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SCHOOL OF GRADUATE STUDIES

MBA IN ACCOUNTING AND FINANCE

CHALLENGES AND OPPORTUNITIES OF E-BANKING IN ETHIOPIA:

THE CASE OF COMMERCIAL BANK OF ETHIOPIA

BY

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Statement of Declaration

I Michael Mekonnen declare that this research titled “Challenges and opportunities of E-banking in Ethiopia: The Case of Commercial Bank of Ethiopia” is done with my own effort. I have produced it independently except for the guidance and suggestions of my research advisor. I assure that this study has been submitted for any scholarly award in this or any other university.

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Here with I state that Michael Mekonnen has carried out this research work on the topic entitled “Challenges and opportunities of E-banking in Ethiopia: The Case of Commercial Bank of Ethiopia” under my supervision. This work is original in nature and has not presented for a degree in any university and it is sufficient for submission for partial fulfillment for the award of MSc degree in Accounting and Finance.

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Abstract

This thesis aims to examine expansion of E-banking in the commercial bank of Ethiopian with respect to the barriers which can influence firm from taking advantage of E-banking system and expected benefits derived by the expansion system. The study was conducted based on the data gathered from bank with in its four branches located at Addis Ababa includes; (Gofa sefer, Arada giorgis ,Addis Ababa and finfine) on E-payment staffs by distribute 160 questionnaire A mixed research approach was used to answer the research questions that emerge through the review of existing literature and the experiences of the researcher in respect of the E-banking system in commercial bank of Ethiopia. The study statistically analyzes data obtained from the survey questionnaire. A research framework developed based on technology-organization-environment framework and Technology acceptance model to guide the study. The result of the study indicated that, the major barriers commercial bank of Ethiopian faces for the expansion of Electronic banking are, security risk, lack of trust, lack of legal and regulatory frame work, Lack of ICT infrastructure and absence of competition between local and entire absence of foreign banks. The study also identified perceived ease of use and perceived usefulness as a driver for expansion of E-banking system. The study suggests a series of measures which could be taken by the bank and by government to address various challenges identified in the thesis. These measures include: Establishing a clear set of legal frame work on the use of technology in banking industry, supporting banking industry by investing on ICT infrastructure and banks needs to be focused on technological innovation competition rather than traditional bases of retail bank competition.

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Abbreviations

CBE= Commercial Bank of Ethiopia

NBE = National Bank of Ethiopia

ICT = Information Communication Technology

EFT = Electronic Fund Transfer

ATM = Automated Teller Machine

POS = Point of Sale

PDA = Personal Digital Assistant

PC = Personal Computer

PIN = Personal Identification Number

SMS = Sort Text Message

ECX = Ethiopian Commodity Exchange

IT = Information Technology

TOE = Technology – Organization – Environment

TAM = Technology Acceptance Model

PEOU = Perceived Ease of Use

PU = perceived usefulness

CSF = Critical Success Factor

PSB = Public Sector Bank

SPSS = Statistical Package for Social Scantiest

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Chapter One

Introduction

1.1 Background of the study

The information communication technology (ICT) sector is the highly growing and significantly influences the global economy. This day's most activities in the financial sector are performed through ICT and the Ethiopian banking industry cannot be exceptional. Among different products banks are providing E- Banking has become one of the key service and used as a means of competition among the industries.

Technological innovations play a crucial role in the banking industry by creating value for banks and customers; it enables customers to perform banking transactions without visiting a brick and mortar banking system. On the other hand, E-banking has enabled banking institutions to compete more effectively in the global environment by extending their products and services beyond the restriction of time and space (Turban 2008). However, mirroring the development of E-commerce, the adoption and diffusion of electronic banking (E-banking) system is yet to be introduced and developed in Ethiopia. In order to encourage further E-banking adoption in developing countries, a better understanding of the barriers and drivers impacting E-banking adoption is critical (Zhao *et al.* 2008). To address the current gap in the literature, this study is designed to examine the E-banking adoption situation in Ethiopia and generally focusing on the investigation of barriers and drivers of Expansion of E-banking system in Commercial Bank of Ethiopia.

Banking in Ethiopia faces numerous challenges to fully adopt and adapt E-Banking applications and seize the opportunities presented by ICT applications in general. According Gardachew Worku (2010), Key Challenges for E Banking applications includes Low level of internet penetration and poorly developed telecommunication infrastructure, Lack of suitable legal and regulatory framework for E-payment, High rates of illiteracy, Fear of risk, and Resistance to changes in technology are some of the challenges described. Also Wondwossen and Tsegai (2011), mentioned Lack of skilled manpower and frequent power disruption are challenges observed in the industry during that time. Even though some studies has been

conducted related to the topic in the past years, the researcher believes that these studies are not in the position to show the ongoing challenges brought by different factors like technological advancement. Therefore, more studies are still required to be carried out in order to identify these enduring problems of E-banking in the country. Hence, this study aims to identify and examine the current challenges and opportunities rise in the industry and also helps to address the current gap in the literature.

1.2 Problem Statement

Even though E-banking has a lot of benefits in delivering service to customers, The giant state owned commercial bank of Ethiopia had been issued only 1,806,876 debit cards, and has mobile banking user of 290,383 and internet banking user 9,781.00 till Dec.2014 (Birittu no. 120). Considering the low extent of development of ICT infrastructure in developing countries, when compared with the developed countries E-banking has not really been able to diffuse into society given the low rate of internet access (Banji & Catherine 2004). In Ethiopia to fill this gap, players in the banking industries are aggressively promoting and advertising their products. According to Gerrard & Cunningham (2003) one of the issues raised with adoption of new technology is perceived risk or uncertainty about the outcome of the use of the innovation or uncertainty that the use of the innovation is secure. Uncertainty arises from a predictive validity of the attributes (for example functionality and security) that is, how well users of new technology will predict future performance (Cox; 1967). Furthermore, the flip side of this technological boom is that electronic banking is not only vulnerable to, but may intensify, some of the same risk particularly governance, legal operational and reputational inherent in traditional banking. In addition, it poses new challenges in response, many national regulators have already modified their regulation to achieve their main objective ensuring the safety and soundness of the domestic banking system, promoting market discipline and protecting customer right and the public trust in the banking system (IJRBM, 2013); E-banking, which refers to the use of modern technology that allows customers to access banking services electronically such as cash withdrawal, funds transfer, bill payment and obtain mini-bank statements are not well-being useful. Therefore this study intended to identify the threat and the related opportunities that come with e – banking system in Ethiopia taking commercial bank of Ethiopia as researched area based on the research problems discussed above.

1.3 Objective of the study

The Ethiopian banking industry is one of the service industries crucial to the growth of its emerging economy. Banking is important in the role it plays in capital mobilization and granting of financial facilities that is crucial to business development and growth. As business always need to find ways of improving its products and service deliveries, it will be useful to understand how different factors affect the expansion of E-banking system and in which way the technological innovations can benefit the banking industries to provide service to customers.

1.3.1 General Objective

The main objective of this study is to explore the challenges and opportunities in the expansion of E banking in Commercial Bank of Ethiopia.

1.3.2 Specific objective of the study

This study aims at addressing the following specific research objectives:

- ✓ To identify the challenges in expansion of E-Banking service and products in the case of commercial bank of Ethiopian in particular.
- ✓ To explore the opportunities available in the expansion of E-banking to customer.
- ✓ Assess the perceived benefit/drivers that can be obtained from the use of E-banking system in Ethiopia.

1.4 Research questions

Based on the problem stated in this study, the researcher developed the following research questions.

Main Question: - What are the challenges and opportunities of E – banking in Ethiopia.

To gain a comprehensive understanding of the phenomenon under investigation, and in order to be able to provide a sufficient justification for answering that question, the following three specific questions need to be addressed. For the purpose of the present research, these questions are:

- 1) What are the challenges to the expansion of E-banking in commercial bank of Ethiopia?
- 2) What are the opportunities in the use of E-banking in commercial bank of Ethiopia?
- 3) What are the benefits that can be attained from the use of E- banking in commercial bank of Ethiopia?

1.5 Scope and Limitation of the study

It is important to define the boundaries of this study such that readers can aware the direction to which this study is headed. Initially the research mainly focuses on Electronic Banking in our case which consists of, card banking (ATM), mobile banking, internet banking and point of sale (POS). In addition this research mainly depends on surveying, interviewing, documentary analysis and observation on the purposely selected bank .i.e. Commercial Bank of Ethiopia. This bank is selected from the total industries players for simplification and the findings of this research can't be generalized to the industries.

1.6 Significance of the study

The outcomes and results of this research have potential value to the institution in terms of identifying the challenges and opportunities related with expansion of e banking and adoption of relevant technology that facilitate e banking service to its customers . In addition, since much was not done on the topic this study is expected to provide important background information for researchers who would like to continue with the issue in a more detail and quantitative manner.

1.7 Organization of the Thesis

The research paper has divided into five chapters. Chapter one presents the introduction part, which discusses, Background of the study, problem statement, research questions, objectives of the study, research method adopted, scope & limitations of the study and significance of the research paper. Chapter two presents related theoretical and empirical literature Chapter three presents the research methodology, which includes description of the research design and approach used in the study, the data source and collection methods and the data analysis technique adopted in the study. .The results and discussion is presented in chapter four. The final part summarizes and concludes the findings and also forwards some recommendations.

Chapter Two

Literature Review

2.1 Definition of E-banking

E-banking has a variety of definitions ,E-banking is a form of banking service where funds are transferred through an exchange of electronic signal between financial institutions, rather than 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 check or cash (Malak 2007).

The term of E-banking often refers to online banking/Internet banking which is the use of the Internet as a remote delivery channel for banking services (Furst&Nolle 2002,). 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 per day, seven days a week.

