lastly service quality has negative effect on behavioral intention to use mobile banking since β=-0.025 but it is not significant because P=.378 which is greater than the acceptable value i.e. P<.05. In other word the independent variable for the analysis cannot explain the dependent value.

4.1.10. Group Analysis

To investigate differences on mobile learning acceptance, this research compared different customer groups across the variable of behavior intention, using the independent samples t-test to compare population means of two different groups and analysis of variance test (ANOVA) to compare population means of multiple groups. Significance level (p-value) was set to 0.05. In both tests, homogeneity of variance was evaluated using Levene statistics to detect a difference in variance and taken into consideration of group comparisons when the analysis was done.

Independent samples t-tests were conducted it was to determine if there was a significant difference on behavior intention between female and male user of mobile banking on their behavioral intention to use mobile banking;

As in Table 19, Levene statistics of tests indicate variance homogeneity at significant levels of 0.683 (p >0.05), respectively. Thus, the two-tail significance for equal variances estimates was

used to determine whether the difference existed between two groups of mobile banking user's i.e. for male and female. As presented in Table 18 and 19, the results for tests suggested that there is no significant difference between the mobile banking users groups. Table 19 gives the mean test result of two gender-oriented independent-sample T tests for mobile banking adoption. In the homogeneity test of variance, $p=0.683$ (greater than the significance level $p=0.05$), meaning that the variance is homogeneous. In the two-sided test, $p=0.217$ (greater than the significance level $p=0.05$), meaning that the test on gender revealed a non significant difference between females and males on intention to adopt mobile banking.

Table 18: Group statistics of behavior intention by gender

	GENDER	N	Mean	Std. Deviation	Std. Error Mean
beha1	MALE	225	3.9867	.91846	.06123
	FEMALE	158	4.1013	.79159	.06298

Table 19: T-test of gender vs. behavior intention and Levene's test for equality of variances

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
beha1	Equal variances assumed	.167	.683	-1.271	381	.204	-.11460	.09014	-.29183	.06263

4.1.11. ANOVA Testes

Three ANOVA tests were conducted to compare intention of behavior to adopt mobile banking across mobile banking users group. Four ANOVA tests were computed to determine if there was a significant difference on mobile banking user's behavior intention to adopt mobile banking based on their age, Educational qualifications, and occupational background.

I.   ANOVA Tests for Age

Table 20: Test Of Homogeneity Of Variances Age Category

Levene Statistic	df1	df2	Sig.
3.339	2	380	.037

Table 21: ANOVA Test Of Age Vs Behavioral Intention To Adopt Mobile Banking

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.925	2	1.962	2.773	.064
Within Groups	268.864	380	.708		
Total	272.789	382			

For the age variable, the F test in the one-way analysis of variance is adopted, as shown in Table 20 and 21. In the homogeneity test of variance for age qualification, p=0.037 (less than the significance level p=0.05), meaning that the variance is not homogeneous. In the significance test of difference, p is lower than the significance level, indicating that people at different ages have different willingness to adopt mobile banking.

II.   ANOVA Tests for Educational Qualifications

Table 22: Test Of Homogeneity Of Variances
             For Educational Qualifications

Levene Statistic	df1	df2	Sig.
1.113	2	380	.330

Table 23: ANOVA test of educational qualifications Vs behavioral intention
to adopt mobile banking

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.915	2	2.458	3.486	.032
Within Groups	267.873	380	.705		
Total	272.789	382			

For the educational qualifications variable also, the F test in the one-way analysis of variance is adopted, as shown in Table 22 and 23. In the homogeneity test of variance for educational qualification, p=0.33 (greater than the significance level p=0.05), meaning that the variance is homogeneous. In the significance test of difference, p is lower than the significance level P=.032, indicating that people at different educational qualifications have similar willingness to adopt mobile banking.

III.   ANOVA Tests for Occupation

Table 24: Test Of Homogeneity Of Variances For Occupation

Levene Statistic	df1	df2	Sig.
3.693	2	380	.026

Table 25: ANOVA test of occupation Vs behavioral intention to adopt
mobile banking

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	8.831	2	4.416	6.357	.002
Within Groups	263.957	380	.695		
Total	272.789	382			

For the occupation variable, the F test in the one-way analysis of variance is adopted, as shown in Table 24 and 25. In the homogeneity test of variance for educational qualification, p=0.026 (less than the significance level p=0.05), meaning that the variance is not homogeneous. In the significance test of difference, p is lower than the significance level P=0.002, indicating that people at different occupation have different willingness to adopt mobile banking. This is may be because of the nature of the business or occupation that the users hold.

