DETERMINANTS OF MOBILE BANKING ADOPTION IN COMMERCIAL BANKS: THE EVIDENCE OF JIMMA TOWN

A Research paper submitted to the school of graduate studies of Jimma University to undertake a research in partial fulfillment of the requirements for the degree of masters of banking and finance

By: Edget Tamiru

JIMMA UNIVERSITY

COLLAGE OF BUSINESS AND ECONOMICS

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JUNE, 2021

JIMMA ETHIOPIA

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DELARATION

This is to certify that Edget Tamiru has carried out his research paper on the topic entitled *"**determinants of mobile banking adoption in commercial banks of Ethiopia:*** **the evidence of Jimma town"**. The work is original in nature and is suitable for the submission for the reward of Msc, masters of degree of science in banking and finance.

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Certificate

This is to certify that the research paper entitled ***"determinants of mobile banking adoption in commercial banks of Ethiopia in Jimma city"*** submitted to Jimma university for the award of the degree of masters of Science in banking and finance and is a record of confide research paper work under our guidance and supervision.

Therefore, I hereby declare that no part of this research paper has been submitted to any other university or institutions for the award of masters.

Main Advisor's Name	Date	Signature
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Internal examiner	_____	_____

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Abstract

The purpose of this study was to investigate the determinants of mobile banking adoption in commercial banks of Ethiopia in Jimma city. Commercial banks in Ethiopia introduced mobile banking technology. However, the numbers of users of the services are very small, even by African standard. The data was collected by administering questionnaire and exploring documents. The collected information is analyzing using quantitative and qualitative method of data analysis. The study was employed both descriptive and explanatory research design. Both primary and secondary data was employed. Data were generated from customers of the bank who was selected based on the study was delimited to convenience and purposive sampling techniques. Quantitative data are collected using a structured questionnaire which has been developed and distributed to a sample of Mobile banking users. The quantitative data was analyzed by using descriptive and inferential analysis. The findings of descriptive statistics have shown that, the mean score of Mobile banking adoption variables i.e. perceived usefulness, perceived ease of use, trust and risk condition. The assumption test were done and no multicolinaritiy. The major finding of the study was there is a positive correlation and significantly related between perceived trust, perceived usefulness, perceived ease of use, perceived risk and mobile banking adoption. Based on the result of the finding of some recommendation were given as follow. The policy makers and the bank should concern on regulation about security issues, for protecting user's information.

Keywords: *mobile banking service, adoption, determinants, binary log it, commercial bank of Ethiopia.*

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CHAPTER ONE

1. INTRODUCTION

1.1 Background of the Study

Mobile banking today is most often performed via SMS or the mobile internet but can also use special program that clients download to their mobile devices. The services offered by mobile banking include getting account information, transferring funds, sending check books request, managing deposits, checking transaction and so on. Mobile banking is likely to have significant effects on the market (Safeena et al., 2012). Despite such benefits, the use of mobile phones or tablets to conduct banking transactions or access financial information is not as widespread as might be expected (Dineshwar and Steven, 2013; Luarn and Lin, 2005; Shih et al.,2010).

The world has witnessed an upsurge of electronic payment instruments meant to facilitate trade and simplify payments. Before the introduction of electronic payment into Ethiopian banking system; customers had to walk into the banking branch to do transactions. They had to queue up and spend more hours to talk to a teller to make their transactions. Inconveniences caused by these long queues discourage most customers who sometimes renegade from the queues in annoyance. On the contrary side, UNECA, World Bank and UNCTAD are helping developing countries to design national e-strategies, including e-commerce, via National Information and Communication Infrastructure plans and Commitment of the governments. The Ethiopian government considers ICT facilitate as an effective and efficient service delivery (UNCTAD, 2004).

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 relatively little scholarly research explores the use of these mobile banking/mobile payments systems (Donner and tellez, 2008). Scholarly research on the determinants of mobile banking service and socio economic impact of mobile banking system in developing world is scarce because the system are so new. Even less attention has been paid to the Social, Economic and cultural contexts surrounding the use of these systems.

Out of the nineteen operating commercial banks in Ethiopia, there are currently nine banks that have started providing mobile banking services and out of these nine banks Commercial bank of Ethiopia (CBE) is leading bank in using mobile banking. Even if CBE has a wide customer base and perform well financially users of mobile phones among the population continues to grow in significant numbers year after year but still the customer's adoption.

The current preference of commercial bank of Ethiopia which is the predominant bank in the sector. Commercial bank of Ethiopia was implement secure payment solutions including fully integrated cards, ATM, POS, On-line and mobile transactions. The Ethiopian vehicle envisaged by the national bank of Ethiopia to play this role is evidently Ethiopian Inter-Bank Settlements System (EIBSS) owned by the banks, with its board chaired by a National Bank of Ethiopia Chang & Gallup, 2003, 2008).

National Bank of Ethiopia has put in place infrastructures for handling inter-bank payments, inter-bank funds transfer and settlements and operates the Ethiopian Automated Clearing System (EACS) electronic funds transfer, Automated Direct Credits and Automated Direct Debits.

However, many of the Ethiopian banks adopted electronic banking system in the early 2001E.C. Today ATM, Mobile, internet and POS are major e-payment instruments currently in use in Ethiopia. In the recent years Mobile banking has been viewed as a driving force that is changing the landscape of the banking industry fundamentally, in particular, towards a more competitive industry. Mobile banking has blurred the boundaries between different financial institutions, enabled new financial products and services and made existing financial services available in different packages (Okoro, 2014).

Mobile Banking refers to provision of banking and financial services with the help of mobile telecommunication devices. The scope of offered services may include facilities to conduct bank transactions, to administer accounts and to access customized information (Tiwari and Buse, 2007). In the broader sense mobile banking enables the execution of financial services in the course of which - within an electronic procedure - the customer uses mobile communication techniques in conjunction with mobile devices (Pousttchi and Schurig, 2004 as cited in Singhe, 2011)

The Ethiopian banking industry as a whole has a network of 2,502 branches (NBE, 2015), which is the lowest compared to the size of the country (1.1milion square km) and number of population (more than 90 million) and this shows that the number of population being served by a single branch stood at around 34,373(NBE2015).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 (NBE 2015)

The commercial bank of Ethiopia corporate strategy document on 2015/16 E.C states that initiatives which improve deposit by deploying Electronic payment channels (ATM, internet banking, mobile banking and pos) having an objectives of creating a cashless community instead cash driven. The strategy is currently in operation in all branches of Ethiopian commercial banks. Electronic banking are inter connected system which have interaction with human and for its development needs reliable legal system and well built communication network (Zheng.etal, 2009). The focus of this research particularly to provide policy makers and stake holders to oversee the revolution which overcome by electronic banking system on Customer mobilization so as to my level of understanding and finding of different information no research work was done on determinants of mobile banking service in Jimma District. Therefore, the purpose this research is to examine the determinants of mobile banking service in commercial banks of Ethiopia Jimma district that benefits realized by banks and stakeholders.

1.2 Statement of the Problem

Commercial bank of Ethiopia have spent huge amounts in establishing mobile banking systems, but the adoption and usage rate of mobile banking is still lower than expected and remains insignificant compared to the entire banking transactions. For instance the bank has 4 only managed to recruit 625,000 new mobile banking in 2015/16 physical year but the actual new mobile banking activated was 431,677 customers (72% activations below the planned 80% activation) and total mobile banking registered stood at 1.1 million out of over 13.3 million accounts –holders as of December 30, 2016. This amounts account to only 8% of all commercial bank of Ethiopia customers. Furthermore, in the same period, mobile banking transaction stood at 868,464 with a total value of birr 3.5billon (CBE, 2016/2017).

Preceding studies in various countries identified determinant of mobile banking services. For example, studies by Alsheikh and Jamil (2014) in Saudi Arabia, Yu (2012) in Taiwan, Oliver (2012), Ndumba et.al (2014) and Abdullatif (2015) in Kenya, Fall et.al (2015) in Senegal, and Cudjoe et.al (2015) in Ghana have shown that the apathy of the bank consumers towards mobile banking services affected the adoption negatively, while customers belonging to the well educated, young, relatively well-off and residing mainly in urban areas, etc adopted the technology. Studies conducted about the determinants of mobile banking services in Ethiopian commercial banks by colder ado (2016) found out that perceived usefulness and perceived ease of use of the technology to have positive relationship with the adoption of mobile banking whereas perceived risk has negative relationship with the adoption of mobile banking. In these studies important variables such as experience with technology and voluntarism to use the service were omitted while they are important. In the current study, the researcher included these omitted variables and estimated the determinants of adoption of mobile banking services using the binary logit model while in the previous studies data were analyzed using the Analysis of Moment Structure. When compared with the banking industry operated in developed country, without doubt the banking industry in Ethiopia is underdeveloped and therefore, there is an all immediate need to embark on capacity building arrangements and modernize the banking system by employing the state of the art of technology being used anywhere in the world (Gardachew, 2010).

As the second highest populous nation in Africa, Ethiopia has the lowest financial inclusion rate (banked population) as compared to Sub-Saharan African Countries and yet having alarmingly increasing mobile penetration rate which can be used as tool for financial inclusion.

In order to encourage further mobile banking adoption in developing countries, a better understanding of the barriers and drivers impacting M-banking adoption is critical. By gaining an in-depth understanding of the factors and conditions that influence developing country's ability to fully adopt and realize its benefits, strategic implications can be generated for the researchers and practitioners regarding how to promote the growth of mobile and agent banking in developing countries (Zhao et al., 2011). Studies conducted about the determinants of adoption of mobile banking services in Ethiopian commercial banks by Mattewos (2016) and Laekemaryam (2016) found out that perceived usefulness and perceived ease of use of the

technology to have positive relationship with the adoption of mobile banking whereas perceived risk has negative relationship with the adoption of mobile banking. In these studies important variables such as experience with technology and voluntarism to use the service were omitted while they are important.As per the NBE, 2016 data even though mobile banking service began operation in Ethiopia in 2010 by Dashen Bank and the service has been in operation for more than six years, the Ethiopian financial sector has not been studied in depth from the perspective of adoption of mobile banking. Thus, this study attempts to fill this gap and contributes to the literature on the mobile banking service and seeks to examine the determinants of mobile banking adoption in Jimma Town commercial banks.