Yang (1997, p.2) defined E-banking as the use of a computer to retrieve and process banking data (statements, transaction details, etc.) and to initiate transactions (payments, transfers, requests for services, etc.) directly with a bank or with other financial service provider remotely via a telecommunications network. It should be noted that electronic banking is a bigger platform than just banking via the internet.

E-banking can be also defined as a variety of platforms such as internet banking or (online banking), TV-based banking, mobile phone banking, and PC (personal computer) banking (or offline banking) whereby customers access these services using an intelligent electronic device, like PC, personal digital assistant (PDA), automated teller machine (ATM), point of sale (POS), kiosk, or touch tone telephone (Alagheband 2006,). Different forms of E-banking system were discussed as follows.

1. Automated Teller Machines (ATM) - It is an electronic terminal which gives consumers the opportunity to get banking service at almost any time. To withdraw cash, make deposits or

transfer funds between accounts, a consumer needs an ATM card and a personal identification number (PIN).

2. Point-of-Sale Transfer Terminals (POS) - The system allows consumers to pay for retail purchase with a check card, a new name for debit card. This card looks like a credit card but with a significant difference. The money for the purchase is transferred immediately from account of debit card holder to the store's account (Malak 2007).

3. Mobile banking- Mobile banking is a service that enables customers to conduct some banking services such as account inquiry and funds transfer, by using of short text message (SMS).

Banks offer Internet banking in two main ways. An existing bank with physical offices can establish a Web site and offer Internet banking to its customers in addition to its traditional delivery channels. A second alternative is to establish virtual branchless or Internet-only, Bank almost without physical offices. Virtual banks may offer their customers the ability to make deposits and withdraw funds via ATMs or other remote delivery channels owned by other institutions (Furst&Nolle 2002,). In the context of this study E-banking were not considered as only transferring of service by using internet connection rather it considered as multi channel service provided through ATM, internet banking, Mobile banking (Modbirr system), point sale terminal and telephone banking.

4. Internet / extranet banking- It 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 (Malak 2007).

2.2 E-banking system in Ethiopian banking industry

The appearance of E-banking in Ethiopia goes back to the late 2001, when the largest state owned, 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 have Visa membership since November 14, 2005. But, due to lack of appropriate infrastructure it failed to reap the fruit of its membership. Despite being the pioneer in introducing ATM based payment system and acquired visa membership, CBE lagged behind Dashen bank, which worked aggressively to maintain its lead in E-payment system. As CBE continues to move at a snail's pace in its turnkey solution for Card Based Payment system, Dashen Bank remains so far the sole player in the field of E-Banking since 2006. (Gardachew 2010);.

Dashen bank, a forerunner in introducing E-banking in Ethiopia, has installed ATMs at convenient locations for its own cardholders. Dashen ATM is available 24 hours a day, seven days a week and 365 days a year providing service to Debit Cardholders and International Visa Cardholders coming to the country. At the end of June 2009, Dashen bank has installed more than 40 ATMs in its area branches, university compounds, shopping malls, restaurants and hotels. In the year 2011 the payment card services have witnessed significant strides, Dashen ATM service expanded to 70 and 704 POS terminals (Annual report of Dashen Bank 2011). Available services on Dashen Bank ATMs are: Cash withdrawal, Balance Inquiry, Mini statement, Fund transfer between accounts attached to a single card and Personal Identification Number (PIN) change. Currently, the bank gives debit card service only for Visa cards. Dashen bank clients can withdraw up to 5,000 birr in cash and can buy goods and services up to 8,000 to 13,000 birr per day. Expanding its leadership, Dashen Bank has begun accepting MasterCard in addition to Visa cards. Dashen won the membership license from MasterCard in 2008. Annual report of Dashen Bank 2011).

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. According to the agreement, iVery Payment Technologies has licensed its Gateway and MiCard E-payment processing solution to Dashen Bank. Dashen Mobbirr users can transfer 500 birr to other Mobbirr users in 24 hours a day. This would make Dashen Bank the first private bank in Ethiopia to acquire E-commerce and mobile merchant transactions (Amanyehun 2011). Although Dashen's 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, Zemen Bank, the only Ethiopian bank anchored in the idea of single branch banking, by launching full-blown internet banking, a service which is new to Ethiopian banking industry in the year 2010. The bank tested the venture through its first phase of the online service, and now it is already started

the full-fledged version, which enable customers to make online money transfer freely. Previously, the online banking service, delivered by the bank, only gave access to bank statements and exchange rate information. The new and never-been-tried service proposed by the bank is to include free account money transfer, corporate payroll uploading system where employers could upload payroll to the system and make payments to individual worker's accounts online and online utility bill settlement system, when utility companies are ready (Asrat 2010).

An agreement was signed by three private commercial banks such as Awash international Bank S.C, Nib International Bank S.C and United Bank to launch ATM and POS terminal network, in February 2009. This is a welcoming strategy to improve electronic card payment system in Ethiopia. The three private commercial banks have agreed in principle to establish an ATM network called Fettan ATM network. If everything goes as planned, Fettan ATM will install over 140 ATM machines and over 340 POS machines across Ethiopia. There will be one ATM at every branch of the consortium banks, all domestic airports serviced by Commercial service, shopping complexes and merchants. The agreement is the first significant cooperation between competing banks in Ethiopia, which others should be encouraged to follow as there is no single bank in Ethiopia that can afford to provide Extensive geographical coverage and access (Binyam 2009).

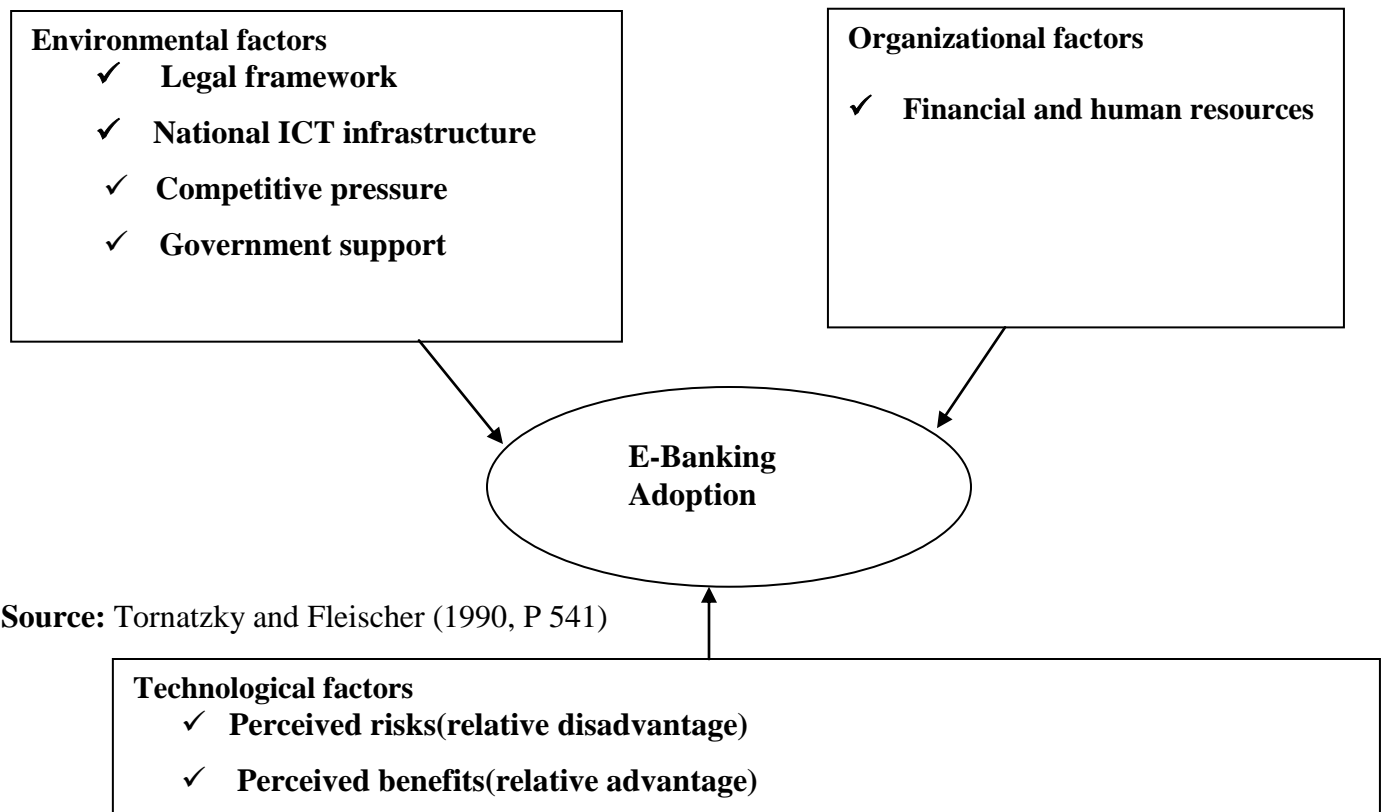
2.3 Challenges of Banks in adopting /expanding E- Banking system

Many researchers have been used different frameworks in the study of factors that affect banks in the adoption of new technological innovation that facilitate E-banking services. Among the frameworks that have been developed includes, the Technology-organization-Environment framework (TOE) (Tornatzky & Fleischer, 1990) which identifies three basic factors for the adoption of technological innovation, i.e., technological factors, organizational and environmental factors. Technology Acceptance Model (TAM) (Davis, 1989), which posit the two sets of beliefs, i.e. perceived ease of use (PEOU) and perceived usefulness (PU) to determine individual's acceptance of a technology. PEOU refers to the degree to which an individual's believes that using a particular system would be free of physical and mental effort, PU on the other hand is related to users perception of the degree to which using a system will be beneficial (Alsabbagh & Molla,2004).

