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Factors that influence the effectiveness of mobile banking adoption: The case of Commercial Banks in Addis Ababa, Ethiopia

Prepared by Bruke Alemayehu

A thesis submitted to the school of graduate studies of Addis Ababa University in partial fulfillment of the requirements for the degree of M.A in **Marketing Management, School of Commerce**

ADVISOR:

Mulugeta G/Medhin (PhD)

June, 2017

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APPROVAL SHEET

**Addis Ababa University School of Commerce, Graduate Studies
Program Department of Marketing Management**

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Declaration

I, Bruke Alemayehu, certify that this research paper entitled “***Factors that influence the effectiveness of mobile banking adoption: The case of Commercial Banks in Addis Ababa, Ethiopia***” has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree.

I also certify that the thesis has been written by me and that any help that I have received in doing my research work and in the preparation of the thesis itself has been duly acknowledged. In addition, I certify that all information sources and literatures used are indicated in the reference part of this thesis.

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List of Abbreviations and Acronyms

ATM = Automatic Teller Machine

CBE = Commercial Bank of Ethiopia

GSMA = Global System Mobile Association

IVR = Interactive Voice Response

M-Banking = Mobile Banking

NBE = National Bank of Ethiopia

PEU = Perceived Ease of Use

PR = Perceived Risk

PU = Perceived Usefulness

SIM = Subscriber Identity Module

TAM = Technology Acceptance Model

TPB = Theory of planned behavior

TRA = Theory of Reasoned Action

USSD = Unstructured Supplementary Service Data

WAP = Wireless Application Protocol

IDT = Innovation Diffusion Theory

PDA = Personal Digital Assistant

SMS = Short Message Service

UTAUT = Unified Theory of Acceptance and Use of Technology

ADC = Alternative delivery channel

MQA = Mobile Quality Assurance

BI = behavioral Intention

ATB = Attitude toward performing the Behavior

SN = Subjective Norm

ETAM = Extension of Technology Acceptance Model

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Abstract

The purpose of this study is to investigate factors that influence the effectiveness of mobile banking adoption in the case of commercial banks in Ethiopia. A sample of 400 respondents was drawn from both public and private banks in Addis Ababa, Ethiopia where a structured questionnaire was distributed to these samples. However, the response rate from among the intended samples was only 95.5% therefore; around 382 responses were found to be workable by this study. SPSS V 24.0 was used to analyze the data collected and to test the hypotheses put forward. The findings of this study then show that factors namely convenience and relative advantage have a positive and significant relationship with mobile banking adoption in Ethiopia which led to, the acceptance of hypothesis two and four. From Hypothesis three, perceived risk was found to have a significant negative influence on mobile banking adoption, meaning hypothesis three was supported. Whereas hypothesis one trust has no significant relationship with the dependent variable mobile banking adoption. And this was found by running multiple linear regressions on SPSS. The testing of the fifth and final hypothesis, which set out to find any significant difference between the different factors (trust, convenience, risk and relative advantage) of public and private banks show that there is no significant difference on trust, convenience and relative advantage between public and private banks but perceived risk was found to be significantly different between public and private banks in Ethiopia. This led to the partial acceptance of the fifth hypothesis. These findings are beneficial for both public and private banks in Ethiopia to identify factors that influence the effectiveness of mobile banking adoption. The study recommends more studies on mobile banking adoption to be conducted in other areas of the country to find out if there could be any similarities.

Key Words: *trust, convenience, perceived risk, relative advantage, mobile banking and adoption*

Chapter One

Introduction

1.1 Background of the Study

The world has become a global village and almost everything are been done through technology. The growth of information technology (IT) in the world is becoming a crucial factor in the future development of businesses and industries around the world. The traditional method of banking is gradually paving the way for modern method of banking in the 21st century. The traditional banking has been in existence for many decades now and is the most common method of carrying out bank transactions in different countries, both developed and undeveloped (Luaran& Lin 2005). Over the past few years now, there have been continuous development of information technology (IT) to help smoothen business operations around the word especially in the banking industry where the use of Automated Teller Machine (ATM) was developed to make withdrawer of money easier for customers, secondly, the development of internet banking was also introduced and thirdly, the use of mobile banking. Both the developed and undeveloped countries have been benefiting from this new technology.

Over the last few years, the mobile and wireless market has been one of the fastest growing markets in the world and it is still growing at a rapid pace. Mobile banking which is an integral part of m-Commerce is defined as availing banking and financial services with the help of mobile telecommunication device. The mobile phone has dramatically changed life of people and still there seems to be much work left for it. Mobile banking is an innovative technology that has gained popularity in Africa and other parts of the world.

Researchers use various terms to refer to mobile banking, including m-banking (Liu et al. 2009), branchless banking (Ivatury and Mas, 2008), m-payments, m-transfers, m-finance (Donner and Tellez 2008), or pocket banking (Amin et al., 2006). As an important component of electronic banking, m-banking usually constitutes an alternative delivery channel (ADC) for various financial and non-financial transactions. Other prominent ADCs include ATMs, point-of-sale terminals, interactive voice response, mobile phones, and the Internet.

Some of the services being offered by banks through the mobile banking platform include account inquiry such as checking balance and statement inquiry, funds transfer between accounts, bill payments, statement request, cheque book requests and airtime top-up (Njenga, 2011). These services are offered in menu form where the different options are listed and identified by numbers and the user selects the number corresponding to the service that he/she wants.

The adoption of mobile banking has brought about changes in banking operations following the advancement of mobile communication techniques and the collaboration with mobile service

providers as a result, the mobile banking technology has become more conducive to individuals and banking sector. With over 4 billion mobile cellular subscriptions worldwide, mobile network has the ability to immediately offer mobile banking to 61% of the world population (Sultana 2009). But still the adoption of mobile banking is a debatable issue among the educated persons and professional body because of the risk involved in such transactions.

Though many of such people argue that internet and other technology based transaction is not safe, not practical and would lead to fraud, a lot of people think it safer, flexible in time and can be done anywhere and anytime (Chowdhury and Ahmmad 2011). Cost and availability are the other factors which might influence the adoption of mobile banking. Thus, it is necessary to have an in-depth analysis for the mobile banking service provider to identify the factors influencing the adoption of mobile banking. A clear understanding of these factors will enable mobile banking service providers to develop suitable marketing strategies, business models, processes, awareness programmes and pilot projects (GSMA 2009).

This study has been conduct with the main objective of identifying the factors that influence the adoption of mobile banking the case of commercial banks in Addis Ababa, Ethiopia.

1.2 Statement of the Problem

Banks are instrumental systems for economic development of any country. One of the most recent and innovative technological changes in the banking industry in Ethiopia is the introduction of mobile banking. In Ethiopia, different Public and Private Banks have implemented mobile banking technology services but are yet to gain a larger customer adoption rate.

Currently over 90 million Ethiopians dispersed across 1.2 million square kilometers of land, 80 percent of which are living in the rural areas. Financial institutions have not been able to reach a majority of those people as the bank branch to population ratio still at 1 to 28,932 in 2015/16.

Even though the penetration of mobile phones among the population continues to grow insignificant numbers year after year still the customer's adoption of mobile banking service within these banks still remains low as per NBE Data 2015. When we look at the growth in mobile phone penetration in Africa in general and in Ethiopia in particular it is moving up at higher rate. In Ethiopia the number of mobile phone subscribers has now reached more than 38 million in Ethiopia as of July 07, 2015 as per unpublished annual performance report of Ethio telecom.

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

the lead in terms of innovation for providing more inclusive access to finance for a large part of the population (KARIUKI NYAGA, 2014).

In developed world, mobile phone users are becoming less hesitant towards the adoption of mobile applications. Recent results from Mobile Quality Assurance (MQA) Research by IBM company shows that, consumer interest in mobile banking and payments services in the US has increased significantly in the past years. Around 75% of those surveyed say they would consider using mobile banking services if offered, compared to only 49% who expressed their willingness to try mobile banking services in a similar survey conducted in 2006. However, the survey conducted by MQA Research shows that security remains a major concern in adopting mobile banking. 72% of the respondents say they worry about the security of accessing financial data on a mobile device, however 79% of the respondents say they would sign up for account balance alerts by mobile.

Around the globe, various initiatives use the mobile phone to provide financial services, not only to those without access to traditional banks but also to the banked population. Yet relative scholarly research explores the use of these mobile banking/mobile payments systems (Donner and Tellez, 2008). Scholarly research on the adoption and socioeconomic impacts of mobile banking systems in the developing world is scarce because the systems are so new (Maurer, 2008). Even less attention has been paid to the social, economic, and cultural contexts surrounding the use of these systems. In addition, even the few researchers who have conducted research in mobile banking have come up with different conclusions on the most important factors influencing its adoption. For example perceived risk, compatibility issue, relative advantage, complexity, observability and interest to technological advancement all this affect the consumer adoption decision of mobile banking users Mattila, M. (2003). Again Laforet, S. and Li, X. (2005) lack of understanding and awareness of m-banking benefits are the main factors hindering the adoption of mobile banking usage in China though perceived risk, culture and technological skills are also barriers to online banking in China. In an empirical study conducted in Taiwan by the authors in Yang, A.S. (2009) revealed the factors responsible for the hindrance and the adoption of mobile banking facilities among university students in Taiwan. The research found out that, security and cost of connection to the internet was a hindrance to the adoption of mobile banking facilities among students in Taiwan.

Therefore the study sought to find out from the customer perspective, the factors that influence consumer adoption of mobile banking services in the case of commercial banks in Addis Ababa, Ethiopia with special reference to perceived risk, relative advantage (cost and time), trust (ability, integrity, benevolence) and convenience (perceived usefulness & perceives ease of use).

According to the past research studies reviewed, it is evident that not much research has been carried out in Ethiopia regarding factors that influence the effectiveness of adoption of mobile banking. In addition, even the few researchers who have conducted research in mobile banking have come up with different conclusions on the most important factors influencing its adoption. 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 package the M-Banking service into a form acceptable to customers. Hence identified the research gap in this regard. Secondly, since most research studies are based on TRA (theory of reasoned action) and TAM (Technological acceptance model) theories, which consist of two constructs; perceived ease of use and perceived usefulness which are not sufficient to explain factors affecting adoption of M-Banking there is a need to adopt more theories in this study such as innovation diffusion theory, the revised unified theory of use and acceptance of technology and Extension of Technology Acceptance Model (ETAM) in order to include more variables namely; perceived risk, trust and relative advantage. Lastly given that there is no comparative study between public and private banks in Ethiopia showed in terms of mobile banking adoption factors and much of the existing research relevant to this study is electronic banking, this research studied on adoption of mobile banking in Ethiopia public and private banks and on factors influencing it. Hence fill the research gap in this regard.

1.3 Research Question

Main Question

- What are the various factors that influence adoption of mobile banking in the case of commercial banks in Addis Ababa, Ethiopia?

Specific Question

- How does the convenience (perceived usefulness & perceived ease of use) affect customer adoption of mobile banking in Ethiopia?
- How does perceived risk affect customer adoption of mobile banking in Ethiopia?
- How does trust (ability, integrity and benevolence) influence customer adoption of mobile banking in Ethiopia?
- How does relative advantage affect customer adoption of mobile banking in Ethiopia?
- Do public and private banks in Ethiopia differ on their mobile banking adoption factors?

1.4 Research Objectives

Main Objectives

- To identify the factors influencing the adoption of Mobile banking services in commercial banks in Ethiopia

Specific Objectives

- To determine whether convenience (perceived usefulness & perceives ease of use) of use plays a role in adoption of mobile banking in the case of commercial banks' in Ethiopia.
- To determine whether relative advantage (in terms of cost and time) influence adoption of mobile banking of commercial banks in Ethiopia.
- To evaluate the effect of trust (ability, integrity, benevolence) on adoption of mobile banking of commercial banks in Ethiopia.
- To examine the influence of users' perceived risk on adoption of mobile banking.
- To test if there are statistically significant differences between public and private banks in Ethiopia, based on their mobile banking adoptions factors.

1.5 Significance of the Study

- The study attempts to provide a better understanding of the factors that influence the adoption of mobile banking services of commercial banks' in Addis Ababa, Ethiopia.
- The variables in several theories and models that have already been explored by other researchers in the past were also applied in the research to study its effect on the study.
- This research contributes to the financial services sector, in that it brings an understanding of consumer behavior with regards to the adoption of mobile banking services. It also contributes to active academic research and adds to the understanding of technology adoption and mobile banking services the case of commercial banks' in Addis Ababa, Ethiopia.
- The study provides a basis for future researchers in the banking industry in Ethiopia.
- In addition, it will assist players in the mobile banking market to understand the factors influencing and challenges affecting mobile banking adoption hence enable them to come up with better services than the existing ones and assist researchers and students of information technology in gaining understanding of the current trends in mobile technologies and their impact. This study will also add to the foundation of knowledge being laid for research in mobile banking technologies.

1.6 Scope of the Study

The scope of this study is to cover the main constructs derived from Technology Acceptance Model (TAM) (Davis, 1989); including intention to adopt mobile banking services, convenience (perceived usefulness, and perceived ease of use). After critically reviewing the literature that pertain the developments in Ethiopia mobile banking situation some important information gathered, which is the context of this study. The variables perceived risk, relative advantage and trust are added to TAM in order to develop a research model to probe variables affecting adoption of mobile banking the case of commercial banks' in Addis Ababa, Ethiopia.

1.7 Limitation of the Study

The study has been conducted in selected branches of commercial banks in Addis Ababa, Ethiopia namely Commercial Bank Of Ethiopia, Awash Bank, United Bank and Berhan International Bank, the banks selected with purposive sampling technique. Besides the sample respondents were selected in convenience sampling method due to difficulty of accessing sample customers. Also the time frame was very limit which restricts an in-depth treatment of the research topic which can be doing by increasing the number of sample.

1.8 Definition of Terms

Perceived Risk: It refers to the five facets of risk including performance risk, security/privacy risk, time risk, social risk and financial risk. As defined by Lee (2009), these five risks can be described for mobile banking as follows:

- a) Performance risk: refers to losses incurred by deficiencies or malfunctions of mobile banking servers
- b) Security/privacy risk: is defined as a potential loss due to fraud or a hacker compromising the security of a mobile banking user.
- c) Time/convenience risk: This refers to a loss of time and any inconvenience incurred due to the delays of receiving payments or the difficulty of navigation.
- d) Social risk: refers to the possibility that using mobile banking may result in disapproval by one's friends/family/work group.
- e) Financial risk: is defined as the potential for monetary loss due to transaction errors or bank account misuse.

Trust: There are three dimensions of trust namely ability, integrity and benevolence. This will be observed from three perspectives: the bank, mobile network provider and wireless infrastructure. Bhattacharjee (2002) defined these as follows:

- a) Ability refers to the perception of the consumer about the competency and salient knowledge of the mobile banking service provider to deliver the expected service;
- b) Integrity refers to users' perceptions that the service provider will be fair, honest and adhere to reasonable conditions of transactions;
- c) Benevolence refers to the extent to which a service provider will demonstrate receptivity and empathy towards the user. The service provider will make a good faith effort to resolve users' concerns and intends to do good to the users beyond profit motives.

Convenience: It is defined as the extent to which mobile banking can serve the users' needs. It includes:

- a) Perceived Usefulness: It refers to the degree to which a person believes that using a particular system would enhance his or her job performance (Davis. F,1989)
- b) Perceived Ease of Usefulness: It is defined as "the degree to which a person believes that using a particular system would be free of effort (Davis. F, 1989)

Relative Advantage: It refers to the comparative benefits that a user of mobile banking may avail which he/she could not get from other traditional banking services as mentioned by Pikkarainen et al (2004) that users are more likely to adopt mobile banking if they believe using mobile banking will gain more relative advantages as compared to other traditional banking channels such as ATM or non-mobile internet banking. It includes perceived cost and time.

- a) Perceived cost Savings refer to the transaction cost of conducting mobile banking transactions, including the airtime and bank charges. Perceived cost is defined as the extent to which a person believes that using mobile banking will cost money (Luarn& Lin 2005). The cost may include the transactional cost in the form of bank charges, mobile network charges for sending communication traffic (including SMS or data) and mobile device cost.
- b) Perceived Time Saving refer to the time required to complete a transaction. Lee (2009) found in his study that time plays an important role in adopting mobile banking service by the users.

Adoption: Adoption in the context of mobile banking means acceptance, being able to accept a new technology as it is introduced and by accepting the service means a customer willing to use the service.

Mobile Banking: Mobile banking is an electronic banking system which allows customers to get access to their bank accounts via SMS (supported by telecommunication networks), website of the bank (internet) and smart phone applications. The service offered when using mobile banking is such as withdrawal, deposits, fund transfer etc.

Customer: A customer is an individual who uses a service whereas in this context it means an individual that uses mobile banking services.

1.9 Organization of the Study

This subsection outlines the entire study in a concise manner. Chapter one deals with the introduction part of the paper. And second chapter discuss the review of related literatures about the subject matter followed by chapter three deals with research methodology use in the research. In chapter four data analysis perform in the research is extensively covered. Finally, in chapter five of the document the summary, conclusions and recommendations of the research with recommendation for future research included in.

Chapter Two

Literature Review

2.1 M-Banking

M-banking dates back to the end of the 1990s when the German company Paybox, in collaboration with Deutsche Bank, launched the first service. Initially, it was deployed and tested mostly in European countries: Germany, Spain, Sweden, Austria, and the United Kingdom. Among developing countries, Kenya was the first to introduce a text-based m-banking service, M-Pesa, in 2007. By 2012, there were more than seven million registered M-Pesa users in Kenya. As Veijalainen et al. (2006) argue, the main driving force for the rapid acceptance of small mobile devices is the capability they offer for obtaining services and running applications at any time and any place, including while on the move.

