ST.MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

FACTORS AFFECTING USAGE OF MOBILE BANKING SERVICE IN COMMERCIAL BANK OF ETHIOPIA

BY: AYNALEM DESALGEN

JUNE, 2017

ADDIS ABABA, ETHIOPIA

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BY: AYNALEM DESALEGN (ID: SGS/0211/2008A)

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ADVISOR: SIMON TAREKE (Asst.Prof.)

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APPROVED BY BORRD OF EXAMINERS

Dean, Graduate Studies	**Signature & Date**
Advisor	**Signature & Date**
External Examiner	**Signature & Date**
Internal Examiner	**Signature & Date**

DECLARATION

I Aynalem Desalegn declare that this research study is my original work, prepared under the guidance of Simon Tareke (Asst.Prof). All sources of material used for the thesis have been duly acknowledged.

I further confirm that the thesis has not been presented for a degree in any other university.

Aynalem Desalegn _____

Name **Signature**

St. Mary's University, Addis Ababa **June, 2017**

ENDORSEMENT

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

Simon Tareke(Asst.Prof) _____

Advisor **Signature**

St. Mary's University, Addis Ababa **June, 2017**

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LIST OF ACRONYMS AND ABRIVATIONS

ATM	Automated Tellers Machine
AVR	Automated Voice Response
CBE	Commercial Bank of Ethiopia
E-banking	Electronic Banking
E-Commerce	Electronic Commerce
EFT	Electronic Funds Transfer
EPS	Electronic Payment System
HCI	Human Computer Interface
ICT	Information and Communication Technology
ICTD	Information and Communication Technologies and Development
IT	Information Technology
M-Banking	Mobile Banking
MFIs	Micro Finance Institutions
MNO	Mobile Network Operator
MPIN	Mobile Personal Identification Number
PDA	Phones or Personal Digital Assistant
POS	Point-of-Sale
SPSS	Statistical Package for Social Scientists
TAM	Technology Acceptance Model

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ABSTRACT

The purpose of this study is to examine factors that affecting the usage of Mobile Banking Service in Commercial Bank of Ethiopia. A sample of 204 respondents was drawn from CBE customers in Addis Ababa. A questionnaire was distributed to these respondents. Data were collect by making use of convenience sampling techniques with descriptive statistics using SPSS V 20.0 to analyze the data. The study results indicate that customer and staff awareness, device feature, customer perception, customer preference, ease of use and utilization, telecom infrastructure, and Lack of suitable legal and regulatory framework were the major challenges of M-Banking found in this study. On the other hand, the study also reveals that the benefits of M-Banking are well known to the banks and represent a formidable force to drive implementation of the service. In general reducing branch burden, improving customer relationship, reduction of cost in general, reducing human error, time saving and other additional benefit identified in the study was considered as a very great potential for banks to improve their public image. It is recommended for awareness creation in order to change the perception that m-banking are difficult and risky. Furthermore, it is recommended for CBE to intensify its marketing communication activities and introduce more services.

Key words: Mobile banking (M-banking, Commercial Bank of Ethiopia (CBE), E-Banking (Electronic Banking)

CHAPTER ONE

INTRODUCTION

1.1. Background of the study

Nowadays, business environment is becoming extremely dynamic because of technological advancement and introduction of information and communication technology. Business organizations, especially the banking industry of the 21st century operates in a complex and competitive environment (Agbolade, 2011).

Electronic banking is defined as the provision of information, or services, by a bank to its customers via a computer or Internet and the one that provides the customer with the opportunity to gain access to their accounts and execute transactions or to buy products (Elizabeth, 2000).

The banking sector is also performing in this dynamic transnational and cross-border networked context. Because of the context in which it works, the banking sector has undergone changes in service delivery, networking and mode of delivery of the services. The developments in information and communication technology (Bradley and Stewart, 2003) have influence on the working of the banking sector. It also influences the policy arena such as the deregulation in the financial sector in nations. Over the past few years, there has been continuous development of IT to smoothen business operations around the world, especially in the banking industry Firstly; the use of Automated Teller Machine (ATM) makes withdrawal of money easier for customers. Secondly, the development of internet banking and the use of mobile banking simplify financial transactions (Zwass1996).

E-Banking is one form of E-commerce. In its very basic form, E-Banking can mean the provision of information about a bank and its services via a home page on the World Wide Web for Commercial Bank of Ethiopia. A more sophisticated Internet based service provides the customer with access to their accounts, the ability to transfer money between different accounts, make payment and other financial products (Tellez, J. D. 2008).

Automated teller machines (ATMs) were the first means of in providing electronic access to retail customers that made possible through the introduction of computer networks (*Shah & Clarke* 2009).

Telephone banking arrived next, which was a revolutionary concept since it made banking possible from anywhere as long as telephones were available. In the mid-eighties, online banking arrived. The early form 'online banking services' required a computer, modem and software provided by the financial services. The goal was for a bank's website to provide many, if not all, of the services offered at the branch. This may include transactions as well as information, advice, administration, and even cross-selling. Given by using ICT infrastructure, Mobile Banking service emerged as a component of E-Banking services.

Mobile Banking (M-Banking) is a financial transaction conducted by logging on to a bank's website using a cell phone, such as viewing account balances, making transfers between accounts, or paying bills (Georgi&Pinkl 2005). M-Banking is an application of mobile computing which provides customers with the support needed to be able to bank anywhere, anytime using a mobile handheld device and a mobile service such as text messaging (SMS) or any other channel. Mobile banking removes spaces and time limitations from banking activities such as checking account balances, or transferring money from one account to another. In a recent research done by (UNCTAD 2012)(Mobile Money-for business development in the East African Countries) found out that while mobile banking and more specifically SMS-based mobile banking applications have become popular in some countries and region such as Kenya and Uganda but are still not widely used in some countries, including Ethiopia. The bank currently has around 1,260,825 Mobile Banking users. In addition to the nonfinancial transaction like getting real time Account balance, Bank statement (latest ten transaction details), creating beneficiary, ATM locator, getting up to date exchange rate.

1.2. Statement of the Problem

The convergence of telecommunication and banking services has created opportunities for the emergence of mobile commerce, in particular mobile banking (Lee, Lee & Kim 2007). Mobile banking has combined information technology and commerce applications together.

Since mobile banking was introduced around 1970 G.C, 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-Banking provides financial transaction services such as balance check, fund transfer, and bill payment via a mobile device (Sripalawat et al.2011).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 M-Banking in the developing countries. However, despite the importance of these adoptions, limited studies are currently available in developing countries, especially in Ethiopia. Therefore, more studies are still required to understand the relevance of M-Banking in the country to identify areas in which the country lags behind that inhibit their M-Banking adoption and diffusion. (CBE Corporate Strategy implementation assessment 2010-2014).In seeking improvements in customer experience, banking institutions have begun offering various M-Banking services. According to the Cellular News, TNS mobile life survey M-Banking users in countries like China, Brazil and Kenya has increased dramatically. For instance, the percentage of Chinese customers using M-Banking increased from 10% in 2010 to 25% in 2011, and increased from 6% to 18% in Kenya.

This growth, however, is not limited to those developing nations. Developed countries such as UK, USA, and Sweden also have experienced a reasonable growth (Cellular-News 2011). While M-Banking grows in popularity, mobile transactions have not been used as much as expected (Kleijnen et al. 2004). This idea is also shared by (Suoranta&Mattila 2004).

There are only 200 million M-Banking users out of 5 billion mobile users around the world. Even within developed countries where mobile devices have become almost ubiquitous, M-Banking usage rate is still low (UK-20.4%, USA-22%, Sweden-20%) (Cellular-News 2011). All of these studies showed varying results and this study therefore intended to fill this gap in a local context. While research has been carried out on the benefits and challenges of introducing electronic

banking in Ethiopia (Ayana 2012), (Garedachew 2010), as per the researcher knowledge there is no study conducted with regards to factors influencing usage of mobile banking in Ethiopia. Therefore, this study aims at filling that gap by assessing the issues that influence customer's usage of mobile banking services.

From a managerial point of view, M-Banking provides a new cost-saving opportunities for banks such as reducing operating costs, minimizing transaction errors and potential for fraud, generating additional revenue through commissions and service fees, and improving customer retention and brand loyalty (Lue et al. 2010). However, when we see the case of Ethiopia it is a fact that, cash, which may be costly as well as unsafe, is still the most dominant medium of exchange, and electronic payment systems (in particular M-Banking) are at an early stage. In order to encourage M-Banking adoption and reduce the problem of cash dominancy, there is a need, to understand the benefits and challenges of implementing mobile banking.

Hence this study, aims to investigate the factors that affecting the usage of mobile banking service in CBE. To this end the study attempts to explore and address the following research questions.

1- What are the factors influencing customer's usage of mobile banking in commercial bank of Ethiopia?
2- What are the benefits of Mobile Banking in commercial bank of Ethiopia?
3- What are the main challenges of Mobile Banking in commercial bank of Ethiopia?
4- How does Mobile Banking is being practiced in commercial bank of Ethiopia?

The purpose of this study is to assess factors that affecting the usage of Mobile Banking service in the case of the Commercial Bank of Ethiopia. Furthermore, it seeks to show how customers perceive, value, and what underlying factors affect their choice of banking services the most.

1.3. Objective of the Study

1.3.1. General Objective

The main objective of this research is to assess factors that affecting usage of Mobile Banking service in Commercial Bank of Ethiopia (CBE).

1.3.2. Specific Objectives

- To assess factors that affecting usage of Mobile Banking service in Commercial Bank of Ethiopia (CBE).
- To describe the benefits of Mobile banking service in CBE.
- To identify the major challenges of Mobile Banking service in CBE
- To evaluate the practice of mobile banking in CBE

1.4. The Significance of the Study

The study is helpful for three major benefits. First; it serves as a good basis for forthcoming researchers who have a strong desire to carry out a research on this or related topics. Second, it may contribute to the current literature on the benefits and challenges related to implementation of M-Banking along with its advantages in providing service to their customers. Thirdly, to recommend solutions as a remedy for the problems associated with M-Banking.

Moreover, the study is very important for the Bank in viewing what the future of banking looks like and how it's performing and preparing today. As a new product analysis it will help other researchers to get an insight to upgraded research work.

1.5. Scope and Limitation of the Study

Even though there are nineteen commercial banks in Ethiopia. And out of those commercial banks that are currently providing the service those banks that comparatively are found to have the large portion of mobile banking customers. Therefore, Commercial Bank of Ethiopia that have adopted mobile banking technology and that constitute 1,260,825 of the total mobile banking users.

The research work has been done at the very moment of the introduction of the product in to the country. This has an impact on the task. Because since it's new, to get a uniform understanding and consensus is very difficult. Moreover, the study was limited to Addis Ababa area branches

and confined itself to surveying, interviewing and documentary analysis of the selected bank Commercial bank of Ethiopia due to the cost and time to reach a number of branches and the difficulty in finding a customer who is using the service.

1.6. Organization of the Study

This study comprises of five chapters. In the first chapter, the background of the study, a statement of the problem, significance of the study, scope and limitations of the study, organization of the study, general and specific objectives were included. In the second chapter, review of related literature was incorporated. In the third chapter, the methodology part of the study and in the fourth the result & discussion and in the fifth chapter conclusion & recommendations of the study were presented consecutively.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1. Theoretical Literature Review

2.1.1. Definition of E-Banking

Due to the nature of E-Banking or E-payment systems, there have not been a widely or universal definition for it. But in this study an attempt is made to bring some few notable definitions given by some writers. These range from now-familiar automated teller machines (ATM) to Internet Banking.

For this specific research, we can define E-Banking as: a form of a banking service where funds are transferred through an exchange of electronic signal between financial institutions, rather than an exchange of cash, checks, or other negotiable instruments (Kamrul 2009).

E-Banking, also known as electronic funds transfer (EFT), is simply the use of electronic means to transfer funds directly from one account to another, rather than by cheque or cash (Malak 2007), with the help of the internet, banking is no longer bound to time or geography. Consumers all over the world have relatively easy access to their accounts 24 hours a day, seven days a week.

According to (Humphrey et al. 2001), Electronic Payment refers to cash and associated transactions implemented using electronic means. Typically, this involves the use of computer networks such as the Internet and digital stored value systems. The system allows bills to be paid directly from bank accounts, without being present at the bank, and without the need of writing and mailing cheques.

E-Banking can be defined as 'payment by direct credit, electronic transfer of credit card details, or some other electronic means, as opposed to payment by cheque and cash' (Agimo 2004).

It was also defined as "a payer's transfer of a monetary claim on a party acceptable to the benefit." (European Central Bank 2003).

For this specific study simply Kamrul's definition is the preferred one with the dimension it covers and the advantage embedded in it.

2.1.2. Types of E-Banking

There are different forms of the E-Banking system. The main ones are Automated Tellers Machine (ATM), Point-of-Sale terminal (POS), Mobile Banking and Internet banking.

Automated Tellers Machine (ATM) shall mean an Unattended Acceptance Terminal that has Electronic Capability, accepts PINs, and disburses money, and may provide balance information, fund transfer between accounts and other services.

Point-of-Sale terminal (POS) shall mean the electronic device used for authorizing and processing bank card transactions at the point-of-sale.

Mobile Banking shall mean a term used for performing check balance, account transactions, payments, credit applications and other banking transactions through a mobile device.