2.3.1 Technology- Organization- Environment (TOE) framework.

TOE framework was proposed by Tornatzky and Fleischer; it is designed for studying the likelihood of adoption success of technology innovations. This framework is a comprehensive and well received framework in the context of innovation adoption by organizations and has been used in many studies (Zhu & Kraemer 2006; Chang *et al* 2007; Salwani, *et al* 2009, Ellis 2009). According to Tornatzky and Fleischer (1990), technology adoption within an organization is influenced by factors pertaining to the technological context, the organizational context, and the external environment. Based on this, the researcher adopts the TOE framework to summarize possible key factors affecting E-banking adoption. The *technological factor* refers to adopter's perception of E-banking attributes. Typical characteristics of technology considered in technology adoption studies are based on the assumption of Roger's diffusion of innovation (Rogers,2003), Which include relative advantages (perceived benefits), and relative disadvantages (perceived risks).While the *organizational factor* refers to the organization's characteristics that influence its ability to adopt and use of E-banking system. The *environmental factor* refers to the external environment in which an organization operates and its condition for supporting the development of E-banking services. For each context, various factors have been identified from the literature but only those that are considered relevant for E-banking adoption are included in the framework. Details of factors considered in this study are discussed below.

Figure: 2:1. Technology-Organization-Environment framework



Source: Tornatzky and Fleischer (1990, P 541)

2.3.1.1 Technological Factors

It appears that there is a lack of consensus on what factors belong to this context. For example, one study (Salwani 2009) includes technology competence covering existing technology infrastructure and skills to utilize the technology in this context, while other studies (Chang 2007 & Ellias 2009) consider some relevant characteristics of technology. To avoid overlapping between technology and organizational contexts, researcher chooses two basic factors related to technology competence, which have relevant to the organizational factors, i.e perceived benefits and perceived risks are considered in this study from the technological factors.

1. **Perceived benefits:** - Perceived benefits of E-banking cover both direct and indirect benefits for the banking industry as well as for the consumers. Direct benefits include the savings on operational cost, improved organizational functionality, productivity gain, improved efficiency 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 (Lacovou 1995; Kuan & Chau 2001 & Lu *et al* 2005).
2. **Perceived risks:** - One of the important risks faced by banking institutions in offering E-banking services is the customers resistance to use the services which significantly hinder the growth of E-banking (Laforet 2005 ; Zhao *et al* 2008). Issues related to security have always been a concern when dealing with technologies related to online transactions such as E-banking (Rogers 2003 ; Chang 2007). Therefore, the perception of the risks regarding E-banking is expected to influence its adoption and further growth.

2.3.1.2 Organizational Factors.

Organizations are different in their preference to adopt technological innovation (Grover 1993; Lacovou 1995) influenced by a number of factors, like firm size, top management support and financial and human resources. In the framework for this study, researcher uses one basic organizational factor as discussed below.

Financial and human resources: - Financial resources are an important factor in facilitating innovation adoption for any organization and they are often correlated with the firm size (Lacovou 1995; Kuan 2001). Therefore, it is expected that the availability of financial resources within the adopting firms is important for E-banking adoption.

These resources enable banking institutions to obtain human related resources including the required skills and expertise to develop and support provision of E-banking services.

2.3.1.3 Environmental factors

Researcher identified factors related to the environmental context that play a crucial role in technology adoption and some factors in this category are arguably more influential than others, especially when countries under study have an authoritative government leadership. The Four factors relevant for E-banking adoptions included in this study are:-

1. **Legal Frameworks:** - The existence and maturity of E-commerce legal frameworks within a country influence the diffusion of online transactions including E-banking as demonstrated in various studies (Martinson & Trappey 2001; Tan & Wu 2002).
2. **The National ICT infrastructure:** - National ICT infrastructure is a major factor that supports the adoption of E-banking as the case for other E-commerce initiatives. Without an adequate development level and quality of a nation's ICT infrastructure, E-banking adoption and use cannot do well (Scupola 2003; Efendioghu 2004).
3. **Competitive pressure:** - Competitive pressure can strongly influence any bank to develop and adopt E-banking initiatives and it may affect the bank's perception towards E-banking system. As implied in previous studies (Gibbs et al 2003; Quaddus & Hofmeyer, 2007).
4. **Government Support:**-Government can either directly or indirectly affect the adoption of E-banking in terms of creating a favorable environment and impetus for banking institutions and their customers so that the services can be diffused with the community (Lacovou 1995;Kuan, 2001)

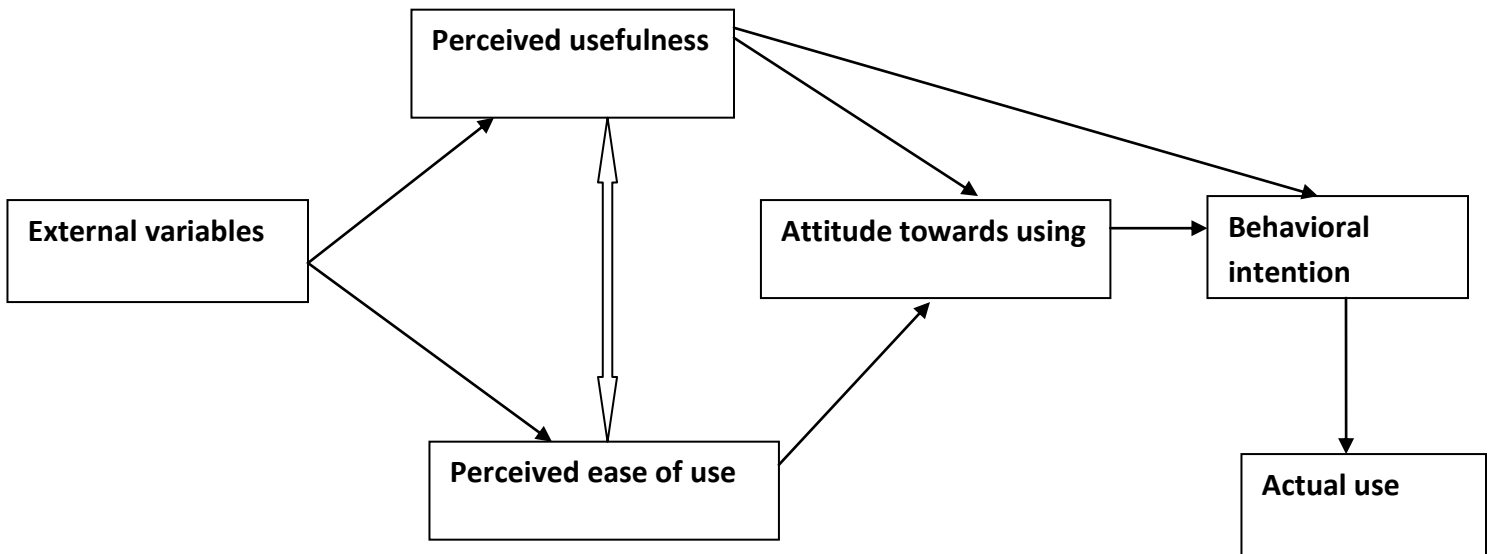
2.3.2 Technology Acceptance Model (TAM)

TAM was developed by Davis (1986) to explain the computer-usage behavior. According to the model, in explaining the adoption of any information system, perceived ease of use (PEOU) and perceived usefulness (PU) are the two most important determinants.

1. **Perceived ease of use:** - refers to the degree to which a person that using a particular system would be free from effort (Davis 1986).
2. **Perceived usefulness:** - refers to the degree to which an organization that using a particular system would enhance or improve its job performance.

According to Masrom and Hussein (2008), the adoption of whether to use an information system for a particular individual is very much dependent on the perceived usefulness and perceived ease of use of the information system. Figure 2.2 shows the links between all the factors found in TAM.

Figure .2.2. Technology Acceptance Model (TAM)



Source: Davis (1986, p251)

TAM was developed to explain and predict particular IT usages. However, this particular Model has been using by many researchers in studying adoption and diffusion of various IT technologies. For this study researcher uses two basic factors of TAM, i.e, perceived ease of use and Perceived usefulness to analyze the perception of users on the adoption of E-banking system in Ethiopia.

The frameworks discussed above have their own advantage and disadvantages based on the nature of the study. In this study, Technology-organization-environment framework and technology acceptance model were used to have a more precise forecast on the barriers and drivers of adopting E-banking system in Ethiopian banking industry.

2.4 Empirical studies related with adoption of E-banking in Ethiopia

Some related studies are conducted by different researchers in different parts of the world. However, there are limited numbers of studies conducted in Ethiopia on the adoption of technological innovation. Specifically, Gardachew (2010) conducted research on the opportunities and challenges of E-banking in Ethiopia. The aim of his study was focused on analyzing the status of electronic banking in Ethiopia and investigates the main challenges and opportunities of implementing E-banking system. The author conducted a survey on the existing operating style of banks and identifies some challenges of using E-banking system, such as, lack of suitable legal and regulatory frame works for E-commerce and E- payments, political instability in neighboring countries, high rates of illiteracy and absence of financial networks that links different banks. According to Gardachew (2010), opportunities offered by ICT through e-learning programs and Commitment of the governments on development of ICT infrastructures is considered as drivers of using E-commerce and E-payment systems.

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

On the other hand Daghfous and Toufaily (2007) conducted a study on the success and critical factors of adopting E-banking by Lebanese banks. Their study was conducted on the factors that can lead to success the adoption of E-banking and the other factors that can constitute as barrier to its adoption, it focus on the organizational, structural and strategic factors which can accelerate or, on the contrary, slow the adoption of this electronic mode of distribution and communication by the banks, through analyzing the case of the Lebanese market. In order to test the validity of the theoretical framework, structured survey was used, interview questionnaire that was given to E-banking managers or to information technology managers of all the banks on the official list of institutions operating on the Lebanese market, with a total of 57 banks, 31 of

them operate internationally and 26 are strictly local were used to gather data. The results of their study shows that the organizational variables (bank size, functional divisions, technical staff,

technical infrastructure, perceived risks, decision makers` international experience and mastery of innovation) are variables which exert significant impact on the adoption of E-banking, among the structural characteristics, the result revealed that internal technological environment of the bank is a very important factor in determining the adoption of E-banking, also the result shows that banks which are developing in the international scale are more likely to adopt E-banking innovations. Finally the result of the study indicated that extent of penetration of E-banking in the growth phase of an emerging market has an important correlation with the improvement of commercial performance.