1.3 Research questions of the study

The study aims at addressing the following research questions:

1. What is the influence of perceived trust on mobile banking adoption in commercial banks of Ethiopia in Jimma city?

2. What is the influence of perceived usefulness on mobile banking adoption in commercial banks of Ethiopia in Jimma city?

3. What is the influence of perceived ease of use on mobile banking adoption in commercial banks of Ethiopia in Jimma city?

4. What is the influence of perceived risk on mobile banking adoption in commercial banks of Ethiopia in Jimma city?

1.4 Objectives of the study

1.4.1. General objective

The general objective of the study was to examine the determinant of mobile banking adoption in commercial banks of Ethiopia in Jimma city.

1.4.2 The specific objectives

1. To assess the influence of perceived trust on mobile banking adoption in commercial banks of Ethiopia in Jimma city.

2. To determine the influence of perceived usefulness on mobile banking adoption in commercial banks of Ethiopia in Jimma city.

3. To assess the influence of perceived ease of use on mobile banking adoption in commercial banks of Ethiopia in Jimma city.

4. To evaluate the influence of perceived risk on mobile banking adoption in commercial banks of Ethiopia in Jimma city.

1.6 Significance of the Study

The findings of the study assist the stakeholders in the banking sector, economic planners and policy makers in the public sector to understand the determinants factors which influence mobile banking service and its impact on people's lives. Ascertain the effects of mobile banking adoption that was helping them in formulating policies and encourages technological innovations as well as adoption in commercial banks of Ethiopia in Jimma city.

The study was recommending new strategy that banks should adopt in using determinants of mobile banking adoption instruments in improving their service. This study was also helping the general public by creating awareness on the benefits of mobile banking. It is also hoped that the awareness that this study was create and also add to the foundation of knowledge being laid for research in mobile banking technologies.

1.7 Scope of the Study

The scope of the study is restricted to the determinants of mobile banking adoption in commercial banks of Ethiopia in Jimma city. As a result, it includes the both government's owned and private commercial banks of Ethiopia in Jimma city. The scope of the study was also includes the six leading industrial banks in the country in terms of both branch network and market share especially namely, AIB, DB, CBE, CBO, UB and BOA.

1.8 Organization of the Study

The study is organized in to five chapters. The first chapter deals with background of the study, statements of the problem, objective of the study, and scope and significant of study, and organization of the research. The second chapter presents previous related literature review.

The third chapter explains types and source of data that would be used for the study, research approach, research design, collection procedures, sampling techniques used to determine the sample size, method of statistical data analysis tools and collection. The fourth chapter presents the analysis and result of the study that has been arrived using descriptive and inferential statistical tools. The last chapter had present summary, conclusion, and recommendation of the study.

CHAPTER TWO

2. LITERATURE REVIEW

2.1Theoretical Review

2.2.1 Mobile banking

The term ‘mobile banking' is defined as ‘the exploitation of mobile terminals, like mobile phones to connect with networks of a bank via the wireless application protocol (WPA)’ (Zhou 2010). As the number of smart phones along with their users increase continuously, banks took the opportunity to make their services easier and developed the new service, the ‘mobile banking. Using the mobile banking, banking transactions can take place in every place and time that is desired, given that there is access to the internet services. Thus, it can be said that mobile banking gives flexibility (more degrees of freedom) to banks’ customers.

2.2.2 Perceived Usefulness

It is defined as the degree to which a person believes that using a particular technology will enhance his or her job performance. This idea derived from TAM model by Davis (1989) and is considered a significant factor affecting acceptance of an information system. For the user of mobile banking this means: how useful does the user find the application, how can he improve his job tasks, decrease the time of doing his job and contributing to more accurate and efficient results.

2.2.3 Perceived Ease of Use

Perceived ease of use refers to the degree to which a person believes that using a particular application will be free of effort (Davis, 1989). Perceived usefulness and Perceived Ease of Use are significantly correlated with system usage as this has been proven by TAM application. Users believe that a given technology is useful but at the same time believe that the technology is too hard to use and the benefits of usage are outweighed by the effort of using the application (Davis and Arbor, 1989).If an online service is difficult to use, the customer is more likely to quit this service and chose another way of doing transactions that will be easier.

2.2.4 Self-efficacy

The component of self-efficacy is defined as the level of confidence a person has in his or her abilities to perform a task. If a person character or believes do not allow him to have confidence in his skills when using an application, this will probably have a reverse influence on technology usage. The wide range of technological advances, the invention of Internet and evolvement of mobile banking requires individuals with willingness to adopt the new technological environment. Thus, when an individual is confident in his skills is more likely to be comfortable in using new technologies.

2.2.5 Facilitating conditions

Refers to the extent to which an individual believes that an organizational and technical infrastructure exists to support use of the system (Venkatesh 2003). By capturing the concepts of perceived behavioral control (TPB/DTPB, C-TAM-TPB), facilitating conditions (MPCU), and compatibility such as work style (IDT), Venkatesh. [2003] defined facilitating conditions as the degree to which an individual believes that an organizational and technical infrastructure exists to support technology use. In UTAUT, Venkatesh. [2003] integrated factors used in eight competing models into five constructs and empirically identified that behavioral intention and facilitating conditions were two direct determinants of adoption behavior. In the mobile banking adoption literature, Joshua and Koshy [2011] illustrated that the more convenient the access of respondents to computer and Internet, the more proficient their use of the computer and Internet, which results in a higher adoption rate of respondents using electronic banking.

2.2.5.1 Bank Support

Support by the bank to the users of Mobile banking is considered as an important factor influencing their behavior toward conducting online transactions. Customers need to know that their bank provides a well-educated help desk that will be able to guide and train them in case they need it. Problems may occur when using Internet banking and users might need bank support to complete their transactions. The issue for a bank is its clients to feel secure for their money transferred and confident for their bank superiority. It is important for the customers to contact directly with bankers when is required because this probably stimulate them more in using bank mobile services.

2.2.6 Security and Privacy

A common and widely recognized obstacle of mobile banking adoption has been the lack of security and privacy over the Web Sites and cellphones. (Bhimani, 1996; Quelch and Klein, 1996; Rhee and Riggins, 1997). Also, Sathye (1999) noted that security and privacy were significant major obstacles to the adoption of online banking in Australia. It should be noted that security issues are confronted by users and developers of internet security especially concerning e-banking, e-commerce and e-government. It is expected that only people who perceive Mobile banking as a low risk activity would be available to use it. It also seems that users misunderstand the Internet technology and this leads to resistance on adopting it. Many users want to control the data that is collected through Internet.

2.2.7 Demographic Characteristics

Adopter categories give an insight for explaining the innovation diffusion rate and accordingly innovativeness of people (Rogers 1995). When the different aspects of early adopters are examined, it is claimed by Rogers that "relatively earlier adopters in a social system are no different from later adopters in age" (Hoffmann 2011, p.44). On the other hand, Venkatesh& Morris (2000) state the different adoption behaviors of older and younger adopters. So, age is perceived as an influential factor in this dissertation. Another claim of Rogers is presented about the education level, occupations and status. It is stated that "the relatively early adopters have more years of formal education, are more likely to be literate, and have higher social status and occupations" (Hoffmann 2011, p.44). So, education level, occupation and income level have also considered as influential on adoption of mobile banking services in this research.

2.3 Review of relevant theories

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

Venkatesh (2003) proposed and tested a unified information technology acceptance and use research model, called the Unified Theory of Acceptance and Use of Technology (UTAUT). The model integrates significant elements across eight prominent user acceptance models and formulates a unique measure with core determinants of user behavioral intention and usage. In this model the original UTAUT aims to explain user intentions to use an IS and subsequent usage behavior. Furthermore, UTAUT model suggests that there are a set of factors that influence the

intention of the individual user acceptance (Feras, Mohammad, 2012). Venkatesh 2003, pp 446, 10 in their research article theorized that, four constructs play a significant role as direct determinants of user acceptance and usage behavior: Performance expectancy, Effort expectancy, Social influence, and Facilitating conditions. Gender, age, experience, and voluntariness of use are said to mediate the impact of the four key constructs on usage intention and behavior.

2.4 Benefits of mobile banking

Mobile banking is one of developing mobile technique used in the commercial domain. It has combined information technology and commerce applications together. Since mobile banking was introduced, consumers have been able to use it to obtain special services 24 hours a day without having to visit the traditional bank branch for personal transactions. Short message service (SMS) is used to support mobile banking service as the main medium. Reasons for mobile and SMS usage are largely saving time, varying location and convenience (Venkatesh et al, 2003).

Mobile banking enables banks to reduce cost of courier, communication, paper works, etc and also it reduces costs in setting up a branch and the resources to process transactions (Sunil and Durga 2013). Also banks providing mobile banking services can have competitive advantage over those banks, which are not providing this service. Goswami and Raghavendran (2009) point out, mobile banking services will enable banks to not only increase fee-based income but also enable significant cost savings, improve service quality and provide cross-selling opportunities.

Convenience, Ubiquitous access and mobility are the main benefits that mobile banking confers to customer (Laforet and Li 2005).Customers don't need to stand at the bank counter for various enquiries about their account. Customers can save their valuable time and travelling cost in reaching the bank for their financial transactions (Sunil and Durga 2013). Customers can pay their utility bills on time and save themselves from paying penalties, since alerts are received from the bank.

With respect to mobile banking and economic development, an analysis should focus on the means by which mobile banking can transform, or at a minimum enhance economic growth. The hope is that cell phone banking can contribute greatly to economic development through its

ability to crate income generation, enabling more people to access needed financial services in a cost efficient and relevant way. Over all the rise of cell phone banking is expected to result in substantial macroeconomic benefit resulting from a five to twenty percent reduction of financial exclusion by 2020 across several developing economies (Techcentral, 2012).

2.5 Delivery channels of e-banking

Electronic banking delivered through various means of electronic delivery channels which are discussed under.

2.5.1Automated teller machine

ATM can be dispensed as computer terminal, having record keeping system and cash vault in one unit permitting customer to enter the banks keeping system with a personal identification number (pin) or by punching a special code number into computer terminal linked to the bank computerized record 24 hours a day, bank give various retail banking service through ATM card to its clients when a card is inserted into a machine the magnetic reader of machine reads magnetic stride and verify for processing.ATM is 24 hour tellers.ATM are first introduced to function cash dispensing machine (Abor,2004).

Siyanbola, 2013 revealed that ATM is the commonest form of electronic banking which have popularity among nations.