Internet banking is an electronic home banking system using web technology in which Bank customers are able to conduct their business transactions with the bank through personal computers. (CBE E-Payment procedure Versin1, September 2012)

2.1.3. Why E-Banking?

Due to the different factors that traditional banking still needs the person in the branch and the anywhere, anytime availability concept of mobile banking, it's demanded much more in today's world. The following are some of the reasons forwarded by some scholar:

- E-Banking transactions are much cheaper than a branch or even phone transactions. This could turn yesterday's competitive advantage - a large branch network - into a comparative disadvantage, allowing E-Banks to undercut bricks-and-mortar banks. This is commonly known as the "beached dinosaur" theory.
- E-Banks are easy to set up, so lots of new entrants will arrive "Old-world" systems, cultures and structures which will not encumber these new entrants. Instead, they will be adaptable and responsive. E-Banking gives consumers much more choice. Consumers will be less inclined to remain loyal.

- E-Banking is just banking offered via a new delivery channel. It simply gives consumers another service (just as ATMs did).
- Experience in Scandinavia (arguably the most advanced, E-Banking area in the world) appears to confirm that the future is "clicks and mortar" banking. Customers want full service banking via a number of delivery channels. The future is therefore "Martini Banking", any time, any place, anywhere, anyhow.
- The electronic device which, performs, interact with customers and communicate with other banking system is called electronic banking delivery channels.
- E-Banking is a boundary less entity permitting anytime, anywhere and anyhow banking. This facilitates us with all the functions and many advantages as compared to traditional banking services. During this step of the process, controls that could mitigate or eliminate the identified risks, as appropriate to the organization's operations, are provided. The goal of the recommended controls is to reduce the level of risk to the IT system and its data to an acceptable level.

2.1.4. Definition of Mobile-banking

M-banking can be defined as a channel whereby the customer interacts with a bank via mobile device, such as a mobile phone or personal digital assistant (PDA). The emphasizes on data communication, and in its strictest form m-banking does not include telephone banking, either in its traditional form of voice dial-up, or through the form of dial-up to a service based on touch tone phones.(S.J. Barnes andB. Corbitt,January 2003*)*

2.1.5. Characteristics of Electronic Banking Services applicable to Mobile Banking

According to (Ho and Ko2008) four characteristics were suggested that include Ease of use, Usefulness, Cost saved and Self-control, determine the customer acceptance of the service. These factors can be defined as follows:

A. Ease of use:

Ease of use can be defined in the current context as a factor in which the self-service activity provides a clear interface and simple process to ensure customers can use it effectively.

(Davis 1989) defined ease of use as the degree to which a person believes that using a particular system would be free of effort. Ease of use given that Internet-based transactions might seem complex and intimidating to many customers, it has often been termed usability in the online context (Zeithamlet al. 2002).

B. Usefulness:

(Davis 1989) defined the usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance", in a sense that it could facilitate the business in modernizing the organization management. It also adds value by deploying this system.

C. Cost saved:

Automated E-Banking services offer a perfect opportunity for minimizing costs (Lustsik2004). Costs saved relates to the amount of time and money saved when using an innovative self-service. Costs in terms of money and time are negative factors when customers assess the value of the service (Ho and Ko 2008).

D. Self-control:

(Gailliot, Baumeister&DeWall 2007) defined self-control as the ability to control or override one's thoughts, emotions, urge, and behave. It provides the flexibility necessary for successful goal attainment. Self-control enables the service activity to be performed without depending on the servers or releasing personal information. An individual with self-control has the power of predictability, controllability, and outcome desirability (Ho &Ko2008).

2.1.5. Mobile Banking Channels

1) **SMS** (short messaging service) mobile banking
2) **USSD** (Unstructured Supplementary Service Data)
3) **XHTML** (Extensible Hyper Text Markup Language) mobile banking
4) Downloadable mobile banking
5) Smart Applications

A .Android Applications

B. Windows Mobile 7 & 8

C. IPhone (IOS Application) **(**CBE internet and mobile banking procedure version3 April 2015)

2.1.6. Mobile-banking platforms

The first applications of m-banking were based in Finland. As early as 1992 customers of Merita Nordbanken were able to make bill payments and check account balances using mobile phone (based on GSM – Global Standard for Mobile – networks). More recently, m-banking applications have relied on the development of some key standards for wireless electronic services and expanded to global markets. In general, the plat forms used have been the wireless application protocol (WAP) and short message service (SMS).

However, in Japan, the i-mode platform, based on compact hypertext markup language (HTML) (and more recently Java), has been the dominant platform form-banking. Let us briefly examine each of these platforms in more detail..(*S.J.* Barnes and B.Corbitt, January 2003*)*

2.1.7. WAP (Wireless Application Protocol) banking

WAP is a universal standard for bringing internet-based content and advanced Value-added services to wireless devices such as phones and personal digital assistants (PDAs). In order to integrate as seamlessly as possible with the web, WAP sites are hosted on web servers and use the same transmission protocol as web sites; that is hypertext transport protocol (HTTP). The most important difference between web and WAP sites is the application environment. Whereas a web site is coded mainly using hypertext markup language (HTML), WAP sites use wireless markup language (WML), based on extensible markup language (XML). WAP data flows between the web servers and a wireless device in both directions via a gateway that sits between the internet and mobile networks. A wireless device will send a request for information to a server, and the server will respond by sending packets of data, which are formatted for display on a small screen by a piece of software in the wireless device called a micro browser. (*S.J.* Barnes and B.Corbitt, January 2003*).*

Mobile banking was one of the first transaction-enabled services to be provided using the WAP platform, partly based on research into consumer perceptions of these emerging services. Early WAP research by Nokia suggested m-banking was likely to become a primary application of choice for those users most interested in wireless data. Around 60% of Europe's largest banks now

offer m-banking services, with nearly all using the WAP platform. In some markets, such as Hong Kong, nearly all large banks, such as HSBC, Dao Heng Bank, Hang Seng Bank and Citibank, offer sophisticated m-banking Services.

The customer logs into the m-banking WAP service to conduct a variety of m-banking activities. Typically these include:

- Checking the balance of their account.
- Transaction enquiry.
- Viewing the last transactions made.
- Checking the status of a cheque number.
- transferring funds from one account to another (usually only for more advanced m-banks)
- requesting a transaction statement
- requesting a cheque book
- cancelling a service request
- checking the status of service requests
- changing a password
- paying a utility bill or credit card (usually only for more advanced m-banks)
- Finding account information, e.g. interest rate.
- Finding product information.
- Examining a branch listing.(*S.J.* Barnes and B. Corbitt,January 2003)

2.1.8. Utility of Mobile Banking from Banks' Perspective

At this stage it would be relevant to understand the usefulness of Mobile Banking from the banks' perspective. It is therefore imperative to understand the business environment in which banks operate and to identify customer groups that the banks may seek to target via Mobile Banking. Working Paper No. 37 (PICMET 2006)

2.1.9. Intensified Competition in the Banking Sector

Bank products are of immaterial nature sold increasingly with the help of computer networks spanning across the globe. The global networks provide the customer with world-wide services, for instance the use of credit cards while abroad. The creation of an EU-wide single domestic

market, hassled to intensification of competition in the EU in all business fields including in the banking sector.

The ongoing Globalization has further intensified the competition. Technical developments coupled with the process of Globalization, have made it possible for banks to offer their services in far-flung areas without investing money to build branches and hire additional staff.

This opportunity, of course, is a two-way street: On the one hand, a bank gets access to new markets. On the other hand it is faced with increased competition on its home turf. To master this combination of opportunities and challenges banks need – apart from business consolidation and cooperation organic growth.

It is therefore necessary to retain the existing customer base while simultaneously acquiring new, economically prosperous customers. Seen in conjunction with the price-sensitivity of customers and the resultant low relevance of the brand-name banks are compelled to introduce innovative services that potentially attract prospective customers while retaining others. Even though the brand-name remains a critical factor on account of the need for trust in banking business, the Globalization and the technological developments, however, have reduced entry barriers so that the number of available reputed brands has increased significantly; thereby intensifying the competition. Working Paper No. 37 (PICMET 2006)

2.1.10. Adapting to Requirements of Core Target Groups

Banks, today, are increasingly confronted with technology-savvy customers who are often on the Move. As Wolfgang Klein, *Private Customers Director* at *Postbank*, a leading German bank, puts it: Today's customers want to organize banking transactions while on the move, irrespective of opening hours". Banks are responding to this development by introducing mobile services.

Core target groups of Mobile Banking are often divided in three categories:

A) The Youngsters: the segment of 14-18 years old youth has acquired an important role in the growth of mobile telecommunications and related services. This group is technology-savvy and willing to experiment with innovative products and services. The youngsters, often on the move, demand ubiquitous, anytime service. Though the youngsters as a group are hardly relevant for banks from a financial perspective, they represent the prospective clientele of Working Paper No.

37 (PICMET 2006) Tiwari/Buse/Herstatt tomorrow and need to be cultivated in the middle to long-term marketing strategy of the banks.

B) The Young Adults: Also this segment is thought to be technology- and innovation friendly. Though this group too is financially not very strong, many members of this group are known to be involved in stock market activities. Further, this group can be expected to enter in short to medium-run a professional carrier so that it needs to be cultivated in order to retain customers of this age-group even after they enter professional lives.

C) The Business People: this group of customers, generally in the age-group of 26-50 years, is thought to be the most important one for Mobile Banking.

Members of this group are generally well educated and economically well-off. They need to be professionally often on the move and carry mobile devices to ensure accessibility. For this reason they are ideal candidates to use services offered via mobile devices. From the banks' perspective this group is particularly attractive on account of its relative economic prosperity and the need for financial services, e.g. home loans for young families. In order to fulfill the requirements of these customer groups banks tend to look at Mobile Banking as a promising option. However, these services also have their own utility for the banks. Working Paper No. 37 (PICMET 2006).

2.1.11. Mobile phone a useful new functionality?

Is there an inherent capability "inside" the mobile phone that really is new, that allows customers to do something that they simply couldn't easily do before a mobile phone can be used to enter, display, process, store, and transmit information—but so can computers, ATMs, and POS devices, which are the electronic network end-points banks use today to service customers. In fact, mobile phones are more limited than these devices, for instance in terms of processing power. There is really not much that is functionally new in a mobile phone as a terminal device: after all, no one was thinking of banking applications when mobile phone standards were being defined. However there is a characteristic of the mobile phone's architecture that sets it apart from most other computing devices that could be used for banking purposes. This is the existence of a device within a device, or a SIM card inside the mobile phone.4neither of the two devices is functionally new: the SIM card is a smartcard (a card with a chip) and the mobile phone is a limited computer. But, having one inside the other enables interesting security features.

The SIM's memory contains two essential elements: the phone's user menu and the security keys that aroused to encrypt all information the phone sends to and receives from the network. **(**Ignacio Mas and kabirkumarjune 2008**)**

The memory in the SIM is tightly controlled by the mobile operator; no other party, not even the customer an access it or store applications without the explicit authorization of the mobile operator. Therefore, the contents of the SIM are much more tamperproof than the rest of the phone or any standard computer. The downsides that the closed architecture of the SIM limits service innovation by third parties. Combining the tight security of the SIM with the more open architecture of the phone itself allows mobile phones to attain the best of two worlds: a secure kernel within a flexible, service innovation-friendly shell. **(**Ignacio Mas and kabirkumarjune 2008**)**

The mobile phone is also a connected device with a particularity: it can attach itself anywhere on the network, automatically. There is one intrinsic feature of a mobile phone that has so far not been used much in mobile banking applications: location awareness. The mobile phone can be spotted in most mobile networks within a couple dozen kilometers or tens of meters (i.e., either single-cell or with more sophisticated multi-cell triangulation technologies). One interesting idea tested by Bank inter in Spain is using the location of the credit card at point of transaction relative to the cardholder's mobile phone (which is presumed to be on or near the cardholder). If they are far apart, there can be more reason to question the authenticity of the requested transaction. Summary: The power of economics vs. customer experience a mobile phone is, and always will be, more limited in its capabilities than either a connected personal computer or a specialized POS. But it has economics on its side. For instance, the high cost of the required dedicated broadband infrastructure and the devices themselves will hinder the spread of Internet banking in developing countries. In rural areas it is further hindered by a vicious circle: low device penetration does not warrant roll-out of appropriate broadband communications infrastructure, and while the infrastructure is not in place few customers will invest in personal computers. But, if we exploit the built-in data-handling capabilities of mobile phones, it turns out that the job of deploying "Internet machines" in developing countries and rural areas is substantially done or under way. By "freeriding" on the strong economics of the mobile voice. **(**Ignacio Mas and kabirkumarjune 2008**)**

Service, business cases have been closed and vicious circles have been broken. But make no mistake: the mobile phone offers a substandard user experience, at least for users unaccustomed to the service. **(**Ignacio Mas and kabirkumarjune 2008**)**

It's great to be able to use devices that people already own, and it's great that mobile phones give people an opportunity to feel more in control over their financial services. But driving customer adoption will not be straightforward if they are intimidated when they first hear about it and scared off the first time they experience it. This presents a key trade-off: mobile banking reduces the cost of service delivery but may create a larger adoption hurdle **(**Ignacio Mas and kabirkumarjune 2008**)**

2.1.12 .Existing theory about the significance of mobile Banking

The emergence of m-banking/m-payments systems has implications for the more general Set of discussions about mobile telephony in the developing world. For example, it underscores. The way the device blurs the domestic and the productive spheres, the social and the Transactional. Each transaction is influenced by (and reinforces) the structural position of people in broader informational networks (Castells, 1996). The latest case of m-banking/m-payments Systems is a reminder that an understanding of the role of the mobile in developing societies must include its role in mediating both social and economic transactions, sometimes simultaneously. Existing theory about the significance of mobile communications in the developing world has focused on voice and text messaging (Donner, 2008). This focus is appropriate, but the Emergence of mobile banking also underscores how, occasionally, innovations emerge from unexpected places and have the capability of reconfiguring the significance of a technology to its Users. Mobile theory must keep pace, accounting for m-banking/m-payments systems along with other capabilities enabled by this increasingly flexible technology. A possible critique of this paper is that, while it calls for additional studies from the use Perspective, it offers only a brief case study of that kind. Nevertheless, the case study and the Paper may be of value to researchers considering further inquiries into the m-banking/payments space at this early stage. It illustrates how communication research can improve understanding of the m-banking/m-payments phenomena by providing detailed studies of everyday and how communication research can use the same phenomena as a new setting for the testing of various theories. The particular properties of m-banking/m-payments systems in the developing world—merging mediated communication and financial transactions, Norms and technological affordances (Hart, 2000)—should make them appealing to researchers

more interested in social capital or domestication or diffusion than in m-banking per se. In no way is this paper supposed to be an admonition against additional adoption or impact research; it argues only that those forms of research can be made stronger by a scan of the complementary literature that apply the ensemble or use perspectives.