The other descriptive case study analysis conducted by Khalfan *et al* (2006), on Factors influencing the adoption of internet banking in Oman, aimed to identify the main potential factors or impediments that are currently inhibiting the incorporation or adoption of E-commerce applications in the Omani Banking sector. Data, used in their study were collected using semi structured interviews and survey questionnaire as well as reviewing some bank documents. The results of their study provide a Pragmatic picture about the adoption of E-Commerce applications in the core financial sector domain of Oman. One of the main findings is that security and data confidentiality issues have been a major barrier. The banking sector was reluctant to use E-commerce applications as they felt that transactions conducted electronically were open to hackers and viruses, which are beyond their control. Lack of top management support is the other inhibiting factor in the adoption of electronic commerce applications as per their finding. Similarly the study of Ghazi and Khalid (2012), found that, the most important barriers for E-business growth are technological issues, such as, security risk, quality of internet and cost of implementation to be the most prominent.

The study of Shah *et al.* (2005) on critical success factors (CSF) in E-Banking conducted in United Kingdom, aims to determine the critical issues related to financial sector organizations when they establish businesses online. The survey method was used by researchers which target the financial sector in the UK. The study indicates that Understanding the CSFs in E-banking is important for senior management of banking related organizations, because it would potentially help them improve their strategic planning process. The analysis of the study indicates two major

types of statistical analyses were conducted, descriptive statistical analyses and factor analysis. In descriptive analyses, the factors (or variables) were ranked in order of their mean score, the highest score being the most important and so on. The top six factors in order of importance were: user-friendly website, systems security, support from top management, fast responsive customer service, promotion of electronic commerce within organization, and all time availability of services and rapid delivery of services. Factor analysis, which was done to group together, related variables to uncover factors (in terms of factor analyses), found the following factors to be critical for the success in E-banking. Issues related to organizational flexibility and speed of services delivery were found to be at the top of the importance list. Issues related to organizational flexibility and speed of services delivery were found to be at the top of the importance list. Business processes and systems integration and enhanced customer services were next in the list of importance.

Polatoglu & Ekin (2001); conducted a research on an empirical investigation of Turkish consumer acceptance of internet banking and mention reliability as the prime factor in their finding for the adoption of new technological innovations, reliability consists of security and privacy in Internet Banking transactions. They go on to state that risks (security concern) include financial, physical or social risks associated when trying an innovation. They say that security risk is known to be as one of the major barriers in online banking adoption. Zhao *et al.* (2010) in their study of adoption of internet banking service in china says trust in a bank is the fundamental because it deals with customers financial activities. Trust is not only important to reduce risk in Internet Banking in general but also it helps banks to build trust to be more competitive in the industry.

Gerrard *et al* (2006), in their study in Singapore identified the risks associated to the adoption of Internet Banking. All respondents who did not use Internet Banking services had a negative perception of the security in Internet Banking. The respondents perceived that there were many security risks when using the internet. They felt the privacy was a concern, feeling all their financial information could be in jeopardy. Risk was one of the two most frequently mentioned factors in their study concern about risk was mentioned by all respondents. An empirical investigation conducted by Sathye (1999), on the adoption of Internet Banking by Australian consumers also identified, security concerns as key factor in internet banking adoption. A report

on Internet Banking in Australia finds that, security concerns among banks and customers are keeping both away from Internet Banking. According to Sathye (1999), security was identified as the biggest obstacle in adoption it was found that 78 percent of personal and 73 percent of business respondents had security concerns when it comes to the use of Internet Banking. Thus, pointing out that personal users have more security concerns than business users. Sathye (1999) further state that, a survey conducted by Thorton Consulting (1996) in USA concluded that 67 percent of banks in the USA felt that security is a key anxiety in Internet Banking adoption. Banks tend to promote their security features in their services using technical terminology. This makes it difficult for normal customers to comprehend and resulting to a squander in the whole promotion.

Similarly the study of Yang (1997) on the security of electronic banking aimed to identify the challenges that oppose electronic banking which are the concerns of security and privacy of information. The study suggests that solutions to the security issues require the use of software-based systems or hardware-based systems or a hybrid of the two. These software based solutions involve the use of encryption algorithms, private and public keys, and digital signatures to form software packets known as Secure Electronic Transaction used by MasterCard and Pretty Good Privacy. Hardware-based solutions such as the Smartcard and the Me Chip provide better protection for the confidentiality of personal information. Software-based solutions have the advantage over hardware-based solutions in that they are easy to distribute and are generally less expensive. In Laukkanen (2008) research, risk is considered as the most intense barrier and the greatest concern in the adoption of Internet Banking. However, in this study consumers feel human errors by themselves could cause a threat to their financial services. For example, losing their Personal identification number (PIN) codes and it may get it to the wrong hands and result in crime or theft. “A higher determinant of resistance appears to be the risk related to the individual’s perceived ability to use the innovation successfully, i.e. self-efficacy” Laukkanen (2008,p.788-797; Sathye (1999) suggests that banks use positive publicity to its customers to help ease the response from customer on security.

One of the major banks in Australia has taken responsibility in undertaking losses for any unauthorised use, with exception of certain circumstances. However, in an empirical investigation in Turkey by Polatoglu & Ekin (2001) states that Internet Banking services introduced by large, well-known and trusted banks, because customer perceived security risk in these banks is assumed to be decreasing significantly. On the other hand the risk factor is a

barrier to corporate customers of banks as well. Balachandher et al (2010) have completed a study on the barriers to internet usage on a corporate customer perspective and found that lack of trust on security issue is the main barrier. The study shows that corporate customers only use Internet Banking to a certain extent and feel banks should invest more on security infrastructure and banks should be willing to take full responsibility. These results are similar to the findings of different studies. For example in the study of Booz et al (1997), security concern was the top ranked factor for users not adopting Internet Banking in Latin America.

Ram and Sheth (1989) argue that consumer resistance to the innovation is caused by functional barriers and psychological barriers. Functional barriers can be divided into three: the usage barrier, the value barrier and the risk barrier, where as psychological barriers can be divided into tradition barrier and image barrier. According to Ram and Sheth (1989) functional barriers arise when consumers perceive changes would take place when adopting innovation and the psychological barriers are caused by consumer's beliefs. On the other hand Khanfar *et al* (2006) conducted study on the customer satisfaction with internet banking web site in the Arab Bank. The study identified some factors which can determine customer's satisfaction in the use of internet banking service. Such as; customer supports, security, ease of use, digital products/services, transaction and payment, information content, and innovation. Researchers employ a survey questionnaire to gather data and their results showed that there is a narrow-based satisfaction with internet banking in all factors through a multi-regression; the researchers found out that all factors have an impact on the customer satisfaction, and they have found that the relation was positive.

A research conducted by D'Souza (2002) on the comparative performance of public and private sector banks in the decade of the 1990s shows that though the turnover ratio rose in public sector banks (PSBs), the turnover per employee in private and foreign banks doubled relative to the ratio for PSBs. Also, this is not due to the presence of a large rural and semi-urban concentration of bank branches amongst PSBs but rather due to technological up gradation in the private and foreign banks. Private and foreign banks have changed the structure of their employment towards a higher skilled workforce by increasing the recruitment of officers and reducing clerical and subordinate staff. The combination of higher technology and higher skills have posted a higher turnover for these banks as they have been able to provide better customer support and have managed their assets well.

The study of Aghdassi *et al* (2007) on the association between strategic values and E-banking adoption in Iranian banks attempted to understand strategic value of E-banking for Iranian banks and examine the causal effect of perceiving E-banking as a value and its adoption. The researchers propose an E-banking adoption model that is identifying five factors that have been found to be influential in the perception of strategic value of IT: performance support, operational support, managerial productivity, and strategic decision aids. They also identified eight factors that influence electronic banking adoption: organizational readiness, Infrastructural readiness, external dependency, Intangible pressure, persuasive pressure, perceived ease of use,

and perceived usefulness. Data are collected via a questionnaire-based survey from Decision maker unit of Iranian Banks. In order to test the model, a statistical analysis was conducted in two stages. The first step employed factor analysis to measure whether the number of factors and loadings of items involved in the two main constructs (perceived strategic value and adoption) conform to the proposed model, canonical analysis was utilized in the second step in order to explore how the perceptions of strategic value influence the decision to adopt E-commerce. The finding of their study indicated, that in a developing country like Iran and a big industry like banking, although the items of the adoption factors model are applied, the story is a bit different. In Iran the E-commerce adoption specifically E-banking adoption is in its beginning stages and still there are lots of gaps. These gaps could be technological, economical, socio-cultural, geopolitical and other gaps. Also the result of their study expressed, that bank managers' perception through E-commerce is very positive and effective in their adoption trend.

The other study reviewed was the study of Kassim (2005) focused on E-banking service quality gaps in the Qatari banking industry investigates the discrepancy between customer's expectation and perception towards the E-banking services in Qatar. A questionnaire was distributed to 100 retail-banking customers in Doha. Out of a total of 100 questionnaires, only 62 were useable. A cross-sectional survey design was adopted which questioned respondents on E-banking services. The findings of the study showed that there were some differences in magnitude of gap score among the five items of the E-banking services: Internet/Telephone/SMS, personnel assistance, instructions, ATM machines and functionality of the ATM machines. The result also showed that one item of E-banking services had positive gap score, that is, the quality of the

Internet/Telephone/SMS banking services. All the other four items indicated that the quality of service fell short of the customer's expectation; customers were generally not satisfied with the service providers. Nevertheless, each item of quality of the E-banking services showed differences with respect to the size and gap score. On the other hand, the study of Leelapongprasut *et al* (2005) on the quality of Internet Banking in Thailand aimed to assess the level of Internet Banking services quality in Thailand and compared the overall services quality of Internet Banking and the factors of Internet Banking service between each bank and each dimension of quality.