2.5.2 Point of sale (Pos)

Point of Sale transfer terminals allow consumers to pay for retail purchase with a check card, a new name for debit card. This card looks like a credit card but with a significant difference. The money for the purchase is transferred immediately from your account to the store's account. Increased banking productivity results from the use of EFT POS to service customers shopping payment requirements instead of clerical duties in handling cheques and cash withdrawals for shopping.

Furthermore, the system continues after banking hours, hence, continual productivity for the bank even after banking hours. It also saves customers time and energy in getting to the bank branches or ATMs for cash withdrawals which can be harnessed into other productive activities (Abor, 2004). POS are the location where a transaction occurs. A terminal or POS is generally

referred to the hardware and software used for check out, the equivalent of an electronic cash register. A POS manages the selling process by a sales person accessible inter-face. The system allows the creation and printing of receipts (Siyanbola, 2013).

2.5.4 Electronic card

This is a physical plastic card that uniquely identifies the holder and is used in transacting businesses on the internet, automated teller machine (ATM) and Point of Sales (POS) terminal (Carow & Statan, 2000). This includes debit and credit cards, debit cards are linked to local bank accounts and offer immediate confirmation of payment while credit card can be used for assessing local and international networks. As credit cards are widely accepted in most countries, the underlying infrastructures and operational rules are the dominant cards in Ethiopia, they are also known as ATM cards and their usage is wider than POS transactions.

2.5.5 Personal computer banking services

PC – Banking is a service which allows the bank's customers to access information about their accounts via a proprietary network, usually with the help of proprietary software installed on their personal computer. Once access is gained, the customer can perform a lot of retail banking functions. The increasing awareness of the importance of computer literacy has resulted in increasing the use of personal computers. This certainly supports the growth of PC banking which virtually establishes a branch in the customers' home or office, and offers 24-hour service, seven days a week. It also has the benefits of Telephone Banking and ATMs (Abor, 2004).

2.5.5 Effects of electronic banking

Agbool, (2001) show that introduction of electronic banking has brought innovation that dictate pace for banking activity. he explain the advantage according to customer perspective, for example a customer can control his account from the comfort of his bed room rather than going to bank and this in turns, will reduce the number of customer which visit bank branch accordingly affording the banks more to time to provide excellence service.

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2.6 Mobile banking service Models

There are a number of mobile banking models which are evolving and are being adopted by the mobile banking service providers. These models are differentiated based on various issues such as who will establish the customer relationship or who is legally responsible for the deposit, the bank or the non-bank/telecommunications company that is in terms of account opening, handling deposits and lending; whose brand is most exposed to the public; where can the cash be accessed; who carries the payment instructions in terms of whether the service is tied to a particular network or is network independent and basically the nature of agency agreement between the bank and the non-bank agent. However, no matter what business model, if mobile banking is being used to attract low income populations in often rural locations, the business model will depend on the banking agent, that is the retail outlet that will process the financial transaction on behalf of the bank (Porteous, 2006).

2.7 Application security in mobile banking

2.7.1 Mobile client applications

Mobile client applications are a rapidly developing segment of the global mobile market. Mobile client applications are common on most mobile phones today and are to providing user interfaces for basic telephony and messaging services as well as for more advanced and entertaining experiences. It has evolved to give a user access to services that require richer, faster and not necessarily connected user experiences. In this respect mobile applications are distinctly different from browsing the mobile web. The combination of a client application on the handset and server component enables many benefits including access to all banking functionalities strong authentication and encryption of sensitive data and the ability for customization and branding. From the financial services and applications point of view, mobile client applications have variety of advantages and disadvantages. In terms of advantages, it offers organizations more control over the user experience with a rich user interface capability, enhance the ability to work even when there is no connection to the wireless network, provides secured access with applications, supports for access to corporate customs applications, and provides the ability to provide remote wipe-out of information when device is lost or stolen (CBE, 2016/17).

The main purpose of mobile banking application is to provide customers with access to their bank accounts through their cellular phones. In order to comply with acceptable industry standards for access in to bank account, the first item to consider is the successful authentication of the customer. Once authentication is done, the information that is transported between the bank and the customer's cellular phone needs to be encrypted to eliminate interception by non-authenticated parties. The security approach in cell phone banking application is crucial, because the customer will use the cell phone to access his bank account remotely by utilizing the network reach of his mobile network operator.

The cell phone banking application will allow the customer to view balances in accounts and transfer money from his account to any other bank account, it is of the utmost importance that the cell phone banking application enforce that each transaction can only be executed by the owner of the bank account. Application security in a cell phone banking application must assure none-repudiation of transactions (Laforet and Li, 20013).

2.8 Drivers of mobile banking

Mobile banking business increased income through commission; bank are usually awarded commissions whenever they perform transactions on behalf of the bank. Increased customer traffic brings additional benefits to the agent; the increased traffic brought about by customers performing banking activities also translates to more people getting to know your business hence more sales, the question comes at the initial stage there might not be sufficient number of customer who frequently visit the agent premises (Chiteli, 2013).

Customers are also one of the drivers of mobile banking business. Most financial institution closes their doors early, but with agents, for as long as the business premise remains open, you can do your transactions, and this gives flexible hours. This has proven to be very convenient especially for people who are busy during the day. The other benefits to customer are financial institution agents have proven to be cost-effective especially to people who live in rural areas that are far away from banks (Veniard, 2010).

Financial institutions have recorded an increase in their profits and banking is one of the main attributes to such huge profits. Banks are finding it cheaper to set up agents as opposed to opening a branch where they will incur extra costs of staffing, rent, electricity etc. With mobile banking, the agent incurs almost all the costs. Mobile banking has made it possible for bank products and services to penetrate areas that at first seemed impossible. With mobile banking banks have reached even the smallest of villages. With regards to wide customer base bank agents are paid commissions when they sign up new customers and this has led to an increase in the number of customers for banks. Banks are finding it effective to increase their customer numbers in this manner as opposed to using sales people (Lehman, 2010).

(Wolela A., 2014) When financial institution do not have branches that are close to the customer, the customer is less likely to use and transact with their service. However, the emergence of new delivery models as a way to bank has played a key role to drastically change the economics of banking by the poor. By using retail points as agents, banking providers can offer banking services in a commercially viable way since they are able to reduce fixed costs and encourage entrepreneurs to use the service more often and in the process provide access to additional revenue sources (Kumar et al, 2006).

At the end, we can conclude that mobile banking is an efficient tool, which can be used to facilitate financial transactions, payment transactions as well as crediting transactions. In order to enable a wide use of mobile banking it has to be of easy usage and applicable to all types of mobile phones. And of course, it has to be cheap for all mobile subscribers. In this way, mobile banking can have a large acceptance. However, challenges have to be considered, such as technological acceptance, trust, traditional ways of conducting financial transactions and the massive use of cash in developing countries. Nevertheless, we think that mobile banking is able to enhance economic development by facilitating financial transactions. However, it has to be noted that mobile banking will not replace classic banking, but is only able to fulfill a niche, i.e. offering banking service to groups, who traditionally do not use a bank account. (Kumar et al, 2006).

The agent offers front-line customer service including physical space and operation of the POS device. The agent intermediates bank transactions through its balance sheet, transforming cash in the-till into money-in-the-bank, and vice versa. This is actually not so different from the normal business of a store: transforming inventory into cash (or receivables) and back (i.e., store stocks goods, which ties up its working capital until the goods are sold). In the agent mechanism described, the store also ties up working capital, but in the form of cash-in the- till and balance-in-its-account rather than in the form of physical inventory. The agent needs to go to the bank from time to time to rebalance its cash in the till versus its money in the bank account. (Lyman, 2006)

The agent absorbs/provides excess liquidity from/to the community of bank customers and deposits that into/withdraws from the bank on their behalf. In effect, the community delegates the bothersome business of going to the bank to the agent. This delegation introduces economic efficiencies. By netting the community's overall net cash position (offsetting withdrawals against deposits), the total amount of cash that needs to be transported to/from the bank is reduced. And by pooling the cash requirements of all customers, the required number of trips to the bank is reduced. (Laurent, 2011)

The Government will be highly beneficial through the high rate of financial inclusion so that the government can benefit from effective utilization of resources. It enhances saving and growth in the economy thereby serves as a way out to combat poverty reduction. (mFino, 2013) The

Kenyan situation remains an important case study in this regard. In Kenya, the Central Bank has already licensed four banks to carry out mobile banking business and approved 8,809 agents. Many others are expected to be licensed in due course. This is expected to deeply boost penetration of low cost banking services in the country.(Barasa, et al, 2013)

2.9 Challenges of mobile banking

When building, incentivizing, and managing a network of retail agents, banks must address the operational, legal, infrastructural, social, structural and economic challenges in a way that fosters a positive and consistent customer experience that will create and maintain trust in the system.

Managing the structure, as one of the challenges by financial institutions towards the provision of mobile banking, refers to the approach that financial institutions establish relationship with their agents. The relationship can be direct, indirect or hybrid. A direct relationship with banking agents is one in which a financial institution uses its own staff to identify and evaluate potential agents and then contract and manage them. An indirect relationship involves contracting an external management company to manage the entire process. There is also a hybrid approach in which a financial institution assumes responsibility for parts of the process, for example, selection and contracting, while a management company is contracted to oversee the day-to-day management of the agent networks, (Mas, et al 2008).

Building agent network is also a challenge which focuses on establishing effective agent with well-trained manpower; trusted by customers; strategically and conveniently located; and properly incentivized to follow procedures, keep sufficient float on hand, and serve customers.

When agents provide a range of services (e.g., account opening, deposits, withdrawals, bill payments, etc.) they are able to generate transaction volume and balance liquidity. An agent must maintain adequate cash and e-money float balances to meet customer cash-in/cash-out requests. If too much cash is taken in, the agent may run out of e-float and not be able to accept more deposits. If there are too many withdrawals, the agent will accumulate e-float but run out of cash. In either case, customers will get discouraged if the agent cannot provide the services they need when they need them. In addition, a secure mechanism needs to be in place to transport cash needs to and from an agent (Faming et. el 2011).

Availability and Quality of Infrastructure is one of the challenges which impact the mobile banking business. Interruption in services of Telecommunications due to technical or non-technical issue and non-availability of any parallel system or alternative may cause disruption in service availability. Similarly, congestion in network may become a bottle neck in providing Quality of Service to mobile banking user. The inconsistent availability of power supply in the country particularly in the rural area is one of the challenges for the implementation and continuous availability of mobile banking service. Therefore, Utility disruptions or software or hardware failures can cause a lack of service availability and information loss. Financial Institution without business continuity and disaster recovery planning may be on risk of non availability of services in case of catastrophic events, power breakdowns, fire etc and natural disasters (flooding, earthquake etc).