Adoption studies can benefit from stronger articulation of what is being adopted (occasional transfers vs. virtual wallets, stored value vs. credit, and so on) to augment or replace which existing behaviors (remittances to family, loans to friends, or payments to institutions). Impact studies can benefit from a stronger articulation of a myriad of possible primary, secondary, and tertiary effects—not all of them necessarily positive. Offering a way to lower the costs of moving money from place to place and offering away to bring more users into contact with formal financial systems, m-banking/m-payments systems may prove to be an important innovation for the developing world. However, the true measure of that importance will require multiple studies using multiple methodologies and multiple theoretical perspectives before our questions about adoption and impact will be answered. (Jonathan Donner, 2008).

2.1.13. Mobile Banking Platform Implementation Options

Mobile banking is seen to be an extension of the existing payment infrastructure of a bank to Mobile phones as a channel for the leveraging of the mobile network and its reach, to deliver Banking services to consumers. The mobile banking infrastructure thus sits in a similar technical environment to the banks ATMs, POS, branch and internet banking service offerings. A bank's core banking system, the system that houses the consumer's account and related Transaction management and history would require a means to translate banking instructions, received from consumers, through one of the bank channels such as ATMs or the internet, into a format that the core banking system can process. This translation is normally performed by an EFT channel switch12. The EFT channel switch would switch transactions from the channel to the appropriate area within the core banking system. The mobile banking channel can be delivered to the consumer through two bearer or application environments. Client-side applications are applications that reside on the consumers SIM card or on their actual mobile phone device. Client-side technologies include J2ME and S@T.Server-side applications are developed on a server away from the consumer mobile phone or SIM card. Server-side technologies include USSD2, IVR, SSMS and WAP.The bank would only need to select one of these bearer13 channels, or bearer channel

strategies, for implementation. However, in some markets it would be wise to implement more than one Bearer channel in order to manage consumer take up and the risk associated with non-take up of a specific technology. The selected bearer channel does not have an effect on where the Mobile banking platform should sit.(Govin Troy krugel August 2007) in the case of Commercial Bank of Ethiopia Mobile Banking Channel looks like the following diagram.

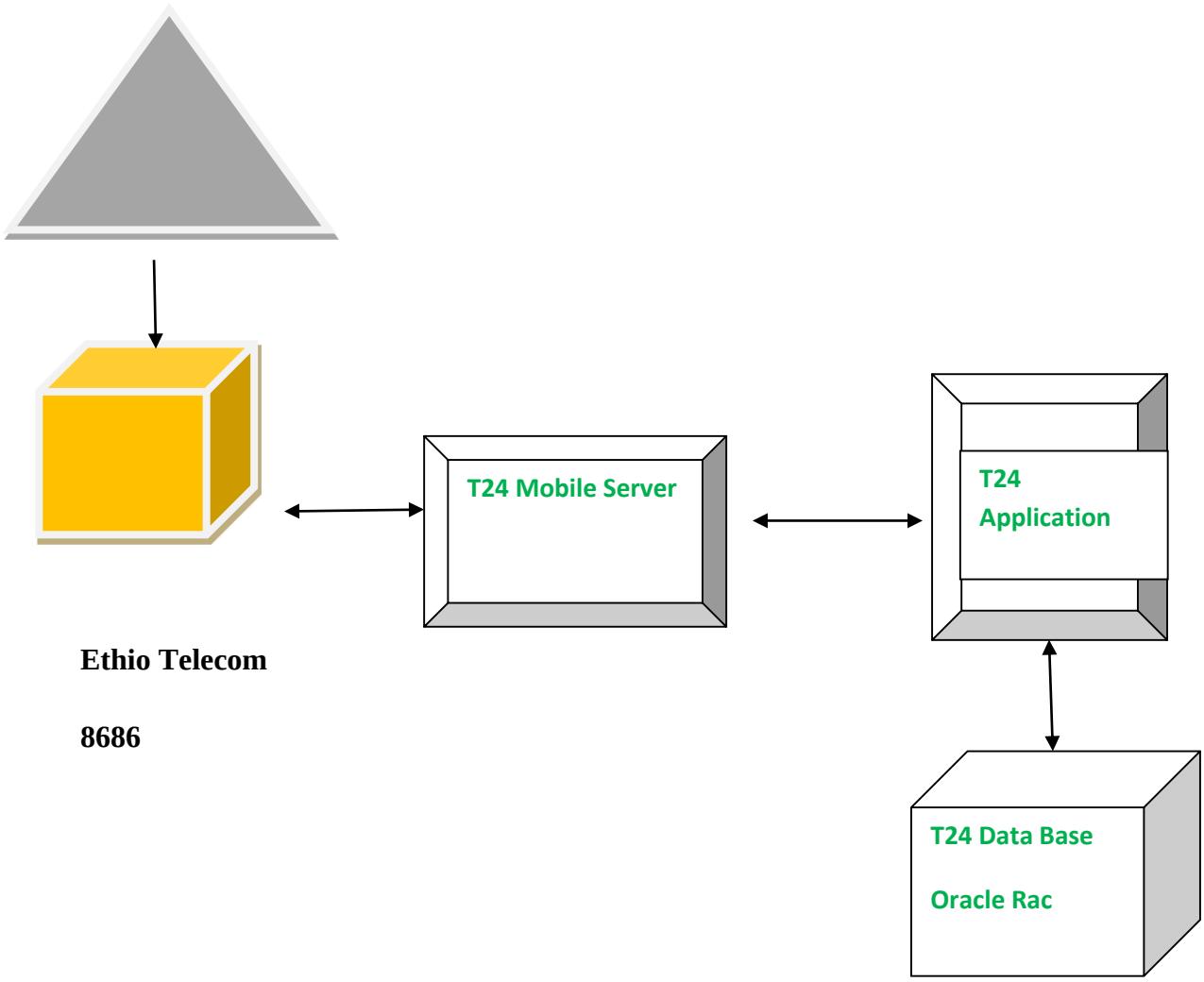


Figure 2.1. SMS gateway Architect Adapted from Temenous Core banking Module.

The Mobile Banking service would require integration into an MNO to facilitate the usage of the network's bearer channels and in order to access the consumer's mobile phone. The Data Repository stores enough customer information, to facilitate the processing of financial

transactions. The data repository would also house sufficient information to authenticate the customer in each transaction. By housing transactional and consumer data, the repository would also facilitate customer care, and the reconciliation of certain financial transactions that use the application development environment to fulfill services. E.g. selling airtime would require reconciliation between the transactions processed and the airtime loaded by the network operator.

The Application Development Environment facilitates the actual service development to the consumer, such as banking menus and commands. It may house the integration of third parties in supporting value added services such as bill payments or airtime sales. The application Development environment fosters the intelligence delivered to the consumers handset, whether client or server side. The Financial Switch would act as the interface to the bank's core banking system. Instructions collected by the application development environment through the MNO interface, and using data from the data repository, are translated through the financial switch into a transaction format that the bank can use. The platform allows a consumer with an application on their phone, or on a server, to authenticate (usually with a PIN) and deliver an instruction to the platform. The platform, depicted in the diagram, will extract the consumer's bank account data and pass the instruction to the application management environment. The application environment will have a set of processes to follow for this specific transaction. Once completed, the application environment will have submitted a financial transaction into the financial switch and from there into the core banking system. The core banking system will process the transaction and submit a confirmation back into the platform that would be delivered back to the consumer. The platform can be housed at the bank, MNO, or third-party processor. The integration effort is similar to that of interfacing into a bank.(Govin Troy krugel August 2007)

2.1.14. Benefits of Mobile Banking

Pallab S. and Munish M. (2013) analyzed benefits of online banking from the viewpoint of customers and banking sector in general.

A. Benefits to Customers

General banking customers have been significantly affected by the advent of internet banking revolution.

a) A banking customer's account is extremely accessible with an online account.

b) Through mobile banking customer can operate their account remotely from the office or home. the need for going to bank in person for every single banking activity is dispensed with.

c) Mobile banking lends an added advantage towards payment of utility bills. It eliminates the need to stand in long queues for the purpose of bill payment.

d) Most, if not all, services that are usually available from the local bank can be found on a single handset.

e) Sharp growth in credit card/debit card usage can be majorly attributed to m-banking. A customer can shop globally without any need for carrying paper currency with the pocket.

f) By the medium of m-banking, banks are available 24x7 and are just a finger click away.

B. Benefits to Banking Sector

In addition to banking customers, growth of E-banking infrastructure in general and mobile banking in particular has proved to be extremely beneficial to banks and overall bank organizations on account of following:

A) The concept of mobile banking has immensely helped the banks in putting a tab over their specific overheads and operating cost.

B) The rise of mobile banking has made the banks more competitive. It resulted in opening of better prospects and avenues for banking operations.

C) The mobile banking has ensured transparency of transactions and facilitated towards removing the documentation requirements to a major extent, since majority of records under an e-banking set up are maintained electronically.

D) The reach and delivery capabilities of mobile -enabled banks, proves to be significantly better than the network of physical bank branches.

2.1.15. Challenges Mobile Banking

Sarita B. (2012) identified five major challenges in addressing the issue of financial inclusion through mobile banking.

1. Regulatory Challenge: As the Internet allows services to be provided from anywhere in the world, there is a danger that banks will try to avoid regulation and supervision. What can regulators do? They can require even banks that provide their services from a remote location through the Internet to be licensed. Licensing would be particularly appropriate where supervision is weak and cooperation between a virtual bank and the home supervisor is not adequate. Sarita B. (2012)

2. Legal Challenge: Electronic banking carries sensitive legal risks for banks. Banks can potentially expand the geographical scope of their services faster through electronic banking than through traditional banks. In some cases, however, they might not be fully versed in a jurisdiction's local laws and regulations before they begin to offer services there, either with a license or without a license if one is not required. Sarita B. (2012)

3. Operational Challenge: The reliance on new technology to provide services makes security and system availability the central operational risk of electronic banking. Security threats can come from inside or outside the system, so banking regulators and supervisors must ensure that banks have appropriate practices in place to guarantee the confidentiality of data, as well as the integrity of the system and the data. Sarita B. (2012)

4. Reputational Challenge: Breaches of security and disruptions to the system's availability can damage a bank's reputation. The more a bank relies on electronic delivery channels, the greater the potential for reputational risks.

5. Personal Information: Internet banks need to collect personal information in order to do business, but if they do not follow local information collection laws then there could be lawsuits and government penalties.

2.1.16. Risk

Currently, there is no specific protection in the event that a user's mobile phone is stolen and used by fraud-stars able to figure out the user PIN; Just like with ATM cards and banks, a user's best bet is to report a stolen mobile phone or SIM as soon as possible so that all mobile money transactions are blocked. However, some banks do not provide sufficient advice on such issues. New registrants are not briefed or given a brochure that discusses how to handle such issues. Instead, they have to figure out how to navigate such pitfalls as they occur. Although some websites typically have answers to frequently asked questions, an average mobile money user in east African countries may not have ready access to the Internet (UNCTAD 2012).The agents ask users to call the general customer service line or visit an MNO service center, where the queues are normally long. M-PESA in Kenya has set up a dedicated customer service line, through which user can call asking users to call "234" for M-PESA related queries, When using mobile money services, all transactions are tied to the SIM (and thereby the mobile phone number) (UNCTAD 2012)

2.1.17. Existing Payment Mechanisms

The role of existing mediated transfers and other financial services also deserves scrutiny. A large proportion of the volume of m-transactions may reflect existing transactional Relationships, shifted over to the new channels. This is not to say that a shift is not itself Valuable—there are significant benefits of cost, reliability, safety, flexibility, and immediacy Associated with m-banking/m-payments systems. However, it is important for industry, Researchers, and policymakers to understand the transactional networks and behaviors that already exist. An antecedent to this argument comes from the microfinance sector. Arguing that “It is no longer acceptable for prospective providers not to inform themselves of what their future clients are already doing and what services they appear to need,” Ruthven (2002, p. 269)identified a broad

array of “money mosaics” operating in a Delhi slum. These “financial relations M-banking are frequently embedded in other social relations which reflect the diversity of social, security, and economic needs which people have. It highlights the relatively small role of commercial transactions in people's financial lives, and the importance, extent and diversity of personal networks” (2002, p. 267).In the case of m-banking/m-payments channels, pawn shops, bus companies, the post office, hand carrying by friends and family, underground money transfer mechanisms—such as China’sfeich’ien („flying money,“ a network of affiliates allowing users to put money into the Network in one city and have it available in another without the actual banknotes making the trip)(Maurer, 2008)—and formal transfer services like Western Union all have their adherents, and the list is longer when one includes alternative savings and credit mechanisms like chit funds and moneylenders. There are communication issues, as well: transfers are exchanges at a distance, and as Ruthven points out, there is an implicit or explicit network of communication and information exchange embedded into almost every transaction. Remittances, in particular, are a context in which it is difficult to separate financial transactions from symbolic meaning and Social bonding (Hart, 2000; Singh, 2007).