The study examined the following dimension of quality such as performance, Features, Reliability, Conformance, Durability, Aesthetics, Serviceability and Perceived quality. The result of the study revealed that the quality level of internet banking service of commercial banks in Thailand in the perspective of performance was different in each bank and by weighting the importance of criteria used to evaluate the Internet Banking service quality in Thailand, the most important was the dimension of reliability, serviceability and durability. The less important was in dimension of perceived quality.

The study of Kerem (2003) on the adoption of electronic banking: underlying consumer behaviour and critical success factors conducted in Estonia, was intended to study how consumers perceive electronic banking in the heyday of interactive channels in Estonia, as Estonia is internationally renowned for being a pioneer in the acceptance of new technologies. A series of an in depth interviews was conducted with leading industry experts in Estonia. The selection criterion for the respondent was mainly their involvement with the development of Internet banking systems from the early days of its emergence. Two factors that the respondents did not consider relevant to their adoption decision were banks' marketing activities and personal recommendations from friends and colleagues. Also the survey conducted six main obstacles (computers are difficult, no access to internet, internet banking is expensive, low security, have had no chance to try and I prefer personal contact) in adopting Internet banking (results of a preliminary study, 100 respondents), the most important factors discouraging the use of Internet banking are lack of Internet access and not having a chance to try out Internet banking in a safe environment. Finally the research indicates that banking activities alone may not be sufficient in achieving growth if general infrastructure, economic environment and government initiatives are not supportive. The research conducted on identifying the attitudinal, social and perceived behavioral control factors that might influence the adoption of Internet banking by Hoppe *et al*.

(2001) were based on theory of planned behaviour (TPB) and the diffusion of innovations theory (DIT) developed by a previous research in Singapore. The aim of the study was to collect South African data in order to test out the hypotheses regarding the factors, which affect adoption of Internet banking and compare these results with those collected in other countries. Online questionnaire was used to collect empirical data and the results of the study shows that intention to adopt Internet banking can be predicted by attitudinal factors, perceived behavioral control factors to a lesser degree, and not by subjective norms. All attitudinal factors except banking needs are found to be significant, with complexity and risk showing a negative relationship.

2.5 Barriers related to the adoption and expansion of E-banking

There are a lot of reasons which hinders the popularity of E-banking services in spite of the fact that bankers and customers can get benefit from online banking. The majority of private banks are still lacking behind the online banking channel. According to Pikkarainen *et al.* (2004) the reasons behind banks are not using the online banking services are as follows:

1. The internet connection is very important prerequisite for customers to use online banking services.
2. Before using these online banking services the new users need to learn how to use these internet services.
3. Some non user's complaint that the face to face banking situation is quite different from doing banking online so there are no social dimensions while doing online banking (Mattila, 2003).
4. The security issue hinders some customers to use the online banking services.

Mattila (2003) noted that perceived difficulty in using computers combined with the lack of personal service in electronic banking were the main barriers while Sathye (1999) identified the security concerns and lack of awareness about Internet Banking as the main obstacles to non adoption. He pointed that young, educated and wealthy groups of customers were the most relevant customer segments for the rapid development of Internet banking market.

2.6 Challenges on expansion E-banking in Ethiopia

According to Gardachew (2010) Ethiopian banking industry faces numerous challenges to adopt E-banking system and grab the opportunities presented by ICT applications in general. The Key Challenges for E-banking applications are:

- Low level of internet penetration and poorly developed telecommunication infrastructure: Lack of infrastructure for telecommunications, Internet and online payments impede smooth development and improvements in e-commerce in Ethiopia. Most rural areas of the country, where the majority of small and medium businesses are concentrated, have no Internet facilities and thus are unable to engage in e-commerce activities.

- Lack of suitable legal and regulatory framework for e-commerce and e-payment:- Ethiopian current laws do not accommodate electronic contracts and signatures. Ethiopia has not yet enacted legislation that deals with e-commerce concerns including enforceability of the validity of electronic contracts, digital signatures and intellectual copyright and restrict the use of encryption technologies.

- Inadequate banking system.

- Political instabilities in neighboring countries: - Political and economic instabilities in Somalia, Southern Sudan, and Eritrea are threatening traits that do not provide a very conducive environment for e-banking in Ethiopia. Political instabilities inevitably disturb smooth operations of business and free flow of goods and services.

- High rates of illiteracy:- Low literacy rate is a serious impediment for the adoption of E-Banking in Ethiopia as it hinders the accessibility of banking services. For citizens to fully enjoy the benefits of E-Banking, they should not only know how to read and write but also possess basic ICT literacy.

- High cost of Internet:- The cost of Internet access relative to per capita income is a critical factor. Compared to the developed countries, there are higher costs of entry into the e-commerce market in Ethiopia. These include high start-up investment costs, high costs of computers and telecommunication and licensing requirements.

- Absence of financial institutions networks that links different banks (Banks are not yet automated):- Most of the banking-transactions currently taking place use credit and debit cards supplied by Visa and MasterCard. For conducting e-banking, the use of credit or

debit cards is mandatory thus requiring the need for specialized systems which are not currently available.

- Frequent power interruption: - Lack of reliable power supply is a key challenge for smoothly running E-banking in Ethiopia (Gardachew, 2010).

2.7 Benefit of adopting and expanding E-banking system

It is essential for the banks to have the official bank website providing the possibility to do transactions so that banks can be qualified as providing the online banking services (Pikkarainen *et al*, 2004). According to Giglio (2002) and Robinson (2000) in delivering banking products the cheapest way can be done only through the Online Banking. According to Karjaluoto *et al*. (2002) with the help of online banking services, the branch networks of banks have reduced and also the staff for working in banks and customers are satisfied to use the online banking services as it will save a lot of time and effort to go to branch of bank and perform these transactions. So the main reason behind accepting the E-banking system is that the service is the time and cost saving and freedom from the place (Polatoglu and Ekin 2001).

Business organization's are trying to uncover the new technologies coming from the E-commerce applications which has a lower transaction cost resulted to eliminate association in distributing channels (Salman & Kashif 2010). The cost can be reduced to zero in some services like information and manufactured goods information. Transaction of low cost and easiness provides to adopt the new trend of technology to trade information among different groups and business parties. Information and Communication technology adoption transformed business to go from local and global. However it has been said that E-banking is vital in the banking sector of developing countries (Polatoglu and Ekin 2001).The online payment system is quite new in banking institutions and dispersion of these innovations can result in more competent online banking systems which resulted in lots of changes in the technologies of the banking sector.

Polatoglu and Ekin (2001) argued that early adopters and heavy users of E-banking services were more satisfied with the services compared to the other customer groups. According to Joseph and Stone (2003), the ability of delivering services via technology appears to be correlated with high satisfaction with services deemed most important to customers. Furthermore, Joseph & Stone (2003) emphasized that human and technology based delivery channels were greatly linked with the customers perceptions of how these bank services were delivered to them and pointed out

that these perceptual outcomes would affect the level of bank customer satisfaction, retention, and switching. Before the shift of technology, customers were facing a lot of problems like handling a lot of money and transferring of that money, submission of utility bills and waiting in a long queue as there was no online transferring facility, and there was no information about new services offered by banks and mostly deposit holders were unaware of how to get benefits from bank products and services like bank loans, credit cards, ATM cards etc.

2.7.1 Benefit of E-banking for Banks

It should be noted that E-banking can bring about various benefits for banks and their customers as well. It is obvious that cost savings, efficiency, gaining new segments of customers, improvement of the bank's reputation and better customer services and satisfaction are primary benefits to banks (Jayawardhena & Foley, 2000). In addition, Jayawardhena & Foley (2000) noted that setting up a specialized E-banking infrastructure costs about US \$1 to \$2 million, which is much lower than setting up a banking branch. In addition, the authors conclude that costs for running a traditional bank account for 50% to 60% of its revenues. Under the view of Robinson (2000), relevant costs for conducting a banking transaction via online are much lower than via a brick and mortar branch. Moreover, Sheshunoff (2000) contends that one of the most important factors influencing the adoption of E-banking by banks is the need to build up strong barriers to customer exiting. Under the view of the author, once customers become familiar with the utilization of full service E-banking, it is unlikely that they will change to another financial institution.

Such an argument can be supported by the consumer behavior theory that switching costs are often very high in terms of time and efforts by consumers. Finally, the author emphasizes that the implementation of E-banking can bring about many competitive advantages for banks in today's highly competitive banking market.

A research on E-banking has been carried out in Denmark by Mols (1998). The author argues that E-banking can play an important role in enhancing cross-selling and price differentiation. E-banking can make favorable conditions for banks to provide customers numerous services 24 hours a day and 7 days a week. E-banking can improve customer satisfaction with the bank due to the fact that it makes customers less price sensitive, and improve their intention to repurchase, and more loyalty to the bank via providing more positive words of mouth about the bank than other bank customers.