Agency Banking represents a significant opportunity to reduce transaction costs such as travel for clients by bringing financial services to hard-to-reach and geographically dispersed areas. This is especially true in Africa where some areas are sparsely populated leaving long distances between the customer and the bank. Obviously, the set-up of agent banks is less costly and more flexible than for traditional bank branches since it reduces the need to invest in staff and physical infrastructure. (Barasaet al, 2013)

(Gardner, 2000) contends that mobile banking systems are up to three times cheaper to operate than branches for two reasons. First, mobile banking minimizes fixed costs by leveraging existing retail outlets and reducing the need for financial agent banks to invest in their own infrastructure. Second, acquisition costs are lower for bank-enabled agents and bank wallets.

Agents require a lot of capital because they need to have enough cash on hand and electronic float for customers to withdraw and deposit on demand. Other costs also require upfront investment, though in much smaller amounts. Agents may need to acquire a business license, bring the look and feel of their store up to standards (paint, counter, etc.), or make security improvements beyond all this they need to keep a prepaid balance/Collateral at the bank premises (Faming et al. 2011).

In the countries studied, the banks and non-banks involved undoubtedly devoted significant effort to researching the relevant laws and regulations before investing in agent-assisted branch-

less banking approaches, and in most cases, they also consulted with regulatory authorities to understand better how authorities were likely to apply existing rules to the new model. But because regulators have had little experience with both models and are still adjusting existing rules to address them (or have yet to begin this process), some level of legal and regulatory uncertainty and ambiguity for both the banks and to a lesser extent also for retail agents remains (Makin, 2012).

Product Image in the Society and Social Issue is also another concern area for financial institutions when retail agent's underpay-from or are robbed, banks' public image may suffer. Many operational risks mentioned (such as the loss of customer records or the leakage of confidential customer data) also can cause reputational risk, as can liquidity shortfalls in the retail agent's cash drawer. This and other mismanagement of the product image because the bad image on the public towards the new product refrain them to usage of the product (Laurer, 2011).

Managing the Risk has remained a challenge in association with technologically innovative products like mobile banking. Technological related risks are risks with regard to technology and could be characterized by unparalleled speed of transformation related to technological and customer service innovation, the nature of electronic network is open everywhere in the globe, the mobile banking application systems are integrated with the financial institutions legacy core application systems and with the hardware. And the necessary information technology service increases the financial institution dependency on the third parties.

Whereas Infrastructure and Software Application Risks are attributed to financial institution without laying down proper information business continuity plans, security policies and procedures will be in a haphazard condition of performing information security operations of mobile banking. This may result into serious IT operational risks like data backup issues, segregation of jobs, succession planning, capacity planning, and disaster recovery and business continuity (Chiteli, 2013).

2.10 Factors affecting mobile banking adoption

Many researchers have been used different theoretical frame works in the study of adopting new technological innovation. Among frameworks that have been developed based on the past studies includes, Technology Acceptance Model(TAM) (Davis, 1989), which posit the two sets of

beliefs, i.e., perceived ease of use (PEOU) and perceived usefulness (PU) to determine individual's acceptance of a technology. Theory of Reasoned Action(TRA) (Fishbein & Ajzen 1975), Theory of Planned Behavior (TPB) (Ajzen 1991), which deals with the intention of adopting and the factors affect the use technology such as attitude, subjective norms and perceived behavioral control. The Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkateshet al 2003) Diffusion of Innovations Theory (DIT) developed by Rogers (1995) to explain how the diffusion of innovations takes place in the social system.

2.11 Empirical studies

2.11.1 Review of previous studies in Ethiopia

Several studies have been conducted to examine the relationship between Mobile banking adoption and its determinants in developed and developing countries. Given the amount of empirical literature available on the topic of this research it would have been quite difficult to present the results of all the studies, therefore here are some of international researches done on mobile banking.

Luarn and Lin [2005] employed the extended technology acceptance model (TAM) to explore human behavioral intention to use mobile banking. They collected 180 respondents in Taiwan and discovered that perceived self-efficacy, financial cost, credibility, easy-of-use and usefulness had positive effects on the behavioral intention to use mobile banking. Likewise, due to the parsimony and predictive power of TAM, Amin [2008] used an extended TAM containing five constructs - perceived usefulness, perceived ease-of-use, perceived credibility, the amount of information, and normative pressure - to explore the adoption of mobile banking. They gathered 158 valid questionnaires in Malaysia and supported that perceived ease-of-use markedly influenced perceived usefulness and credibility, and human intentions to adopt mobile banking was significantly affected by perceived usefulness, perceived ease-of-use, perceived credibility, the amount of information, and normative pressure. Drawing from the theory of innovation resistance proposed by Ram and Sheth [1989], Laukkanen [2007] summarized 18 factors into five barriers, namely Usage, Value, Risk, Tradition, and Image barriers. The theory of innovation resistance, adapted from the psychology and the IDT of Rogers [Rogers 2003], aims to explain why customers resist innovations even though these innovations were considered necessary and

desirable. Through investigating 1525 usable respondents from a 16 large Scandinavian bank, Laukkanen[2007] uncovered that the value and usage barriers were the most intense barriers to mobile banking adoption, while tradition barriers (such as preferring to chat with the teller and patronizing the banking office) were not an obstacle to mobile banking adoption. Based on TAM and TPB research structure, Sripalawat [2011] collected 195 respondents and found subject norms to be the most influential factor, perceived usefulness to be the second influential factor, and self-efficacy to be the third influential factor in mobile banking adoption. Based on the extended TAM and through collecting 325 valid responses from MBA students in India, Dasgupta [2011] first employed the exploratory factor analysis to identify seven antecedents to behavioral intention toward the adoption of mobile banking. Thereafter, they utilized the regression technique to examine the effects of these antecedents on behavioral intention. Their empirical results supported six of seven antecedents, except for risk. The six antecedents were perceived image, perceived usefulness, perceived ease-of-use, perceived value, self-efficacy, perceived credibility, and tradition, which significantly influenced the behavioral intent to use mobile banking. Recently by using interpretive structure modeling and mapping of mobile banking influences in India, Ketkar [2012] systematically plotted key mobile banking barriers and enablers on the two-dimensional map. By treating driving power of enablers as positive and that of barriers as negative, their work identified “facility to get quick updates”, “time and cost saving”, “reach of telecom distribution” and “need for telecoms to improve customer retention” as the crucial drivers for the adoption of mobile banking.

In the context of Ethiopia, a number of studies on mobile banking were adopted. Ayana (2012) studied factors that affect adoption of E-banking in the Ethiopian banking industry. The study was conducted based on the data gathered from four banks in Ethiopia; three private banks (Dashen bank, Zemen bank and Wegagen bank) and one state owned bank (commercial bank of Ethiopia). A mixed research approach was used to answer the research questions that emerge through the review of existing literature and the experiences of the researcher in respect of the E-banking system in Ethiopia. The study statistically analyzes data obtained from the survey questionnaire. A research framework developed based on technology-organization environment model (TOE) developed by Tornatzky and Fleischer. The result of the study indicated that, the major barriers Ethiopian banking industry faces in the adoption of Electronic banking are: security risk, lack of trust, lack of legal and regulatory frame work, Lack of ICT infrastructure

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

Michael (2013) examined the challenges and opportunities of electronic banking in Ethiopia in the case of Dashen and Nib International Banks. The study was conducted based on data collected from staff and customers of the two banks through questionnaires and interviews. The response of interviews and the survey show that there are certain issues that become a challenge for the development of electronic banking in Ethiopia. In this regard, the result of the study indicated that the major challenges for the development of electronic banking in Dashen and Nib International Banks are lack of information, security risk, lack of trust, lack of legal and regulatory framework, lack of infrastructure, shortage of skilled professionals and lack of awareness. The study also identified perceived ease of use and perceived usefulness as benefits for the development of E-banking in Ethiopia. The study suggests a series of measures which could be taken by the two private commercial banks and to address various challenges identified in the study. These measures include: enhancing the awareness level of individuals on E-banking, implementing powerful security programs, establishing a clear set of legal framework on the use of technology in banking industry, supporting banking industry by investing on telecommunication infrastructure and hiring well trained and experienced IT professionals to handle the E-banking business competently with adequate knowledge.

Kalkidan (2016) conducted a research on factors influencing the usage of mobile banking in Ethiopia. The study used Technology Acceptance Model (TAM) and Innovation Diffusion Theory (IDT) by integrating perceived risk, trust and awareness into the established models. This study was conducted based on the data gathered from customers of Commercial Bank of Ethiopia and United Bank in Addis Ababa, Ethiopia. Survey was conducted using questionnaire. The research results found relative advantage, compatibility, perceived trust, perceived usefulness, and perceived risk as major influencing factors for mobile banking adoption whereas perceived ease of use and awareness were found to have insignificant effect on mobile banking

usage for bank customers located in Jimma, Ethiopia. The study recommended banks to consider investing in campaigns and arranging information sessions to demonstrate the features of mobile banking services, and its benefits over traditional channels.