Researchers use various terms to refer to mobile banking, including m-banking (Liu et al. 2009), branchless banking (Ivatury and Mas, 2008), m-payments, m-transfers, m-finance (Donner and Tellez 2008), or pocket banking (Amin et al., 2006). As an important component of electronic banking, m-banking usually constitutes an alternative delivery channel (ADC) for various financial and non-financial transactions. Other prominent ADCs include ATMs, point-of-sale terminals, interactive voice response, mobile phones, and the Internet.

Regardless of the terminology they use, scholars generally define m-banking as an application of m-commerce that enables customers to access bank accounts through mobile devices to conduct transactions such as checking account status, transferring money, making payments, or selling stocks (e.g., Alafeef et al., 2012; Harma and Dubey, 2009; Lee and Chung, 2009). In addition, a few studies (e.g., Akturan and Tezcan, 2012; Masreket et al. 2012; Shih et al., 2010) cite m-banking as an innovative communication channel in that the customer interacts with a bank through a portable device.

However, the dynamic markets for mobile devices and m-banking suggest the need for a fresh definition that captures recent advances in the field. Previous definitions have not, for example, explicitly stated which mobile devices qualify for use under the term m-banking. Nevertheless, accessing banking services from a laptop should not be considered m-banking, since their user interface is similar to that of desktop PCs. Laptops are aligned with the online/Internet banking category rather than with m-banking.

Retail and microfinance banks located in both developed and developing countries typically offer four points of access to m-banking services: (1) mobile applications that can be downloaded to a smartphone, (2) mobile browsers that can be used with any mobile or smartphone that has a Web browser, (3) applications that can be downloaded to a tablet, and (4) short messaging services (SMS) that provide notifications of account information. The first three routes require an Internet

connection on the mobile device; SMS relies on standard Global System for Mobile Communication (GSM) networks. Overall, though, m-banking has changed the financial landscape, and portable devices are now considered ADCs that use different applications to deliver financial and non-financial services and products to consumers.

2.2 Benefits of Mobile Banking

Benefits to Customers

- a) A banking customer's account is extremely accessible with an online account.
- b) Through mobile banking customer can operate his account remotely from his office or home. The need for going to bank in person for every single banking activity is dispensed with.
- c) Mobile banking lends an added advantage towards payment of utility bills. It eliminates the need to stand in long queues for the purpose of bill payment.
- d) Most, if not all, services that are usually available from the local bank can be found on a single handset.
- e) Sharp growth in credit card/debit card usage can be majorly attributed to m-banking. A customer can shop globally without any need for carrying paper currency with him.
- f) By the medium of m-banking, banks are available 24x7 and are just a finger click away.

Benefits to Banking Sector

- a) The concept of mobile banking has immensely helped the banks in putting a tab over their specific overheads and operating cost.
- b) The rise of mobile banking has made the banks more competitive. It resulted in opening of better prospects and avenues for banking operations.
- c) The mobile banking has ensured transparency of transactions and facilitated towards removing the documentation requirements to a major extent, since majority of records under an e-banking set up are maintained electronically.
- d) The reach and delivery capabilities of mobile -enabled banks, proves to be significantly better than the network of physical bank branches.

2.3 Adoption

Adoption is the acceptance and continued use of a product, service or idea. According to Rogers and Shoemaker (1971), consumers go through “a process of knowledge, persuasion, decision and confirmation” before they are ready to adopt product or service.

So the stages through which a technological innovation passes are:

1. Knowledge
2. Persuasion
3. Decision
4. Implementation
5. Confirmation

A potential adopter passes through certain stages before decision is made on whether to adopt or reject an innovation. Rogers has been one of the number of researchers who has focused upon the adoption process, which he defines as the “the process through which an individual or other decision-maker unit passes from first knowledge of an innovation, to forming an attitude toward the innovation to a decision or rejection to implementation of the new idea, and to confirmation of this decision” (Frambach, 1993).

The innovation adoption process defined by Rogers is the process through which an individual or other decision making unit passes from knowledge of an innovation, to forming an attitude towards the innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision (Figure 2-1).

As the Figure shows there are five stages in innovation decision process. These are:

1. Knowledge: Socio-economic characteristics, Personality variables and communication behavior all relate to innovativeness. Innovativeness is the degree to which an individual or other adoption unit is relatively early in adopting new ideas compared to other members of a system (Rogers, 1995). According to Rogers early adopters have more formal education than later adopters and are more likely to be (socio-economic characteristics).
2. Persuasion: The potential adopter’s attitude towards the innovation is formed in this stage. By anticipating and predicting future use satisfaction and risk of adoption, the potential adopter develop positive or negative attitudes to the innovation, which play important role of modifying the final decision. Perceived attitudes of an innovation as its relative advantage, compatibility and complexity are especially important here (Rogers, 1995).

3. Decision: The decision stage occurs when an individual engages in activities that lead to adoption or rejection of the innovation. In this stage the adopter starts to actively seek out information about the innovation that assists the decision making.
4. Implementation stage: In this stage, mental information processing and decision making come to an end, but the behavioral change begins.
5. Confirmation stage: After the adoption of innovations, the adopter keeps evaluating the results of his / her decision. If the level of satisfaction is significant enough, the use of innovation will continue; however, it is also possible that the rejection occurs after adoption. In the latter case, the reverse of previous decision is called “discontinuance”.

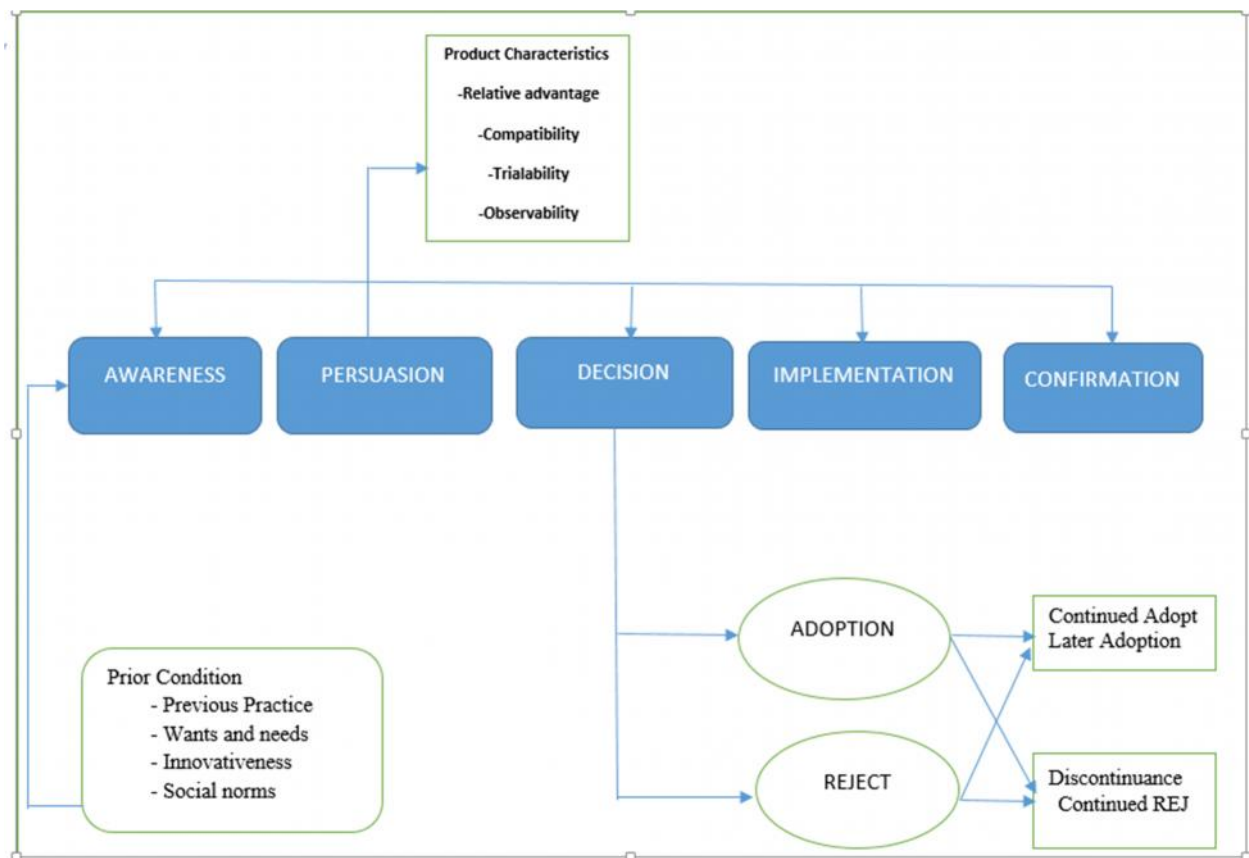


Figure 2-1 A model of stage in the innovation-Decision Process. Source: Rogers, 1995

The time frames for adopting an innovation can be compressed or fairly lengthy. For example, awareness of an innovation may precede the decision to adopt by months or years. Rogers (1995) has data showing awareness preceding the adoption of hybrid seed corn by about 1.7 years for early adopters and by as much as 3.1 years for later adopters. Further, the decision to adopt and the implementation of the decision may be separate acts and may be separated in time (Reed et al., 1996).

So we can briefly define adoption: Adoption is the acceptance and continued use of a product, service or idea. According to Rogers and Shoemaker (1971), consumers go through “a process of knowledge, persuasion, decision and confirmation” before they are ready to adopt a product or service.

2.4 M-Banking Development in Ethiopia

At the end 2013/14 FY, there were eighteen commercial banks operating in Ethiopia, of these sixteen are private commercial banks while the rest two are state owned banks. 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 Ethiopian banking industry as a whole had a network of 2,323 branches as at September 30, 2014, in which the number of population being served by a single branch was around 37,861.8. Commercial bank branch (per 100,000 adults) ratio in 2012 was 2.94 which is lower than Sub-Saharan Africa, 3.71 (World Bank, 2012). 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.

The mobile banking development in Ethiopia is at its starting stage. Currently m-banking practice in Ethiopia can be considered as accessing the core banking system within the bank. Hence, only a customer of given bank can access some banking services via his/her mobile phone. Moreover, there are only six commercial banks that have got license to operate mobile and agent banking services as per the Directives No. FIS /01/2012. As of December 2014 there are about 151,425 active number of mobile subscriber customers in these six banks.

The mobile banking development in Ethiopia is not full-fledged in terms of exhaustively utilizing all the mobile services one can get. Currently, of all the types of mobile banking services, most customers of the bank use notification or alarm inquiry.

2.5 Technologies employed to provide mobile banking services

Mobile banking services could be used through more than one channel such short messaging service/messaging, Browser-based and application download (client-based) (Tiwari & Buse 2007; Information gatekeepers 2007).

2.5.1 SMS – Short Messaging Service

This is where the customers communicate with the bank through their mobile devices by sending an SMS (short messaging service) to the bank. The short messaging service (SMS) works in two ways, and it can be either a pull mode or a push mode. In the push mode, the mobile customer send a text message to the bank which contains a service command with a predefined request code to the bank's specific number. The bank also reply with SMS containing the specific information requested from the bank while the pull mode is when the banks sends a text message to the subscriber (customer) to inform the customer about certain transaction that have just taken place over the account. The message could be inform of an MMS (multimedia message service) or SMS (short message service) they both work similarly even though the use of SMS is more popular (Tiwari & Buse 2007). This is commonly used in Ethiopia by mobile banking customers.

2.5.2 Client-based

This method requires the customers to use software installation, and this will serve as a user interface that can allow customers to use the mobile device while offline to access some basic transactions before going online. Typing details before connecting to the internet could reduce cost. This client based application is particularly useful because it allows customers to stay offline and while preparing transaction such as entry of account details and afterwards the transmission is made by sending out the data, this banking process conducted offline reduces online connection time and cost (Tiwari &Buse 2007).

2.5.3 Browser-based

Brower-based customer needs to be connected to the internet to use this service. The interface is generated from the server which is transported to mobile device, and this allows the content to be displayed through the browser. This method is extremely fast depending on the server that the customer is connected to but one its disadvantages is that, it requires the subscriber (customer) to stay online all through the transaction process and could lead to higher cost for the customers (Tiwari &Buse 2007).

2.6 Theoretical Review

2.6.1 Perceived risk

Various studies on consumer perceptions of risks were conducted in the context of online banking (Tan &Teo, 2000; Im, Kim & Han 2008; Wu & Wang, 2005), but the perceived risk variable has only been modelled as a single construct. When the perceived risk is modelled as single construct, it fails to reflect on the characteristics of the perceived risk (Lee, 2009).

Lee (2009) conducted a study on perceived risk in the context of Internet (online) banking adoption. The perceived risk was divided into five facets (performance risk, social risk, financial risk, time risk and security risk), which provided a more in-depth understanding of the characteristics of risks regarding Internet banking (Lee, 2009). Mobile banking may be considered an extension of Internet banking, but with its own unique characteristics given that a cell phone is used rather than a web browser on a personal computer (Brown, Cajee, Davies & Stroebel, 2003). Thus, a similar set of risk factors can be derived for mobile banking by using the five risk facets as used by Lee (2009) as a basis: performance risk, social risk, financial risk, time risk and security risk. As defined by Lee (2009), these five risks can be described for mobile banking as follows:

- Performance risk: refers to losses incurred by deficiencies or malfunctions of mobile banking servers (Lee, 2009). According to Littler & Melanthiou (2006), a malfunction of a banking server would reduce customers' willingness to use banking services, and a similar notion applies in the context of mobile banking.
- Security/privacy risk: is defined as a potential loss due to fraud or a hacker compromising the security of a mobile banking user. In a similar study, Luarn and Lin (2005) used the construct 'perceived credibility', which is defined as the extent to which a person believes that using mobile banking will have no security or privacy threats. For this study, security/privacy risk will be considered to be similar to a lack of credibility.
- Time/convenience risk: this refer to a loss of time and any inconvenience incurred due to the delays of receiving payments or the difficulty of navigation (finding appropriate services and relevant commands) (Lee, 2009).
- Social risk: refers to the possibility that using mobile banking may result in disapproval by one's friends/family/work group (Lee, 2009).
- Financial risk: is defined as the potential for monetary loss due to transaction errors or bank account misuse (Lee, 2009).

Lee (2009) & Lee, Lee and Kim (2007) found that all five risks: security, financial, time, and social and performance risks, emerged as negative factors in the intention to adopt online banking. However, social risk was found to have an insignificant effect on the intention to adopt online banking (Lee, 2009).

A study by Imet *al.* (2008) found that when deploying a technology perceived by users to be high risk, managers need to emphasis 'ease of use'. When deploying a technology perceived to be low risk, managers need to focus on communicating the 'usefulness' of the technology (Imet *al.*, 2008).

A study by Wu and Wang (2005) conducted on mobile commerce, where more than three-fifths (60%) of the respondents had online transaction experience, showed that perceived risks have positive influences on the behavioral intention to use the product. The study by Wu and Wang (2005) fails to clearly explain the reason for these results; it rather assumes that the respondents might have been aware of the existing risk of mobile commerce.

A study by Tan and Teo (2000) on the adoption of Internet banking revealed that perceived risk is a significant determinant. Brown *et al.* (2003) applied Tan and Teo's Internet banking adoption framework to the mobile banking context. Brown *et al.* (2003) found perceived risks to be significant factors affecting mobile banking adoption. However, in their studies, perceived risk was modelled as a single construct (Tan & Teo, 2000; Brown *et al.*, 2003).

For this study, all five risk facets will be adapted as antecedents of perceived risk in the research model. As per the literature review, it is hypothesized that security, financial, time, social and performance risks are more likely to have a negative effect on the adoption of mobile banking.

2.6.2 Trust

Customer trust is recognized as a critical factor for the success of mobile banking. With the surge of both electronic commerce (e-commerce) and mobile commerce (m-commerce), more studies have been conducted on the conceptual structure, formation of the mechanisms of trust and effects of trust (Bhattacharjee, 2002; Kim, Shin & Lee, 2009; Kim, Chung & Lee, 2010; Shin, 2010).

In a study by Kim *et al.* (2009) which examined the effect of initial trust in mobile banking user adoption, trust was defined as a psychological expectation that a trusted party will not behave opportunistically. In Kim, Chung and Lee (2010), trust was defined as a feeling of security and willingness to depend on someone or something.

Kim *et al.* (2009) further makes a distinction between initial trust and experience or knowledge-based trust. This study will focus on initial trust, as users are more likely to have less experience with service providers with regard to the use of mobile banking.

A study by Siau and Shen (2003) classified trust into two categories: trust of technology and trust of mobile banking service providers. This is supported by Lee, Lee and Kim (2007) in a study that focused on three trust dimensions: trust in bank, trust in mobile network provider and trust in wireless infrastructure.

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

- Ability refers to the perception of the consumer about the competency and salient knowledge of the mobile banking service provider to deliver the expected service;
- Integrity refers to users' perceptions that the service provider will be fair, honest and adhere to reasonable conditions of transactions;
- Benevolence refers to the extent to which a service provider will demonstrate receptivity and empathy towards the user. The service provider will make a good faith effort to resolve users' concerns and intends to do good to the users beyond profit motives.

For the purpose of this study the three dimensions of trust: ability, integrity and benevolence (Bhattacharjee, 2002), will be used, together with trust from the three perspectives of bank, mobile network provider and wireless infrastructure (Siau&Shen, 2003; Lee *et al.*, 2007).