2.1.18. The Social embedded ness of Economic Transactions

There is a litany of social/contextual influences on m-banking/m-payments use. Both Macro-level cultural factors and micro-level, locally-negotiated norms in families and among Peers particularly about money—are at play (Zelizer, 1994). For example, respondents in focus Groups we conducted in Manila (Donner, 2007b) explained that, while they would certainly Transfer money to a family member (a gift), they would not do so to an acquaintance (a loan).Technically, the actions are the same. Socially, they are miles apart. Practitioners and policymakers are already concerned about validating m-transaction sunder conditions of sharing behavior (infoDEV, 2006), in which two people use the same handset. On the other hand, others suggest that m-banking/m-payments systems may alter patterns of money sharing within families by giving women greater autonomy and control over household savings (von Reijswoud, 2007)

2.1.19. Mobile Banking as Image Product

Finally, Mobile Banking can be also used as an image product to gain strategic advantages. A bank may hope to win or retain a positive image amongst technology-savvy sections of the society and strengthen the brand-reputation of being innovative and visionary. The image of being a technology leader can help the bank win customers looking for modern products and services and at the same time help it retain its own existing base of technology-savvy customers, some of whom otherwise might have switched to other banks while looking for such a product. Further, the bank can profit from an early-mover advantage by actively shaping technological standards that are based on one's own strengths. This is, of course, fraught with a substantial risk of incurring financial and image losses if the propagated technology fails to establish .Working Paper No. 37 (PICMET 2006)

2.2. Empirical Literature Review

2.2.1. Evolution of E-Banking

There have been significant developments in the E-Financial services sector in the past 30 years. According to (Devlin 1995), until the early 1970s functional demarcation was predominant with many regulatory restrictions imposed. One main consequence of this was the limited competition both domestically and internationally. As a result there was heavy reliance on traditional branch based delivery of financial services and little pressure for change. This changed gradually with deregulation of the industry during 1980s and 1990s, whilst during this time, the increasingly important role of information and communication technologies brought stiffer competition and pressure for a faster pace of change.

The Internet is a relatively new channel for delivering banking services. Its early form 'online banking services', requiring a PC, modem and software provided by the financial services vendors, were first introduced in the early 1980s. However, it failed to get widespread acceptance and most initiatives of this kind were discontinued. With the rapid growth of other types of electronic services since mid-1990s, banks renewed their interest in electronic modes of delivery using the Internet (Abrazhevich 2012).The spread of online banking has coincided with the spread of high-speed broad- band connections and the increasing maturation of the internet user population. Another factor in E-Banking growth is that banks have discovered the benefits of E-Banking and have become keener to offer it as an option to customers by increased revenue, easier expansion, load reduction on other channels, cost reduction, organizational efficiency and other potential benefits of E-Banking to organizations because of the following reasons (Shah & Clark 2013). Improved use of IT resources and business processes; better relationships with suppliers/customers; quick delivery of products and services; and reduction in data entry and customer services related errors are issues that gave rise to the need for the development of this service.

The early 1990s witnessed the emergence of automated voice response (AVR) technology. By using the AVR technology, banks could offer telephone banking facilities for financial services. With further advancements in technology, banks were able to offer services, through PC owned and operated by consumers at their convenience, through the use of intranet propriety software.

The users of these services were, however, mainly corporate customers rather than retail ones (Sohail & Shanmugham 2003).

This also gives rise to private banking and especially in major metropolitans where there are a number of millionaires. They never come to the banks; rather the banks will go to their premises. The security first network bank was the first to introduce internet banking in the world that was built in 1995 in USA.

After that some banks introduced their internet banking one after another, such as: Barclays, JPMorgan, Citibank and Bank of America (Shah & Clarke 2013).

The need for online payments was first addressed by using extant payment methods of the offline world of online payments. For example, credit cards, originally intended as an offline credit instrument, have become the major payment instrument for E-commerce. As E-commerce and online purchasing grows, the weaknesses of credit and debit cards and cheques are becoming more apparent (Abrazhevich 2012).

Electronic Payment Systems: another early starter, which is a User-Centered Perspective and Interaction Design and also identified as a leader in the field was a Spanish initiative (backed by BBVA and Telephonica), called Mobi Pago. The name was later changed to Mobi Pay. The product was launched in 2003 and many retailers were acquired to accept the special USSD payment confirmation.Many other large players announced initiatives and run pilots with big fanfare, but never showed traction and all initiatives were ultimately discontinued. Some of the earliest examples are the famous vending machines at the Helsinki airport supported by a system from Nokia. Siemens made announcements in conjunction with listed and high-flying German E-commerce company, Brokat. This company also won the lucrative Vodafone contract in 2002. Initiatives in Norway, Sweden and France never got traction. France Telecom launched an ambitious product based on a special mobile phone with an integrated card reader.

The solution worked well, but never became popular because of the unattractive, special phone that participants needed in order to perform these payments. Since 2004, mobile banking and payment industry has come of age. Successful deployments with positive business cases and big strategic impact have been seen recently.

2.2.2. Mobile Banking as Distribution Channel

Mobile Banking enhances the number of existing channels of distribution that a bank employs to offer its services. The efficiency of a distribution channel can be measured by its fulfillment of three major objectives, which are closely related to each other. Working Paper No. 37 (PICMET 2006)

2.2.2.1. Reducing Costs of Distribution

Due to increased competition a distribution channel must organize business processes efficiently so as to reduce distribution costs. This pressure can be coped with by rationalizing organizational structures to increase productivity. Mobile Banking can contribute to achieve this goal by following means:

a) The manual collection, processing, transmission and archiving of data by bank employees In branch offices is substituted, as in the Internet-based banking, by automated processes. Lubber cites a US study according to which a transaction carried out in a branch office Costs banks on average $1. When carried out via telephone it costs only $0.5.

   The same Transaction, when carried out via Internet or mobile devices costs the bank just 1 cent. The Advantage of Mobile Banking vis-à-vis conventional banking is thus obvious. Vis-à-vis Internet-based banking, however, there is no cost advantage.

b) As against Internet Banking, Mobile Banking makes it possible to offer ubiquitous, semi personal consulting services in real time. These services can be centralized to exploit economies of scale and scope as well as regional cost differences.

c) Diversification of distribution channels helps reduce business costs that arise in the form of sales lost due to sudden collapse of a channel and to minimize customer dissatisfaction.

   For instance, the utilization of transaction-based mobile financial services of *Nordea*, one of the Pioneers in the field of Mobile Banking, grew by 30% in 2004. *Nordea* reported successful cost Reduction by motivating customers to shift to electronic/mobile forms of banking. A vice-president of the mobile banking division at *Nordea*is quoted as saying, “Nordea’s customers have been persuaded to take the net banking and mobile routes because these are cheaper and more convenient ways of banking”. Working Paper No. 37 (PICMET 2006)

2.2.2.2. Increasing Sales Volume

One of the primary tasks of a distribution channel is to increase the volume of demand for products at profitable prices. This objective is arrived by increasing operational efficiency so that those losses are minimized that are caused by delays in catering to customer orders. Further, a favorable reputation of the firm's logistical capacities may help generate additional orders. Mobile Banking can contribute to achieve this goal by following means.

a) Anytime, anywhere access to banking services;
b) Availability of push services to suggest transactions on an urgent basis, e.g. to sell certain Stocks when a crisis erupts;
c) Face-to-face talks with the personal consultant via video telephony.

For instance, *ING Post bank* of Netherlands launched in the year 2001 a scheme to boost its sales Volume .Every new customer who deposited €450 in a savings account was provided with a mobile telephone worth €150. Within 6 weeks more than 500,000 new customers and over €225 million in deposits could be acquired. More importantly, 97% of these new customers became regular users of Mobile Banking and remained with the bank.This example also shows the importance of "induced Working Paper No. 37 (PICMET 2006) Tiwari/Buse/HerstattDemand, which suggests that, the demand for a good or service often increases, once the supply is increased and actively promoted. Working Paper No. 37 (PICMET 2006)

2.2.2.3. Increasing Customer Satisfaction

Mobile Banking may help increase the customer satisfaction by following means:

a) Streamlining of business processes to increase efficiency

b) More attention and better consulting for customers due to automation of routine processes

c) Innovative "anywhere, anytime" services customized for individual preferences and Current geographic locations of the customer provide value-added to the customer

d) The collected data can be utilized to create customer profiles.
Increased customer satisfaction can help reduce the customer attrition rate.
Working Paper No. 37 (PICMET 2006) Tiwari/Buse/Herstatt

2.2.2.4. Mobile Banking as Source of Revenue

Mobile Banking can also serve as a source of revenue. Mobile services can be offered on a premium basis. The price, in this case, should be reasonable enough so that customers are willing to pay them but at the same time they should be – from a financial point of view – higher than the costs incurred by the bank. Additional revenues can be generated in two ways:

i) Offering innovative, premium services to existing customers;

ii) Attracting new customers by offering innovative services. Whereby new customers contribute to revenue generation not only by utilizing mobile services but also by using other conventional distribution channels. There are reports of banks that have successfully employed Mobile Banking as a source of revenue. The French bank Society General launched a SMS-alerts service named "Messalina" whose subscription costs in general €4.00 a month. This service had attracted 640,000 subscribers by the year-end 2004 with an 11% growth vis-à-vis year-end 2003. This service has been generating profits ever since it was launched. Working Paper No. 37 (PICMET 2006)

2.2.3. Global Mobile Banking Trend

Mobile banking has increased globally as increasing numbers of people have access to mobile phones and place more emphasis on real time financial transactions (Shen, Huang, Chu, & Hsu, 2010). Financial institutions have increased the products and services available electronically such as transferring money, depositing checks and paying bills (Chung & Kwon, 2009). This increase in mobile banking has been a result of a number of global banking industry trends (Laukkanen, 2007). Firstly, the use of the internet has increased as it has become more accessible and cheaper. Most people have a mobile phone with an increasing number having internet capabilities that enable mobile banking (Ratten, 2009). Secondly, the globalization of the banking industry has enabled more people to use international banks.

This has lead to more competition on interest rates and credit card fees. Thirdly, more people are communicating electronically, which has enabled banks to market their products and services via mobile phones. It is also cheaper for financial institutions to communicate with their clients via mobile phones than traditional advertising mediums such as television and newspapers. These trends have lead to the increased electronic availability of banking services and more people using

mobile banking services (Ratten, 2008). However, there are also a number of financial risks from mobile banking including not being able to access funds and internet fraud.

The change in banking practices to be more electronic has lead to easier access to money transfers and electronic funds (Ratten, 2007).

It has also altered the way banking services are marketed to consumers (Wymbs, 2000). Mobile commerce (m-commerce) has changed banks marketing strategies as a result of technological innovations (Holt, Whitmire, & Knight, 1999). M-commerce is defined as the ability to conduct commerce using a mobile device such as a mobile telephone, personal digital assistant (PDA) or emerging mobile telephone equipment. M-commerce involves the conduct of any transaction involving the transfer of ownership to use goods or service that is completed using a mobile device. The core feature of m-commerce is that is allows a commercial transaction to be completed by using mobile electronic computer access. Technological innovations including wireless internet access has enabled banking services to become more electronic and enable banking to be done at any place or time (Takac, 1997). These technological developments in m-commerce have led to mobile banking being a low cost development (Holland, 2008).

2.2.4. Kenya's M-PESA Experience

In March of 2007 a mobile money service called M-PESA was introduced into the market by Safari com, Kenya's largest mobile operator (MO). The application facilitates a variety of financial transactions through the mobile phone. This includes account balance checks, deposits and withdrawals, bill and merchant payments, airtime purchases, and money transfers (Hughes & Lonie, 2007; Vaughan, 2007 as cited in Morawczynski, 2010). M-PESA is designed in such a way that people without bank accounts can use it. Customers' money is held safely in a bank account run by M-PESA on behalf of the customer. A customer does not have any contact with the bank and the bank does not have customers' details. An individual who have M-PESA account can have a balance between 0 ksh and 100,000 ksh (Kenyan Shilling). M-PESA is driven by a secure application on Safaricom SIM cards. Registered customers have a menu on their phone giving them the ability to move money to other phone based accounts. To load money into MPESA account a customer need to go to an M-PESA Agent and make a cash deposit which results in electronic money being transferred into customers' M-PESA account (This is confirmed by an

SMS received by both the Agent and the Customer).Then, a customer can conveniently transfer money to other mobile phone users by SMS transaction. To withdraw cash from M-PESA account or (for unregistered customers to get cash), a customer need to go to an M-PESA agent and make an electronic transfer to the agent who will exchange this for cash. An M-PESA agents are Safaricom dealers, Selected Banks & Micro-Finance Institution, and other retailers with a substantial distribution network like petrol stations, distributors, supermarkets & registered SMEs. Wrong transfers are reversible on the M-PESA system, upon rigorous vetting of the sender & recipient and if the money has not yet been cashed or withdrawn. If a customer makes an incorrect transaction, there is a free assistance call service. According to Morawczynski (2010) the liberalization of the telecommunications sector, among other things, plays a crucial role for the success of M-PESA. The government has taken numerous strategies to increase the penetration rates of ICTs in general and the mobile phone in particular. This includes instigating competition in the market and including universal service stipulations in license agreements. Such stipulations made it easier for M-PESA to penetrate rural areas, which are under-served by financial institutions. In addition, the super and retail agents were aligned to facilitate the scalability of the agent network and to make it easier to move cash and e-money around the system. The main function of the retail agents is to provide cash-in & cash-out services to the customers and provide customer support. The super-agents are responsible for balancing cash and e-money requirements of the retail agents. They did this by making deposits (purchase e-value) or withdrawals (sell e-value) into the Central Bank of Africa (CBA) where all of the M-PESA funds were stored. The agent commission structure rewards retail and super agents differently. Retail agents receive a commission (80 Ksh) for each new customer signed up. They further receive 70% of the commission for cash in/cash out transactions. The other 30% goes to the super agents who balance the cash and E-money floats.