2.12 Conceptual framework

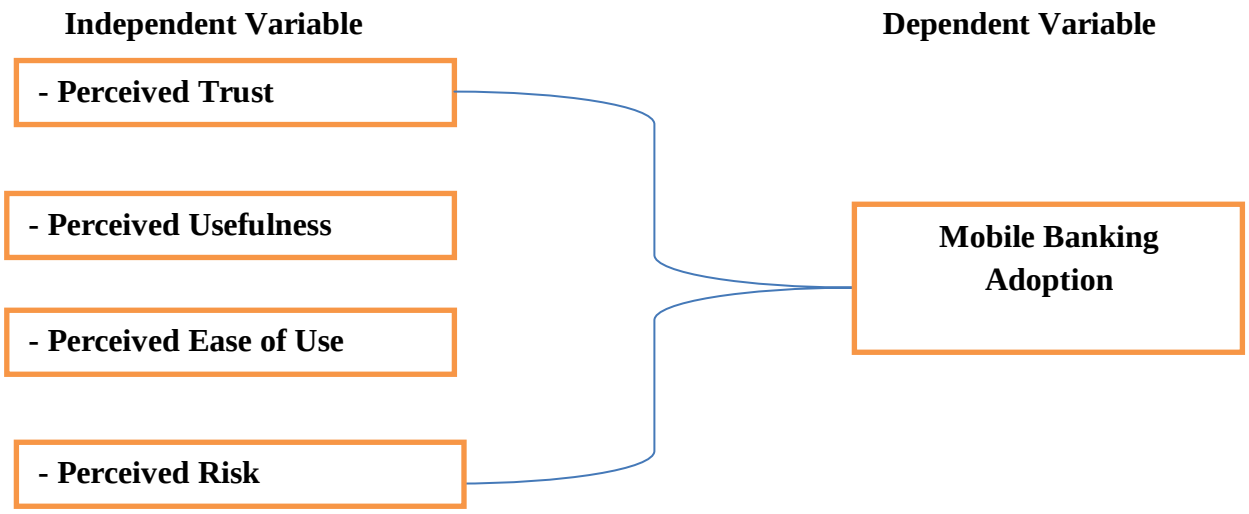
The knowledge gap of the adoption of mobile banking has been gradually increasing with the rapid increase in the use of mobile or wireless handsets in the recent past. Studies conducted in the early 2000 showed that European countries including Scandinavian countries, France, UK, Ireland and Germany, alongside Canada and Japan were among the leaders in mobile banking. In some Asian countries (Singapore and Malaysia) mobile banking penetration was on the increase whereas Australia and New Zealand were among the slow adopters. There was no reference to Africa considering it is a developing continent and mobile banking was still very new in the technology world. However, other studies conducted in mid 2000s showed that mobile banking had grown faster in Sub-Saharan Africa than in most other parts of the world within a relatively short time, and was expected to continue increasing (International Telecommunications Union, 2005).

Studies were conducted in different countries .Some of these studies includes Yang (2005), carried out a study "Exploring factors affecting the adoption of mobile banking in Singapore" Laforet & Li (2005), "Consumers attitudes towards online and mobile banking in china", Gu et al, (2009) conducted a study on determinants of behavioral intension to mobile banking, Esther (2013) conducted a research on Mobile banking adoption in the banking industry in Kenya and an empirical study that was conducted on the factors that affect the Malaysian customers from adopting mobile banking services by Cheah et al (2011). In the context of Ethiopia, however, to the knowledge of the researcher, there appears to be limited evidence on factors affecting adopting of mobile banking but some of related studies are: The opportunities and challenges of e-banking in Ethiopia (Garedachew, 2010), the challenges and opportunities of electronic banking in Ethiopia in the case of Dashen and Nib International Banks,(Michael ,2013) , factors affecting adoption of e-banking system in Ethiopian Banking industry(Ayana ,2012). However as far as the researcher knowledge is concerned one study, factors influencing usage of mobile banking in Addis Ababa by (kalkidan 2016) has been conducted but the study covered only Addis Ababa city and did not include users' perception of other regional areas in addition

perceived self-efficacy and perceived cost which are major factors of mobile banking adoption were not studied.

The study is going to be carried out using the conceptual framework presented below, which is drawn from the theoretical and empirical literature reviews discussed above.

Figure 1: Conceptual Framework



Source: The researcher own development

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1 Research Design and Approach

According to Kerlinger (1978), research designs are invented to enable answering the research questions as validly, objectively, accurately and as economically as possible. Descriptive research enables to describe characteristics of objects, people, groups, organizations, or environments and explains the conditions of the present by using questionnaires to describe the phenomenon (Gabriel et al, 2015). Survey design is a quantitative procedure in which researchers administer a survey to a portion sample or entire population of the respondents in order to describe opinion, attitudes, characteristics or behavior of the population (Kumar, 2011).

The study was to identify determinants of mobile banking adoption. The researcher was used quantitative data in respect with research variables of mobile and agent banking services. Since it tries to describe the problem and attempts to explain the phenomenon with quantitative research approach. Thus, due to quantitative nature of data, the researcher was used deductive reasoning to examine the cause and effect relationships between dependent and independent variables because deductive reasoning starts from laws or principles and generalizes to particular mean that the researcher generalized the position of mobile and agent banking. As noted by Kothari (2004), explanatory research design examines the cause and effect relationships between dependent and independent variables. Therefore, since this study was examined the cause and effect relationships between dependent and independent variables. It is an explanatory research design whereas quantitative explanations are quantitative research approach.

3.2 Samplings techniques & procedures

The study was used stratified sampling technique and judgmental technique simultaneously. The stratified sampling technique was used to categorize by Branches. There are 6 banks; south, then by simple random sampling select 6 branches from those.

3.3 Sample Size determination

The total population of the research was employees of the selected branches of CBE in Addis Ababa. There are around 100,000 customers in Jimma city of commercial banks of Ethiopia. By

using of Solving formula the researcher use around 398 sample customers at 95% confidence level. The researcher was distributing questionnaires to samples in randomly selected branches. In this study all the customers randomly selected branches was used as a sample. There are six banks taken in Jimma city, under commercial banks of Ethiopia, there are Awash Bank, Debub Global Bank, Commercial Bank of Ethiopia, Cooperative bank of Oromia, United Bank and Addis Bank. All banks perform similar tasks, and share the same role in achieving the Company's objectives. As the data obtained from the Management Information System directorate of those Banks, there are around 100,000 customers in Jimma city. For the purpose of this research, to get the sample size of these 100,000 customers, the researcher used the confidence level of 95% confidence level is assumed for this formula to determine the sample size, at e=0.05 and the sample size is determined by (Yamane Taro, 1967) sampling formula.

$$n = \frac{N}{1 + N * (e)^2}$$

$$n=100,000/1+100,000(0.05)^2$$

$$n=398$$

Where n‟ is the required sample size,

N- is the population size and

ε- is the level of precision

Hence the sample sizes for this research was 398 customers of Jimma city. Therefore a sample of 398 customers was made ready for questionnaires.

3.4 Source of Data and Method of Data Collection

The researcher used both primary and secondary sources of data to conduct the study. Accordingly primary data was collected from customers of the respective banks through questionnaire developed to solicit their opinion regarding the factors affecting the adoption of mobile banking. The researcher also used secondary data sources like, annual reports, directives which supported the study. As a research instrument, structured questionnaire was used to gather data from the respective banks respondents. The questionnaires consisted of closed ended

question. To ensure successes, the questionnaires were short and precise with questions moving from easy to difficult ones. Data that were relevant to answer the research questions to meet the research objectives were included and a five points likert scale was used where 1= strongly disagree, 2= disagree, 3= Neutral, 4= Agree and 5= strongly agree was used to measure the respondents concerning the variables.

3.5 Reliability of the Instrument

Cronbach‟s alpha reliability coefficient normally ranges between 0 and 1. The closer alpha coefficient is to 1.0, the greater the internal consistency and vice versa. In this research the rule of thumb developed by (George and Mallery, 2003) was used where an alpha value>= 0.90 is excellent, >=0.80 is good, >= 0.70 is acceptable, >=0.60 is questionable, >= 0.50 is poor, <= 0.50 is unacceptable. Since the value of all the constructs were above 0.80, we can conclude that the data collection instrument is consistent and dependable as indicated in the following table.

Table 1: Reliability test

Construct	Number of item	Cronbach's alpha	Internal consistency
Perceived Trust	5	0.868	Good
Perceived Risk	4	0.717	Acceptable
Perceived Ease of Use	3	0.700	Acceptable
Perceived Usefulness	4	0.756	Acceptable

3.6 Data Collection Instruments

For this research, the primary data was collected through the use of self-administered questionnaire from customers who were located in Jimma city. After identifying the sample respondents, the questionnaire was provided to them by the researcher and enough time was given to respond on all of the items in the questionnaire carefully. The questions in the questionnaire was closed ended or structured with pre-determined 5-point Likert scale for response in order to ease the process of analyzing the data from the respondents. According to Babbie & Mouton (2006), the use of questionnaires is advantageous because questionnaires are economical, speedy, there is no bias (as in interviewee: interviewer bias), and the possibility of anonymity and privacy encourages participants to be willing to respond on sensitive issues, and

do so honestly. The questionnaire is preferred because it translates the research objectives into specific questions that were asked to the respondents.

3.7 Methods of Data Analysis

The data collected from questionnaire was analyzed using data analysis tools. Verification was conducted and completed questionnaires were identified. Then the data was coded in to SPSS (Statistical package for social science).

According to the variables selected and the questions asked. The data analysis was performed using descriptive for demographic characteristics and inferential statistics for independent and dependent variables. SPSS Version 20 was used to analyze the data.

3.7.1 Descriptive Statistical Analysis

The final report of the relevant demographic characteristics of the respondent's result was illustrated through central tendency measurements (frequency and percentage) and the variables mean and standard deviation was illustrated. In addition, tabular explanation was used to present the results.

3.7.2 Inferential Statistical Analysis

In inferential statistical analysis, correlation and multiple linear regression tools was utilized. The use of these statistical tools and methods are described below:

a) Correlation

Correlation (r) was used to describe the strength and direction of relationship between two variables. All variables was be measured an interval level; Pearson correlation was used. Correlation "r" output always lies between -1.0 and +1.0 and if r is positive, there exists a positive relationship between the variables. If it is negative, the relationship between the variables is negative. While computing a correlation, the significance level shall be set at 95% confidence level with error term„ ε "value of 0.05.

b) Multiple Linear Regression Analysis

Multiple regression analysis is a major statistical tool for predicting the unknown value of a variable from the known value of variables. And it is about finding a relationship between variables and forming a model. The model for this study was developed using independent

variables and dependent variable of mobile banking adoption.

The multiple linear regression equation is in the form of:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where Y= Mobile Banking Adoption

β_i are coefficients to be estimated,

(x_1) = Perceived Trust

(x_2)= Perceived Usefulness

(x_3)= Perceived Ease of Use

(x_4)= Perceived Risk

ε =error term normally distributed with zero mean and variance.

Y is the dependent variable and X_i are the independent variables and„ ε " is the error term.

To enhance understandability of the result, table, and graph was used in presentation each accompanied by descriptive narrative.

3.8 Ethical Consideration

Permission to carry out the research was sought from the college of business and economics department of banking and finance before the study is initiated. The respondent was made aware of the objectives and the general overview of the study. The respondents were also making aware that participation in the study did not warrant the many gifts, monetary or otherwise. However, they were informing that to search findings was used by the stakeholders and policy makers for the betterment of the Ethiopia banking industry system. Their informed consent was sought by appending a signature in the respondent consent.