In the mobile banking context, trusting intentions represents users' willingness to engage in subsequent transactions with the service provider (Bhattacharjee, 2002). Higher levels of trust in a service provider will therefore lead to greater intentions on the part of the user to engage in mobile banking transactions.

A study by Gu, Lee and Suh (2009) verified the effect of trust on behavioral intentions in mobile banking, using the trust from the banks' perspective. This indicates that trust helps reduce fraud and potential risks caused by opportunistic behavior and provides users the ultimate benefit of getting more reliable banking services from honest banks (Guet *al.*, 2009). To better understand the role of the customer trust on the adoption of mobile banking, the concept of brand loyalty and customer loyalty is also introduced in this study.

In a study by Lin and Wang (2006), brand loyalty is simply defined as the repetitive purchase of preferred brand products or services. It further defines customer loyalty as a customer's favorable attitude toward the mobile vendor that results in repeat buying behavior (Lin & Wang, 2006). For the purpose of this study customer loyalty will be used. According to Reichheld and Schefter (2000), to earn customer loyalty in an online business it is critical to first earn customers' trust. A study by Harris and Goode (2004) found that trust is positively and directly associated with customer loyalty for online services. Since mobile banking is considered an extension Internet banking (Brown *et al.*, 2003), it is therefore considered to be part of the online services.

Hence a customer's trust in a mobile banking service provider is likely to positively influence the adoption of mobile banking.

2.6.3 Convenience

Perceived usefulness: (Davis, 1985) defines Perceived usefulness as the degree to which an individual believes that using a particular system would enhance his or her job performance. Hence, it is believed that an innovation perceived to be useful is more likely to be adopted and customers will take advantage of the innovation such as mobile banking which they find useful to them (Luarn& Lin 2005). Perceived usefulness is one of the two most important factors affecting the acceptance of new technologies or information system.

Perceived ease of use: (Davis, 1985) defines Perceived ease of use as the degree to which an individual believes that using a particular system or innovation would be free of physical and mental effort. It is believed that a customer will adopt an innovation or a particular system if it is easy to learn and use (ibid). An innovation perceived to be difficult to use by customers will be less adopted (Rogers, 1983:230). According to Cooper and Zmud (1997:137), ease of use of an innovation is one the most important characteristics for adoption of an innovation. Adoption of mobile banking is more likely to occur if the process of usage is easy for customers.

2.6.4 Relative Advantage and Trust

Relative advantage is associated with time and cost; According to Williamson (1993) “individuals use the aspect of cost of product or service to make the decision to trust or not to trust”.

Relative advantage and trust can either be positively or negatively related to each other, it all depends on what the consumer chooses to believe in but in most cases positively related. Before making a decision to use a service or product most consumers will look at the cost of that product and that’s where the decision to use will be derived from, also for the case of the time used in conducting a service, time conscious customers will use time to judge the service provider which in this case is the time used to make transactions, if anything happens in between the purchase say, the network fails, this can affect some customers because they may render the service unreliable and hence decide not to use the service.

2.7 Review of Relevant Theories

2.7.1 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 and Fishbein, 1980; Fishbein and Ajzen, 1975). It is composed of attitudinal, social influence, and intention variables to predict behavior. Figure 2.2 is a schematic representation of the relationships among constructs in TRA. 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 do. The importance of ATB and SN to predict BI will vary by behavioral domain. For behaviors in which attitudinal or personal-based influence stronger (e.g., purchasing something for personal consumption only), 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 (e.g., purchasing something that others will use), 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 (AB). BI is expected to predict AB 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. For example, TRA predicted turnover (Prestholdt et al., 1987); education (Fredricks and Dossett, 1983); and breast cancer examination (Timko, 1987). 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.

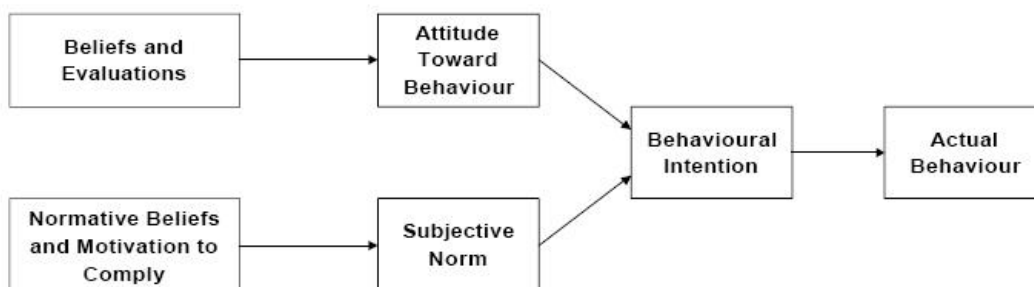


Figure2-2 Theory of Reasoned Action.
Source: Fishbein and Ajzen, 1975

2.7.2 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 by including another construct called perceived behavioral control, which predicts behavioral intentions and behavior. The extended model is called the Theory of Planned Behavior (TPB).

As Figure 2-3 shows, TRA and TPB have many similarities. 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.

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. In any given application, however, one predictor may be more important than the other, and only one of the two may be significant.

The Theory of Planned Behavior has been successfully applied to various situations in predicting the performance of behavior and intentions, such as predicting user intentions to use a new software (Mathieson, 1991), to perform breast self-examination (Young et al., 1991), to avoid caffeine (Madden et al., 1992), to perform unethical behavior (Man, 1998), and to understand waste paper recycling (Cheung et al., 1999). Madden et al. (1992), Man (1998), and Cheung et al. (1999) all found that TPB has a better predictive power of behavior than TRA.

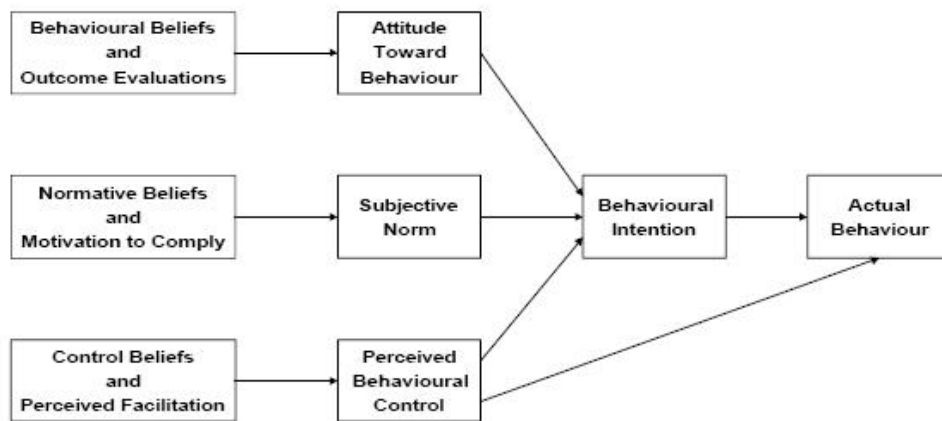


Figure2-3 Theory of Planned Behavior.
Source: Adopted from Pavlou, 2001

2.7.3 The Innovation Diffusion Theory (DIT)

The Innovation Diffusion Theory developed by Rogers (1962). This model was used to explain Internet-based service adoption prior to TAM. Again Rogers (1995) explain the innovation diffusion process, it is including four components: innovation, social system, communication channel and time. Factors such as relative advantage, complexity, trial ability, observability and compatibility were considered important in influencing an individual's acceptance of the innovation. The domestication approach (Lie and Sorensen, 1996, Habib, 2005) is the process by which innovations especially in new technology are adopted by the users. The domestication approach introduces the features of demographics details like age and gender.

Lee et al [2003] performed eight interviews to collect transcripts from participants. He 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 Customer previous experience and self - efficacy generalized their beliefs (a negative or positive attitude) toward the adoption of Mobile banking.

2.7.4 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, while at the same time being both parsimonious and theoretically justified. Ideally one would like a model that is helpful not only for prediction but also for explanation, so that researchers and practitioners can identify why a particular system may be unacceptable, and pursue appropriate corrective steps. A key purpose of TAM, therefore, 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 small number of fundamental variables suggested by previous research dealing with the cognitive and affective determinants of computer acceptance, and using TRA as theoretical backdrop for modeling the theoretical relationships among these variables.

As Figure 2-4 shows, 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 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 January 2000, the Institute for Scientific Information’s Social Science CitationIndex® listed 424 journal citations of the two journal articles that introduced TAM (i.e., Davis 1989, Davis et al. 1989). In the past decade, TAM has become well established as a robust, powerful, and parsimonious model for predicting user acceptance.

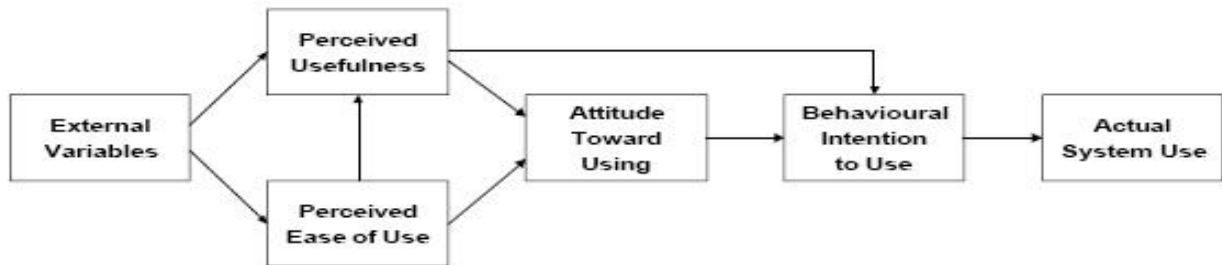


Figure 2-4 Technology Acceptance Model.
Source: Davis, 1989

2.7.5 Extension of Technology Acceptance Model (ETAM)

A study of the adoption 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 a 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 the current TAM studies is that there are very few investigations target at the study of the factors (i.e., the external variables) that affect the PU and PEOU (GefenandKeil, 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.

Furthermore, Venkatesh and Davis (2000) developed and tested a TAM2 model by including a number of determinants to Perceived Usefulness into the new model (see Figure 2-5. 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 arrange of industries, organizational contexts, functional areas (ranging from small accounting service firm, medium-sized manufacturing firm, to the personal financial services department of a large financial services firm), 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.

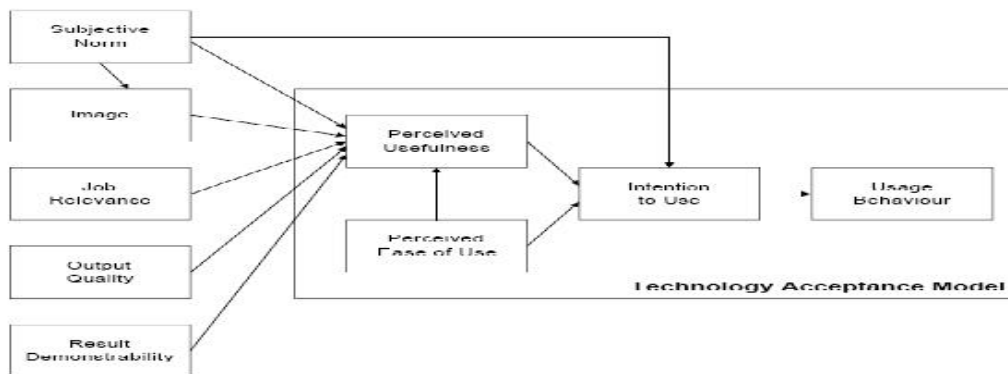


Figure 2-5 TAM2.
Source: Venkatesh and Davis, 2000

2.7.6 Decomposed of Theory of Planned Behavior

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, are relative advantage, complexity and compatibility (Rogers, 1983). Taylor and Todd (1995) showed that the decomposed model of the TPB has better explanatory power than the pure TPB and TRA models. So, the argument of our empirical study is that Internet banking is a technological innovation and thus the decomposed TPB model gives a more satisfactory explanation of adoption intention.

Related 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 (and its corollary, ease of use) has been found to be an important factor in the technology adoption decision (Davis et al., 1989).

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.

As for the structure of normative belief, while some studies have found support for the decomposition of normative belief structures (e.g. Burnkrant and Page, 1988), studies such as those by Shimp and Kavas (1984) and Oliver and Bearden (1985) have failed to identify a multidimensional structure for nbjmcj. Therefore, as Taylor and Todd (1995), we also should not provide additional insight into the decomposition of the subjective norm.

In addition, according to Ajzen (1985, 1991), PBC reflects belief regarding access to the resources and opportunities needed to effect a behavior. PBC appears to encompass two components. The first is "facilitating conditions" (Triandis, 1979), which reflect the availability of resources needed to perform a particular behavior. This might include access to the time, money and other specialized resources. In fact, as supporting technological infrastructures become easily and readily available, Internet commerce applications such as banking services will also become more feasible. Accordingly, the government can play an intervention and leadership role in the diffusion of innovation. The second component is self-efficacy (Ajzen, 1991), that is, being confident of tenability to behave successfully in the situation (Bandura, 1977, 1982). An individual with the

self-assured skill to use a computer and the Internet is more inclined to adopt Internet banking. This component then refers to comfort with using the innovation.

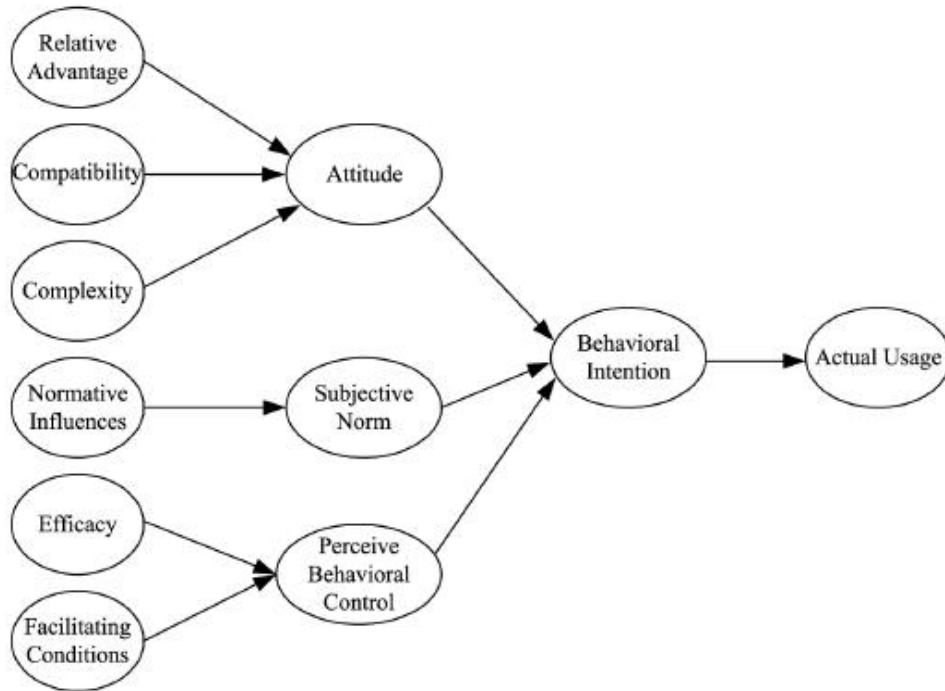


Figure 2- 6 Decomposed model of theory of planned behavior.
Source: Shih and Fang, 2004

2.7.7 Unified Theory of Acceptance and Use of Technology

Unified theory of acceptance and use of technology by Venkatesh et al (2000), This is a more complex theory which explains individual intentions to use technologies and how differences between individuals can influence the use of new technologies, it was introduced after a critical review of eight theories and models of Information system which are, TRA, TAM, TPB, CTPB and IDT.

The theory establishes that variables such as PEOU and PU can influence adoption but also varied depending on age, gender and experiences of the individuals who are introduced to a new technology. According to Venkatesh et al., (2000) The UTAUT theory assumes that the effect of core constructs is moderated by gender, age, experience, and voluntariness of use.

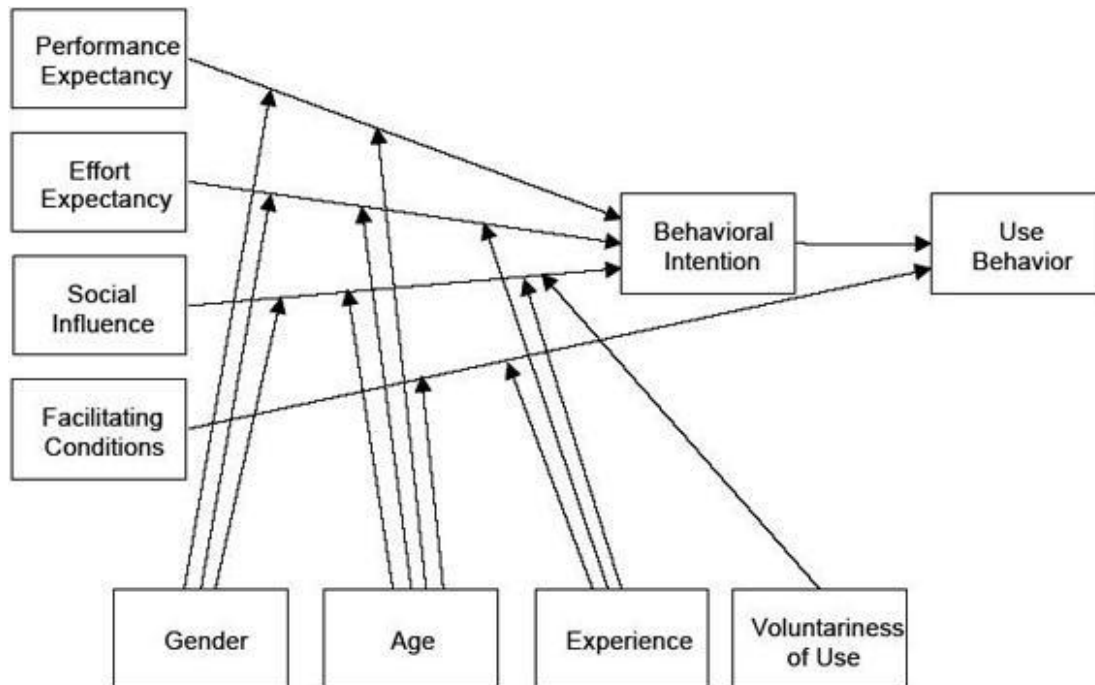


Figure 2-7 Unified theory of acceptance and use of technology.
Source Venkatesh et al (2003)

The theory attracted a lot of criticism from a number of scholars such as Van raaji and Schepers (2008) who criticized the theory by saying it lacked enough information to yield correct results hence does not guarantee to give correct information in the results of any study.