4.1.12. DISCUSSION

This study is concerned with an investigation of factors that could affect mobile banking adoption on customers of commercial bank of Ethiopia. These factors include Performance expectancy, Perceived risk, Perceived cost, Effort expectancy, Trust, Mobile banking service quality and Behavioral intention items and the finding are discussed as follows.

The construct, Performance Expectancy, had a strong impact on the model i.e Venkatesh et al. 2003 UTAUT model. Customers with high performance expectancy had high intention to adopt mobile banking. This study is congruent with Venkatesh et al. (2003), in which Performance expectancy was found to have significant influence on the behavioral intention to adopt mobile banking. Thus, this result could imply those customers who expect to gain benefits from using mobile banking are more likely to have intention to adopt mobile banking which provides benefit to them in transacting, sending, money through their mobile phone. These outcomes are consistent with previous studies of Cheong and Park (2005), Chiu et al. (2005), Wang et al. (2003), and Venkatesh and Morris (2000). Hence, when mobile banking is shown to be useful, bank customers' intention to adopt it will be greater.

Researches confirmed that risk has significant influence on intention to adopt mobile banking in negative way. Several mobile banking adoption studies have supported that people refuse or are unwilling to use mobile banking mainly because of perceived risk [Brown et al. 2003; Riquelme & Rios 2010; Natarjan et al. 2010; Dasgupta et al. 2011]; Cruz et al. [2010]; The study by Brown et al. 2003 main findings tell us risk has negative effect on adoption on mobile banking. Cruz et al. [2010] also confirmed that risk has negative effect on adoption of mobile banking. This study finding is consistent with those studies mentioned above. Meaning when customers believe that using mobile banking is riskier they intend no to adopt or use mobile banking in this study context.

Perceived cost, as the extent to which a person believes that adopting mobile banking will cost money. In this study cost play a significant negative role in adoption of mobile banking. Given that perceived cost is important factor in affecting people intention to use mobile banking, the

study performed a drill-down analysis and found that the cost for using services via mobile phones was perceived a critical factor in hindering people to use mobile banking. This may be either the person doesn't know how much it cost him for transacting or it really cost a lot for using mobile banking at all. This finding is consistent with Yang [2009], Cruz et al. [2010].

The construct, effort expectancy also has significant influence in individual intention to adopt mobile banking in this study. When people try to use some information system to improve their performance, they have to learn how to operate a machine or sophisticated software. In this kind of case, effort expectancy or ease of use undoubtedly has significant influence on user's intention to adopt mobile banking in this study context. Thus, the greater the ease of use, the more likely mobile banking is useful, thus influencing decisions to adopt it as a means of financial transactions. Both Nassuora (2012) and Jairak et al. (2009) find that effort expectancy predicts behavioral intention; therefore this study is consistent with at list for these two studies.

Hoffman et al. (1999) showed that lack of trust prevented customers from transacting using mobile phone or on line. In addition, Gefen et al., (2003) showed that trust was a major driver of customers' intention to use. These implies as trust for the service increases intention to adopt also increases.

In this study, the only non significant variable is Service quality of mobile banking. In fact from previous research service quality were positively related to behavior intention, meaning as the quality for the service increases behavior intention should increases. For example Yu Huang (2014) finding tells us that there is positive relationship between service quality of mobile banking and adoption of mobile banking.

Finally the demographic factor which includes gender, age, educational qualification and occupation were tested using t test and ANOVA. The t test for gender show interesting finding, no significant difference between male and female in this study. But previous research showed that gender differences have shown to exist in technology acceptance (Venkatesh & Davis, 2000; Wolin & Korganmkar, 2003; Gefen & Straudb, 1997). Wolin and Korganmkar (2003) found that

males and females differ significantly in several dimensions with males exhibiting more positive beliefs and attitudes about E-commerce in this context mobile banking than females.