CHAPTER FOUR

4. DATA PRESENTATION, ANALYSIS AND INTERPRETATION

This chapter comprises of presentation, analysis, and interpretation of the study findings. The research objective was to investigate the determinants of mobile banking adoption in commercial banks of Ethiopia in Jimma city. This chapter demonstrates the descriptive statistics of the study as well as inferential statistics of the variables under study. A total of 398 questionnaires were distributed to customers, out of which 384 were returned. This represented a response rate of 96.48%. This is a very high response rate which is good for research as any response rate above 70 % is good and adequate for analysis and reporting, (Mugenda 2003).

4.1 Demographic characteristics of the respondents

Under this section, the demographic characteristics of the respondents who participated in the study are being discussed in terms of frequencies and the corresponding percentages for each category.

Table 2: Demographic characteristics of the respondents

Characteristics	Category	Frequency	Percentage %
Gender of respondents	Female	179	46.61
	Male	205	53.38
	Total	384	100
Age of respondents	18-30 years	154	40.10
	31-45 years	132	34.37
	Above 45years	98	25.52
	Total	384	100
Level of education	Certificate	115	29.94
	Diploma	113	29.42
	Bachelors	148	38.54
	Masters	8	2.08
	Total	384	100
Duration of operating a bank account	Less than a year	112	29.16
	2-5 years	137	35.67
	5years and above	135	35.15
	Total	384	100
Source of information about	Television and radio	134	34.89
	Newspapers	118	30.72
	Bank	132	34.37

mobile banking	Total	384	100

Source: Own survey data, 2021

As evidenced in the above table, the gender of the respondents was evenly distributed with the female customers constituting 46.61% of the total respondents and the males 53.38%. In relation to the age of the respondents, customers falling in the age bracket of 18 to 30years constituted the highest percentage of 40.10%, followed by 31 to 45 years with 34.37% and lastly those above 45years of age with 25.52%. Other demographic characteristics included in the study were the level of education with 29.94% certificates, 29.42% diplomas, 38.54% undergraduates, 2.08 master's degrees.

The responses given by the respondents about the duration one has been operating a bank account, 29.16 % of the respondents had been banking for less than a year, 35.67% for a period between 2 to 5 years, while 35.15% corresponded to those who had banked for 5 years and above. When customers were asked about how they came to know about mobile banking adoption, 34.89% got to know about the service from television and radio advertisements, 30.72% from reading newspapers, 34.37% obtained the information when making transactions in the mobile banking adoption halls. This is an indication that majority of the bank customers had never used the mobile banking adoption.

4.2: Descriptive statistics

This section consists of the descriptive statistics of the variables under study. The variables of the study whose descriptive statistics were computed included; perceived trust, perceived usefulness, perceived ease of use, perceived risk and mobile banking adoption. The scores low level was represented by mean score, equivalent to 1 to 2.5 on the continuous Likert scale. The scores of moderate level were represented by a score equivalent to 2.6 to 3.5 on the Likert. The score o f high level were represented by a mean score equivalent to 3.6 to 5.0 on the Likert Scale Durham Unversty, 2013).

4.2.1: Perceived trust

In the study, perceived trust was measured in terms of security, confidentiality and credibility of the mobile banking adoption. Descriptive statistics relating to perceived trust that's to say, mean and standard deviation were computed and the findings are displayed in the table below.

Table 3: Descriptive statistics corresponding to perceived trust

Statement	Mean	Std. Deviation
My account information would be kept safe when I make transactions using the mobile banking adoption.	2.90	1.102
Banks are well equipped with machines to enable them detect fake money in a mobile banking adoption transaction.	2.83	1.170
My money would be in safe custody when I make deposits using the mobile banking adoption.	3.01	1.078
The mobile banking adoption is reliable.	3.30	1.078
The mobile banking adoption is credible.	3.59	1.058
Mean average=3.13		

Source: Own survey data, 2021

As evidenced in table 4.2, the findings of the study revealed that customers generally perceived all the items corresponding to perceived trust to be equivalent to the average. However, notable variations were observed in relation to the different dimensions used to conceptualize perceived trust, that is to say, the extent to which the customers perceive the service to be reliable had the highest mean of 3.59 and a standard deviation of 1.058, this was followed by the extent to which the customers perceive the mobile banking adoption being credible with a mean of 3.30 and a standard deviation of 1.078. This implies that these two particular items were accorded more relative importance in explaining perceived trust by the respondents.

The extent to which customers believed their money would be in safe custody came third with a mean of 3.01 and a standard deviation of 1.078, followed by the extent to which the customers believed that their account information would kept safe when they make transactions using the mobile banking adoption with a mean of 2.90 and a standard deviation of 1.102. Lastly, the extent to which customers believe that banks are given machines to detect fake money got the least score (mean=2.83, SD= 1.170).

4.2.2: Perceived usefulness

In the study, perceived usefulness was conceptualized in terms of; service efficiency, actual benefits and accessibility of the mobile banking adoption. Descriptive statistics relating to

perceived usefulness that's to say, mean and standard deviation were computed and the findings are displayed in the table below.

Table 4: Descriptive statistics corresponding to perceived usefulness

Statement	Mean	Std. Deviation
The cost of accessing financial services using the mobile banking adoption would be affordable as compared to other banking options.	3.35	1.296
Withdrawing money from my account would be easier when using the mobile banking adoption.	3.81	1.062
It would be easier depositing money on my account when using the mobile banking adoption.	3.69	1.080
I would save more time when I use the mobile banking adoption to make transactions.	3.89	1.084
It would be easier paying bills using the mobile banking adoption as compared to traditional banking service.	3.38	1.347
Transacting using the mobile banking adoption is something I would enjoy doing.	3.42	1.139
The mobile banking adoption would be faster in processing transactions than the traditional banking service.	3.59	1.138
Mean average=3.62		

Source: Own survey data, 2021

As indicated in table 4.3, in relation to perceived usefulness, the banking customers who participated in the study revealed that they preferred the mobile banking adoption to other banking options because they could save a lot of time when making transactions with a mean of 3.89 and a standard deviation of 1.084. This was followed by the extent to which customers believed withdrawing money from their account would be much easier while using the mobile banking adoption with a mean of 3.81 and a standard deviation of 1.062, and the extent to which customers believed depositing money to their accounts would be much easier when using the mobile banking adoption (Mean=3.69, SD=1.080).

Other dimensions included; the extent to which customers believed the service would be much faster when processing transactions (Mean=3.59, SD=1.138), the extent to which customers perceived transacting using the mobile banking adoption being enjoyable (Mean=3.42, SD=1.139), extent to which customers believed paying bills when using the mobile banking adoption would be much easier when compared to other payment options with a mean of 3.38 and a standard deviation of 1.347. Lastly, the extent to which customers believed that the cost of accessing banking services when using the mobile banking adoption would be much affordable with the least mean score of 3.35 and a standard deviation of 1.296.

4.2.3: Perceived ease of use

In the study, perceived ease of use was measured in terms of; ease to learn, ease to operate and service effectiveness of the mobile banking adoption. Descriptive statistics relating to perceived usefulness, that's to say, mean and standard deviation were computed and the findings are displayed in the table 4.4.

Table 5: Descriptive statistics corresponding to perceived ease of use

Statement	Mean	Std. Deviation
It would be much easier tracking my account information when I use the mobile banking adoption than when using the traditional banking service.	2.89	1.095
The network on the mobile banking adoption would be more reliable when making transactions as compared to ATMS and banking halls.	2.95	1.106
The mobile banking adoption would be compatible with my banking needs.	3.04	1.066
The banks have enough cash to enable me withdraw large sums of money.	2.30	1.156
Banks are skilled enough to enable me make transactions using the mobile banking adoption.	2.96	1.167
Mean average=3.04		

Source: Own survey data, 2021

As shown in table 4.4, the findings revealed that on average, customers perceived all the issues relating to ease of use of the mobile banking adoption being slightly below average. The extent to which customers believe the service to be compatible with their banking needs scored the highest mean of 3.04 and a standard deviation of 1.066, followed by the extent to which the customers believed the banks being skilled enough to process transactions using the mobile banking adoption (mean=2.96 ,SD=1.167), the extent to which the customers believed the network on the mobile banking adoption being more reliable as compared to other banking options (mean=2.95, SD=1.106), the extent to which customers believed that it would be easier for them to track information about their account information with a mean of 2.89 and a standard deviation of 1.095. Lastly, the extent to which customers believed that the banks had enough cash to enable customers make withdrawals of large sums of money had the least mean of 2.30 and a standard deviation of 1.156.

4.2.4: Perceived risk

In the study, perceived risk was service effectiveness of the mobile banking adoption. Descriptive statistics relating to perceived risk, that's to say, mean and standard deviation were computed and the findings are displayed in the table 4.5.

Table 4.5: Descriptive statistics corresponding to perceived risk

Statement	Mean	Std. Deviation
Mobile banking services may not perform well and may process payments incorrectly because of network problems.	3.40	1.94
When and if transaction errors occur, I will get compensation from banks.	3.52	1.57
I'm worried about using mobile banking because other people may be able to access my account.	2.56	1.90
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.	3.10	1.95
It would take me lots of time to learn how to use mobile banking adoption.	2.32	1.72

Mean average=2.98

Source: Own survey data, 2021

As indicated in table 4.5, in relation to perceived risk, the banking customers who participated in the study revealed that when and if transaction errors occur, I will get compensation from banks with a mean of 3.52 and a standard deviation of 1.57. This was followed by the extent to which Mobile banking services may not perform well and may process payments incorrectly because of network problems with a mean of 3.40 and a standard deviation of 1.94, and the extent to which customers 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 (Mean=3.10, SD=1.95).

4.2.6: Mobile banking adoption

Table 4.6: Descriptive statistics corresponding to mobile banking adoption

Statement	Mean	Std. Deviation
I frequently use the mobile banking adoption to make transactions.	2.23	1.306
I'm very likely to use the mobile adoption	3.49	1.142
I intend to use the mobile banking adoption in the near future.	3.70	1.030
I will increase my use of the mobile banking adoption to make transactions.	3.21	1.301
With my job complexity, I have to use the mobile banking adoption.	2.95	1.431
Mean average=3.171		

Source: Own survey data, 2021

The customers' intention to use the mobile banking adoption in the near future scored the highest mean of 3.70 and a standard deviation of 1.030. This was followed by extent to which customers were likely to use the service (Mean= 3.49 and SD=1.142) and the extent to which customers were in agreement to increase their use of the mobile banking adoption to make transactions (Mean=3.21, SD=1.301). These particular items were above the grand mean of 3.17 implying that the respondents agreed that the items were measuring mobile banking adoption.