Bagozzi (2007) also criticized this theory, he insisted “the theory was clear in its targets but it had too many variables which made it complex and confusing enough to cause chaos for the researcher and reader”, This is evident from the number of variables and contributing variables of this theory, the theory is indeed complex and if not carefully noted it can cause a lot of confusion for the reader and researcher.

2.8 Empirical review

The author Laekemariam Haile (2015) conducted a research factors affecting the adoption of mobile banking in commercial bank of Ethiopia. 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. Of the 400 potential respondents, a total of 383 questioners were got on hand which is the minimum of the sample size. Results were analyzed by the use of SPSS. In this research, it was found that Performance expectancy, perceived risk, perceived cost, effort expectancy, trust, mobile banking service quality significant influence on intention to adopt mobile banking in commercial bank of Ethiopia.

The author Worku Muluaem, (2015) carried out a research Factors affecting adoption of mobile banking: the case of commercial bank of Ethiopia Addis Ababa city customers. The sampling design applied for the research is two level sampling Purposive sampling and convenience sampling. The population using the formula sample size required for the study is 400 bank customers in Addis Ababa and 80 questionnaires are distributed for each five branches. Results were analyzed by the use of SPSS. The multiple regression analysis conducted in the research shows as perceived usefulness has positive relationship with mobile banking adoption, perceived ease of use has positive relationship with mobile banking adoption and perceived risk of mobile banking has negative relationship with mobile banking adoption. The source of customers' perceived risk of mobile banking as per the finding of the research is network problem. However, other risk factors considered in the research work are not perceived as risky in the use of mobile banking.

The author Biruk Tesfaye (2016) conducted a research Factors affecting adoption of mobile banking: the case of commercial bank of Ethiopia. Factors include Performance expectancy, Perceived risk, Service quality, trust and behavioral intention items. The target population of this study is the one who adopted mobile banking in Addis Ababa. A total sample size of 400 was drawn to collect data from respondents. The respondents were selected using convenient sampling method. Performance expectancy is found to have a positive and direct influence on mobile banking. Furthermore, trust was found to have positive and significant influence on mobile banking adoption. Perceived Risk has negative effect but not- significant influence on mobile banking adoption. Service quality has a positive impact on mobile banking adoption but not significantly.

The author Mattila, M. (2003) conducted a research in order to evaluate the factors influencing the adoption of mobile banking services in the innovation theory and, to also, formulate a model to describe the behavior pattern of users. Out of the 800 customers included in the study 710 responses were retrieved. Simple random sampling technique was adopted for the selection of customers included in the study. Results were analyzed by the use of SPSS and presented in the tables and charts. In this research, it was found that access to internet facilities, perceived risk, compatibility issue, relative advantage, complexity, observability and interest to technological advancement all this affect the consumer adoption decision of mobile banking users.

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

Additionally, the author Laforet, S. and Li, X. (2005) carried out a research to examine the online mobile banking in China. Purposive sampling technique was adapted to a sample of five hundred (500) customers who transact their banking business online. Analysis was done quantitatively through a regression model. Base on this research it was established that lack of understanding and awareness of m-banking benefits are the main factors hindering the adoption of mobile banking usage in China though perceived risk, culture and technological skills are also barriers to online banking in China.

The author Medhi, I., Ratan, A. and Toyama, K. (2009) looked at the factors which are responsible for mobile banking adoption and its usage across different countries by focusing on low income earners and the low literate. The researcher adapted the purposive and convenience sampling technique. Using the SPSS to generate results, the research focused on non-bank model which uses the agents in its operation. It was observed that variations along parameters such household type, services adopted, frequency of usage, ease of use and pace of uptake. Factors which are responsible includes pricing, trust, reliability on informal channels, transaction turnaround time, interface design (mobile phone), needs, agent proximity, pricing, and level of human intervention (agent's support).

The author Luarn, P. and Lin, H.-H. (2005) carried out a research in order to understand user's behavioral intention to use mobile banking service based on the extension of technology acceptance model (TAM). It was observed that the financial cost, perceived usefulness, self-efficacy, credibility and perceived ease of use were the factors influencing the behavioral intention to use mobile banking. In this finding, it was also observed that credibility was a major issue, which has a stronger influence on user's behavioral intention than the technology acceptance model (TAM) of perceived ease of use and perceived usefulness. The authors Amin, H., Hamid, M.R., Tanakinjal, G.H. and Lada, S. (2006) carried out a research to analyze the adoption usage of mobile banking of the student willing to use mobile banking in the future. Questionnaires were administered to 250 respondents in two universities. The researcher used the quota sampling technique to select respondents. There searchers adopted both the qualitative and quantitative technique in analyzing results obtained from respondents. From the analysis, it was observed that attitude and expectation were the factors which are useful to predict the wiliness of the under graduate student to adopt mobile banking in the future.

In an empirical study conducted in Taiwan by the authors in Yang, A.S. (2009) revealed the factors responsible for the hindrance and the adoption of mobile banking facilities among university students in Taiwan. Three hundred (300) students were selected for the study using the stratified sampling technique. Results were analyzed with the aid of SPSS specifically regression model. The research found out that, security and cost of connection to the internet was a hindrance to the adoption of mobile banking facilities among students in Taiwan.

2.9 Conceptual Framework

Masinge K (2010), used TAM Model and shown how Perceived Risk, Trust, Convenience lead users towards the adoption of Mobile Banking. Similarly, Cheah et.al (2011), has established his model by showing how Perceived Usefulness (PU) Perceived Ease of Use (PEOU) Relative Advantages (RA) Perceived Risk (PR) and Personal Innovativeness (PI) influence Behavioral Intention to Adopt Mobile Banking. The study combined TAM, the original variables of extended technology acceptance model (TAM2) (Venkatesh& Davis, 2000) and IDT along with perceived risk, trust and relative advantage to investigate factors influencing mobile banking adoption in Addis Ababa, Ethiopia.

As shown in the figure below, perceived risk, relative advantage, trust and convenience are the independent variables that are believed to have a relationship or effect on the dependent variable; mobile banking adoption.

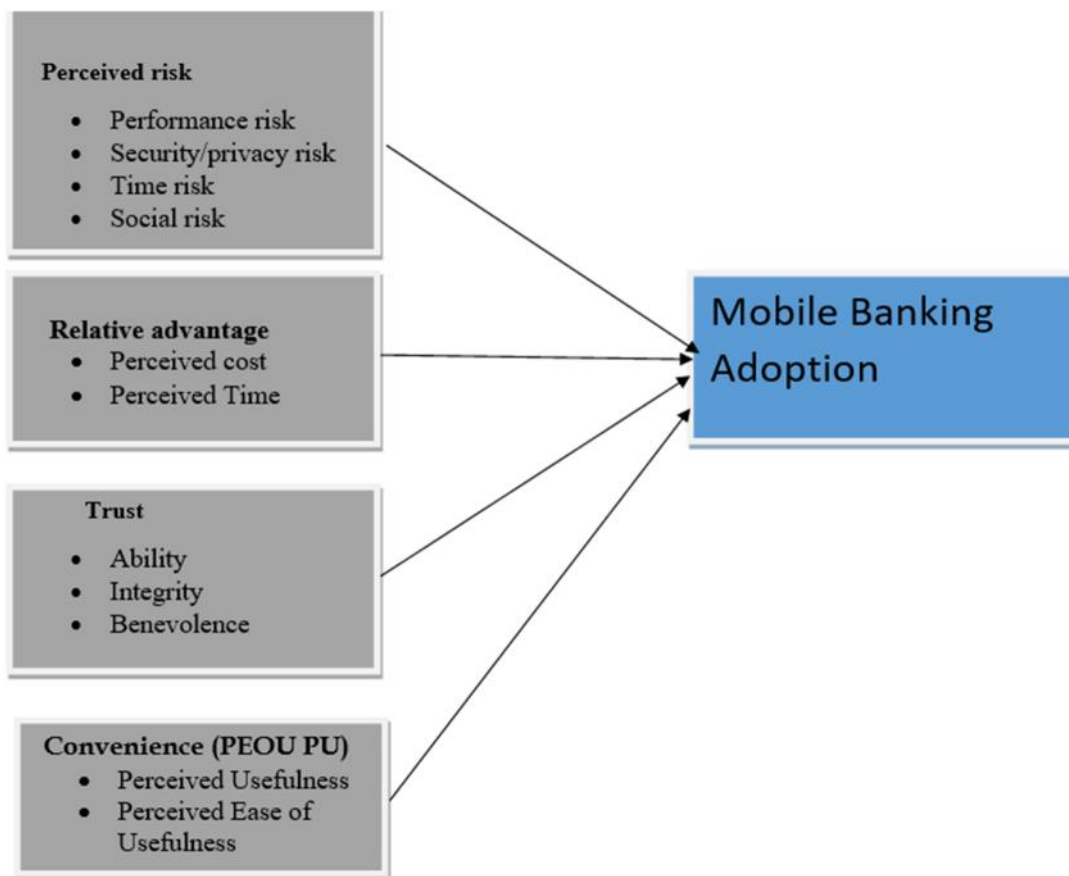


Figure 2-8: Conceptual Frameworks

Source: Adopted from Kabir , M. R. (2013).

In line with the stated research questions and objectives in chapter one, the theoretical and empirical works reviewed in the second chapter and the conceptual framework provided in the

above figure, this research proposed the following hypotheses to be tested with the aim of finding factors that influence the effectiveness of mobile banking adoption.

2.9 Research Hypotheses

H1: Trust has a positive and significant influence on mobile banking adoption in Ethiopia.

H2: Convenience has a positive and significant influence on mobile banking adoption in Ethiopia.

H3: Perceived risk has a negative influence on mobile banking adoption in Ethiopia.

H4: Relative advantage has a positive and significant influence on mobile banking adoption in Ethiopia.

Hypothesis 5: Public and private banks in Ethiopia have significant differences on mobile banking adoption factors.

Chapter Three

Research Methodology

3.1 Research Approach

The research can be classified into two research approaches. These are qualitative research and quantitative research.

Qualitative research involves studies that do not attempt to quantify their results through statistical summary or analysis. It seeks to describe various aspects about behavior and other factors in the social sciences and humanities. In this kind of research data are often in the form of descriptions, not numbers. It typically involves in-depth interviews, group discussions, and observations without formal measurement.

Quantitative research is the systematic and scientific investigation of quantitative properties and phenomena and relationships. The objective of quantitative research is to develop and employ mathematical models, theories and hypotheses pertaining to natural phenomena. It usually starts with a theory or a general statement proposing a general relationship between variables. Quantitative researchers favor methods such as surveys and experiments, and will attempt to test hypotheses or statements with a view to infer from the particular to the general.

Therefore the student researcher was carried out quantitative research to describe factors that influence the effectiveness of mobile banking adoption the case of commercial banks' in Addis Ababa, Ethiopia by collecting quantitative data from customers of the banks'. In addition the effect of the independent variables (perceived risk, trust, convenience, and relative advantage) on dependent variables, i.e. the adoption of mobile banking is quantitatively measured by this study.

Research may be deductive or inductive. Deductive research approach begins with the development of a theory or hypothesis and later a development of a strategy to test it in a context to verify or reject its claims. So it is thinking from general to specific. On the other hand, the approach is inductive where the research begins with an observation of a phenomenon in an environment, then data is collected upon through which a theory is developed and it is generalized. Since this study used applied empirical theories which test factors influencing the effectiveness of mobile banking adoption, use of quantitative approach has been appropriate. Therefore, the study is deductive.

3.2 Research Design

Research can be classified as descriptive, explanatory and exploratory depending on the specific purpose that the research tries to address. Descriptive research sets out to describe and to interpret what is. It looks at individuals, groups, institutions, methods and materials in order to describe, compare, contrast, classify, analyze and interpret the entities and the events that constitute the various fields of inquiry. It aims to describe the state of affairs as it exists. On the other hand, explanatory research, aims at establishing the cause and effect relationship between variables.

The research approach is predominantly quantitative in nature which involves the use of primary and secondary data in order to answer the research questions and achieve its research objective and this research is a case based analysis about the factors that affect mobile banking adoption the case of commercial banks' in Addis Ababa, Ethiopia customers. This research is descriptive research designs as there were many variables already studied and existed in the phenomena. And descriptive study is one in which information is collected without any manipulation. So this study measure the intensity of the same variables in this study in Ethiopia context which were already studied earlier by different researchers.

The research work also explanatory type of researches which looks for the relationship among the different factors as per the conceptual model. The student researcher explored important variables which influence the effectiveness of Mobile banking adoption in the case of commercial banks' in Addis Ababa, Ethiopia by questioning from the banks customers.

3.3 Population and Sample

3.3.1 Sampling Design

This study made use of multi-stage sampling design, which refers to sampling plans where the sampling is carried out in stages using smaller and smaller sampling units at each stage (Garson, 2012). In the first stage, stratum were identified using purposive sampling, where all bank users in Addis Ababa were public bank users and private bank users. Purposive sampling enables an initial understanding of the situation. It produces a sample where the included groups are selected according to specific characteristics that are considered to be important. With such a sample, group differences can be compared and contrasted and a range of experiences can be summarized. For example, it can help us find out whether or not there is a significant difference in mobile banking adoption factors between public and private banks in Ethiopia.

The second stage stratum then contained:

- Under the stratum public banks, only Commercial Bank of Ethiopia was included because it is the largest and the only public bank serving in the commercial banking sector and already implemented mobile banking.
- Under the stratum private banks, Awash Bank, United bank and Berhan International Bank were selected as already implemented mobile banking, for their branch distribution, and customer base.

Then the second stage stratum were further branched out in to: only customers use mobile banking in the mentioned banks. And the third and final stage was mobile banking user that were eighteen and above of age.

For this work, a stratified sampling was used. Stratified random sampling according to,(Fienberg, 2003), is a technique which attempts to restrict the possible samples to those which are less extreme by ensuring that all parts of the population are represented in the sample in order to increase the efficiency (that is, to decrease the error in the estimation). From each stratum a sample, of pre-specified size, is drawn independently in different strata. Then the collection of these samples constitutes a stratified sample. If a random sample selection scheme is used in each stratum then the corresponding sample is called a stratified random sample.

Reasons for stratification:

- To obtain estimates of known precision for certain sub-divisions of the population by treating each sub-division as a stratum. Since sampling is done independently in each stratum, separate stratum estimates and their precision can be obtained by treating each stratum as a “population” in its own right.
- For administrative convenience
- Employing stratification in a careful fashion, we can get improved precision for our estimates of population quantities.

3.3.2 Population

In research methods, population is the entire aggregation of items from which samples can be drawn. In this study, the target population is comprised of customers of the selected commercial banks that have implemented mobile banking technology consider as the target population in Addis Ababa, Ethiopia.

3.3.2 Sampling Techniques

A non-probability sampling technique, convenience sampling, was used. The following two reasons can be put forward in favor of using convenience Sampling:

1. There is no complete listing of our target population; no formal sampling frame.
2. This gives a better result within a small budget and time constraints. (Farhana& Islam, 2012)

3.3.3 Sample Size

Sample size refers to the number of items to be selected from the universe to constitute a sample. Determining sample size is a very important issue because samples that are too large may waste a lot of time, resource and money, while samples that are too small may lead to inaccurate results (Kothari, 2004).

The sample size determined based on a format extract from research advisory 2006 (WWW. Research–advisors.com/documents/sample size-web .x/s). Because the total number of customers within each bank is unknown, 95% confidence level, a margin of error (degree of accuracy) of 5% and the standard table Z- score of 95% confidence level is 1.96 is 384.

$$\text{Sample size} = (Z\text{-score})^2 * \text{Std.dev} * (1 - \text{Std Dev.}) / (\text{confidence interval})^2$$

Substituting the above data in the formula

$$\text{Sample Size} = ((1.96)^2 * 0.5 * (0.5)) / (0.05)^2$$

Although stratified random sampling suggests the assignment of samples from each stratum should be proportional to a certain criteria (usually the stratum's representation in the total population), this work followed a disproportionate stratified sampling, which is a stratified sampling procedure in which the number of elements sampled from each stratum is not proportional to their representation in the total population. Population elements are not given an equal chance to be included in the sample. The same sampling fraction is not applied to each stratum. On the other hand, the strata have different sampling fractions. If this research was to select its sample size proportionately, Commercial Bank of Ethiopia will take up more than half of the samples dedicated for both public and private bank stratum, be it with customer base criteria or distribution of branches criteria.