2.2.5. Mobile banking and performance of commercial banks in Kenya

Mobile banking is the provision of banking services using the mobile phone. In keeping with the advancement in technology, commercial banks have in the recent past undergone major technological leaps in the provision of banking services by adoption of mobile banking technology. This model of banking is particularly useful in providing efficiency and accessibility of banking services without the barriers of location and time. Many studies have been done to assess the

impact of mobile banking on financial inclusion. Not many known studies have been carried out in the Kenyan banking sector in respect of the impact of mobile banking on performance of commercial banks. This research sought to study the relationship between mobile banking and performance of commercial banks in Kenya. The setting of this study was Kaka mega town where banks operating in the town were studied. To attain this, the banks perceptions and attitudes towards mobile banking, and its effects on performance on financial and customer based measures were assessed by administering questionnaires to the customer service and operations staff. Various journal articles, print media articles, and books were reviewed to provide findings of previous work on the area of study. This study was co relational in nature as it sought to fully describe all the key variables under study and establish the relationship among the variables. A structured questionnaire was used to collect data. The collected data was analyzed by inferential statistics where Pearson's Product Moment Correlation and multiple regression analysis were used in measuring relationships among the various variables. This study established that there was positive relationship between mobile banking and performance of commercial banks. It found out that improvements in performance of commercial banks can be attributed to mobile banking. The findings of this research will be useful to bank management and other stakeholders as well as researchers in the area of mobile banking. The research will offer insight into the area of mobile banking to bank management and strategists in proper implementation of mobile banking and will form a basis for future research in this area.(Kato, G. K., Otuya, W. I., Owunza, J. D. and Nato, J. A.2011)

2.2.6. Global Mobile Banking user Adoption Trends and Growth Projections

There is little doubt that mobile banking – defined as the execution of Banking services and transactions using a mobile device, such as a Telephone or tablet – has seen extraordinary adoption rates since the earliest SMS and WAP offerings. However, in the period 2000-2005, these services remained fairly marginal and were highly limited in terms of the scope of the functionality offered (typically just balance enquiries and mini-statements).Today, almost all banks have some kind of mobile banking offering, either developed in house or by making use of third-party specialist vendors, such as Monitise or Clair mail (now merged).In the developed world, the rapid proliferation of smart phones and latterly tablets has poured fuel On the mobile banking fire, such that in 2014, Juniper Research reported total global mobile banking users standing at 0.8billion. A

startling finding is that this already impressive level Of adoption is set to continue growing very rapidly over the coming years with Juniper Predicting a global mobile banking user base of some 1.8 billion people by2019(Source: Juniper Research, KPMG analysis).

2.2.7. M-Banking and M-Payments Systems in the Developing World

The terms m-banking, m-payments, m-transfers, m-payments, and m-finance refer Collectively to a set of applications that enable people to use their mobile telephones to Manipulate their bank accounts, store value in an account linked to their handsets, transfer funds, Or even access credit or insurance products. This paper uses the compound term-banking/m-payments systems to refer to the most common features. The first targets for these applications were consumers in the developed world. By Complementing services offered by the banking system, such as checkbooks, ATMs, Voicemail/landline interfaces, smart cards, point-of-sale networks, and internet resources, the Mobile platform offers a convenient additional method for managing money without handling Cash (Karjaluoto, 2002). For users in the developing world, on the other hand, the appeal of these M-banking/m-payments systems may be less about convenience and more about accessibility and affordability (Cracknell, 2004; infoDEV, 2006). An exploration is underway—between banks, mobile operators, hardware and software providers, regulatory agencies, donors, and users—to determine the shape of m-banking/m-payments services in the developing world (infoDEV,2006; Ivatury, 2004; Ivatury& Pickens, 2006; Porteous, 2006). Mobile phone operators have identified m-banking/m-payments systems as a potential service to offer customers, increasing loyalty while generating fees and messaging charges (info DEV, 2006). Financial institutions, which have had difficulty providing profitable services through traditional channels to poor clients, see m-banking/m-payments as a form of "branchless banking" (Ivatury& Mas, 2008), which lowers the costs of serving low-income customers. Government regulators see a similar appeal but are working out the legal implications of the technologies, particularly concerning security and taxation. There is no universal form of m-banking; rather, purposes and structures vary from Country to country. The systems offer a variety of financial functions, including micro payments to merchants, bill-payments to utilities, P2P transfers between individuals, and long-distance Remittances. Currently, different institutional and business models deliver these systems. Some are offered entirely by banks, others entirely by telecommunications providers, and still others involve a partnership between a bank and telecommunications provider (Porteous, 2006)

.Regulatory factors, which can vary dramatically from country to country, play a strong role in determining which services can be delivered via which institutional arrangements (Mortimer-Schutts, 2007). Most m-banking/m-payments systems in the developing world enable users to do three things: (a) Store value (currency) in an account accessible via the handset. If the user already has Mobile banking Pre-publication draft, Edits possible, a bank account, this is generally a question of linking to a bank account. If the user does not have an account, then the process creates a bank account for her or creates a pseudo bank account, held by a third party or the user's mobile operator. (b) Convert cash in and out of the stored value account. If the account is linked to a bank account, then users can visit banks to cash-in and cash-out. In many cases, users can also visit the GSM providers‟ retail stores. In the most flexible services, a user can visit a corner kiosk or grocery store—perhaps the same one where heor she purchases airtime—and transact with an independent retailer working as an agent for the transaction system. (c) Transfer stored value between accounts. Users can generally transfer funds between accounts linked to two mobile phones, by using a set of SMS messages (or menu commands) and PIN numbers.The new services offer a way to move money from place to place and present an alternative to the payment systems offered by banks, remittance firms, pawn shops, etc. The uptake of m-banking/m-payments systems has been particularly strong in the Philippines, where three million customers use systems offered by mobile operators Smart and Globe (infoDEV, 2006);

In South Africa, where 450,000 people use Wizzit ("the bank in your pocket") (Ivatury&Pickens, 2006) or one of two other national systems (Porteous, 2007); and in Kenya, where nearly two million users registered with Safari com M-Pesa system within a year of its nationwide rollout (Ivatury& Mas, 2008; Vaughan, 2007).

2.2.8. E-Banking System in Ethiopian Banking Industry

The appearance of E-Banking in Ethiopia goes back to the late 2002, when the largest state owned bank, commercial bank of Ethiopia (CBE) introduced ATM to deliver service to the local users. In addition to eight ATM located in Addis Ababa, CBE has had a Visa member since November 14, 2005. (Gardachew 2010).

Harnessing its leadership with advanced banking technology, Dashen Bank signed an agreement with iVery, a South African E-payment technology company, for the introduction of mobile

commerce in April 21, 2009. Both had already the ATM service in 2004.This would make Dashen Bank the first private bank in Ethiopia to acquire E-commerce and mobile merchant transactions (Amanyehun 2011). Although Dashen new technology is one step ahead in that it allows transfer of funds from one's account to others, the first ever E-Banking gateway was signed between Ethiopian Commodity Exchange (ECX) and Dashen Bank and CBE. The E-Banking system being developed with both banks is designed to give a secure electronic data sharing gateway between clients, banks and ECX, by facilitating a smooth transaction (Abiy 2008).

By the end of 2008 Wegagen Bank has signed an agreement with Technology Associates (TA), a Kenyan based information technology (IT) firm, for the development of the solutions for the payment system and installation of a network of ATMs on December 30, 2008. The other core point in relation to evolution is that the agreement signed by three private commercial banks to launch ATM and POS terminal network, February 2009 is welcoming strategy to improve electronic card payment system in Ethiopia. Three private commercial banks – Awash International Bank S.C, Nib International Bank S.C and United Bank S.C have deployed an ATM network called Fettan ATM network (Binyam 2009).After successfully deploying around 60 ATMs, the other privately owned bank: Birhan International Bank S.Co., joined the project to share their system and to deliver card banking service via same switch on March 2013. This will allow one bank customer to withdraw from the other three banks' ATMs as well.

In having a Motto to establish a modern banking service with a single branch and multi ATM, Internet and SMS banking, Zemen Bank started operation in August 2008. It also started online Banking immediately in effect that boosted the bank's name as a modern banking service provider. With the above developments almost all banks have already launched a project by realizing the importance of E-Banking for their future survival and business continuity. Currently, almost all banks issued a bid to launch the E-Banking service across the country, even if, except Commercial Bank of Ethiopia, Zemen, and United bank goes live to a certain extent.

2.2.9. M-Banking Development in Ethiopia

At the end 2013/14 FY, there were eighteen commercial banks operating in Ethiopia, of these sixteen are private commercial banks while the rest two are state owned banks. Despite a rapid

increase in the number of financial institutions since financial liberalization, the Ethiopian banking system is still underdeveloped compared to the rest of the world.

The Ethiopian banking industry as a whole had a network of 2,323 branches as at September 30, 2014, in which the number of population being served by a single branch was around 37,861.8. Commercial bank branch (per 100,000 adults) ratio in 2012 was 2.94 which is lower than Sub-Saharan Africa, 3.71 (World Bank, 2012). With urban skewed branch network it is hard to ensure efficient flow of financial resources and optimize the contributions of the entire financial system to the development processes.

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

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

Micro-Finance Institutions (MFIs) render M-Birr mobile money service in their respective regional states. M-BIRR aims to develop a mobile banking services, allowing people to conduct basic financial transactions from their mobile phone, including sending and receiving money, paying bills, receiving salaries and other government or non-governmental, and repaying loans. (Henok A. (2013), Challenges and Prospects of Commercial Bank Branch in Ethiopia, National Bank of Ethiopia, Unpublished)

2.2.10. Pinpointing the strategic value of mobile banking

Abbas discovered that pinpointing the precise role mobile banking can play within a bank's strategy is not straightforward. The issues are not complex, but they are highly interrelated. Therefore, in our discussion, we first identify what it is about a mobile phone—the device itself—that can make it a potentially useful tool for banks as an access device compared to other

Electronic banking interfaces. Is it because we can carry it with us? Is it because its architecture offers special security or usability benefits? Or is it simply because it is a widely available Internet or point-of-sale (POS) terminal where there are few alternatives?

Second, we map "inherent" benefits of the mobile phone to four typical strategic drivers for banks: increase penetration, sell more services, retain the most valuable customers, and reduce the cost of providing services. Third, we build on the first two to develop a set of mobile banking cases or prototypical strategies banks may use. The second part of this paper leads banks and MFIs through the implementation choices available. In the markets we are primarily concerned with, where most people are using basic handsets, 3 wireless connectivity coverage is limited the mobile markets less competitive because it has fewer players (e.g., Safaricom has 70 percent market share in Kenya), and there are simply less technological options, the wrong Technology choice can easily jeopardize the success of the banking service.**(**Ignacio Mas and kabirkumarjune 2008**)**

2.2.11. Studies on Use (would be useful)

Additional adoption and impact studies are sure to follow, but the research community should also pursue studies of the context and use of m-banking/m-payments systems in the Developing world.

This section presents three important examples of non-technical (social and Economic) contextual factors: comfort with electronic money, the availability of alternatives, and the social context of transactions. Each influences the dynamics of m-banking/m-payments "adoption and impact, currently unfolding around the world. Conceptualizing Electronic Money Even the simplest handsets have features buried deep in menu structures. If navigating an m-banking/m-payments interface is difficult for experienced mobile users with bank accounts, Even greater is the difficulty for first-time users in the developing world, many of whom will Have only been using a mobile for a year or two (Cracknell, 2004; Peevers, Douglas, & Jack,2008). However, the challenges may run deeper than interface design. People coming to banking for the first time via the mobile handset require a command of abstract concepts about invisible/virtual money. Consider the lack of ways to wrap or "gift" a digital money transfer (Singh, 2007). Beliefs, misunderstandings, habits, and concerns must be addressed if people who are used to storing money in cash are asked to store it "in" a handset; the analogy Remains Strained—the mobile is not yet a wallet (Chipchase, Persson, Piippo, Aarras, & Yamamoto,2005).