2.7.2 Benefit of E-banking for Customers

It should be noted that E-banking is not only brings about benefits to banks but also to their customers. Thanks to the emergence of the Internet, banking transactions are no longer limited to time and geography. It is very easy for consumers throughout the world to access to their bank accounts 24 hours per day and seven days a week. Customers can enjoy a variety of services, especially services which are not provided by traditional bank branches (Pham 2010). It is argued that one of the greatest benefits that E-banking brings about is that it is not expensive or even free for customers to utilize E-banking products/services. However, some people believe that prices appear to be one factor that is impedimental to the diffusion of E-banking (Sathye 1999). The price debates often revolve around geographical differences and disparities between costs of Internet connections and telephone call pricing. It has also been believed that E-banks have been changing to respond to customers increasingly changing demands (Pham 2010). There has been a tendency that customers don't want to travel to or from a bank branch to conduct some banking transactions. In other words, they want to utilize E-banking to save time and money. E-banking can bring about convenience and accessibility, which will have positive effects on customer satisfaction and loyalty (Pham 2010). It is totally possible for customers to manage their banking transactions whenever they want and to enjoy improved privacy in their interactions with the bank. In addition, customers can enjoy more benefits at lower cost levels by utilizing E-banking (Mols, 1998).

It is contended by Turban (2008), that E-banking is really beneficial to customers in terms of cost savings, no limit on time and space, quick response to customer complaints, and better services/products. Such benefits are believed to elevate customer satisfaction.

Summary

E-banking is a form of banking where funds are transferred through an exchange of Electronic signal between financial institutions or/and customers, rather than exchange of cash, checks, or other negotiable instruments and it is an online banking/Internet banking which is the use of the Internet as a remote delivery channel for banking services. E-banking innovation was traced back to 1970s when the computerization of financial institutions gained impetus. Innovative banking has grown since then, aided by technological developments in the telecommunications and information technology industry. The early decade of the 1990s witnessed the emergence of automated voice response technology. The security first network bank was the first internet banking in the world that was built in 1995, in USA.

In Ethiopia E-banking system was started by the largest government owned commercial bank (CBE). CBE introduced to use ATM to deliver service to customers beyond their brick and mortar banking system in 2001. Following the introduction of ATM in commercial bank of Ethiopia, Dashen bank, the largest private bank in the country started to use ATM machine to deliver service to its customers in 2006, and the bank adopts mobile banking (Modbirr) in the year 2009. Another two private banks, Zemen bank and Wegagen bank also use different technological innovation in their banking system.

In relation with the study of technology adoption different frame works were used by different researchers, in this study two basic frame works has been reviewed, which can guide the study, these are: Technology-organization-environment (TOE) framework and Technology acceptance model (TAM), Some of the challenges deals with adoption of E-banking are lack of personal service in E-banking, security concerns, Lack of enough IT infrastructures and lack of legal frame works. However, some of the barriers such as, lack of competition between local and foreign bank and lack of social awareness were not addressed. Despite the stated challenges E-banking has advantages for both banks and customers, by saving time and costs.

Chapter Three

Research Methodology

In the previous chapter, the literature review, which shows the factors affecting expansion of E-banking system and review of issues related with barriers and benefits of E-banking, has been presented. This chapter presents the detail methodology, showing the logical frame work that discusses research purpose, research approaches, Research strategy, data collection and data analysis method (research method adopted).

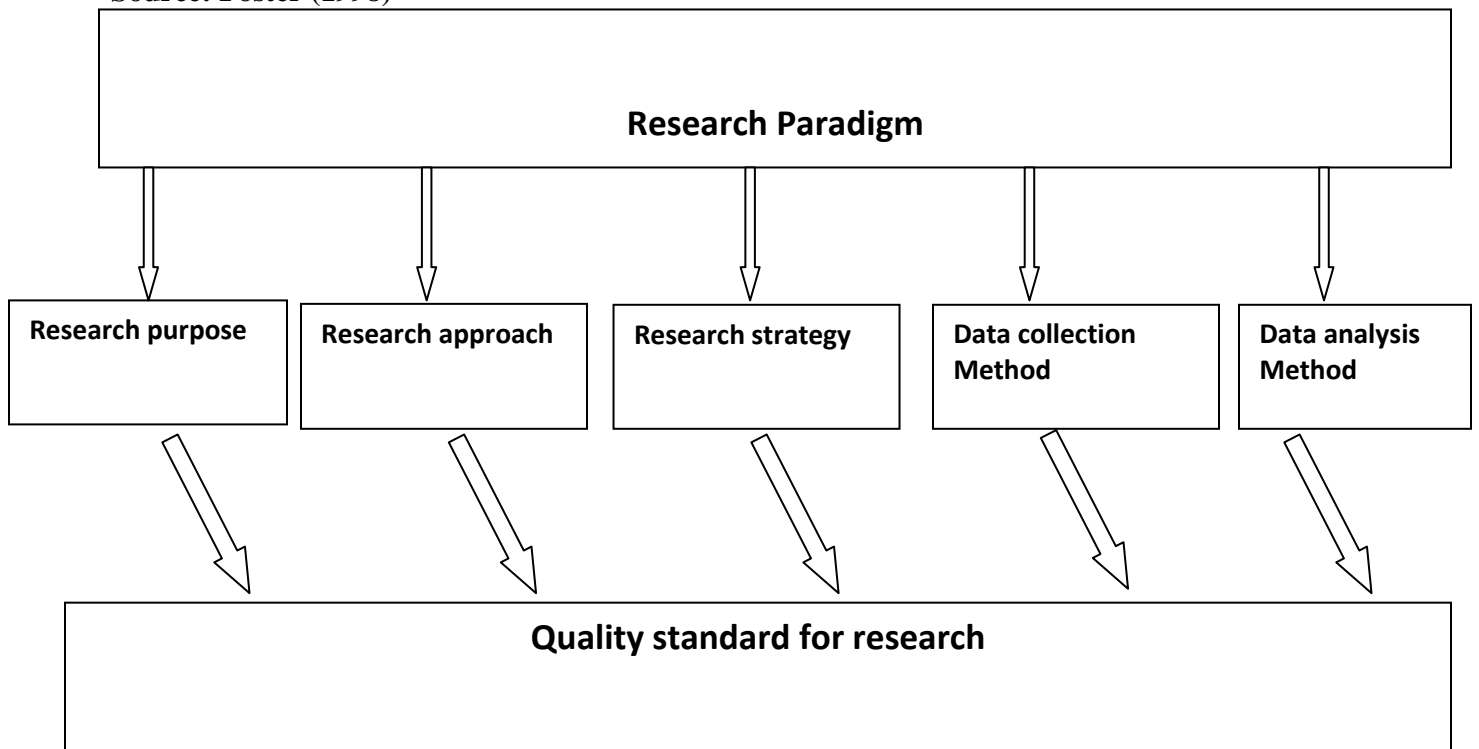
3.1 Research Approach and Design

Overview of the Methodology

Many researchers have written extensively on research methodology. The underlying factor in most studies on research methodology is that the selection of methodology is based on the research problem and stated research questions. Methodologies cannot be true or false, only more or less useful (Silverman, 2001). Nachamias et al (1996) for instance states that methodologies are considered to be systems of explicit rules and produced, upon which research is based, and against which claims for knowledge are evaluated. Conducting any type of research should be governed by a well-defined research methodology based on scientific principles. Eldabi (2002), suggested that a series of steps as a research paradigm to be followed in a methodology part of a research. Based on this suggestion researcher basically try to follow and collaborate it with the guide line of this basic framework of research paradigm developed by Foster

Figure 3.1. Frame work for the research paradigm

Source: Foster (1998)



3.1.1 Research Approach

Research approach is selected by researcher(s) based on the research purpose, the nature of the research, the problem area, and research questions (Alhamdani *et al.* 2006). The research approach in this study is chosen based on the purpose and the research questions set out to be addressed. According to Creswell (2003, P.13-15) There are three basic types of research approaches, quantitative, qualitative, and Mixed approach.

1. Quantitative research approach

Quantitative research approach is based on the philosophy of post positivism world view. It is also reductionist in that the intent is to reduce the ideas into a small, discrete set of ideas to test, such as the variables that constitute hypotheses and research questions. In addition, quantitative approach uses statistical methods in describing patterns of behavior and generalizing findings from samples to population of interest, and employs strategies of inquiry such as experiments and surveys (Creswell, 2003).

2. Qualitative research approach

Under qualitative approach or social-constructivist world view, inquirers generate or inductively develop a theory or pattern of meaning rather than starting with a theory as in post positivism. Qualitative researchers tend to use open-ended questions so that participants can express their views and meanings are constructed by human beings as they engage with the world they are interpreting (Creswell 2003).

3. Mixed research approach

Mixed research approach or pragmatist world view is not committed to any one system of philosophy and reality. In this approach, inquirers draw liberally from both quantitative and qualitative assumptions. In order to achieve the objective of this study and answer the research questions researcher adopts mixed research approach to examine the Barriers and drivers of expansion E-banking in Ethiopian banking industry to converge across qualitative and quantitative methods (triangulating data sources). Employing this approach is used to neutralize or cancel the biases of applying any of a single approach and a means to offset the weaknesses inherent in a single method with the strengths of the other method (Creswell 2003). Mixed research approach opens door to multiple methods of data collection and helps to generate the findings to a population and develop a detailed view of the meaning of a phenomenon or concept for individuals (Creswell, 2003; pp. 12-22). this research approach pose the researcher to the challenges that need for extensive data collection, the time-intensive nature of analyzing both text and numeric data, and the requirement for the researcher to be familiar with both quantitative and qualitative forms of research (Creswell, 2003; pp. 210). Mixed methods approach can be implemented in different ways. The literature identifies three strategies in integrating the two approaches, i.e quantitative and qualitative methods (Wollela, 2009, P.92). First concurrent, in which the quantitative and qualitative phases occur simultaneously; second, sequential, in which the researcher starts with gathering qualitative data and then gathers quantitative data or vice versa in two different phases; and third, transformative where the researcher (either concurrently or sequentially) may be able to give voice to diverse perspectives, to better advocate for participants or to better understand a phenomenon or process that is changing as a result of being studied.