Disproportionate stratified sampling may be broken into three subtypes based on the purpose of allocation that is implemented. The purpose of the allocation could be to facilitate within-strata analyses, between-strata analyses, or optimum allocation (Daniel, 2012).

Disproportionate allocation for within strata analyses: the purpose of a study may require a researcher to conduct detailed analyses within the strata of the sample. If using proportionate stratification, the sample size of a stratum is very small, it may be difficult to meet the objectives of the study. Proportionate allocation may not yield a sufficient number of cases for such detailed analyses. One option is to oversample the small or rare strata. Such oversampling would create a disproportional distribution of the strata in the sample when compared to the population. Yet, there may be a sufficient number of cases to carry out the within-strata analyses required by the study’s objectives (Daniel, 2012).

Disproportionate allocation for between-strata analyses: the purpose of a study may require are searcher to compare strata to each other. If this is the case, sufficient numbers of elements must be selected for each category. A researcher may desire to maximize the sample size of each stratum. For such a study, equal allocation (also referred to as “balanced allocation” and “factorial sampling”) may be appropriate. A researcher may seek to select an equal number of elements from each stratum (Daniel, 2012).

Optimum allocation may focus on the optimization of costs, the optimization of precision, or the optimization of both precision and costs (Daniel, 2012).

From among the above stated disproportionate stratified sampling breakdowns, this study followed the “disproportionate allocation for between strata analyses” and assigned equal number of sample sizes of 192 respondent customers to each bank type. This also helped in identifying whether or not there is a significant difference on mobile banking adoption factors between public and private banks.

Table 3.1: Sample Breakdown

| Type of Bank | Sample Banks | Target Sample Sizes | Total No. of Samples |
|---------------|--------------|---------------------|----------------------|
| Private Banks | Awash Bank | 64 | 64 |
| | United Bank | 64 | 128 |
| | Berhan Bank | 64 | 192 |
| Public Bank | | 192 | 384 |

Source: Own computation, Microsoft Excel (2016)

3.4 Data Sources and Types

In order to address the research objectives properly and effectively the student researcher gather data based on the questionnaire generate from the conceptual model adopted for the research project, namely extended Technology Acceptance Model (TAM). Data types for the research are: personal profile of sample customers, their perception about mobile bank perceived convenience (perceived usefulness and perceived ease of use), relative advantage (cost and time), customer’s trust and perceived risk with the adoption of mobile banking. Hence, the main sources of data for this research were Commercial Bank of Ethiopia, Awash Bank, United Bank and Berhan

International Bank customers, and also Commercial Bank of Ethiopia, Awash Bank, United Bank and Berhan International Bank itself through primary and secondary sources.

3.5 Data Collection Procedures

The research work was used primary and secondary data. Secondary data was used mainly to have data about M-banking customers, bank customers, and mobile telephone subscribers. As result secondary data were collected using different sources such as Commercial Bank Of Ethiopia, Awash Bank, United Bank, Berhan International Bank, Ethio telecom, National Bank of Ethiopia, and other publications.

Regarding the primary data the researcher used questionnaire as an instrument to collect data from Commercial Banks of Ethiopia and their customers to gather the information needed for the research. The questionnaire have two parts first part focuses mainly about the personal profiles of sample respondents such as age, gender, income, education status etc. Whereas part two of the questionnaire deals with different factors based on TAM and the variable added. Closed ended questionnaires were used for the study. The questionnaire prepared in English and translated in to Amharic so that sample respondents have options to fill the questionnaire.

3.6 Data Analysis

The data analysis of this research is based on descriptive statistics such as frequency, percentage, mean and standard deviation and inferential statistics multiple regression. The descriptive statistics used mainly to understand the customers' profiles and the perception of customers towards the convenience, trust, relative advantage and risk of mobile banking adoption which help us to answer the research questions related to customers' perception. In order to explain the relationship between the variables of the study, correlation and multiple regression will be used. Besides, t-test was used to examine if there are statistically difference between public and private banks customers adoption of mobile banking. The student researcher used Statistical Package for Social Science (SPSS) to analyze the data. This software has been widely used by researchers as a data analysis technique. Both descriptive as well as inferential statistics are used to analyze the data.

3.7 Reliability and Validity

3.7.1 Reliability

Reliability refers to a degree to which measurements used can yield suitable results because they are free from errors. According to Hair, Black, Babin, & Anderson, (2010) reliability is the assessment of the degree of consistency between multiple measurements of a variable.

This study used the Cronbach's alpha to assess the reliability of the variables. According to Field (2005) and Tan & Teo, (2000), Cronbach's alphas of the sub-scales ranged from 0.690 to 0.925

which indicate an acceptable internal consistency and reliability measures for the questionnaire meaning that if the results exceed the minimum alpha of 0.690 the constructs measures will be deemed reliable. In this study the measures has been taken as reliable when the cronbach's alpha value is found to be 0.7 or above.

3.7.2 Validity

The collected questionnaire was proved for its validity through a pilot study. Pilot study is believed to be an important component in the data collection process. And it simply means as mall-scale trial run of all the procedures planned for use in the main study. Pilot testing of an instrument, such as a questionnaire administered for research purposes, is the standard in social sciences. There are obvious benefits of carrying out a pilot study researchers can enumerate which are: an opportunity to test hypotheses; allowance for checking statistical and analytical procedures; a chance to reduce problems and mistakes in the study; the reduction of costs incurred by inaccurate instruments. Moreover, researchers can seek information from the participants in the pilot study to determine the degree of clarity of questions and to identify problem areas that need attention (Simon, 2011). According to (Simon, 2011), a sample size of 10-20% of the sample size for the actual study is a reasonable number of participants to consider enrolling in a pilot. Following this conviction, this study tested the validity of the questionnaire by taking 10% of its total sample size. And the questionnaire was also exposed to professional E-banking managers working in financial institutions of Ethiopia and academicians.

3.8 Ethical Consideration

As this study require the participation of human respondents, specifically Commercial Bank Of Ethiopia, Awash Bank, United Bank and Berhan International Bank customers, certain ethical issues like consent and confidentiality has been consider. In order to secure the consent of the selectee participants, all important details of the study, including its aim and purpose relayed. By explaining these important details, the respondents were able to understand the importance of their role in the completion of the research. With this, the participants were not force to participate in the research. The confidentiality of the participants also ensure by not disclosing their names or personal information in the research. Only relevant details that help in answering the research questions were include. Finally, ethical consideration of proper and due referencing and acknowledgement also made during the entire research process.

Chapter Four

Data Analysis and Interpretation

4.1 Introduction

This chapter covers the presentation, analysis and interpretation of data collected from primary sources. A total of 400 questionnaires were distributed to customers of public and private banks located in Addis Ababa city, in order to collect data about factors that influence the effectiveness of mobile banking adoption. Out of the questionnaires distributed 382 usable responses were obtained. The overall respondent rate for survey was approximately 95.5%.

In the following topics various demographic variables such as age, gender, income, education status, etc. of the sample respondents are analyzed. Then after data related to factors that influence the effectiveness of mobile banking adoption as per conceptual model: convenience, perceived risk (PR), trust and relative advantage discussed using descriptive and inferential statistics.

4.2 Data screening and cleaning

In order to ensure the accuracy of questionnaire data analysis, the student researcher screened and cleaned the data prior to data analysis. The errors in the data file were checked. Correction was made when an error was found.

According to Hair et al. (2010), cases with over 50% missing data should be deleted. There is no such poorly completed cases. If there is poorly completed cases it could affect the reliability of the results (Gill and Johnson 1997). As the two parts of the questionnaire were independent sections, there is no missing values were treated separately.

Based on the data cleaning and data screening, 382 out of the 400 responses were found valid for data analysis of Section one and Section two. Hair et al. (2010) claim factors with over 15% missing data should be deleted. No such factors were detected.

4.3 Reliability Test

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

As shown in table 4.1 for the reliability test Cronbach's Alpha coefficients for adoption of mobile banking factors range from 0.746 to 0.835. Based on the examination of the research scales and constructs, it can be concluded that each variable represents a reliable and valid construct.

Table 4.1. Reliability test

| Construct | Number of Item | Cronbach's alpha |
|-------------------------|-----------------------|-------------------------|
| Trust | 6 | 0.775 |
| Convenience | 7 | 0.763 |
| Risk | 9 | 0.835 |
| Relative advantage | 5 | 0.746 |
| Mobile banking adoption | 7 | 0.833 |
| Overall Reliability | 34 | 0.727 |

Source: Survey Result, SPSS (2017)

4.4 Demographic Profile of Respondents

This subsection contains paragraphs that capture and summarize demographic characteristics of respondents of this study. To this end the following paragraphs reveals the gender, age, income, work status, which mobile technology respondents use, how often respondents use mobile banking, educational level and type of bank used (public or private) of the participants of this research.

4.4.1 Gender of Respondents

The respondent's gender profile indicates, as shown in the table 4.2 below, the majority of the respondents are male which accounts 56.8 percent of the sample respondents whereas female respondents account for 43.2 percent of the sample respondents.

Table 4.2. Gender of Respondents

| Gender | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------------|------------------|----------------|----------------------|---------------------------|
| Male | 217 | 56.8 | 56.8 | 56.8 |
| Female | 165 | 43.2 | 43.2 | 100 |
| Total | 382 | 100.0 | 100.0 | |

Source: Survey Result, SPSS (2017)

4.4.2 Age of Respondents

The highest percentage of respondents were between the ages of 18 and 29 years (43.5%), the second largest age group was between 30 and 39 years (39.8%), the third largest group was between 40 and 49 years (13.4%), and the last group was over 50 years (3.4%). When combining two age groups, the group between 18 and 39 years contributed 83.3% of the respondents, which

represents the majority portion of the working population in Ethiopia. Also it is a good opportunity for mobile banking adoption in the near future.

Table 4.3. Age of Respondents

| Age Category | Frequency | Percent | Valid Percent | Cumulative Percent |
|----------------|-----------|---------|---------------|--------------------|
| 18 -29 | 166 | 43.5 | 43.5 | 43.5 |
| 30 -39 | 152 | 39.8 | 39.8 | 83.2 |
| 40 – 49 | 51 | 13.4 | 13.4 | 96.6 |
| 50 – 59 | 11 | 2.9 | 2.9 | 99.5 |
| Above59 | 2 | 0.5 | 0.5 | 100.0 |
| Total | 382 | 100.0 | 100.0 | |

Source: Survey Result, SPSS (2017)

4.4.3 Education Level Attained

Education level attained by respondents as indicated by the table 4.4 below majority of the respondents were first degree holders which is 45percent of the total respondents which is followed by TVET/diploma holders 24.3 percent

Table 4.4. Education Level Attained

| Education Level | Frequency | Percent | Valid Percent | Cumulative Percent |
|----------------------------|-----------|---------|---------------|--------------------|
| Secondary Education | 70 | 18.3 | 18.3 | 18.3 |
| TVET/Diploma | 93 | 24.3 | 24.3 | 42.7 |
| First Degree | 172 | 45.0 | 45.0 | 87.7 |
| Master’s Degree | 46 | 12.0 | 12.0 | 99.7 |
| PHD | 1 | 0.3 | 0.3 | 100.0 |
| Total | 382 | 100.0 | 100.0 | |

Source: Survey Result, SPSS (2017)

4.4.4 Work Status of Respondents

Looking at the table 4.5 below about the work status of the respondents, most of them are employed which is 68.6 percent of the total respondents. And 19.6 percent are self-employed as can be seen from the table below.

This is a good opportunity for M-banking adoptions because those who are employed have time constraint since most of them are at work place when the bank branches are operational (have less time freedom). Hence, M-banking will give them time saving advantage by enabling customers to

make banking transactions and payments such as payment of utilities and other bills, money transfer etc. without traveling to the bank branches.

Table 4.5. Work Status of Respondents

| Work Status | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------------------|------------------|----------------|----------------------|---------------------------|
| Employed/Working | 262 | 68.6 | 68.6 | 68.6 |
| House Wife | 21 | 5.5 | 5.5 | 74.1 |
| Student | 13 | 3.4 | 3.4 | 77.5 |
| Self Employed | 75 | 19.6 | 19.6 | 97.1 |
| Unemployed | 4 | 1.0 | 1.0 | 98.2 |
| Pensioner/Retired | 7 | 1.8 | 1.8 | 100.0 |
| Total | 382 | 100.0 | 100.0 | |

Source: Survey Result, SPSS (2017)

4.4.5 Monthly Income Level in Ethiopian Birr

Referring to the table 4.6 below among the sample respondents 49.0 percent earn monthly income between 3,000-6,999 birr. Whereas 21.2 percent of the respondents earn monthly income between 7,000-14,999birr. In terms of cumulative percent the 70.2 percent of respondents earn less than 14,000.00 birr monthly.

Table 4.6. Monthly Income Level in Ethiopian Birr

| Monthly Income | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------------------------|------------------|----------------|----------------------|---------------------------|
| No Income | 32 | 8.4 | 8.4 | 8.4 |
| Between: 1 - 2,999 | 59 | 15.4 | 15.4 | 23.8 |
| Between: 3,000 - 6,999 | 187 | 49.0 | 49.0 | 72.8 |
| Between: 7,000 - 14,999 | 81 | 21.2 | 21.2 | 94.0 |
| Between: 15,000-19,999 | 10 | 2.6 | 2.6 | 96.6 |
| Above: 20,000 | 13 | 3.4 | 3.4 | 100.0 |
| Total | 382 | 100.0 | 100.0 | |

Source: Survey Result, SPSS (2017)

4.4.6 In which Bank Do you have an account

Looking at the table 4.7 below about the respondent bank, 50.0 percent from Commercial Bank of Ethiopia, 24.1 percent from Awash Bank, 15.4 from United Bank and 10.5 percent from Birhan International Bank selected based on the number of branch network of the banking system in Addis Ababa and capital. From the table 4.8 divide the commercial banks into public and private bank, out of the total respondents 50 percent from public bank and the remaining 50 percent from private bank.

Table 4.7. In Which Bank Do you have an account

| Banks | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------------------------|------------------|----------------|----------------------|---------------------------|
| Commercial Bank of Ethiopia | 191 | 50.0 | 50.0 | 50.0 |
| Awash Bank | 92 | 24.1 | 21.4 | 74.1 |
| United Bank | 59 | 15.4 | 15.4 | 89.5 |
| Birhan International Bank | 40 | 10.5 | 10.5 | 100.0 |
| Total | 382 | 100.0 | 100.0 | |

Source: Survey Result, SPSS (2017)

Table 4.8 Public and Private Bank

| Banks | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------------------|------------------|----------------|----------------------|---------------------------|
| Public Bank | 191 | 50.0 | 50.0 | 50.0 |
| Private Bank | 191 | 50.0 | 50.0 | 100 |

Source: Survey Result, SPSS (2017)

4.4.7 Mobile Banking Technology

Mobile banking services could be used through more than one channel such short messaging service/messaging, Browser-based and application download (client-based). Referring to the table 4.9 below among the sample respondents 44.2 percent used Client based (application), which is the bank prepare appropriate application to use through an internet connection, the second largest used technology SMS (Short messaging service) 41.1 percent used, which is useful because it can be used without an internet connection anywhere in the country, browsed based 3.9 percent, which is the least and the remaining 10.7 percent used all Technology.

Table 4.9. Mobile Banking Technology

| Technology | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------------------------------|------------------|----------------|----------------------|---------------------------|
| SMS (Short Messaging service) | 157 | 41.1 | 41.1 | 41.1 |
| Client Based (application) | 169 | 44.2 | 44.2 | 85.3 |
| Browsed Based | 15 | 3.9 | 3.9 | 89.3 |
| All Technology | 41 | 10.7 | 10.7 | 100.0 |
| Total | 382 | 100.0 | 100.0 | |

Source: Survey Result, SPSS (2017)

4.4.8 Mobile Banking Service in Use

The respondents who had adopted the M-Banking service were asked to indicate which services they were using under the M-Banking platform. 46.1% said they were using transfer money service, 24.1 were enquiring account balances, other services 3.4 percent and 26.4 percent used all mobile banking service.

As can be seen the finding m-banking services the frequently used services are money transfer and account balance checking which are the traditional banking services and this implies that new services such payment using mobile banking needs to be pushed so that customers will exploit the benefit of m-banking services by effecting payment wherever they are without incurring transportation and time cost.

Table 4.10. Mobile Banking Service in use

| M-banking services | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------------------|-----------|---------|---------------|--------------------|
| Check Account Balance | 92 | 24.1 | 24.1 | 24.1 |
| Transfer Money | 176 | 46.1 | 46.1 | 70.2 |
| Pay bill | 0 | 0 | 0 | 73.6 |
| Others | 13 | 3.4 | 3.4 | 73.6 |
| All | 101 | 26.4 | 26.4 | 100.0 |
| Total | 382 | 100.0 | 100.0 | |

Source: Survey Result, SPSS (2017)

4.4.9 How often do you use Mobile Banking?

Looking at the table 4.11 below about the respondent bank, 36.4 percent use mobile banking once a week, 31.9 percent once a month, 23.0 percent many time a month and the remaining 8.6 percent use mobile banking daily.