2.2.12. Consumer Attitude towards M-Banking Services

Studies have been conducted in many countries to better understand consumers' attitudes toward this emerging mobile technology. For example, (Mattila2003) focused on the drivers and inhibitors of M-Banking adoption. Also, security and confidentiality of information are fundamental pre-requisites for any M-Banking services to be successful. While Mattila primarily focused on the Finnish market, which was already gearing up for M-Banking. (Luarn& Lin 2005) conducted a survey in Taiwan, where mobile banking was still in infant stage. The traditional Technology Acceptance Model (TAM) framework was extended by adding one trust-based construct (perceived credibility) and two resource-based constructs (perceived self-efficacy and perceived financial cost) in M-Banking context. They found that all factors have a significant effect on behavioral intention, and the perceived credibility is the most contributing factor to intention. Later, the authors extended their study to mobile-service (m-service) context to validate whether their earlier M-Banking acceptance model can be generalized to investigate overall m-service acceptance. They showed that all factors considered were significant, but perceived usefulness contribute more to the behavioral intention than perceived ease of use, perceived credibility, self-efficacy, and perceived financial resources in the context of m-service.

(Cheong & park 2008) examined the reluctance factors of Koreans to use mobile banking for m-payment. In addition to the traditional TAM factors, they included two additional factors: facilitating conditions and switching barriers. Facilitating conditions refer to the lack of interoperability and market de-facto, and switching barriers refer to high exchange costs, and attractiveness of alternatives. The results indicate the facilitating conditions are positively related to the intention to use m-payment while switching barriers are negatively related. In addition, self-efficacy, social influence, facilitating conditions, system quality, familiarity with the bank, situational normality, structural assurances, and calculated-based trust were introduced as determinants of key constructs. They found that perceived usefulness is the most important construct to explain the behavioral intention. Also, all the determinants except for familiarity with the bank were found to be significant to measure key constructs.

Another stream of research on M-Banking is to understand the socioeconomic and technological impacts of M-Banking adoption in developing countries.

For consumers in developing countries, M-Banking can be a complementary service (additional platform for managing financial transactions) offered by financial institutions in addition to ATMs and internet banking. Therefore, factors such as convenience and ease of use may become an important criteria when they consider adopting M-Banking. However, consumers in the developing countries, the appeal of M-Banking may be less about convenience, but more about accessibility and affordability due to network coverage, quality connection, and costs (Donner & Tellez 2008). For example, (Laforet and Li 2005) investigated consumer behavior, attitude, motivation, and cultural influence on online/mobile banking adoption in China. Their findings suggest that there are large discrepancies between China and western countries in terms of users' demographic characteristics and attitudes towards online/mobile banking. Perceived risks (hackers and fraud) and technological skills were the most important factor influencing Chinese adoption of online and mobile banking. However, consumers in China do not attach much importance on convenience, ease of use, and free access to a wide range of services. A study by (Sripalawat et al. 2011) examined positive and negative factors affecting M-Banking acceptance in Thailand. Subjective norms, perceived usefulness, perceived ease of use, and self-efficacy was considered as the positive factors, and device barrier, perceived risk, lack of information, and perceived financial cost as the negative factors.

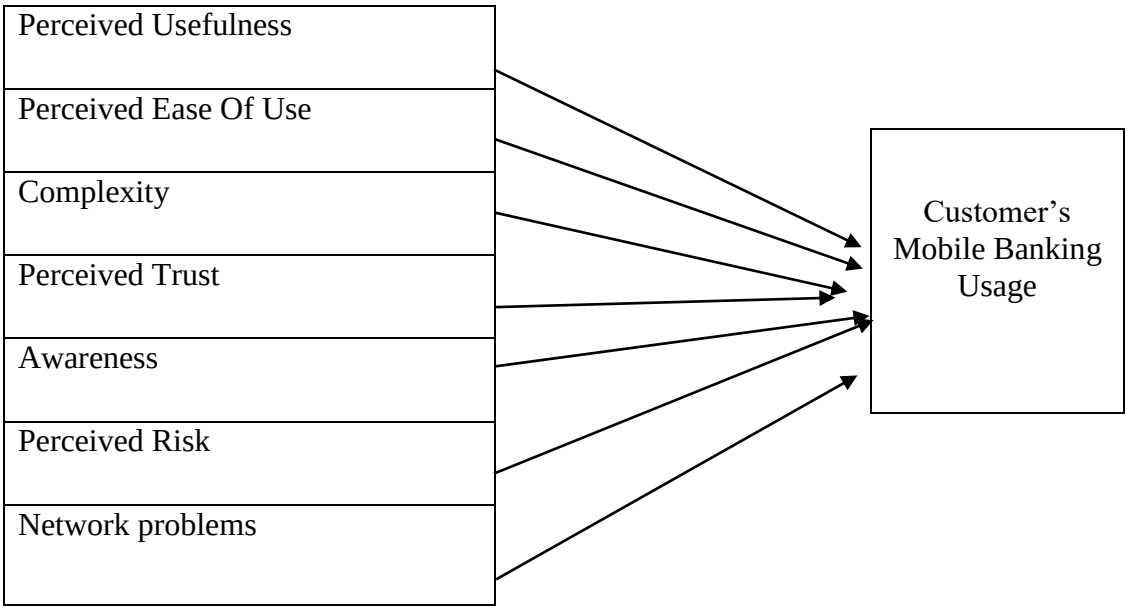
They found that the positive factors have more influence than negative factors towards the acceptance of mobile banking. Among the positive factors, subjective norm is the most influential factor in M-Banking adoption in Thailand. (Crabbe et al. 2009) examined the impact of social and cultural characteristics on M-Banking adoption in Ghana. They showed that social and cultural factors in the form of perceived credibility, facilitating conditions, and demographic factors play an important role in influencing the adoption and sustained usage. Issues such as trust, usability, applicability, security, and convertibility are extremely important because they can influence subsequent decisions of people whether to use a payment system or not. There are several obstacles to user acceptance of EPSs: developers not only have to sell the service to potential users, they also have to convince the users to entrust their money to a third party institution, to rely on the payment system in their business and personal finance, and to use it frequently for convenience, reliability, specific applications, services and for a variety of other reasons. To

achieve this high standard of user acceptance, the creators of a payment system should bear in mind user-related factors from the very beginning of the conception of the payment system.

2.2.13. Conceptual Framework

Based on the existing theories and ideas in the literature, the research formulated an inclusive research framework (Figure 2.2).

Figure 2.2. The conceptual framework



Source: compiled by researcher

CHAPTER THREE

RESEARCH METHODOLOGY

In research design, there are two major methods of research. These are qualitative research and quantitative research. In quantitative research, the aim is to determine the relationship between one thing (an independent variable) and another (a dependent or outcome variable) in a population. Quantitative research designs are either descriptive (subjects usually measured once) or experimental (subjects measured before and after a treatment).

In this research quantitative research method is implemented. Surveys were used together with information from the bank's customers, staffs and other external organization employees.

3.1. Research Design

In this research employed the survey method. Survey method usually used for collection of large amount of data from sizable population (Sanders et. al 2007). For this specific research the dimensions of the main constructs were selected on the basis of reviews from previous researches, as well as a questionnaire instrument that were constructed mostly by adopting the measures from prior researches to be consistent with the purpose of study and the suit with study population and sample. In addition, survey strategy has the advantage of generating finding that is more representative of the whole population at lower cost than collecting the data from the whole population.

3.2. Data Source and Data Collection Methods

For this study both qualitative and quantitative data were employed from both primary and secondary sources. In order to collect sufficient data that can answer the research questions, the researcher designed two surveys; the first Questionnaire which includes the five scales Likert rating tools was used to collect primary data from sampled customer. The second survey was interviews aimed to collect data from E-payment staffs. In addition to the questionnaire and interview, Secondary data from: reports, published and unpublished documents of the bank and other stakeholders were also taken.

The sources for the data are from branches in Addis Ababa only. This is due to the availability of the mobile banking users in the city branches and the product is new to the bank's customers. Moreover the researcher has a time and cost constraints.

3.3 Sampling Procedure and Sample Size Determination

For the purpose of making the survey effective, sampling design was implemented. Sampling is the process of choosing, from a much larger population, a group about which the researcher wish to make generalized statements so that the selected part represent the total group (Leedy 1989). All the Commercial Bank of Ethiopia branches operating in Addis Ababa are taken as universe to get rich evidence. To determine the sample size of the study, the sum of average Monthly served customer from each grade taken as the total population with the confidence level of 93% and then sample size was determined using the formula given on (Slovin2006).

To take a population sample, we must use a formula to figure out what sample size we need to take. Sometimes we know something about a population, which can help to determine a sample size. That's when we have to use Slovin's formula to figure out what sample size, we need to take, which is written as:

Sample size n = N / (1 + N e2),

Where n = Number of samples, N = Total population and e = Margin of Error tolerance

= 1,260,825/1+1,260,825 (0.07)2 **n=204**

Since Mobile Banking users are randomly distributed in the city, which makes it very difficult to contact each of them individually; convenience sampling techniques when used to select customer at the working hour of the bank on the counter. In addition to the sampled customer interviews were made with E-payment staffs; and support staffs from Information Technology (IT) was contacted for the purpose of validity and credibility of data collected from the sample respondent and to supplement survey respondents.

3.4. Method of data analysis

Data analysis consists of examining, categorizing, tabulating, or otherwise recombining the evidence, to address the initial proposition of a study (Yin 1989). The researcher analyzed the data collected through surveys to statistical population concerning benefits and challenges of Mobile Banking service. The data collected via questionnaires analyzed with descriptive statistics such as mean, frequency, and percentage using statistical package for social scientists' version 20.0 (SPSS 20).

CHAPTER FOUR

Data Presentation and Analysis

This study tries to assess factors that affecting usage of mobile banking service in the case of Commercial Bank of Ethiopia. A descriptive statistical analysis is used to present and interpret the data collected on the major factors that affecting usage of M-Banking service. Out of the total 204 questionnaires distributed for customers, was able to collect 194 which have a 95% return rate. As a result the analysis was made based on this and the interview made to twenty different E-payment staffs that have a direct relationship with Mobile Banking Service, five support staffs from Information Technology (IT). Frequency tables and graphs along with percentages are employed to analyze the responses of the respondent.

Mobile Banking is a banking process without bank branch which provides financial services to un-banked communities efficiently and at affordable cost. The aim of the service is to bring more people under the umbrella of banking service. An advantage that is expected to be gained from the implementation of M-Banking covers both direct and indirect benefits for the banking industries. Direct benefits include savings in operational cost, improved organizational functionality, productivity gain, improved efficiency, saving time and increased profitability. Indirect benefits include the opportunity or intangible benefits such as improved customer's satisfaction through improved services, improved banking experience and fulfillment of their changing needs and lifestyle (Lu 2005; Kuan 2001; Lacouou 1995).

Moreover, the major prospects of implementing M-Banking in CBE are analyzed in the following sections.

4.2. Demographic characteristics of respondents

In this study participants on survey questionnaire have different personal information; besides these differences they introduce different responses towards the benefits and challenges of mobile banking. The following discussion indicates these variations. The demographic profile of respondents, participated in this study is shown in table 4.1 as follows.

Table 4.1 Respondents' Demographic profile

Variables	Classification of variables	Number	Percentage
Age	18-40	162	83
	41-60	30	16
	Above 60	2	1
Gender	Male	127	65
	Female	67	35
Educational level	Primary school	13	7
	Secondary school	22	11
	College diploma	29	15
	University degree and above	130	67
Occupation	Business person	43	22
	Student	91	47
	Government employed	38	20
	Self employed	10	5
	Professional	12	6

Source: on survey 2017

From the above Table we can see that the highest percentage of participants in this study was males who form 65% of respondents. In the case of classification of respondents by age the highest percentage of participants are (18-40 years old) who form 83% of total respondents. Regarding the educational level of the study participants, the highest percentage of them has university degrees and above that is 67% of total participants.

Regarding the occupation of the respondents 20% were government employed, 22% were Business Person, 5% were Self-employed, 47% were students and 6% were Professionals from the above demographic data it is possible to understand different views about the factors that affecting the usage of mobile banking service.

4.3. Positive Effects of Mobile banking service

4.3.1. Customer Perspective

A. Time saving

According to an interview result, one of the basic benefits considered in the adoption of M-Banking system, is that it saves time to accomplish banking activities both for banks as well to customers. Using the system to get banking service is fast and available 24 hours a day and 7 days a week. This was in line with the study of (Karjaluoto et al. 2002), which identifies time saving as a major benefit of adopting M-Banking.

B. Reducing Cost

Cost minimization is an important goal for business organization in addition to profit maximization. We can see cost minimization as an advantage of using the system from two perspectives, first from the bank perspectives, by using M-Banking banks save a lot of costs. In the long run a bank can save money by not paying for tellers or for managing branches. This way of cutting transaction cost results in higher profit margin for the banks. (D'Souza 2002) noted that, the combination of high technology and higher skills have posted a higher turnover of banks as they have been able to provide better customer support and have managed their assets well. Second, customers can get banking service at lower costs compared with traditional banking service, because, it is cheaper to make transactions over Electronic fund transfer. This also includes the reduction in the costs of paper and printing, advertising promotions, staff and time, even if not yet worked out from the bank's side.