CHAPTER FIVE
CONCLUSION AND RECOMMENDATION

5.1. CONCLUSION

This paper developed a theoretical model of user adoption on mobile banking services based on The Unified Theory of Acceptance and Use of Technology (UTAUT), and attempted to explore the influencing factors which play a role in user's adoption of mobile banking. By collecting questionnaire survey data, the study proceeded statistical analysis and Structural Equation Modeling analysis with SPSS and AMOS, and tested the theoretical model and further made a discussion on the results of data analysis. This study is concerned with an investigation of factors that could affect mobile banking adoption on commercial bank of Ethiopia customers. These factors include Performance expectancy, Perceived risk, Perceived cost, Effort expectancy, Trust, Mobile banking service quality and Behavioral intention items. Effort expectancy is found to have a positive and direct influence on internet banking adoption. A large coefficient, $\beta = 1.158$ as compared to other all factors. Furthermore, Performance expectancy and trust were found to have positive and significant influence on mobile banking adoption β beta= 0.018; 0.035 respectively. However, perceived risk and perceived cost has negative and significant influence on mobile banking adoption a beta value of -.065 and -.128. Service quality is the only not significant predictor which influences the mobile banking adoption in this study, due to the fact that nature of population itself which were only users of mobile banking might influence the result of the study. Furthermore group analyses were tested using Independent samples t-tests and ANOVA to measure the relationship between demographic factors and adoption of mobile banking. Gender is non-significant demographic factor for behavioral intention to adopt mobile banking in this study. Despite gender, age is found as significant factor for behavioral intention to adopt mobile banking; it indicates people at different ages have different willingness to adopt mobile banking. However the study reveled educational qualifications have similar result with gender, educational a qualification is a non significant factor for behavioral intention to adopt mobile banking. At last occupation factor has significant relation with behavioral intention to adopt mobile banking, meaning people that have different occupation have different willingness to adopt mobile banking.

5.2. LIMITATION OF THE STUDY AND FUTURE RESEARCH

Despite the useful findings of the study, this study has several limitations that need to be acknowledged. Several factors were examined in this study. Future studies should attempt to draw profiles based on characteristics other than these factors. And also the data for this study was only collected in commercial bank of Ethiopia in Addis Ababa which have technological different environment from some other places and other banks, thus the results may not be generalized. In ANOVA test the direction of independent variable to dependent variable was not analyzed for each demographic variable except for gender this may affect the generalization of the findings. Hence, further research should be conducted in order to answer which category or group of demographic characteristics is directly affect adoption of mobile banking. The sample for this study was biased in terms of gender. The gender distribution of the study subjects was 58.7 % male and 41.3 % females. Thus, men were overrepresented. Therefore, future research is required to see if the same results could be achieved using different samples. To generalize the findings of this study, more research is encouraged on other samples. Furthermore Opinion of unbanked and non user of mobile banking people was not factored in to this study and the factor identified would be predominantly users of mobile banking services who had existing bank account only in CBE.

5.3. RECOMMENDDATION

As suggested in chapter one in the significance of the study section the primary stakeholder that would be interested in the finding of the study are policy makers and banks in Ethiopia who have already or planning to introduce mobile banking for their customers. The identification and confirmation of factor affecting the adoption of mobile banking provides banks with information on what is expected and what is required to make these channel more utilized among their customer base. The factors for example performance expectancy and effort expectancy should be marketed aggressively.

➢ Hence, policy makers should concern on regulation about security issues, the manner in which mobile banking are implemented, identifying users, protecting users and how much money can be transacted, should be a major area the regulation should address.

➢ In performance expectancy officials should give aggressive awareness of mobile banking service usefulness, i.e. convenience, time saving and productivity. The research has also potential implications for system designers. They should emphasize performance expectancy and effort expectancy in the architects of mobile banking while ensuring reliable content and high quality service, since no matter how easy a system is to use, the system will not be used if it is not deemed useful in banking activity.

➢ In addition concerning effort expectancy the mobile banking menu should be easier to navigate and should be easily understandable hence in this regard software developer should create user friendly app or software.

➢ The perceived risk factor emphasizes what the banks need to focus on by addressing security risks for mobile banking. Informing customers that transacting via mobile banking is secure. For example the bank can educate or tell how the service is secured while customers comes for registration or educating how the service works should be bundled in marketing and advertising campaigns.