Table 4.11. How often do you use mobile banking?

| How often | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------------------------|-----------|---------|---------------|--------------------|
| Daily | 33 | 8.6 | 8.6 | 8.6 |
| Once a week | 139 | 36.4 | 36.4 | 45.0 |
| Once a month | 122 | 31.9 | 31.9 | 77.0 |
| Many times a month | 88 | 23.0 | 23.0 | 100.0 |
| Total | 382 | 100.0 | 100.0 | |

Source: Survey Result, SPSS (2017)

4.5 Descriptive Analysis

The first section of the questionnaire asked demographic information of respondents and the second section asked basic research questions that intended to acquire information regarding trust, convenience, perceived risk, relative advantage and mobile banking adoption of both public and private banks in Ethiopia.

4.5.1 Trust of Mobile Banking Adoption

A five point likert scale is used to measure respondents' response concerning trust of mobile banking. Where: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

Table 4.12 Descriptive Statistics on trust of M-Banking adoption

| Item | Respondent | | | |
|---|------------|---------|------|----------------|
| | Frequency | Percent | Mean | Std. Deviation |
| Trust | | | | |
| Trust1: Ability of the mobile banking service provider has important influence in use mobile banking service | | | | |
| Strongly disagree | 11 | 2.9 | 4.09 | 0.892 |
| Disagree | 8 | 2.1 | | |
| Neutral | 46 | 12.0 | | |
| Agree | 188 | 49.2 | | |
| Strongly agree | 129 | 33.8 | | |
| Total | 382 | 100.0 | | |
| Trust2: My mobile banking service provider has the ability to provide mobile banking service effectively | | | | |
| Strongly disagree | 9 | 2.4 | 4.02 | 0.893 |
| Disagree | 17 | 4.5 | | |
| Neutral | 43 | 11.3 | | |
| Agree | 201 | 52.6 | | |
| Strongly agree | 112 | 29.3 | | |
| Total | 382 | 100.0 | | |
| Trust3: Integrity of the service provider has important influence in choosing mobile banking service | | | | |
| Strongly Disagree | 5 | 1.3 | 3.95 | 0.820 |
| Disagree | 13 | 3.4 | | |
| Neutral | 69 | 18.1 | | |
| Agree | 204 | 53.4 | | |
| Strongly agree | 91 | 23.8 | | |

| | | | | |
|--|-----|-------|------|-------|
| Total | 382 | 100.0 | | |
| Trust4: Integrity of the service provider will make the mobile banking a better option than the traditional banking | | | | |
| Strongly disagree | 11 | 2.9 | 4.18 | 0.915 |
| Disagree | 8 | 2.1 | | |
| Neutral | 41 | 10.7 | | |
| Agree | 162 | 42.4 | | |
| Strongly agree | 160 | 41.9 | | |
| Total | 382 | 100.0 | | |
| Trust5: Goodwill of the service provider has important influence in choosing mobile banking service | | | | |
| Strongly disagree | 13 | 3.4 | 4.12 | 0.957 |
| Disagree | 17 | 4.5 | | |
| Neutral | 25 | 6.5 | | |
| Agree | 182 | 47.6 | | |
| Strongly agree | 145 | 38.0 | | |
| Total | 382 | 100.0 | | |
| Trust6: I believe banks are trustworthy | | | | |
| Strongly disagree | 6 | 1.6 | 4.09 | 0.777 |
| Disagree | 7 | 1.8 | | |
| Neutral | 42 | 11.0 | | |
| Agree | 218 | 57.1 | | |
| Strongly agree | 109 | 28.5 | | |
| Total | 382 | 100.0 | | |

Source: Survey Result, SPSS (2017)

Trust construct were subdivided into various facets, which included ability, integrity and benevolence. With regard to trust of mobile Banking adoption, table 4.12 indicates that combined mean of the trust determinant elements is 4.075 can be round up to 4. However the standard deviation statistics tell there is significant deviation from the mean on both sides

4.5.2 Convenience of Mobile Banking Adoption

A five point likert scale is used to measure respondents' response concerning convenience of mobile banking. Where: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

Table 4.13 Descriptive Statistics on convenience of M-Banking adoption

| Item | Respondent | | | |
|---|------------|---------|------|----------------|
| | Frequency | Percent | Mean | Std. Deviation |
| Convenience | | | | |
| Convenience1: Using mobile banking would enable the users to accomplish tasks more quickly | | | | |
| Strongly disagree | 1 | 0.3 | 4.58 | 0.650 |
| Disagree | 4 | 1.0 | | |
| Neutral | 16 | 4.2 | | |
| Agree | 113 | 29.6 | | |
| Strongly agree | 248 | 64.9 | | |
| Total | 382 | 100.0 | | |
| Convenience2: Using mobile banking would make it easier for the users to carry out my tasks. | | | | |
| Strongly disagree | 1 | 0.3 | 4.30 | 0.641 |
| Disagree | 4 | 1.0 | | |
| Neutral | 20 | 5.2 | | |
| Agree | 211 | 55.2 | | |
| Strongly agree | 146 | 38.2 | | |
| Total | 382 | 100.0 | | |
| Convenience3: Overall using mobile banking is Mobile banking is useful. | | | | |
| Strongly Disagree | 1 | 0.3 | 4.53 | 0.658 |
| Disagree | 6 | 1.6 | | |
| Neutral | 11 | 2.9 | | |
| Agree | 135 | 35.3 | | |
| Strongly agree | 229 | 59.9 | | |
| Total | 382 | 100.0 | | |
| Convenience4: Learning to use mobile banking would be easy | | | | |
| Strongly disagree | 5 | 1.3 | 4.47 | 0.762 |
| Disagree | 5 | 1.3 | | |
| Neutral | 18 | 4.7 | | |
| Agree | 132 | 34.6 | | |
| Strongly agree | 222 | 58.1 | | |
| Total | 382 | 100.0 | | |
| Convenience5: It is easy to use mobile banking to accomplish my banking tasks | | | | |
| Strongly disagree | 1 | 0.3 | | |
| Disagree | 20 | 5.2 | | |

| | | | | |
|---|-----|-------|------|-------|
| Neutral | 14 | 3.7 | 4.27 | 0.785 |
| Agree | 188 | 49.2 | | |
| Strongly agree | 159 | 41.6 | | |
| Total | 382 | 100.0 | | |
| Convenience6: Interaction with mobile banking does not require a lot of mental effort. | | | 4.15 | 0.816 |
| Strongly disagree | 5 | 1.3 | | |
| Disagree | 13 | 3.4 | | |
| Neutral | 33 | 8.6 | | |
| Agree | 198 | 51.8 | | |
| Strongly agree | 133 | 34.8 | | |
| Total | 382 | 100.0 | | |
| Convenience7: Using mobile banking does not require training | | | 3.67 | 1.023 |
| Strongly disagree | 12 | 3.1 | | |
| Disagree | 49 | 12.8 | | |
| Neutral | 65 | 17.0 | | |
| Agree | 184 | 48.2 | | |
| Strongly agree | 72 | 18.8 | | |
| Total | 382 | 100.0 | | |

Source: Survey Result, SPSS (2017)

As shown from the table 4.13 above the descriptive statistics the combined mean of the convenience is 4.28 that means the respondents agree with the statement that mobile banking enable the users to accomplish tasks more quickly, easier for the users to carry out tasks, learning to use mobile banking would be easy, it is easy to use mobile banking to accomplish banking tasks and interaction with mobile banking does not require a lot of mental effort.

4.5.3 Perceived Risk of Mobile Banking Adoption

A five point likert scale is used to measure respondents' response concerning risk of mobile banking. Where: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

Table 4.14 Descriptive Statistics on perceived risk of M-Banking

| Item | Respondent | | | |
|--|------------|---------|------|----------------|
| | Frequency | Percent | Mean | Std. Deviation |
| Perceived Risk | | | | |
| Risk1: Mobile banking services may not perform well because of network problems.(reverse coded) | | | | |
| Strongly disagree | 8 | 2.1 | | |
| Disagree | 22 | 5.8 | | |

| | | | | |
|--|-----|-------|------|-------|
| Neutral | 48 | 12.6 | 2.06 | 0.888 |
| Agree | 210 | 55.0 | | |
| Strongly agree | 94 | 24.6 | | |
| Total | 382 | 100.0 | | |
| Risk2:Mobile banking services may not perform well and process payments incorrectly (reverse coded) | | | 3.01 | 0.980 |
| Strongly disagree | 19 | 5.0 | | |
| Disagree | 97 | 25.4 | | |
| Neutral | 166 | 43.5 | | |
| Agree | 69 | 18.1 | | |
| Strongly agree | 31 | 8.1 | | |
| Total | 382 | 100.0 | | |
| Risk3:I'm sure that if I decided to use mobile banking and something went wrong with the transactions, my friends, family and Colleagues would think less of me.(reverse coded) | | | 3.11 | 0.930 |
| Strongly Disagree | 35 | 9.2 | | |
| Disagree | 65 | 17.0 | | |
| Neutral | 207 | 54.2 | | |
| Agree | 57 | 14.9 | | |
| Strongly agree | 18 | 4.7 | | |
| Total | 382 | 100.0 | | |
| Risk4:When mobile banking users' bank account incurs fraud or hacking, they will have a potential loss of status in social group (reverse coded) | | | 2.80 | 1.068 |
| Strongly disagree | 29 | 7.6 | | |
| Disagree | 54 | 14.1 | | |
| Neutral | 157 | 41.1 | | |
| Agree | 96 | 25.1 | | |
| Strongly agree | 46 | 12.0 | | |
| Total | 382 | 100.0 | | |
| Risk5: Due to poor network of mobile in some areas may take a lots of time to do transactions through mobile banking (reverse coded) | | | 1.88 | 1.051 |
| Strongly disagree | 10 | 2.6 | | |
| Disagree | 31 | 8.1 | | |
| Neutral | 37 | 9.7 | | |
| Agree | 128 | 33.5 | | |
| Strongly agree | 176 | 46.1 | | |
| Total | 382 | 100.0 | | |

| | | | | |
|---|-----|-------|------|-------|
| Risk6: Providing personal privacy information over mobile banking may not be safe(reverse coded) | | | | |
| Strongly disagree | 28 | 7.3 | 2.20 | 1.270 |
| Disagree | 50 | 13.1 | | |
| Neutral | 35 | 9.2 | | |
| Agree | 126 | 33.0 | | |
| Strongly agree | 143 | 37.4 | | |
| Total | 382 | 100.0 | | |
| Risk7:I'm worried about using mobile banking because other people may be able to access my account.(reverse coded) | | | | |
| Strongly disagree | 33 | 8.6 | 2.25 | 1.328 |
| Disagree | 51 | 13.4 | | |
| Neutral | 46 | 12.0 | | |
| Agree | 102 | 26.7 | | |
| Strongly agree | 150 | 39.3 | | |
| Total | 382 | 100.0 | | |
| Risk8: When transferring money through mobile banking, I'm afraid that I will lose my money due to careless and mistakes (reverse coded) | | | | |
| Strongly disagree | 10 | 2.6 | 1.98 | 1.115 |
| Disagree | 48 | 12.6 | | |
| Neutral | 29 | 7.6 | | |
| Agree | 132 | 34.6 | | |
| Strongly agree | 163 | 42.7 | | |
| Total | 382 | 100.0 | | |
| Risk9: Due to transactions errors there might be loss of my money(reverse coded) | | | | |
| Strongly disagree | 13 | 3.4 | 2.60 | 1.079 |
| Disagree | 69 | 18.1 | | |
| Neutral | 119 | 31.2 | | |
| Agree | 113 | 29.6 | | |
| Strongly agree | 68 | 17.8 | | |
| Total | 382 | 100.0 | | |

Source: Survey Result, SPSS (2017)

The study required to determine if customers, perceived risk towards mobile banking affect their adoption of the service. Perceived risk seen from different perspectives. As defined by Lee (2009), these five risks can be described for mobile banking as follows: Performance risk, privacy risk, financial risk, social risk and time risk.

The respondents were asked mobile banking services may not perform well because of network problem which is performance risk 24.6 percent strongly agreed, 55.0percent agreed, 7.9% strongly disagreed and disagreed. Mobile banking services may not perform well and process payments incorrectly 43.5 percent neutral and 25.4 disagreed. The third and fourth question was about social risk and the respondents answer nearly neutral. The fifth question was Due to poor network of mobile in some areas may take a lots of time to do transactions through mobile banking which is time risk 46.1 percent strongly agreed, 33.5 agreed.

Providing personal privacy information over mobile banking may not be safe 37.4 percent strongly agreed, 33.0 percent agree. The respondents were asked worried about using mobile banking because other people may be able to access their account 39.3 percent strongly agreed, 26.7 percent agreed. When transferring money through mobile banking, the respondents lose their money due to careless and mistakes 42.7 percent strongly agreed, 34.6 agreed. Lastly due to transactions errors there might be loss of the respondent’s money 17.8 percent strongly agree, 29.6 agree, 31.2 percent Neutral, 18.1 percent disagree and 4.2 percent strongly disagree.

4.5.4 Relative Advantage of Mobile Banking Adoption

A five point likert scale is used to measure respondents’ response concerning relative advantage of mobile banking. Where: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

Table 4.15 Descriptive Statistics on relative advantage of M-Banking

| Item | Respondent | | | |
|--|------------|---------|------|----------------|
| | Frequency | Percent | Mean | Std. Deviation |
| Relative Advantage | | | | |
| Relative Advantage1: The mobile banking access cost is inexpensive to use | | | | |
| Strongly disagree | 0 | 0 | 4.39 | 0.744 |
| Disagree | 10 | 2.6 | | |
| Neutral | 30 | 7.9 | | |
| Agree | 142 | 37.2 | | |
| Strongly agree | 200 | 52.4 | | |
| Total | 382 | 100.0 | | |
| Relative Advantage2: The mobile banking transaction fee is inexpensive. | | | | |
| Strongly disagree | 2 | 0.5 | 4.25 | 0.740 |
| Disagree | 10 | 2.6 | | |
| Neutral | 26 | 6.8 | | |
| Agree | 195 | 51.0 | | |
| Strongly agree | 149 | 39.0 | | |

| | | | | |
|---|-----|-------|------|-------|
| Total | 382 | 100.0 | | |
| Relative Advantage3: It doesn't take much time to learn about the use of mobile banking | | | | |
| Strongly Disagree | 0 | 0 | 4.24 | 0.661 |
| Disagree | 3 | 0.8 | | |
| Neutral | 39 | 10.2 | | |
| Agree | 202 | 52.9 | | |
| Strongly agree | 138 | 36.1 | | |
| Total | 382 | 100.0 | | |
| Relative Advantage4: The adoption of mobile banking service enables to get banking service quickly | | | | |
| Strongly disagree | 3 | 0.8 | 4.39 | 0.716 |
| Disagree | 2 | 0.5 | | |
| Neutral | 28 | 7.3 | | |
| Agree | 158 | 41.4 | | |
| Strongly agree | 191 | 50.0 | | |
| Total | 382 | 100.0 | | |
| Relative Advantage5: Mobile banking is faster than visiting a bank | | | | |
| Strongly disagree | 1 | 0.3 | 4.21 | 0.827 |
| Disagree | 17 | 4.5 | | |
| Neutral | 42 | 11.0 | | |
| Agree | 164 | 42.9 | | |
| Strongly agree | 158 | 41.4 | | |
| Total | 382 | 100.0 | | |

Source: Survey Result, SPSS (2017)

As shown from the table 4.15 above the descriptive statistics the combined mean of the relative advantage is 4.29 that means the respondents agree with the statement that the mobile banking access cost is inexpensive to use, the mobile banking transaction fee is inexpensive, It doesn't take much time to learn about the use of mobile banking, the adoption of mobile banking service enables to get banking service quickly and mobile banking is faster than visiting a bank.

4.5.5 Mobile Banking Adoption

A five point likert scale is used to measure respondents' response concerning mobile banking adoption. Where: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

Table 4.16 Descriptive Statistics on mobile banking adoption

| Item | Respondent | | | |
|---|------------|---------|------|----------------|
| | Frequency | Percent | Mean | Std. Deviation |
| Mobile Banking Adoption | | | | |
| Mobile_Banking_Adoption1: I trust that the use of mobile banking fulfills my needs | | | | |
| Strongly disagree | 5 | 1.3 | 4.11 | 0.707 |
| Disagree | 8 | 2.1 | | |
| Neutral | 23 | 6.0 | | |
| Agree | 251 | 65.7 | | |
| Strongly agree | 95 | 24.9 | | |
| Total | 382 | 100.0 | | |
| Mobile_Banking_Adoption2: I find mobile banking a convenient option that suits my lifestyle | | | | |
| Strongly disagree | 6 | 1.6 | 4.38 | 0.803 |
| Disagree | 7 | 1.8 | | |
| Neutral | 21 | 5.5 | | |
| Agree | 150 | 39.3 | | |
| Strongly agree | 198 | 51.8 | | |
| Total | 382 | 100.0 | | |
| Mobile_Banking_Adoption3: I use mobile banking because of convenience as compared to branch banking. | | | | |
| Strongly Disagree | 1 | 0.3 | 3.75 | 0.809 |
| Disagree | 18 | 4.7 | | |
| Neutral | 124 | 32.5 | | |
| Agree | 171 | 44.8 | | |
| Strongly agree | 68 | 17.8 | | |
| Total | 382 | 100.0 | | |
| Mobile_Banking_Adoption4: I use mobile banking service for various types of banking transaction | | | | |
| Strongly disagree | 0 | 0 | 3.99 | 0.802 |
| Disagree | 26 | 6.8 | | |
| Neutral | 47 | 12.3 | | |
| Agree | 215 | 56.3 | | |
| Strongly agree | 94 | 24.6 | | |
| Total | 382 | 100.0 | | |
| Mobile_Banking_Adoption5: I intend to use mobile banking regularly | | | | |
| Strongly disagree | 2 | 0.5 | | |

| | | | | |
|---|-----|-------|------|-------|
| Disagree | 13 | 3.4 | 4.0 | 0.748 |
| Neutral | 55 | 14.4 | | |
| Agree | 224 | 58.6 | | |
| Strongly agree | 88 | 23.0 | | |
| Total | 382 | 100.0 | | |
| Mobile_Banking_Adoption6: I believe that it is valuable for me to adopt mobile banking | | | 4.44 | 0.774 |
| Strongly disagree | 5 | 1.3 | | |
| Disagree | 3 | 0.8 | | |
| Neutral | 28 | 7.3 | | |
| Agree | 130 | 34.0 | | |
| Strongly agree | 216 | 56.5 | | |
| Total | 382 | 100.0 | | |
| Mobile_Banking_Adoption7: I recommend others to use mobile banking | | | 4.34 | 0.803 |
| Strongly disagree | 7 | 1.8 | | |
| Disagree | 7 | 1.8 | | |
| Neutral | 17 | 4.5 | | |
| Agree | 169 | 44.2 | | |
| Strongly agree | 182 | 47.6 | | |
| Total | 382 | 100.0 | | |

Source: Survey Result, SPSS (2017)

Finally the respondents were asked adoption of mobile banking and as can be seen from the above table 4.16, 65.7 percent agree and 27.9 percent strongly agreed that respondents trust that the use of mobile banking fulfills their needs. 51.8 percent strongly agreed and 39.3 agree that mobile banking a convenient option that suits their lifestyle. 44.8 percent agree and 17.8 percent strongly agree that respondents use mobile banking because of convenience as compared to branch banking. 56.3 agree and 24.6 strongly agree that the respondents use mobile banking service for various types of banking transaction. 58.6 percent agree and 23 percent strongly agree that respondents intend to use mobile banking regularly. 56.5 percent strongly agree and 34 percent agree that respondents believe that it is valuable for them to adopt mobile banking. 47.6 percent strongly agree and 44.2 percent agree that respondents recommend others to use mobile banking.