4.3.2. Banks Perspective

A. Cost Reduction

Through M-Banking the bank can introduce different bank products to the customer; in other words, by using the electronic catalogs, The bank provide more comprehensive 24 hour information on type of banking services with less cost banking services for clients and customers. For example, with only USD 100 the bank puts its mobile banking logo on the App store and Google play store for its customers.(Interview from CBE IT support staffs) Entering the information for several times in the traditional system causes a lot of mistakes. By eliminating the

reworking, and using the appropriate methods of control, the electronic system can prevent such errors. From the Internal Audit report of one team that made assessment on 5 sample branches, 930 human errors counted that could bring a financial and reputational loss to the bank. In effect, by deploying the mobile banking the bank is also transferring the errors and risk to the customer. (Interview from CBE M-banking team leaders)

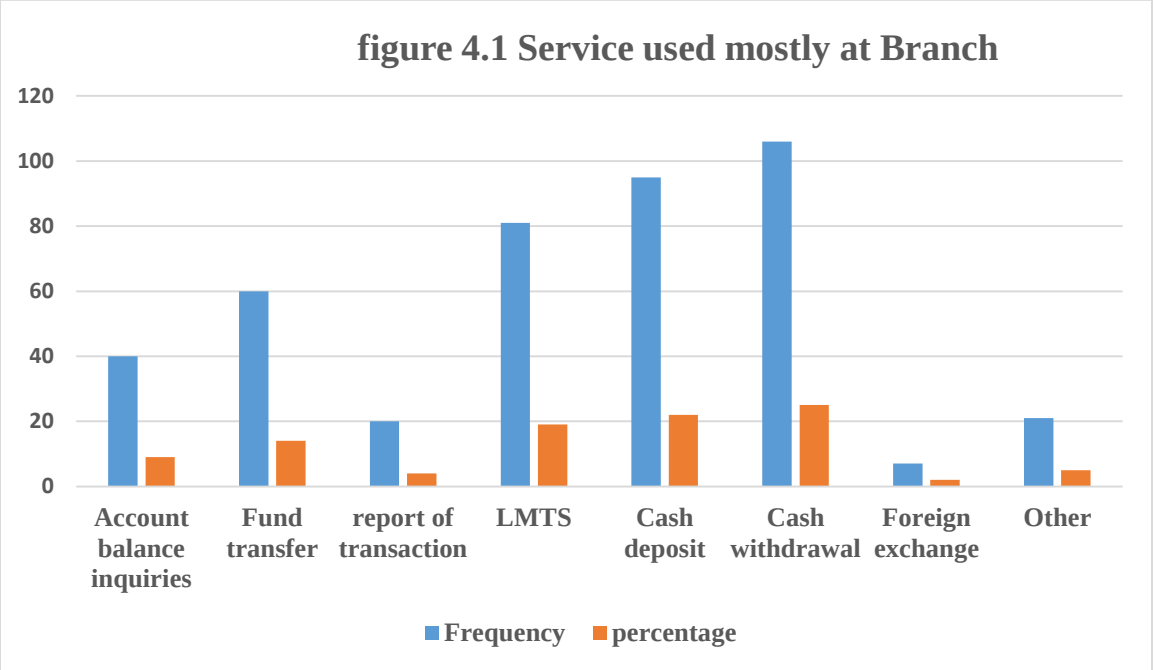
B. Improved relationships with customers

In today competitive and fast business arena, customers prefer to work with banks which offer faster, more accurate and efficient financial services. Therefore, the M-Banking improves the relationships with customers by providing better services. According to (Carr 2004) a happy customer will bring joy even to the staffs of any service giving organization.

C. Decreasing branch burden

Mobile Banking offers many advantages in comparison with traditional banking methods. It is time saving and convenient for a customer. The customer can get a service seven days a week and twenty four hours within a day without physically visiting a Bank, and transactions are processed and confirmed almost immediately so the number of customers visiting the branches becomes decreased.

The questionnaire result related to branches burden is shown in figure 4.1 as follows.



Source: (on survey 2017

As shown in figure 4.1 above when respondents asked about which service they use mostly at that branch, respondents representing 46%, used services they can get through mobile banking specially, 19% use mobile banking for LMTS, 9% for account balance enquiries, and 14% for fund transfer, and 4% for report of transaction.

4.3.4 Challenges of Mobile banking

Even though there are many attached benefits when using Mobile Banking Service, there are also reasons which challenge implementation of the service. In this section Major challenges of Mobile Banking in Commercial Bank of Ethiopia are discussed as follows.

4.3.4.1. Customer Perspective

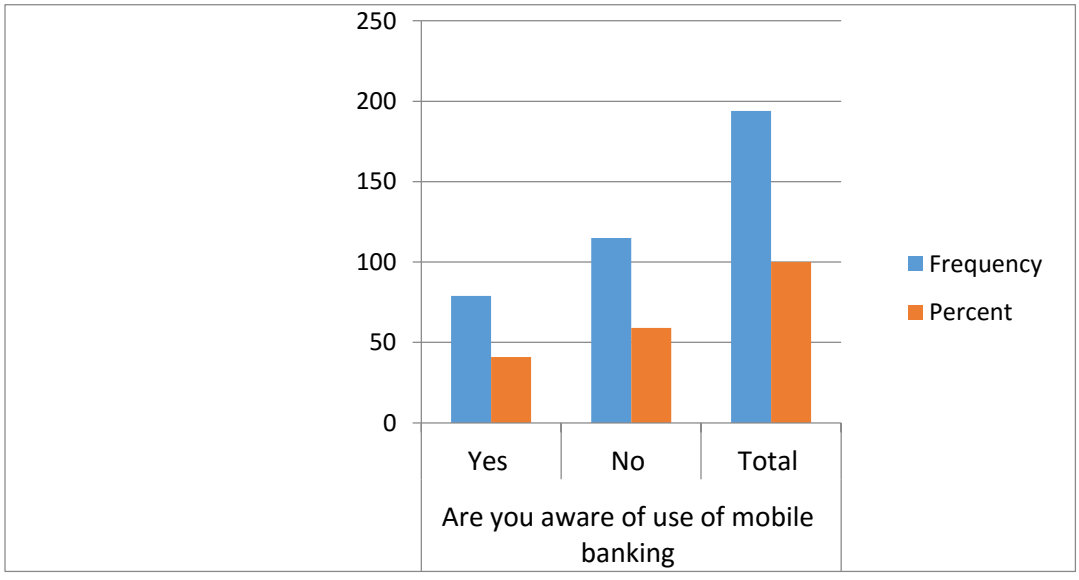
A. Customer awareness and support

Governments see mobile technology as a vehicle to achieve financial inclusion, especially among the rural and poor. Mobile technology is transforming the global banking and payment industry by providing added convenience to existing bank customers in developed markets, and by offering new services to the unbanked customers in emerging markets. (Sunil Gupta, March 2013**)**

Various researchers' literature and finding shows that awareness of customers on the services being delivered determines the implementation and usage of the service. Whenever customers' aware of the service provided it is easy to implement the product and vice versa. As indicated in table 4.3 below the finding of the research indicate that out of the total sample population of customers only 41% of the respondents are aware of the use of Mobile Banking and the rest 59% are not. Therefore, to implement Mobile Banking in an efficient and effective way Commercial Bank of Ethiopia shall increase the awareness level of the customers.

Graphically the response seems like the following figure

Figure 4.2 Level of customer awareness



Source: (on survey 2017

B. Trust

One of the major difficulties in the area of trust-building for m-banking services is security. In terms of technology, the mobile transaction channel is very new and needs to build a perception of security among consumers. As with the traditional internet, this may take time, but may be easier for familiar services such as messaging. Human nature suggests that customers are more likely to trust traditional 'bricks-and-mortar' banks than those that they cannot see, weakening the possibility for building stand-alone m-banking services, even in emerging markets.

However, the extension of trust for existing brands is a strong possibility, although the limited richness of mobile devices does make it more difficult to communicate the brand message to the consumer. (S.J. Barnes and B. Corbitt,January 2003*)*

Trust was defined as a psychological expectation that a trusted party will not behave opportunistically. The respondents' behavioral analysis demonstrated high levels of trust across all three perspectives: the banks, a mobile network provider and wireless infrastructure.

A. Customer perception

One of the basic barriers a firm face, while adopting new product is the perception of the users. For example, the study of (Sohail&Shanmugham2003) suggests that one of the barriers to the adoption of mobile banking is perception. This is also supported by the current survey result shown in table 4.4.

Table 4.4 Customer perception

No	Item	Response (N=194)				
		5	4	3	2	1
1	Using mobile banking increases customer's risk than traditional banking	58	71	36	18	11
		30%	37%	19%	9%	5%
2	Mobile banking is complicated than traditional banking	66	68	39	14	7
		34%	35%	20%	7%	4%
3	Mobile banking is useful to satisfy customer needs	21	30	51	59	35
		11%	15%	26%	30%	18%
4	Mobile banking services may not perform well because of network problems	56	75	41	15	9
		29%	39%	21%	8%	3%
5	Security risk affect the user to use mobile banking	68	77	37	27	15
		32%	37%	16%	11%	4%

Source: (on survey 2017)

C- Device feature and customer preference

The types of mobile the customer's possess determine the type of channel appropriate for that customer. For example, a mobile phones, which have not internet access cannot use for downloadable application channel rather than using SMS channel. We have the following Mobile Channels

1) SMS (short messaging service) mobile banking
2) USSD (Unstructured Supplementary Service Data)
3) XHTML (Extensible Hyper Text Markup Language) mobile banking
4) Downloadable mobile banking
5) Smart Applications

These channels need identification of the device, whether phone having internet, phone without internet and smart phone (such as Java, android, window phone). Due to this there is a mismatch between the type of phone and the appropriate channel for that phone. As we can observe from table 4.4, the number of non-active users from the total applicants becomes high. So lack of identification of device feature is one of the challenges of implementing mobile banking in CBE. In order to give the right channel for the right person and to make customer effective user, it is better to consider the channel selection of customers on application form of mobile banking.
Table4.5 Status of CBE Mobile banking users

Mobile banking registered	Active Mobile Banking Users	Active %
1,806,617	**1,260,825**	**70%**

Source: CBE Mobile Banking performance Report (As of March, 31 2017)

4.3.2. External Environment

4.3.2.1. Regulatory and Legal issues

Some functions need no more than contractual relations determined by commercial law while others need specific forms of regulation. In the following we distinguish between two classes of regulation:

Business conduct regulation encompasses such fields as consumer protection and anti-money laundering measures. The most basic question is whether to rely purely on normal commercial law and the means for redress it provides, in which case buyers of services are at risk and, if hurt, they need to seek redress via normal dispute resolution procedures. However, customers may be assisted by regulators empowered to set standards for the integrity of system operations and to review their practice. There may be specific disclosure rules and sanctions in case of breach of rules - business conduct regulation tends to have relatively well defined rules and processes with limited regulatory discretion. Prudential regulation may require more substantial discretion. Core tools are capital adequacy and liquidity requirements, but also rules governing risk-taking on the asset side. For example, regulators may limit credit growth or require certain loan-to-value ratios. They may have views on the riskiness of assets and reflect these in capital requirements or more directly in rules governing certain asset classes. It is a mantra of prudential regulation that it should be rule-based as far as possible but in practice substantial discretion may be required particularly when assessing system-wide risks, namely macro-prudential regulation. *Colin (*Mayer Michael Klein, May 2011)

Lack of a legal framework is one of the challenges of the E-Banking system in Ethiopia (Gardachew2010). In a country the study of (Wondwossen&Tsegai2005) revealed that an adequate legal structure and security framework could encourage the use of e-payments in Ethiopia. The result of this study also shows that there is no comprehensive legal framework for E-payment in general and mobile banking in particular, except Regulation of Mobile and Agent Banking Services Directives No. FIS /01/2012. Even this directive may need some modification in some of its articles by the National Bank of Ethiopia..

For instance, if we see article number five sub article number one and two of directives no. FIS /01/2012 it says “The maximum balance that should be available in a mobile account of a person with a financial institution at any time shall not exceed Birr 25,000 and Daily mobile banking transaction that involves debiting of an account by a person with a financial institution shall not exceed Birr 6,000” respectively. From this we conclude that even though it is advantageous in terms of security, daily debiting transaction and the maximum balance of the account settled; this directive does not consider the type of customer. Since transactions of corporate customers and the rest are not equal, it is better if it is based on the customer risk appetite. In this article since the transaction is limited the charge become high as a result it has its own impact on the implementation of mobile banking.

Respondents are asked to rate whether using mobile banking increases customer's risk than traditional banking or not (item 1of table 4.4), about 67% of the respondents replied that using mobile Banking increases customer's risk; whereas, only 14% of respondents replied that their disagreement. This shows that customers have a feeling that mobile banking has more risk than the traditional banking system as a result this could be an obstacles for the implementation of mobile banking service. Similarly about 69% of the respondent agreed that mobile banking is complicated than traditional banking (item 2 in table 4.4). From this it is possible to say that customers perceive that mobile banking is complicated service to accomplish banking activities by the customer, so it is one of the challenges which need consideration in implementing M-Banking service. On the other hand, respondents are asked whether Mobile banking is useful to satisfy customer needs (item 3 in table 4.4), only 26% of the respondents have shown their agreement and 48% of the respondents, however, do not believe that they are not getting competitive benefit and the rest 26% have shown a neutral attitude.

4.3.2.2. Telecom infrastructure

Lack of sufficient telecommunication infrastructure is one of the basic challenges in the development of E-payment in Ethiopia (Wondwossen&Tsegai, 2005).

According to the information obtained from respondents and E-payment staffs despite the recent improvements made by the Ethiopian government on the national infrastructure, the overall ICT infrastructure in Ethiopia remains inadequate to implement mobile banking in a proper way.

Therefore, from this we can say that telecom infrastructure is one of the challenges which hinder the fast growth of M-Banking.