In relation to the extent to which customers believed that they had to use the service to make transactions due to their job complexity with mean of 2.95 and a standard deviation of 1.431 while adoption of mobile and service, majority of the customers included in the study were in disagreement in regards to the extent to which they frequently used the mobile banking adoption to make transactions with the least mean score of 2.23 and a standard deviation of 1.306.

4.3 Correlation Analysis

Correlation analysis is beneficial method of exploiting relation (association) between variables. This section indicates that correlations of independent variables under measure perceived trust, perceived usefulness, perceived ease of use, perceived risk with mobile banking adoption are presented. The result of Pearson correlation is presented in the following table and interpreted by the guide line suggested by Field (2006); mentioned that the Pearson correlation coefficient shows the relationship and direction between the predictor and outcome variable. Accordingly, if the relationship is measured in the range of 0.1 to 0.29 it is a week relationship, 0.3 to 0.49 is moderate, above 0.50 shows strong relationship; while the positive and negative sign tell us the direction of their relationship.

Table 6: Pearson correlation coefficient

Variables		MBA	PT	PU	PEU	PR
Mobile Banking Adoption	Pearson Correlation	1	.827**	.776**	.607**	.655**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	384	384	384	384	384
Perceived Trust	Pearson Correlation	.827**	1	.780**	.493**	.570**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	384	384	384	384	384
Perceived Usefulness	Pearson Correlation	.776**	780**	1	.465*	.486**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	384	384	384	384	384
Perceived Ease of Use	Pearson Correlation	.607**	.493**	.465**	1	.276**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	384	384	384	384	384

Perceived Risk	Pearson Correlation	.655**	.570**	.486**	.276**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	384	384	384	384	384

Source: Own survey data, 2021

The above table 4.7 shows that the Pearson correlation analysis of the study variable shows that the correlation between predictor variables, (i.e. perceived trust, perceived usefulness, perceived ease of use, perceived risk) and dependent variables, (mobile banking adoption).

Accordingly, mobile banking adoption has strong and positive correlation with all four independent variables at Pearson correlation (r) value of 0.827, 0.776, 0.607, 0.655 and 0.691respectively as perceived trust, perceived usefulness, perceived ease of use, perceived risk with significance value of $P<0.01$.

4.3 Regression Analysis Results

Regression Analysis is a statistical tool to deal with the formulation of mathematical model depicting relationship amongst variables which can be used for the purpose of prediction of the value of dependent variable, given the value of the independent variables (Kothari 2004). Besides the correlation between the research variables, it is important to assess the predictive relation between these variables. Based on the fact that correlation does not guarantee causality, the researcher examined the coefficient of the dependent variable through regression test. As can be observed from conceptual frame work, the following models can be developed based on theoretical and empirical reviews.

Multiple regression analysis is an analysis of association in which the effects of two or more independent variables on a single, interval-scaled dependent variable are investigated simultaneously (William and Barry, 2010).

4.3.1 Analysis of Variance (ANOVA)

Analysis of variance (ANOVA) is a collection of statistical models and their associated estimation procedures (such as the "variation" among and between groups) used to analyze the differences among group means in a sample. Analysis of variance is based on the law of total

variance, where the observed variance in a particular variable is partitioned into components attributable to different sources of variation. Also, it provides a statistical test of whether two or more population means are equal, and therefore generalizes the t-test beyond two means.

Table 7: ANOVA

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	283.602	4	70.900	226.44	.000[b]
	Residual	78.902	379	.209		
	Total	362.504	383			
a. Dependent Variable: Mobile banking adoption						
b. Predictors: (Constant), perceived trust, perceived usefulness, perceived ease of use, perceived risk						

Source: Own survey data, 2021

In the above ANOVA table shows that, the regression model overall fit can be examined with the help of ANOVA. Accordingly, the overall significance of the model presented in ANOVA table 4.8 above, the total variance (362.504) was the difference in to the variance which can be explained by the independent variables (Model) and the variance which was not explained by the independent variables (error). The study established that there existed a significant goodness of fit between variables as F-test F (226.44) =95.795, at P=0.000<0.01). This indicated that the model formed between effects of perceived trust, perceived usefulness, perceived ease of use, perceived risk and mobile banking adoption was a good fit for the data.

4.3.2 Model Summary

Table 8: Model Summary

Model Summary[b]					
Model	R	R^2	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.908[a]	.824	.816	.97277	1.955

a. Predictors: (Constant), perceived trust, perceived usefulness, perceived ease of use, perceived risk.
b. Dependent Variable: Mobile banking adoption

Source: Own survey data, 2021

In the model summary above table, the multiple regression coefficients R, indicates a very strong correlation of 0.908 between mobile banking adoption and the four independent variables. The adjusted r square = 0.816 reveals that the model accounts for 81.6 % of the variation in mobile banking adoption is explained by the linear combination of all the four independent variables (i.e. perceived trust, perceived usefulness, perceived ease of use, perceived risk). The remaining 18.4% is explained by other factors giving room for further research to investigate other factors which affect mobile banking adoption.

4.3.3 Multiple Linear Regression Coefficients

Regression coefficient is to identifying the relationship between a dependent variable and one or more independent variables. A model of the relationship is hypothesized, and estimates of the parameter values are used to develop an estimated regression equation. Various tests are then employed to determine if the model is satisfactory. If the model is supposed satisfactory, the estimated regression equation can be used to predict the value of the dependent variable given values for the independent variables.

4.4 Multicollinearity Test

Multicollinearity is a state of very high intercorrelations or inter-associations among the independent variables. It is therefore a type of disturbance in the data, and if present in the data the statistical inferences made about the data may not be reliable.

Table 9: Test of Multicollinearity

Model	Collinearity Statistics	
	Tolerance	VIF
Perceived trust	.530	1.886
Perceived Usefulness	.556	1.797
Perceived ease of use	.445	1.058
Perceived risk	.319	1.088

a. Dependent Variable: Adoption of mobile banking

Source: SPSS result, 2019

As observed from table 13 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 multicollinearity among independent variables. Therefore, it is possible to use multiple regressions analysis.

Table 10: Regression Coefficient

Model	Unstandardized Coefficient		Standardized Coefficient	t	Sig.
	B	Std.Error	Beta		
(Constant)	2.217	.819		2.708	0.08
PT	.341	.079	.320	4.298	.000
PU	.201	.063	.221	3.215	002
PEU	.225	.048	.228	4.714	.000
PR	.226	.052	.225	4.315	.000

a. Predictors: (Constant), perceived trust, perceived usefulness, perceived ease of use, perceived risk.

b. Dependent Variable: Mobile banking adoption

Source: Own survey data, 2021

As it is defined in chapter three, the unstandardized coefficients (β1 to β4) are the coefficients of the estimated regression model. Hence, by including the error term (ε), the model for mobile banking adoption can be written as;

The intercept β0 is the point on the vertical axis where the regression line crosses the Y axis. The value of β0 is 2.217 which means the expected value of mobile banking adoption is 2.217when all the independent variables (perceived trust, perceived usefulness, perceived ease of use, perceived risk) assume zero value.

As it can be seen from table 4.10 above, the unstandardized coefficients of the independent variables are the largest value followed by perceived trust, perceived usefulness, perceived ease of use, perceived risk ranks from one to four respectively. The larger the standardized coefficient, the higher is the relative effect of the factors to the mobile banking adoption.

The significance test of the four explanatory variables indicate that all of the explanatory variables are significant with p-value ($p<0.01$) for predicting mobile banking adoption. All the four variables perceived trust, perceived usefulness, perceived ease of use, perceived risk are found to be statistically significant. Studies conducted about the determinants of mobile banking services in Ethiopian commercial banks by colder ado (2016) found out that perceived usefulness and perceived ease of use of the technology to have positive relationship with the adoption of mobile banking whereas perceived risk has negative relationship with the adoption of mobile banking. The beta coefficients of these factors indicate that a one unit increase in the independent variables will result increase in mobile banking adoption. The result supports studies by Kalkidan (2016) the research results found perceived trust were found to have significant effect on mobile banking usage for bank customers located in Ethiopia.

4.5 Discussion

Below mainly the discussion part of results were presented on the outputs of mobile banking adoption the evidence of Jimma town banks. Accordingly, the following sub sections discuss the results of the research hypotheses presented in chapter three. The selected perceived determinant factors are perceived usefulness, perceived ease of use; perceive self-efficacy and perceived risk.

4.5.1 Perceived usefulness and mobile banking adoption

Perceived usefulness was considered to be one of the key factors that can affect mobile banking adoption in Ethiopia. This finding suggest that if mobile banking is to be accepted by users, they should perceive it as a useful and quicker way of doing banking transactions compared with the traditional banking system. This result is found to be in line with (Luarn and Lin, 2005) finding that states perceived usefulness having a positive influence in mobile banking adoption. (Wang et.al 2003) also agree that most customers choosing mobile services because they see their benefits. Therefore the possible reason for the significant positive relationship could be most users in Ethiopia choose to adopt mobile services because they see the benefits they could obtain and also the convenience and any time anywhere accessibility.

4.5.2 Perceived Ease of Use and mobile banking adoption

In terms of the impact of perceived ease of use on mobile banking adoption in Ethiopia, as shown in the results section, this study found a positive and statistically significant relationship between the two. This finding was consistent with the results by (Khalifa and Shen 2008, Kim et

al 2009; Wei et al. 2009) that stated in previous empirical studies that perceived ease of use has a positive influence in the usage of mobile banking.

4.5.3 Perceived self-Efficacy and mobile banking adoption

This study found Perceived self-efficacy and mobile banking adoption was found to have a positive significant relationship. Therefore the result of the study is consistent with prior researches by (extended TAM, Luarn & Lin, 2004) that found perceived self-efficacy to be influential in the adoption of mobile banking. This implies that in Ethiopia, users' knowledge, ability and skills are needed to use the new information technology.