In this study, Concurrent procedure will be employed to triangulate quantitative and qualitative data to provide a comprehensive analysis of the research problem. Moreover, the researcher collect both forms of data at the same time during the study and integrates the information in the interpretation of the overall results.

3.2 Research Design

There are three types of academic researches depending on the problem area and the nature of the phenomenon that it studies. The purpose of the research can be exploratory which deals with unknown problem, Descriptive in which there is an awareness of the problem and explanatory, where the problem is clearly defined (Ahmed, 2011).

The purpose of this thesis is to conduct an exploratory and descriptive research in order to gather as much information as possible concerning the expansion of E-banking as an option in a competitive business environment in Ethiopia. Specifically this will be in respect of the perspective of commercial bank of Ethiopia. According to Yin (1994) exploratory research is designed to allow a researcher to just look around with respect to some phenomenon, with the aim to develop suggestive ideas. Exploratory research is often used when a problem is not well known, or the available knowledge is not absolute. The technique that is best suited for information gathering when performing an exploratory research is interview (Yin, 1994). In this study researcher aimed to explore the main barriers and drivers on the expansion of E-banking in Ethiopia. To do that, an exploratory type of the study was selected. Because it gives valuable insight of the problem and result drawn from this study resolve firms grasp of essential characters. It has also been demonstrated that exploratory research provides suggestive ideas through reviewing information from problem area. On the other hand this research were focused on describing the current situation of the problem and answer the research questions which are in the form of “what” and to highlight the most important factors that can negatively or positively affect the expansion of E-banking in Ethiopia. Moreover, this research aims to explain the phenomenon and assess the current situation of E-banking. Therefore, Descriptive research is being used in to fulfill this approach.

3.3 Research Strategy

The most important condition for differentiating among the various research strategies is to identify the type of research question being asked (Yin, 1989; Leedy, 1989; Creswell, 2003; McNabb, 2004; and Hair *et al.* 2006). It is possible to identify some situations in which all

research strategies might be relevant and other situations in which two strategies might be considered equally attractive. We can also use more than one strategy in any given study.

To this extent, the various strategies are not mutually exclusive. But we can also identify some situations in which a specific strategy has a distinct advantage (Yin, 1989; p. 20).

According to Yin (1994), there are five strategies to collect data and get results: experiment, survey, archival analysis, history and case study. In addition, there are three criteria to determine the research strategy: types of research questions, control over behavioral events, and focus on present events. But it is important to notice that boundaries among the above methods are not completely clear, they may overlap each other. The relevant situation for different research strategy was summarized in table 3.1 as follows.

Table 3.1 Research strategy

Strategy	Nature of questions	Requires control over behavioral events	Focus on contemporary event
Experiment	How, Why	Yes	Yes
Survey	Who, what ,where, How many, How	No	Yes/No
Archival Analysis	Who, What, Where ,How many, How much	No	Yes/No
History	How, Why	No	No
Case Study	How, Why, What	No	Yes

Source: Ahmed, 2011

3.4 Variables, Data Sources and Data Collection Methods

In this study, survey approach has been chosen, because the research questions are focused on: What are challenges on expansion of E-banking? What are the opportunities on expansion of E-banking? And what are the drivers for expansion E-banking in Ethiopia? So the types of questions are in the form of “what”. This research does not require control over behavioral events but it focuses on current issues.

3.4.1 Type of Data

Primary data is used in this study. The data was collected through, interviews, and questionnaires. This gives specific responses to the research questions. Primary data is recognized as data is gathered for a specific research in response to a particular problem through interviews and questionnaires. Additional data was obtained by examining various documents, including, banks annual reports on related information, local and international news paper related with issues of E-banking system, Research reports, books and journal articles.

3.4.2 Data Sources

This research paper intended to examine the main barriers and drivers on the expansion of E-banking at purposely chosen state owned commercial banks. To undertake this research, the specific methods of data collection were survey, semi-structured interview and document sources. Survey for the quantitative strategy was used through distributing self-administered questionnaires. Questionnaires are distributed to all E-payment department professional staff of the selected branches. These respondents were selected because, the researcher believes they are deemed to be knowledgeable about E-banking system and could provide important perspectives on its expansion.

3.4.3 Method of data collection

In order to collect sufficient data that can answer the research questions, researcher designed two surveys; the first was a questionnaire to get quantified results. The second survey was interviews aimed to collect data from E-payment/IT managers. In addition to questionnaire and interview, data collected from different published and unpublished materials can also be used.

1. Questionnaires

As indicated in the above, the staffs of the purposely sampled four branches were included in the survey. A questionnaire were being distributed to all 160 professional staffs of CBE, Questions present in the form of affirmative statements, relating to the concepts on E-banking and to identify their intention on the challenge and opportunities of using electronic banking system, in such a way to enable measurement of the respondent's opinions.

The questionnaires was structured in close-ended type and responses to the questions will be measured on a five Liker rating scale where: Strongly Agree (SA) = 1; Agree (A) = 2; Neutral (N) =3, Disagree (D) = 1; and Strongly Disagree (SD) = 5; the use of Liker scale is to make it easier for respondents to answer question in a simple way. In addition, this research instrument will permit an efficient use of statistics for the interpretation of data. Moreover, the central issue to argue that liker scales is that it produce ordinal data. Johns (2010) noted that in statistical terms the level of measurement of the liker response scale is ordinal rather than interval: that is, we can make assumptions about the order but not the spacing of the response options. Thus, the permissible descriptive statistics that can perform on ordinal data is median (or average response) and mode (or more frequent responses) (Hole, 2011).

2. Interviews

In the qualitative strategy, semi-structured interview were conducted with two managers from each of the four chosen branches to have sufficient information regarding the research problem and with the relevant body at National Bank of Ethiopia (NBE). The major purpose of this interview was to substantiate certain facts, According to (Yin, 1989; P. 89). Semi-structured interviews were conducted to enhance and supplement the results of questionnaires.

3. Other Information

The most important use of this information is to corroborate and augment evidence from other sources (Yin, 1989; P. 86). Thus, the document examination helps to support the patterns that evolved from the data collected via questionnaires and interview, so that the validity of the findings could be enhanced. Some of the data will be obtained mainly from records and reports of the industry, from the website, magazine, books, articles and journals.

3.5 Population and Sampling

This section describes the banking environment in Ethiopia with respect to the policy and legal framework under which the banking industry operates. The banking industry in Ethiopia is controlled by the National bank of Ethiopia (NBE) acting as the central bank of the country. There are 18 banks registered under the NBE up to 2015 (Access Capital 2015), these comprises 2 state owned banks and 16 other private commercial banks. One bank and four of its branch's is selected for this study and they are found in the capital city of the country, Addis Ababa.

3.6 Strategy Design

Since the research questions mainly focus on “what” questions; it is justifiable for conducting an exploratory study and more likely to favor survey than others (Yin, 1989; pp. 17-18). Survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population. Its purpose is to generalize from a sample to a population so that inferences can be made and it is also economical and rapid turnaround in data collection (Creswell, 2003; pp.153-154); and this method is important for collecting large amounts of raw data using question and answer formats (Hair *et al.* 2006). Survey had conducted via self-administered questionnaire from the purposely sampled bank staff; because questionnaire is a common place instrument for observing data beyond the physical reach of the observer (Leedy, 1989; pp. 142). The main advantage of survey is its ability to accommodate large sample sizes at relatively low costs, ease of administration and ability to tap in to factors that are not directly observable (Hair *et al.*, 2006).

As briefly discussed in the above, questionnaire were distributed to the purposely sampled commercial bank staffs, and semi-structured interview will be conducted with the management (E-payment/IT managers) commercial bank.

The questionnaire was divided into two sections. Section I captures basic demographic information of the respondents such as age and educational back ground, Section II have information about the nature of the barriers faced in the adoption and expansion of E-banking services and sought to determine the perceived benefits of using E-banking system.

3.6.1 Sample Design

Sampling is the process of choosing, from a much large population, a group about which wish to make generalized statements so that the selected part represent the total group (Leedy, 1989; pp. 158). According to Access Capital (2015), the total number of Commercial Banks which had

been operated in the year 2015 is 16 private banks and 2 state-owned banks. Moreover, looking ahead Ethiopian banking industry enjoying high growth, high profits, and high dividends, From this participants of the industry commercial bank of Ethiopia (CBE) is the one and it's the largest player comparing from the other by having more than one thousand branches all over the country so that, to undertake this research paper, the researcher purposely sampled one bank i.e. CBE and four of its branches called Gofa sefer, Arada giorgis ,Addis Ababa and finfine .

The procedure used for drawing the sample from the available lists was based on the branches current size and transaction volume to deliver service to customers Thus, this research paper used purposive sampling method to draw the sample from the population.

From the entire bank four braches was selected as a sample units that can be based on the responsible for E-banking and the total of 160 staff, Will be sampled to see their intention on the challenges and benefits of expansion of E-banking system in Ethiopia. The researcher chooses to take 4 branches; because it is often impossible or too much expensive to collect data from all the potential units. Hence samples are chosen to represent the relevant attributes of the whole population. In this respect we can note the caution by Graziano and Raulin (1997) because the samples are not perfectly representative of the population from which they are drawn, therefore the researcher unlikely to be able to generalize the conclusions to the entire population.

3.7 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; pp. 105). The researcher will analyze the data collected by survey thorough statistical population concerning the expansion of E-banking system. The data collected via questionnaires will be analyzed with descriptive statistics using statistical package for social scientists (SPSS) by taking median and mode as specific analytical tool. Furthermore, Wolcott (1994) cited in Creswell (2003; pp. 184), suggested that qualitative research is fundamentally interpretative i.e. the researcher makes an interpretation of the data. Thus, the data that will be collected from the interview and reviews of documents will be interpreted qualitatively. To sum, the analysis of quantitative data and interpretation of qualitative data combines to seek convergence among the results (Creswell, 2003).