In relation to respondent's response to the statement that Mobile banking services may not perform well because of network problems (item 4 in table 4.4), 68% of respondents agreed; whereas 21% of respondents have a neutral position and the rest 11% of respondent disagreed with this statement. From this we can conclude that perception towards network is one of the challenges in implementing mobile banking.

4.4. Other Benefits

The traditional way of keeping money safe is to store it in a safe place ("under the mattress") and guard it. Modern financial systems allow more sophisticated ways of delegating safe-keeping through for example a safe-deposit box. To facilitate transferring or investing the money, one can delegate safe-keeping by opening an account with an account provider which traditionally has been a bank account but could be an account provided by a non-bank such as M-PESA. A record needs to be created which can either is paper-based or electronic that establishes who owns the account and how access is gained to the account. In addition, an account requires rules on how the records are maintained and how the owner is informed about transactions and the balance on the account. The key to any safe-keeping function is regulation that assures the integrity of the system and requires procedures to be subject to audit (Makin, 2009).

In addition to the above, there are also different benefits which, banking industry can attain from adoption of M-Banking system. The other benefit of M-Banking system identified in this study are, improving customer satisfaction, enhancing speed and efficiency, reduce the number of customers arrival to banking hall, while it reduces the work load of bank staff, increase the productivity of banks, increase reliability and accessibility of banking service, create a better relationship between banks and clients, used as better information control and unlimited time to access bank account and information.

Furthermore, M-Banking improves the banking activities and has advantages for customers as well as the unintended advantages of the society; from which the following advantages can be painted:

- Higher public productivity due to the improved time management:
- Encourage savings resulted from the reduced costs and accessibility
- Better fund management and efficient use of liquidity
- Lower social costs such as the traffic, air pollution, and noise pollution especially in Addis Ababa

The critical problem in implementing Mobile Banking was lack of benchmark in the country, to create integration the Mobile Banking Module (Arc-Mob) with the retail products, network operator problem, and shortage of resource persons. As discussed with both groups they believe that with the new service development projects of the Ethio Telecom, since most of the connectivity problems will be resolved the service will lay a foundation throughout the country. Because of the ease of use, operability on all types of phones and working with or without internet connection.

Still the main challenge is the awareness level of the CBE staffs. Unless the owner operates it well, it will be very difficult to sell the product for their customers. Among the reasons most respondents indicate that there should be an intensive educational campaign in the bank before going to the market. With the number of transactions seen weekly and the costs saved and the efficiency level gained, the bank should have marketing officers specializing in this area. Moreover, the business development unit should also be proactive to address all the promotional session and educational materials on time. National set of laws, rules and regulations are important requirements for the successful implementation of E-payment schemes. Some of the major elements include rules on money laundering (a criteria to join the WTO), supervision of commercial banks of the central bank. Due to the virtual and global nature of electronic payment also raises legal questions such as which jurisdiction will be competent and about the applicable laws in disputed cases and validity of electronic contracts. A legal and regulatory framework that builds trust and confidence supporting technical efforts is an important issue to be addressed in implementing this service. According to most of the staff, lack of suitable legal and regulatory framework for E-payment in Ethiopia is a challenge.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1. Conclusion

The assessment result revealed that Factors that affecting usage of Mobile Banking service in the Commercial Bank of Ethiopia. The study also assessed the level of usage of the system in CBE. Even if electronic payments will bring various benefits to the society, the bank and individuals, it also has its own challenges. Electronic payments include mobile money transfer, text and pay, cashless mobile phone top up service and debit card. Most of the universal banks issue Debit cards. Debit Cards are used to withdraw money from Automated Teller Machines (ATM) as well as make payment of purchases at Point of Sale (POS) outlets. It is known that only limited Hotels, Fuel stations and shops have introduced POS machines to perform transaction through debit cards. Electronic payments in Ethiopia during the past few years have undergone significant progress, but are still paper-based.

The study was undertaken to create a better understanding of the benefits and challenges of mobile banking services in CBE. As mobile banking is still relatively new in Ethiopia, an understanding of the benefits and challenges to use mobile banking may influence its implementation. The findings of this study offer insight to commercial banks in promoting the use of mobile banking among bank customers. In order to achieve this it is important for commercial banks to take into account the major factors that affecting the usage of mobile banking service .this study has found on the use of mobile banking and it can be utilized to formulate best promotional strategies in enhancing the use of mobile banking among customers. The study results indicate that customer and staff awareness, device feature, customer perception, customer preference, ease of use and utilization, telecom infrastructure, and Lack of suitable legal and regulatory framework were the major challenges of M-Banking found in this study.

On the other hand, the study also reveals that the benefits of M-Banking are well known to the banks and represent a formidable force to drive implementation of the service. In general reducing branch burden, improving customer relationship, reduction of cost in general, reducing Human error, time saving and other additional benefit identified in the study was considered as a very great potential for banks to improve their public image.

In addition to answering the direct question that is introducing a new product; the bank will get many indirect benefits but that could help the bank to achieve its main goals. In this instance since Mobile Banking facilitates account to account transfer the resource or the deposit will be kept in the bank. In today's business environment where by the demand for finance is very high, getting the necessary resource is crucial. Practically all banks are in search for resource. To find these banks should fulfill the needs of their customer to be profitable or achieve their goal.

In another scenario where our country is on process of joining the World Trade Organization getting to start with the simple banking practice mandatory. Because if once entered there will be a very stiff competition with the world's biggest banks that are operating with very high technology and minimal number of staffs. So, before this whole fire comes to the venue, the bank should get prepared not to be among the swallowed ones.

Furthermore, the assessment of M-Banking identified in this study may help to identify the best course of actions to promote its implementation. It will also be valuable to all banking industries of Ethiopia to increase their awareness and understanding of Mobile Banking.

5.2. Recommendations

The following recommendations are suggested against the findings of the study

- It is advisable for CBE to introduce a well-organized information system about mobile banking.
- CBE should evaluate customer service excellence level of branches; and provide training to branch managers and district staff on implementation of Mobile banking and E-Payment services.
- **Regulatory and legal framework for mobile banking**

  Should be developed by the government and National bank of Ethiopia. The existing regulations should needs amendment and improvement.

- **CBE Should create Awareness**

  For the customers about mobile banking service and Electronic banking products effectively and efficiently. By providing sufficient information on the advantages of mobile banking. In order to achieve this, the bank should provide the user manual that contains details on mobile banking, including the ability to assess a wide range of banking services such as account balance inquiries, fund transfers via mobile phone and other services offered by M-Banking. Moreover, the research showed that awareness lacks in different level. It is recommended that the bank initiate awareness seminars and courses to those who are in the banking business.

- **CBE should work more on promoting the product across the country**

  Mobile is used by many people in the town and in the rural areas by Government workers, students, Business persons, merchants & etc. Accordingly, by participating and sponsoring different trade fairs, on different meetings, Social medias the bank should teach how Mobile Banking is useful, fast, time saving and cost saving.

- **Ethio-Telecom infrastructure should be improved**

  To implement Mobile Banking Effectively and efficiently the ICT and telecom infrastructure should be facilitated

  Otherwise it is meaningless

- **CBE Branches should identify customers Mobile type**

  In order to deliver satisfactory service of Mobile Banking the apparatus type should be known some mobile types accept SMS, some needs internet connection, the others may need dawn loadable application.

  As the finding indicates from 1,806,617 mobile banking users only 1,260,825 customers or 70% are active users the remaining 30% are inactive users in order to increase number of active mobile banking users' customers should be counseled. The limited richness of mobile devices does make it more difficult to communicate the brand message to the consumer.

- **CBE Should upgrade the capacity of data server**

  Number of CBE branches is reached more than 1186 and still increasing in a fast rate number of mobile banking users are also increasing it was 1,260,825 on March 31, 2017.For the successful implementation of Mobile Banking service and to increase customer satisfaction in Commercial Bank of Ethiopia the data base server should be also upgraded and the capacity should be increased.

- **CBE Should strength the security of Mobile Banking Service**

  As we can observe from the investigation of this study customers have fear of security in order to minimize the security risk CBE should secure end to end data getaways, security access should be established with applications.

  CBE should communicate mobile banking customers to verify their identity before providing personal information. All getaways should be secured to prevent unauthorized access. Customers should be advised to use logging of all accesses when they use the service and they should be logging out after they finished using the service.

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Annexes

Annex – 1

ST.MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES
MBA PROGRAM

Dear Respondent,

The aim of this questionnaire is to identify benefits (opportunities) and challenges of M-banking in CBE. The results of the study are expected to supply to the understanding of the challenges and opportunities of implementing M-banking in delivering of service to customers in commercial banks of Ethiopia. I would like to assure you that the information you provide will be used only for the purpose of achieving academic award.

Therefore, your response is highly valuable and there are no identified risks from participation in this study and participation is completely voluntary.

The report of the study will only be communicated in aggregate form to protect the identity of the respondents and the finding of the study will be used only for academic purpose

Mob +251 913013103

E-mail danani2121@gmail.com

Thank you for your participation

General instructions

- No need to write a name
- Tick your choices

I. Background Information

1. Age

   18-40 ☐ 41-60 ☐ >60 ☐

2. Gender

   Male ☐ Female ☐

3. Education

   Illiterate ☐ Primary school ☐ Secondary School ☐ College Diploma ☐ University degree and above ☐

4. Occupation

   Professional ☐ business person ☐ student ☐ government employed ☐ self-employed ☐ unemployed ☐ other ☐

II. Mobile Banking

4. Do you own a mobile phone? Yes ☐ No ☐
5. If your answer is yes for question No 4 which type? Have an internet access ☐ haven't internet access ☐ smart phone ☐ (specify the brand)

   _____

6. Which mobile services are you aware of?

   Send/receive text messages ☐ play games ☐ play & store music ☐ Access the internet ☐ other ☐ (please specify) _____

7. Do you own a bank account? Yes ☐ No ☐
8. Which service do you use mostly at your branch? LMTS ☐ cash deposit ☐ cash ☐ withdrawal ☐ payment via account ☐ foreign exchange ☐ report of transaction ☐ Account balance enquiries ☐ other please specify) _____
9. Are you aware of the use of M-banking? Yes ☐ No ☐
10. If your answer is NO for question No 9 why?

    _____

    _____

11. Which of the following mobile banking services would you be interested in if offered by your bank?

Account balance enquiries ☐ Funds transfer ☐ Payments via mobile ☐ Report of transactions ☐ LMTS ☐

12. What in your opinion are the main problems of mobile banking?

    Security concerns /risks ☐ Complicated /uncomfortable usage of mobile devices ☐Too expensive ☐ others ☐ (please specify) _____

13. How do you perceive the use of mobile banking?

    Positively ☐ Negatively ☐ neither of the two ☐

14. Do you have trust to use mobile banking? Yes ☐ No ☐

15. Do have enough information on use of mobile banking? Yes ☐ No ☐

16. Is Mobile Banking Takes more Time than Traditional banking system?

    Yes ☐ No ☐

17. Is mobile banking advantageous to customers? Yes ☐ No ☐

18. If your answer is yes what are those please specify

    _____

---

19. Does CBE provide you guidelines on the use of M-Banking? Yes ☐ No ☐

20. Does your decision to use M-Banking is influenced by your friends, parent and colleagues

    Yes ☐ No ☐

Please indicate the extent of your level of agreement and disagreement with the following statement. Please tick (✓) your appropriate answer based on the following rating.1= strongly disagree 2= disagree 3= neutral 4= agree 5= strongly agree

Q.No	Statement to evaluate	Rating point				
		1	2	3	4	5
21.	Security risk affect the user to use mobile banking					
22.	Lack of trust is considered as barriers for the use of M-banking.					
23.	Using mobile banking increases customer risk than traditional banking.					
24.	Mobile banking is complicated than traditional banking					
25.	Mobile banking useful to satisfy customer needs					
26.	Mobile banking enables users to complete banking activities more quickly and easily					
27.	Mobile banking services may not perform well because of network problems					
28.	You would use mobile banking if you could get more information about it.					
29.	You would use mobile banking if there are such more functions or services provided					
30.	You will use mobile banking if the other banking service could not provide the same useful service or function as mobile banking.					

If you have any comment?

_____

_____

_____

Thank you very much for filling out this questionnaire, your help is appreciated!

Annex – 2

St. Mary 'S University School of Graduate Studies Master of Business Administration Program Interview questions for CBE E-payment mobile banking manager and IT support office staffs.

Dear respondents:

The objective of this interview is to secure and relevant firsthand information that may be helpful to conduct a research on the topic of challenges and benefits of mobile banking service on CBE in partial fulfillment of the requirement for MBA General management. Here I kindly request you to attempt all the questions in interview to meet the aim of the study. Whatever information is provided confidentially and strictly to be used for academic purpose only.

Aynalem Desalegn (Graduating Student)

1. For what reason and Purpose banks adopting mobile banking services in Ethiopia? This is to for the purpose of obtain the reason why banks involved in such a business and what benefits it get from the service

2. What are the major challenges banks faced in adopting mobile banking? This is target to regarding security government support, legal and regulatory frame work, ICT infrastructure, and socio cultural issues concerning mobile banking.

3. What are the pull factors or opportunities in the future to provide the service effectively and efficiently? This question will help to assess the main factors for the attractiveness of the business

4. What are your customers' attitudes towards the mobile banking service that the organizations provide?

5. Do your customers lack of confidence in using the mobile banking system as a payment method? If yes why?

6. In case of mobile banking what are the problems the bank encounter from technical, operational and infrastructure aspects?