4.6 Measurement of Model Validity

4.6.1 Normal Distribution

A normal distribution is one of the importantly assumed statistical procedures. Normal distributions take the form of a symmetric bell shaped curve. The standard normal distribution is one with a mean of 0 and a standard deviation of 1 (Garson, 2012). Severe asymmetry then is stated to be the result of strong outliers. A common test for normality is to run descriptive statistics

to get skewness and kurtosis. Skewness should be within +2 and -2 range, if the data is normally distributed. Kurtosis is the peakedness or flatness of a distribution and this distribution shall also commonly fall between +2 and -2, although a few other authors according to (Garson, 2012), are more lenient and allow kurtosis to fall within +3 and -3.

Following the above justification, the normality test was done for four variables on SPSS, which resulted in all the variables' skewness to fall within +2 and -2 range and all the variables' kurtosis to fall within +3 and -3 range. Consequently, the data utilized for this research was found to be normally distributed.

Table 4.17 Test of Normal distribution

| | N | Skewness | | Kurtosis | |
|--------------------------------|------------|---------------|--------------|---------------|--------------|
| | Statistic | Statistic | Std. Error | | Std. Error |
| Trust | 382 | -1.271 | 0.125 | 1.693 | 0.249 |
| Convenience | 382 | -1.152 | 0.125 | 1.741 | 0.249 |
| Risk | 382 | 0.761 | 0.125 | -0.112 | 0.249 |
| Relative Advantage | 382 | -1.195 | 0.125 | 2.152 | 0.249 |
| Mobile banking adoption | 382 | -1.297 | 0.125 | 2.057 | 0.249 |

Source: Survey Result, SPSS (2017)

4.7 Validating the proposed Hypotheses

4.7.1 Test of Multicollinearity

Multicollinearity test is useful in knowing whether there are inter-correlations among independent variables.

Table 4.18 Test of Multicollinearity

| Model | | Collinearity Statistics | |
|-------|--------------------|-------------------------|-------|
| | | Tolerance | VIF |
| 1 | (Constant) | | |
| | Trust | .751 | 1.331 |
| | Convenience | .750 | 1.334 |
| | Risk | .862 | 1.160 |
| | Relative Advantage | .720 | 1.389 |

Source: Survey Result, SPSS (2017)

As observed from table 4.18 above, the values of Variance Inflation Factor (VIF) for all independent variables or factors are less than 10 (Gareth James, 2013). Hence, there is no multi-co-linearity among independent variables. Therefore, it is possible to use correlation and multiple regressions analysis.

The table below shows the inter item correlation which gives us the correlation coefficients for items in the study’s scale. This matrix is especially relevant because this study has not carried out a factor analysis which may cause a problem because the overall alpha may be affected by the number of items being analyzed. Therefore, we need to use the inter item correlation table to check and see if the items interrelate well.

Table 4.19 Inter Item Correlation

| | Trust | Convenience | Risk | Relative Advantage | Mobile banking adoption |
|-------------------------|-------|-------------|--------|--------------------|-------------------------|
| Trust | 1 | .346 | -.270 | .448 | 0.316 |
| Convenience | .346 | 1 | -.324 | .421 | 0.472 |
| Risk | -.270 | -.324 | 1 | -.219 | -0.356 |
| Relative Advantage | .448 | .421 | -.219 | 1 | 0.489 |
| Mobile banking adoption | 0.316 | 0.472 | -0.356 | 0.489 | 1 |

Source: Survey Result, SPSS (2017)

4.7.2 Regression Analysis

The following tables shows the unstandardized and standardized regression weights for the variables and the result discussed and interpreted below along with regression model.

Table 4.20 Model Summary

| Model Summary | | | | |
|---|-------------------|----------|-------------------|----------------------------|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .615 ^a | .378 | .371 | .43661 |
| a. Predictors: (Constant), Relative Advantage, Risk, Convenience, Trust | | | | |

Source: Survey Result, SPSS (2017)

The above table is the first table 4.20 provided by SPSS, which gives summary of the model. This summary gives the R and R² of the model that has been derived. R has the value of 61.5% which represents the overall correlation between mobile banking adoption and the factors.

The R², which is the coefficient of determination, was found to be close to 37.8% which means that the factors can account for 37.8% of the variation in mobile banking adoption. i.e., there may be many factors that can explain the variation in mobile banking adoption in Ethiopia, but the model used in this study, which includes the four factors, can explain close to 40% of it. In other words, 60% of the variation in mobile banking adoption in Ethiopia cannot be explained by these four factors and that there must be other variables that have an influence on the outcome.

Table 4.21 ANOVA

| ANOVA ^a | | | | | | |
|---|------------|----------------|-----|-------------|--------|-------------------|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 42.998 | 4 | 10.750 | 56.389 | .000 ^b |
| | Residual | 70.724 | 371 | .191 | | |
| | Total | 113.722 | 375 | | | |
| a. Dependent Variable: Mobile Banking Adoption | | | | | | |
| b. Predictors: (Constant), Relative Advantage, Risk, Convenience, Trust | | | | | | |

Source: Survey Result, SPSS (2017)

The next part of the SPSS output reports an analysis of variance (ANOVA). The summary table shows the various sums of squares described in the table 4.21 above and the degrees of freedom associated with each. From these two values, the average sums of squares (the mean squares) can be calculated by dividing the sums of squares by the associated degrees of freedom. The most important part of the table is the F-ratio, which is a test of the null hypothesis that the regression coefficients are all equal to zero. Put in another way, this F statistic tests whether the R proportion of variance in the dependent variable accounted for by the predictors is zero and the table also shows the associated significance value of that F-ratio (Field, 2009). For this data, F is 56.389, which is significant at $p < 0.001$ (because the value in the column labeled *Sig.* is less than 0.001). This result tells us that there is less than a 0.1% chance that an F-ratio this large would happen, if the null hypothesis proposed about F-ratio were true. Therefore, the regression model overall predicts mobile banking adoption well.

Table 4.22 Coefficients

| Coefficients^a | | | | | | |
|---------------------------------|--------------------|-----------------------------|------------|---------------------------|--------|------|
| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.630 | .293 | | 5.567 | .001 |
| | Trust | .018 | .044 | .019 | .407 | .684 |
| | Convenience | .311 | .053 | .277 | 5.852 | .001 |
| | Risk | -.157 | .034 | -.203 | -4.594 | .001 |
| | Relative Advantage | .343 | .051 | .327 | 6.763 | .001 |

a. Dependent Variable: Mobile Banking Adoption

Source: Survey Result, SPSS (2017)

B= Beta

Std. Error= Standard Error

Sig= significance

Hypothesis 1: Stated that trust has a positive and significant influence on mobile banking adoption.

Based on the table 4.22 and justifications provided in the preceding paragraphs, trust has no significant relationship with the dependent variable mobile banking adoption, where the t- statistic value was calculated to be 0.407 at p value > 0.05. The value of the coefficient of trust was also found to be 0.018 which means that, this finding did not support H1. Meaning that, the issues of integrity, ability and goodwill are things that service providers need to revise so that they can create a positive image in the eyes of their customers. The finding was also consistent with the results by other researchers studies by Al-Jabri and Sohail, (2012), Tan and Teo (2000) Luo et al (2010) and Gu et al (2009).

Hypothesis 2: Stated that convenience has a positive and significant influence on mobile banking adoption.

The second hypothesis testing provided that the coefficient of convenience was calculated to be 0.311, which indicates that keeping other factors constant, a unit change in convenience causes a 31.1% increase in mobile banking adoption. And the relationship of the independent factor convenience (whose t-statistic value was found to be 5.852 at p-value of 0.001) with that of the dependent variable mobile banking adoption is found to be positive and statistically significant, which leads to the acceptance of H2. Meaning that, the factors perceived ease of use and perceived usefulness are important motivating factors in influencing adoption of mobile banking services in Ethiopia.

Hypothesis 3: Stated that perceived risk has a negative influence on mobile banking adoption.

Based on the table 4.22 coefficient of perceived risk was calculated to be -0.157. And the relationship of the independent factor perceived risk (whose t-statistic value was found to be -4.594 at p-value of 0.001) with that of the dependent variable mobile banking adoption is found to be negative. From Hypothesis H3, perceived risk was found to have a significant negative influence on mobile banking adoption, meaning H3 was supported. Respondents perceived a risk when using mobile banking services which discourage them from adopting mobile banking services. It is important for service providers to ensure security for their customers in order to remove the uncertainty among people. The finding was in other previous studies by, Koenig-Lewis et al. (2010) they investigated the factors that influence Mobile money adoption in Germany using Technology Acceptance Model, The findings of the study indicated that perceived risk is a significant indicator for the adoption of Mobile money services in Germany. On the other hand, there are other studies that did come up with similar findings are such as the study by Brown et al. (2003) they investigated the predictors of Mobile money adoption in South Africa, Variables that were identified included perceived risk and consumer banking needs but the findings revealed that perceived risk had a major negative influence in adoption of mobile banking services in south Africa.

Hypothesis 4: Stated that relative advantage has a positive influence on mobile banking adoption.

Based on the results of this study, users of mobile banking perceived mobile banking to be making a positive contribution in their lives in terms of cost and time. The findings of the regression analysis confirmed the effect of relative advantage on mobile banking adoption the result indicated that the variable was significant on mobile banking adoption with $\beta = 0.343$ and $p < 0.05$. This means that relative advantage contributes 34.3% towards mobile banking adoption. In this case, hypothesis H4, relative advantage was found to have a significant positive influence on mobile banking adoption of mobile banking services in Ethiopia. The finding was consistent with past studies by Cruz et al., (2010) and Laukkanen, (2007). The findings revealed relative advantage had a significant positive influence on adoption. This result indicate that, if mobile banking service providers paid attention to the element of cost and time consumers will most likely be willing to adopt the service because customers pay attention to issues of time and cost meaning that the greater the relative advantage of using the service the more likely the customer will be willing to adopt mobile banking services.

Table 4.23 Summary of Hypothesis (H1-H4) Result

| No | Hypotheses | Results | Reason |
|----|---|----------|--|
| H1 | Trust positively influence the adoption of mobile banking. | Rejected | Correlation results, Rho=0.316 , Pr<0.01, Alpha=0.05 Regression result $\beta = .019$, sig. 0.684 |
| H2 | Convenience positively influence the adoption of mobile banking. | Accepted | Correlation results, Rho=0.472 , Pr<0.01, Alpha=0.05 Regression result $\beta = 0.277$, sig. 0.000 |
| H3 | Perceived risk negative influence the adoption of mobile banking. | Accepted | Correlation results, Rho= -0.356 , Pr<0.01, Alpha=0.05 Regression result $\beta = -0.203$, sig. 0.000 |
| H4 | Relative advantage positive influence the adoption of mobile banking. | Accepted | Correlation results, Rho=0.489 , Pr<0.01, Alpha=0.05 Regression result $\beta = 0.327$, sig. 0.000 |

From the above discussion and the above table of summary of hypothesis the most influencing factor is the relative advantage as represented by cost and time which has positive impact on the adoption of mobile banking. This result indicate that, if mobile banking service providers paid attention to the element of cost and time consumers will most likely be willing to adopt the service because customers pay attention to issues of time and cost. The next one is convenience represented by perceived usefulness and perceived ease of use. Convenience has positive relationship with mobile banking adoption and customers also perceive mobile banking as useful and easy of use while perceived risk negatively influence the adoption of mobile banking. The source of customers' perceived risk of mobile banking as per the finding of the research is performance risk, social risk, time risk, privacy risk and financial risk. The last one trust has no significant relationship with the dependent variable mobile banking adoption. Meaning that, the issues of integrity, ability and goodwill are things that service providers need to revise so that they can create a positive image in the eyes of their customers.

Hypothesis five: Public and private banks in Ethiopia have significant differences on mobile banking adoption factors.

For this hypothesis, t-test was used to determine whether or not two group means are different. There are two different *t*-tests and their use depends on whether the independent variable was manipulated using the same or different participants.

Independent-means t-test: This test is used when there are two experimental conditions and different participants were assigned to each condition (this is sometimes called the independent measures or independent-samples t-test) (Field, 2009).

Dependent-means t-test: This test is used when there are two experimental conditions and the same participants take part in both conditions of the experiment (this test is sometimes referred to

as the matched-pairs or paired-samples t-test) (Field, 2009). Both the **independent t-test** and the **dependent t-test** are parametric tests based on the normal distribution. Therefore, they assume:

- The sampling distribution is normally distributed

The independent *t*-test, because it is used to test different groups of people, further assumes:

- Variances in these populations are roughly equal (homogeneity of variance).

For the purpose of this research, the independent t-test was chosen to test if the means of the mobile banking adoption factors are significantly different for the two bank categories namely, public and private.

Homogeneity of Variance

This assumption means that as one goes through levels of one variable, the variance of the other should not change. If groups of data are collected, then, this means that the variance of the outcome variable or variables should be the same in each of these groups. If continuous data are collected (such as in correlational designs), this assumption means that the variance of one variable should be stable at all levels of the other variable. A test called Levene’s test is usually used to test homogeneity of variance for a group of data (Field, 2009).

Levene’s test tests the null hypothesis that the variances in different groups are equal (i.e. the difference between the variances is zero). If Levene’s test is significant at $p = 0.05$, then, we can conclude that the null hypothesis is incorrect and that the variances are significantly different therefore, the assumption of homogeneity of variances has been violated. If, however, Levene’s test is non-significant (i.e. $p > 0.05$) then the variances are roughly equal and the assumption is tenable (Field, 2009).

Table 4.24: Descriptive Group Statistics

| Group Statistics | | | | | |
|--------------------|---------------|-----|--------|----------------|-----------------|
| | Banks | N | Mean | Std. Deviation | Std. Error Mean |
| Trust | Public Bank | 191 | 4.0471 | .55046 | .03983 |
| | Private Banks | 191 | 4.0837 | .59521 | .04307 |
| Convenience | Public Bank | 191 | 4.0302 | .65000 | .04703 |
| | Private Banks | 191 | 4.0754 | .70137 | .05075 |
| Risk | Public Bank | 191 | 2.6603 | .70321 | .05088 |
| | Private Banks | 191 | 2.4127 | .85583 | .06193 |
| Relative Advantage | Public Bank | 191 | 4.0213 | .68213 | .04936 |
| | Private Banks | 191 | 4.0832 | .60948 | .04410 |

Source: Survey Result, SPSS (2017)

Table 4.25: Homogeneity of Variance

| | | Independent Samples Test | | | | | | | | |
|--------------------|-----------------------------|---|------|------------------------------|---------|-----------------|-----------------|-----------------------|---|--------|
| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | Lower | Upper |
| Trust | Equal variances assumed | .259 | .611 | -.624 | 380 | .533 | -.03663 | .05866 | -.15197 | .07871 |
| | Equal variances not assumed | | | -.624 | 377.702 | .533 | -.03663 | .05866 | -.15198 | .07871 |
| Convenience | Equal variances assumed | .253 | .615 | -.654 | 380 | .514 | -.04525 | .06919 | -.18130 | .09080 |
| | Equal variances not assumed | | | -.654 | 377.822 | .514 | -.04525 | .06919 | -.18130 | .09080 |
| Risk | Equal variances assumed | .407 | .524 | 3.088 | 380 | .002 | .24753 | .08015 | .08994 | .40512 |
| | Equal variances not assumed | | | 3.088 | 366.227 | .002 | .24753 | .08015 | .08992 | .40514 |
| Relative Advantage | Equal variances assumed | 1.192 | .276 | -.936 | 380 | .350 | -.06192 | .06619 | -.19206 | .06822 |
| | Equal variances not assumed | | | -.936 | 375.280 | .350 | -.06192 | .06619 | -.19207 | .06823 |

Source: Survey Result, SPSS (2017)

The SPSS output table in table 4.29 shows that Levene’s test is non-significant for the entire factors (values in the Sig. column are all more than 0.05), indicating that the variances are not significantly different (i.e. they are similar and the homogeneity of variance assumption is tenable).