➢ Perceived cost these costs could typically include the cost of the mobile device, network charges, and transaction charges for bank costs as well as costs for data sent via the network infrastructure. A reduction in the cost of mobile banking transactions can motivate consumers to use the service, therefore banks have to strive to provide cost effective service. For example banks could introduce price bands Customers, who process

large volumes of transactions through mobile, should receive a discount on transaction charges. So it can be as a good marketing strategy to attract customers to use mobile banking.

➢ Referring Mobile banking service quality it's mainly about reliability and content quality. Visually appealing features, such as graphic, appropriate colors and fonts, and good page layout in addition system consistency could be given priority concerning service quality. And mainly system familiarity for mobile banking must be reduced since it may irritate users of mobile banking. This may be solved by collaborating with service providers i.e. with Ethio telecom and developing internal IT specialists' i.e. E payment specialists.

To sum up with the identified factors provides beneficial information to banks to ensure that if they want to increase adoption of mobile banking in their operation, they would be aware of what is required to make this happen. Essentially the factors indentified provide the bank with an opportunity to increase their sales and increase profits by addressing the factors via innovative marketing and educational promotions to tell customers what mobile banking is, how it works, what the benefits are and highlight the security aspects and advantages.

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SURVEY ITEM

My name is Laekemariam Haile. I am conducting research for my MBA in business administration at st' marry university. The title of my research project is "factor affecting the adoption of mobile banking in commercial bank of Ethiopia" in the information provided will be treated confidentially and your co-operation will be highly appreciated. The aim of this research project is to improve the mobile banking service to Ethiopian customers.

Please read each statement and **put (√) on the item that suits you as best alternative.**

1. Demographic details

    1.1. Gender

Male	
Female	

    1.2. age category

20 to 30	
31 to 40	
41 to 50	
Over 50	

    1.3. Educational qualifications.

University / degree/diploma	
Some high school	
Secondary school complete	
Other (specify)	

    1.4. Occupation

Workers	
Not working	
Pensioner	
Self employed	
Other (specify)	

1. Mobile phone experience

	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
I have been using the mobile phone for a long time and My general knowledge in mobile phone is excellent					

2. Performance expectancy

	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
I found mobile banking services useful.					
Using mobile banking services enables me to accomplish banking task more quickly.					
Using mobile banking services increase my productivity in handling my banking tasks.					
Using mobile banking services enhance my bank transaction quality.					
Using mobile banking services increase my efficiency in conducting my banking tasks.					
Mobile banking services improve my payment convenience.					

3. Perceived risk

	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
I think using mobile banking services for monetary transactions have potential risk					
I think that privacy is not guaranteed when using mobile banking services.					
I have serious doubts that the banking transactions performed on a mobile phone will work satisfactorily.					
I believe it can rather easily happen that money can be stolen if mobile banking services are used					
Conducting banking transactions on mobile phones is risky because one can easily lose or misplace the mobile phone					
I think mobile banking services are more risky than other banking options.					

4. Perceived cost

	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
It would not cost a lot to use mobile banking.					
Using Mobile banking is cheaper method than going bank for the same service mobile banking offers.					

5. Effort expectancy

	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
My mobile banking menu is very easy to navigate					
My mobile banking menu is very easy to understand					
It is easy to make a payment					
It is easy to make transfer money					
It is easy to make a balance inquiry					

6. Trust

	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
Using mobile banking, I believe my transactions are secured;					
Using mobile banking, I believe my privacy is secured;					
Using mobile banking, I believe my information is kept confidential					

7. Mobile banking service quality

	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
My mobile banking service has visually appealing features, such as graphic, appropriate colors and fonts, and good page layout In my mobile banking menu.					
My mobile banking service is always available without network and system frailer.					

8. Behavioral intention

	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
I intend to use mobile baking service in the future					
I will use mobile banking services for various types of banking transaction					
I believe it is worthwhile for me to adopt mobile banking services					

THANK YOU SO MUCH!

DECLARATION

The undersigned, declare that this thesis is my original work, prepared under the guidance of Zinegnaw Abiy (Phd), all sources of materials used for the thesis have been duly acknowledged, I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

Laekemariam Haile   _____

                                                                                    Signature

St. Mary's university, Addis Ababa   **June 2015**