4.5.4Perceived Risk and mobile banking adoption

According to the results of this study, in Ethiopia, factors which hamper mobile banking usage are: consumers believe that it is not safe to use mobile banking; consumers believe that it is unsafe to reveal personal information. This finding show that the lower the perceived risks of mobile banking the more likely an individual would be prepared to become active users of mobile banking. Therefore the perceived risk negatively influences consumer behavior with regard to mobile banking. This finding was found to be consistent with Luo et al. (2010); Mitchell (1999), Safeena, et al., (2011); Laforet and Li, (2005); Luarn and Lin, (2005); Mallat (2007) and Gu et al., (2009) that found perceived risk is one of the critical factors to be focused while designing and developing a mobile banking service.

CHAPTER FIVE

5. Summary of Findings, Conclusion and Recommendations

This chapter includes summary of the major findings, conclusion drawn from the findings and the study recommendation.

5.1. Summary of Findings

The purpose of this study was to examine the determinants of mobile banking adoption in commercial banks of Ethiopia in Jimma city. The first research question of the study was perceived trust influence on mobile banking adoption in commercial banks of Ethiopia in Jimma city. The average mean value for the descriptive statistics revealed that the perceived trust (M=3.13) is moderate level in linker scale questioner. The research paper uses descriptive statistics as well regression analysis model with the mobile banking technology to understand customers‟ mobile banking technology in the commercial banks of Ethiopia in Jimma city customers and following are the conclusion of the research and its implication. The study has provided empirical justification for the framework that identifies four constructs of the independent variables and describes the relationship among the constructs and mobile banking adoption within the context of commercial banks of Ethiopia in Jimma city. The Pearson's correlation analysis revealed that, there is found to be a positive correlation and significantly related between mobile banking adoption and perceived trust. The regression model result revealed that, a unit increase in perceived trust by keeping other independent variables constant will lead to a 0.341 increases in mobile banking adoption. This implies that perceived trust indicate for 34.1 % of variation in mobile banking adoption. Therefore, the findings indicated that perceived trust in the organization affects positively mobile banking adoption.

The second research question was the perceived usefulness influence on mobile banking adoption in commercial banks of Ethiopia in Jimma city. The average mean value for the descriptive statistics revealed that the perceived usefulness (M=3.62) is high level in linker scale questioner. The Pearson's correlation analysis revealed that, there is found to be a positive correlation and significantly related between mobile banking adoption and perceived usefulness. The regression model result revealed that, a unit increase in perceived usefulness by keeping

other independent variables constant will lead to a 0.201 increases in mobile banking adoption. This implies that perceived usefulness indicate for 20.1 % of variation in mobile banking adoption. Therefore, the findings indicated perceived usefulness in the organization affect positively mobile banking adoption.

The third research question was perceived ease of use influence on mobile banking adoption in commercial banks of Ethiopia in Jimma city. The average mean value for the descriptive statistics revealed that the perceived ease of use (M=3.04) is moderate level in linker scale questioner. The Pearson's correlation analysis revealed that, there is found to be a positive correlation and significantly related between mobile banking adoption and perceived ease of use. The regression model result revealed that, a unit increase in perceived ease of use by keeping other independent variables constant will lead to a 0.225 increases in mobile banking adoption. This implies that perceived ease of use indicate for 22.5 % of variation in mobile banking adoption. Therefore, the findings indicated that perceived ease of use in the organization affect positively mobile banking adoption.

The final research question was perceived risk influence on mobile banking adoption in commercial banks of Ethiopia in Jimma city. The average mean value for the descriptive statistics revealed that the perceived risk (M=2.98) is high level in linker scale questioner. The Pearson's correlation analysis revealed that, there is found to be a positive correlation and significantly related between mobile banking adoption and perceived risk. The regression model result revealed that, a unit increase in perceived risk by keeping other independent variables constant will lead to a 0.226 increases in mobile banking adoption. This implies that perceived risk indicate for 22.6 % of variation in mobile banking adoption. Therefore, the findings indicated that perceived risk in the organization affect positively mobile banking adoption.

5.2. Conclusions

Based on the findings, the study concludes that there is a relationship between the perceived trust, perceived usefulness, perceived ease of use, perceived risk (independent variables) and mobile banking adoption (dependent variables); the correlation relation shows that they have strong and a positive correlation with the organization. The independent variables studied significantly and positively affect the mobile banking adoption of commercial banks of Ethiopia

in Jimma city. In general, the study concludes that perceived trust, perceived usefulness, perceived ease of use, perceived risk positively affect mobile banking adoption at commercial banks of Ethiopia in Jimma city.

5.3 Recommendations

The study found out that perceived trust, perceived usefulness, perceived ease of use, perceived risk were significant predictors of mobile banking adoption. Based on the above summary and conclusion, the researcher recommends the following points.

- The policy makers of the bank should concern on regulation about security issues, the manner in which mobile banking are implemented, identifying users, protecting users and how much money can be transacted, should be a major area the regulation should address.
- Ethio telecom as mobile network service provider shall give special attention to mobile banking technology from its side to provide reliable network to the banks as the customers perceive the mobile network is not risky to adopt mobile banking.
- The banks shall produce user guide for mobile banking services using various means such as booklets, flyers, and in electronic means such as website based electronic documents to make users more experienced and knowledgeable about mobile banking so that the probability of adoption is more.
- With regards to perceived risk it is important for banks and service providers to project higher security when providing mobile banking services in order to yield higher customers' acceptance. In fact, banks and service providers should continuously innovate and offer better security and reliable applications to enhance users' confidence towards mobile banking services.
- To change the customer's perception with regards to risk and trust issues banks could use a well structured advertisement and staff interaction in order to make them realize that the service is safe to use. This will help the customers to know the advantages and disadvantages associated with the service and as a result of this, they could weigh the costs and the benefits of using the self-service which in turn will reduce unnecessary worries and anxiety.

- 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.

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APPENDIX

JIMMA UNIVERSITY

COLLAGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF BANKING AND FINANCE

Dear participant,

My name is Edget Tamiru and I am a student undertaking a master of degree of Science in banking and finance at the University of Jimma, Ethiopia. To fulfill the completion of this course, I am carrying out a study on the determinants of mobile banking adoption in commercial banks of Ethiopia in Jimma city. Since the matter affects the whole community, I am inviting you to participate in this research paper study by completing the attached questionnaire.

If you choose to participate in this research paper, please answer all questions as honestly as possible.

Participation is strictly voluntary and you may decline to participate at any time. In order to ensure that all the information was remain confidential, you do not have to include your name.

The data collect will be for academic purposes only.

Thank you.

Research Questionnaire

SECTION ONE: Background Information

1. Gender of respondents

1. Female 2. Male

2. How old are you?

1. 18 -30 years 2. 31 - 45 years 3.Above 45 years

3. What is your level of education?

1. Certificate 3. Undergraduate

2. Diploma 4. Masters

If others, please specify……

4. For how long have you been banking with us?

1. Less than a year.
2. 2-5years
3. 5years and above.

5. How did you come to know about the mobile banking adoption?
    1. Television advertisements
    2. Newspapers
    3. Friends
    4. Social media

SECTION TWO: Perceived Trust

- **Below are lists of statements pertaining to mobile banking adoption, Please indicate whether you agree or disagree with each statement by ticking (√) on the spaces that specify your choice from the options that range from ''strongly agree" to ''strongly disagree".**

Note: SA- Strongly Agree = 5, A- Agree = 4, N- Neutral = 3, DA- Disagree = 2, SD- Strongly Disagree = 1

No	Statement	1	2	3	4	5
1	My account information would be kept safe when I make transactions using the mobile banking adoption.					
2	Mobile banking adoption are well equipped with machines to enable them detect fake money in the transaction.					
3	My money would be in safe custody when I make deposits using the mobile banking adoption.					
4	Mobile banking adoption are well equipped with money counting machines to ensure I get the right amount of money when I make deposits or withdraws using the mobile banking adoption.					
5	Mobile banking adoption is fully registered and has the authority to act on behalf of my bank.					
6	My transactions would be reflected on my account when I make transactions using mobile banking adoption.					
7	The mobile banking adoption is trust worthy.					

8	The mobile banking adoption is reliable.					
9	The mobile banking adoption is credible.					
10	My account information would be kept confidential when I make transactions using the mobile banking adoption.					

SECTION THREE: Perceived Usefulness

No	Statement	1	2	3	4	5
11	The cost of accessing financial services using the mobile banking adoption would be more affordable as compared to other banking options.					
12	Withdrawing money from my account would be easier when I use mobile banking adoption.					
13	It would be easier depositing money on my account when using the mobile banking adoption.					
14	I would save more time when I use the mobile banking adoption to make transactions.					
15	It would be easier paying bills using the mobile banking adoption as compared to traditional banking service.					
16	It would be easier for me to transfer money from one account to another using the mobile banking adoption.					
17	Transacting using the mobile banking adoption is something I would enjoy doing.					
18	The mobile banking adoption would be faster in processing transactions than the traditional banking service.					
19	The mobile banking adoption would be more accessible and convenient than banking halls.					
20	The mobile banking adoption would enable me accomplish my tasks more efficiently and effectively.					

SECTION FOUR: Perceived Ease of Use

No	Statement	1	2	3	4	5
21	Interacting with the mobile banking adoption would not require me a lot of mental efforts.					
22	It would be much easier tracking my account information when I use the mobile banking adoption than when using the traditional banking service.					
23	It would be easier making transactions when using the mobile banking adoption.					
24	The network on the mobile banking adoption would be more reliable when making transactions as compared to ATMs and banking halls.					
25	The mobile banking adoption would be compatible with my banking needs.					
26	The mobile banking adoption would have enough cash to enable me withdraw large sums of money.					
27	The mobile banking adoption is skilled enough to enable me make transaction using the mobile banking adoption.					

SECTION FIVE: Perceived Risk

No	Statement	1	2	3	4	5
28	Mobile banking services may not perform well and may process payments incorrectly because of network problems.					
29	When and if transaction errors occur, I will get compensation from banks.					
30	I'm worried about using mobile banking because other people may be able to access my account.					
31	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.					

32	It would take me lots of time to learn how to use mobile banking services.					

SECTION SIX: Mobile banking adoption

No	Statement	1	2	3	4	5
33	I frequently use the mobile banking adoption to make transactions.					
34	I'm very likely to use the mobile banking adoption.					
35	I intend to use the mobile banking adoption in the near future.					
36	I will increase my use of mobile banking adoption to make transactions.					
37	With my job complexity, I have to use the mobile banking adoption.					

Thank You for Your Cooperation