Now that the assumptions were satisfied, the next step in testing the four hypothesis is to carry out an independent t-test, the output of which SPSS provides us with two tables. The first table 4.28 shows that both public and private banks have 191 participants who responded to the four adoption factors, with their respective mean, standard deviation and standard error mean.

SPSS produces the exact significance value of t, and we are interested in whether this value is less than or greater than 0.05. In this case the two-tailed value of p for trust, convenience and relative advantage were 0.553, 0.514 and 0.350, respectively, which are greater than 0.05, and so we would have to conclude that there was no significant difference between the means of the above variables (trust, convenience and relative advantage) for public and private banks in Ethiopia.

The two tailed p-value for risk was calculated to be 0.02, which are less than 0.05. Therefore, there was a significant difference between risk for public and private banks in Ethiopia. These variable (perceive risk) can be point of difference and source of differentiation for their respective banks.

Table 4.26: Homogeneity of Variance

| | | Independent Samples Test | | | | | | | | |
|----------------|-----------------------------|---|------|------------------------------|---------|-----------------|-----------------|-----------------------|---|--------|
| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | Lower | Upper |
| Mobile Banking | Equal variances assumed | 1.288 | .257 | 1.019 | 380 | .309 | .07040 | .06908 | -.06543 | .20623 |
| Adoption | Equal variances not assumed | | | 1.019 | 370.245 | .309 | .07040 | .06908 | -.06545 | .20624 |

Source: Survey Result, SPSS (2017)

The SPSS output in the above table 4.30 shows that Levene’s test is non-significant for the entire factors (values in the Sig. column are all more than 0.05), indicating that the variances are not significantly different (i.e. they are similar and the homogeneity of variance assumption is tenable).

In this case the two-tailed value of p for mobile banking adoption were 0.309 which is greater than 0.05, and so we would have to conclude that there was no significant difference between the above variable (mobile banking adoption) for public and private banks in Ethiopia.

Chapter Five

Conclusion and Recommendation

5.1 Conclusion

In this section based on the regression analysis findings outlined in chapter four the conclusion is presented followed by some recommendations to provide insight in to factors that influence the effectiveness of mobile banking adoption in case of commercial banks in Addis Ababa, Ethiopia.

The study provides an understanding of the factors that influence mobile banking adoption in Ethiopia by incorporating four constructs, thus perceived risk, relative advantage (time and cost), trust and convenience (PEOU and PU) .These factors were used as explanatory variables for the purpose of this study and the effect of these variables on mobile banking adoption was the main concern of this work. Following this, 400questionnaires were distributed to customers of both public and private banks in Ethiopia, after testing the validity of the instrument through pilot study.

Among the distributed questionnaires, only 382 workable data was added on the SPSS program where the descriptive analysis of the data assigned respondents to the different categories of gender, age, monthly net income, educational level and the type of bank (public or private) the respondents use.

Multiple regression analysis for the independent and dependent factors was used in order to carry out the study. After analyzing the results the study pointed out convenience and relative advantage found to have significant positive influence on mobile banking adoption because they had a strong influence on adoption of mobile banking, for that reason, mobile banking customers tend to use mobile banking services based on its perceived ease of use, perceived usefulness, time and cost. Perceived risk was also found have a significant negative influence on mobile banking adoption. This paper finds that there is no relationship between trust and mobile banking adoption. The last hypothesis, which was tested using independent t-test, proposed that private and public banks in Ethiopia have a significant difference on mobile banking adoption factors. This hypothesis, however, was partially accepted. After running an independent t-test, the means of trust, convenience and relative advantage of public and private banks in Ethiopia were not found significantly different. But, perceived risk was calculated to be significantly different for public and private banks in Ethiopia and thus, the partial acceptance of the hypothesis.

Regarding demographic factors, the findings revealed that, customers with age ranging from 29-39 were the majority users of mobile banking services, most of which use the service once a week and 38 percent use mobile banking for transferring funds. 85.3 percent customers used SMS (short message service) and client based technology. The influence of demographic variables such as gender, age and length of use on mobile banking adoption was not extensively explored to determine whether they can be influencing factors.

5.2 Recommendations

Based on the findings discussed in chapter four, this study proposes the following recommendations.

- Banking institutions could consider taking advantage of value-adding characteristics of mobile banking in promoting perceived usefulness. In addition, they should continue to innovate and invest in mobile banking services which allow users to have more alternatives and get more values from mobile banking services.
- Banks should develop more aggressive marketing activities to inform customers about the service. They should inform the customers of the conveniences and other advantages that come with the service which customers might not be aware of. Mostly they should emphasize on the accessibility, saving of time and ease of use that have been seen to encourage adoption of the service according to the results of the research.
- On the contrary, the bank should assure customers that the factors which have been found to discourage them from adopting the service such as risk of loss and system failure are almost non-existent as the research has tested their presence and customers have had such experiences in their use of M-banking and therefore there is no reason to shy away from adopting the service as they will miss out on its benefits.
- Banks could invest in campaigns and arrange information sessions to demonstrate the features of mobile banking services, and its benefits over traditional channels.
- In addition, given that customers' greatest perceived risk is sending money to wrong account or phone number, the banks should ensure that customers are in a position to recover their money in the shortest period in case of such a scenario.. The customers should also be urged to verify the account and phone numbers they are transferring money to, to avoid the rigorous process that may be involved in retracing the money. To prevent loss of personal/account information the bank should ensure that their system is secure to prevent hacking. In addition, they should ensure that their system is working efficiently and effectively to avoid system failure which may discourage adoption of the service. The bank should assure the customers that the risks they perceive in M-Banking are not real as shown by the research results.
- Commercial banks of Ethiopia shall deploy reliable network infrastructure and system to ensure mobile banking services operate smoothly so that it can reduce the perceived risk by customers regarding mobile banking technology
- Ethio telecom as mobile network service provider shall give special attention to mobile banking technology from its side to provide reliable network to commercial banks.

5.3 Limitation and Future study

This study utilized a very small sample size from only four banks that reside in Addis Ababa, the capital city of Ethiopia, through convenient sampling due to time and budget constraints. This fact alone makes an in depth treatment of the findings of this study to be close to impossible.

This work used cross sectional data, where data was collected at point in time via the instrument of survey. So, future researchers may use a time series data and they may also use more samples and a different sampling method and a different data collection method, such as interview method to increase the generalizability of the findings beyond the population from which the samples were drawn to the entire financial industry.

The variables were limited to only four although there are so many other factors that can influence customer adoption of mobile banking services that were not examined in this study. This research would have provided better results if it included more variables such as social influence, complexity, perceived cost normative influence, social influence and attitude but also incorporating building factors such as gender, these factors can help the researcher to understand their influence on adoption.

The contribution of demographic factors such as age, gender and technology toward the adoption of mobile banking services was not given much emphasis in this study, future researchers may investigate the influence of demographic factors in adoption of mobile banking services.

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Appendix I:

Questionnaire in English

**ADDIS ABABA UNIVERSITY
SCHOOL OF COMMERCE
MARKETING MANAGEMENT PROGRAM**

Dear Respondent,

The aim of this questionnaire is to identify the Factors that Influence the effectiveness of mobile banking adoption. The results of the study are expected to supply to the understanding on the influencing factors of mobile banking adoption in commercial banks found in Addis Ababa, Ethiopia. I would like to assure you that the information you provide will be used only for the purpose of achieving academic award. Thank you for your participation.

Best Regards,

Section I: Demographic Details

| No. | UserDemographics | Categories | Mark Applicable with Cross (X) |
|-----|--|---------------------|--|
| 1 | Gender | Male | |
| | | Female | |
| 2 | Age | 18 -29 | |
| | | 30 -39 | |
| | | 40 – 49 | |
| | | 50 – 59 | |
| | | Above59 | |
| 3 | Highest Level of Education Attained | Secondary Education | |
| | | TVET/Diploma | |
| | | First Degree | |
| | | Master's Degree | |
| | | PHD | |
| 4 | Work Status | Employed/Working | |
| | | Housewife | |

| | | | |
|---|--|-------------------------------|--|
| | | Student | |
| | | Self Employed | |
| | | Unemployed | |
| | | Pensioner/Retired | |
| | | | |
| 5 | Monthly Income Level in Ethiopian Birr | No Income | |
| | | Between: 1 - 2,999 | |
| | | Between: 3,000 - 6,999 | |
| | | Between: 7,000 - 14,999 | |
| | | Between: 15,000-19,999 | |
| | | Above: 20,000 | |
| | | | |
| 6 | In which Bank Do you have an account | Commercial Bank of Ethiopia | |
| | | Awash International Bank | |
| | | United Bank | |
| | | Birhan International Bank | |
| | | | |
| 7 | What kinds of Technologies you use to get mobile banking services | SMS (Short Messaging service) | |
| | | Client Based (application) | |
| | | Browsed Based | |
| | | | |
| 8 | What do you use mobile banking for? | Check Account Balance | |
| | | Transfer Money | |
| | | Pay bill | |
| | | Balance enquiry | |
| | | Account history request | |
| | | Others | |
| | | Not Applicable | |
| | | | |
| 9 | How often do you use Mobile banking | Daily | |
| | | Once a week | |
| | | Once a month | |
| | | Many times a month | |

Section II: Five Point Likers Scale

Please complete the following questionnaire on scale of 1 to 5. 1-strongly disagree, 2-disagree, 3-neutral, 4-agree, and 5-strongly agree

| | Statement to evaluate | Rating point | | | | |
|-----------------------|---|--------------|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| Trust | | | | | | |
| 1 | Ability of the mobile banking service provider has important influence in use mobile banking service | | | | | |
| 2 | My mobile banking service provider has the ability to provide mobile banking service effectively | | | | | |
| 3 | Integrity of the service provider has important influence in choosing mobile banking service | | | | | |
| 4 | Integrity of the service provider will make the mobile banking a better option than the traditional banking | | | | | |
| 5 | Goodwill of the service provider has important influence in choosing mobile banking service | | | | | |
| 6 | I believe banks are trustworthy | | | | | |
| Convenience | | | | | | |
| 7 | Using mobile banking would enable the users to accomplish tasks more quickly | | | | | |
| 8 | Using mobile banking would make it easier for the users to carry out tasks. | | | | | |
| 9 | Overall using mobile banking is Mobile banking is useful. | | | | | |
| 10 | Learning to use mobile banking would be easy | | | | | |
| 11 | it is easy to use mobile banking to accomplish my banking tasks | | | | | |
| 12 | Interaction with mobile banking does not require a lot of mental effort. | | | | | |
| 13 | Using mobile banking does not require training | | | | | |
| Perceived Risk | | | | | | |
| 14 | Mobile banking services may not perform well because of network problems. | | | | | |
| 15 | Mobile banking services may not perform well and process payments incorrectly. | | | | | |

| | | | | | | |
|-----------------------------------|--|--|--|--|--|--|
| 16 | I'm sure that if I decided to use mobile banking and something went wrong with the transactions, my friends, family and Colleagues would think less of me. | | | | | |
| 17 | When mobile banking users' bank account incurs fraud or hacking, they will have a potential loss of status in social group. | | | | | |
| 18 | Due to poor network of mobile in some areas may take a lots of time to do transactions through mobile banking. | | | | | |
| 19 | Providing personal privacy information over mobile banking may not be safe | | | | | |
| 20 | I'm worried about using mobile banking because other people may be able to access my account. | | | | | |
| 21 | When transferring money through mobile banking, I'm afraid that I will lose my money due to careless and mistakes. | | | | | |
| 22 | Due to transactions errors there might be loss of my money | | | | | |
| Relative Advantage | | | | | | |
| 23 | The mobile banking access cost is inexpensive to use | | | | | |
| 24 | The mobile banking transaction fee is inexpensive. | | | | | |
| 25 | It doesn't take much time to learn about the use of mobile banking | | | | | |
| 26 | The adoption of mobile banking service enables to get banking service quickly | | | | | |
| 27 | Mobile banking is faster than visiting a bank | | | | | |
| Adoption of Mobile Banking | | | | | | |
| 28 | I trust that the use of mobile banking fulfills my needs | | | | | |
| 29 | I find mobile banking a convenient option that suits my lifestyle | | | | | |
| 30 | I use mobile banking because of convenience as compared to branch banking. | | | | | |
| 31 | I use mobile banking service for various types of banking transaction | | | | | |
| 32 | I intend to use mobile banking regularly | | | | | |
| 33 | I believe that it is valuable for me to adopt mobile banking | | | | | |
| 34 | I recommend others to use mobile banking | | | | | |

THANK YOU SO MUCH

Appendix II

Annual Report 2015-16 N

| Banks | Branch Network | | | | | | | | Capital | | | |
|------------------------------|----------------|--------------|----------------|-------------|----------------|--------------|----------------|--------------|-----------------|--------------|-----------------|--------------|
| | 2014/15 | | | | 2015/16 | | | | 2014/15 | | 2015/16 | |
| | Regions | Addis Ababa | Total | % Share | Regions | Addis Ababa | Total | % Share | Total Capital | % Share | Total Capital | % Share |
| 1. Public Banks | | | | | | | | | | | | |
| Commercial Bank of Ethiopia | 785 | 192 | 977 | 36.3 | 888 | 262 | 1150 | 36.1 | 10,716.4 | 34.8 | 13,557.5 | 31.5 |
| Construction & Business Bank | 69 | 51 | 120 | 4.5 | 0 | 0 | 0 | 0.0 | - | - | | 0.0 |
| Development Bank of Ethiopia | 31 | 1 | 32 | 1.2 | 106 | 4 | 110 | 3.5 | 2,269.2 | 7.4 | 7,500.8 | 17.4 |
| Total Public Banks | 885 | 244 | 1129 | 41.9 | 994 | 266 | 1260 | 39.5 | 12,985.5 | 42.1 | 21,058.3 | 48.9 |
| 2. Private Banks | | | | | | | | | | | | |
| Awash International Bank | 95 | 112 | 207 | 7.7 | 118 | 127 | 245 | 7.7 | 2,540.3 | 8.2 | 3,191.2 | 7.4 |
| Dashen Bank | 76 | 88 | 164 | 6.1 | 61 | 57 | 118 | 3.7 | 2,377.2 | 7.7 | 2,809.3 | 6.5 |
| Abyssinia Bank | 64 | 72 | 136 | 5.1 | 84 | 92 | 176 | 5.5 | 1,594.3 | 5.2 | 1,838.2 | 4.3 |
| Wegagen Bank | 63 | 56 | 119 | 4.4 | 95 | 66 | 161 | 5.1 | 2,061.9 | 6.7 | 2,431.1 | 5.6 |
| United Bank | 62 | 66 | 128 | 4.8 | 70 | 74 | 144 | 4.5 | 1,475.0 | 4.8 | 1,814.7 | 4.2 |
| Nib International Bank | 50 | 65 | 115 | 4.3 | 69 | 86 | 155 | 4.9 | 1,925.3 | 6.2 | 2,253.9 | 5.2 |
| Cooperative Bank of Oromiya | 106 | 35 | 141 | 5.2 | 139 | 45 | 184 | 5.8 | 1,058.7 | 3.4 | 1,182.7 | 2.7 |
| Lion International Bank | 50 | 38 | 88 | 3.3 | 75 | 46 | 121 | 3.8 | 601.6 | 2.0 | 787.2 | 1.8 |
| Oromia International Bank | 103 | 49 | 152 | 5.6 | 148 | 62 | 210 | 6.6 | 771.7 | 2.5 | 1,069.9 | 2.5 |
| Zemen Bank | 5 | 2 | 7 | 0.3 | 8 | 5 | 13 | 0.4 | 650.0 | 2.1 | 800.0 | 1.9 |
| Buna International Bank | 47 | 35 | 82 | 3.0 | 56 | 49 | 105 | 3.3 | 559.3 | 1.8 | 774.7 | 1.8 |
| Berhan International Bank | 32 | 39 | 71 | 2.6 | 43 | 45 | 88 | 2.8 | 622.3 | 2.0 | 805.9 | 1.9 |
| Abay Bank | 70 | 19 | 89 | 3.3 | 89 | 27 | 116 | 3.6 | 591.0 | 1.9 | 814.5 | 1.9 |
| Addis International Bank | 10 | 22 | 32 | 1.2 | 17 | 26 | 43 | 1.3 | 399.6 | 1.3 | 569.8 | 1.3 |
| Debut Global Bank | 13 | 9 | 22 | 0.8 | 17 | 11 | 28 | 0.9 | 202.6 | 0.7 | 270.9 | 0.6 |
| Enat Bank | 5 | 6 | 11 | 0.4 | 7 | 13 | 20 | 0.6 | 392.1 | 1.3 | 588.6 | 1.4 |
| Total Private Banks | 851.0 | 713.0 | 1,564.0 | 58.1 | 1,096.0 | 831.0 | 1,927.0 | 60.5 | 17,822.8 | 57.9 | 22,002.5 | 51.1 |
| 3. Grand Total Banks | 1736 | 957 | 2693 | 100 | 2,090.0 | 1097 | 3187 | 100.0 | 30,808.3 | 100.0 | 43,060.8 | 100.0 |