3.8 Summary of the Methodology

The methodology part of this study was based on the research paradigm developed by Foster (1998) and the guide line as: Research purpose, research approach, Research strategy and specific research methods employed. The purpose of the study was to explore the main barriers and drivers on expansion of E-banking system and describe the current situation in the expansion of the system in Ethiopian banking industry. The research approach in use in this study will be both quantitative as well as qualitative (mixed) approach. The research strategy choose in the study is survey study. In the case of research method used in this study, data will be collected by using questionnaire and interview. Finally data collected from various sources will be analyzed by using statistical package for social scientists (SPSS).

Chapter Four

Results and Discussion

4.1 Introduction

Data collected by using different techniques were analyzed and presented in this chapter by using a triangulation approach. A total of 160 questionnaires were distributed to four purposely sampled commercial bank branches, such as: - Gofa sefer, Arada Giorgis, Addis Ababa and Finfine branches employees. Out of the total 160 questionnaires, 126 useable questionnaires were obtained with a 79% response rate. In addition to the questionnaire survey the researcher conducted interviews with employees working in the E-payment and reviewed documents regarding E-banking system. The analysis results by using descriptive statistics of the responses from the qualitative analysis of the interviews are presented in the following sections.

4.2 Barriers to Expansion of E-Banking System in the Case of Commercial Bank of Ethiopia

Although there are many associated benefits with the expansion of E-banking, there are many reasons which obstruct implementation of the system. In this study factors identified as hindrance include, lack of appropriate infrastructure for E-payment, lack of internet facilities and low customers learning skill how to interact with new technology are some of barrier identified. As for the expansion of E-banking in the country regarding the technological factor, organizational factor and Environmental factor were analyzed in the following sections.

4.2.1 Technological factor

The issues raised in this study in relation with technological factor are the perceived relative advantages benefit that the firm gains from expansion of E-banking system and the relative perceived disadvantages or risk which hinder banking industries from the expansion of new technological innovations.

Perceived risk is one of the basic barriers a firms face, while expanding technological innovation is the perceived risks. This also supported on the outcome that E payment manager's participated. In this study respondent were asked whether security issue is raised with the use of technological facility in the banking industries, and all of them stated that security is the main concern that hinders our bank to use technological facilities similarly example the study of

Sohail and Shanmugham (2003) suggests that one of the barriers in the expansion and adoption of electronic banking is fear of security risks. These were also supported by the survey result shown on table 4.1, as follows.

Table 4.1:- Technological Factor Affecting the Use of E-Banking by Customers of Commercial Bank of Ethiopia (n= 126)

Items related to Technology	Median	Mode
Customers fear risk to use ATM	2	2
Lack of confidence with the security	2	2
In the case of using mobile banking, ATM and others, security risk affect users decision to use the system	2	2
Customers do not trust the technology provided by banks	3	2
Lack of trust is considered as barriers for the expansion of E-banking system	2	2

Source: Own Survey (2016)

1= Strongly Agree, 2=Agree, 3-Neutral, 4=Disagree and 5=Strongly Disagree.

Customer respondents were asked whether they fear risk to use ATM, and the descriptive statistics result shows median and mode value of 2 that means the largest number of respondents agreed that they fear risk to use ATM; therefore fear of risk is one of the factor that should be considered when planning to expand and adopt. Similarly the result shown on the above table revealed that lack of confidence with the security issue is considered as barrier for the expansion

of E-banking system, with a median and mode value of 2. This result is consistent with the findings of Ghazi and Khalid (2012, p.9) and Khalfan et al 2006) in which all indicted that, security risk as a technological hindrance factor for the adoption and expansion of E-banking. Lack of trust among bank customers on the use of technological facility provided by bank is another factor that hindered the expansion of technological innovation by the Ethiopian banking industry. This is confirmed by a considerable proportion of respondents (29%) who agreed that trust in the use of technological innovations as one of the basic factor in the expansion of E-banking system. This result confirms the finding of Sathye (1999) which argued that the greatest challenge among the electronic banking sector is winning the trust of customers in the issue of security or perceived security risk as a key inhibitor in the expansion of online banking.

4.2.2 Organizational Related Factors

One of the basic issue related with organizational factor is, the availability of financial skilled human resource to implement the system and technical or managerial skills required to implement E-banking system were considered as organizational factors.

As presented in table 4.2 considerable proportion of the respondent (40%) did not agreed that the cost incurred in using internet /online and mobile banking system as factor hindering the use the service. Similarly the descriptive statistics result shows that, the value for the questions raised as, does using internet banking increases cost to do banking task and Relatively using Mobile to get banking service is expensive for customers have 4 median and mode. On the other hand the result presented on table 4.2, revealed that unfamiliarity with the service provided though ATM, Internet banking, telephone and mobile phone by customers, lack of technical and managerial skills on the use of technological innovation and lack of skills to implement E-banking system viewed as barriers for the expansion of E-banking system.

Table 4.2:- Organizational related Factors Affecting the use of E-banking in commercial bank of Ethiopia.

Items related to Organizational factor	Median	Mode
Using internet banking increases cost to do banking task.	4	4
Relatively using of Mobile to get banking service is expensive for customers.	4	4
Customers of our bank were not familiar with service provided though ATM, Internet banking, telephone and mobile phone.	3	2
Lack of technical and managerial skills on the use of technological innovation	2	2
Lack of skills to implement E-banking system	3	2

Source: Own Survey (2016)

The above results were also supported by an interview script received from all respondents, which indicated that compared with traditional banking system, using different technological innovation in banking industry is used to perform banking activities at lower costs. This finding is consistent with the finding of Rasoulina & Javaheri(2006) in Iran who argued that, costs in addition to other factor such as level of infrastructure development, socio-cultural factors and factors related to legislation and, regulation are the most important factor that affect the expansion of electronic banking activities. These factors can be either drivers or barriers. For instance, if a country has managed to achieve a cost reduction greater than the investment made in expansion of new technology, then the cost factor can be considered as a driver rather than as

barrier. On the other hand lack of social awareness/lack of familiarity with different technology and lack of sufficient skills to use and implement E-banking system were considered as barriers for the expansion of E-banking system in the case of commercial bank of Ethiopia.

4.2.3 Factors Related to the External Environment

Another factor which may affect the expansion of technological innovation in banking industry is external environment: In this study four basic environmental factors such as the legal framework, national ICT infrastructure, competitive pressure and government support were considered. The result obtained from survey, interview and literature regarding those four issues were presented in the following sections.

1. Poor legal and regulatory framework

Electronic payments are not currently covered in Ethiopian legal system. Lack of such legal framework may thus hinder the introduction of cost effective modern electronic payment instrument such as ATMs, credit and debit cards, mobile/telephone/internet banking. Other policy initiative which is currently under consideration is the development of securities market, particularly, that of long term debt instruments (Getahun 2008). Similarly the study of Gardachew (2010) revealed that lack of legal frame work is one of the challenges for E-banking system in Ethiopia. The result of survey presented in Table 4.3 revealed that lack of legal frame works and cross country legal and regulatory difference is considered as barriers faced by banking industries for the adoption of E-banking system in Ethiopia.

Table 4.3:- Legal and regulatory framework as factor affecting expansion of E banking in Commercial Bank of Ethiopia

Item related to Legal and regulatory Framework	Median	Mode
Poor legal frameworks that enforce banking industries to adopt technological innovation		
Cross-country legal and regulatory differences will have impact on the expansion of new technological innovation in the banking sector like, ATM, internet banking, mobile banking and Point of sale terminals (POS).	2	2
	2	2

Source: Own Survey (2016)

Results reported on table 4.3 shows that the median and mode value about the item that enquired about the lack of legal and regulatory framework supports the expansion of E-banking service in Commercial Bank of Ethiopia, and a mean and median of 2.00 revealed for the question raised as Does the existence of Poor legal frameworks that enforce banking industries to adopt technological innovation and acquire 33% out of the total, So that respondents were agreed there is lack of legal framework, also Gardachew (2010) revealed that lack of legal frame work is one of the challenges for E-banking system in Ethiopia. Likewise, the median and mode value for question raised as does the Cross-country legal and regulatory differences will have impact on the expansion of new technological innovation in the banking sector like, ATM, internet banking, mobile banking and Point of sale terminals (POS) were 2.that means greater number of respondents 53% agreed that the differences on banking regulation in different country will have impact on the expansion of new technological innovation, According to OECD (2004) lack of reliable trust and redress systems and cross country legal and regulatory differences was also impede e-commerce adoption and expansion in addition the result of an interview conducted with one of the bank supervision manager at national bank of Ethiopia (NBE) also shows that, Ethiopia is now on the way to implement special rule on the use of E-banking system or it will be included in the banking regulation. So that lack of legal frame work for the implementation of E-banking system is raised as basic barrier for the Bank. The finding of this study were also consistent with the study of Tan and Ouyang (2002), Who argued that lack of legislation is an initial barrier that influence E-banking expansion in china.

2. Lack of adequate ICT infrastructure

Despite the recent improvements made by Ethiopian government on the national infrastructure, the overall ICT infrastructure in Ethiopia remains inadequate. Card-based payment systems in Ethiopia have been growing fast in recent years. Commercial bank of Ethiopia also cited plans to use new technologies for remittance transfers, including mobile-phone transfers and remittance-linked financial products such as prepaid cards CBE (2014), However, significant challenges to these plans include, lack of adequate financial and telecommunications infrastructure for the new technologies (Alemayehu & Jacqueline 2011). Similarly the study of Wondwossen and Tsegai (2005) stated that lack of sufficient telecommunication infrastructure is one of the basic challenges in the development of E-payment in Ethiopia.

Table 4.4:- Lack of adequate ICT Infrastructure as a Barrier in the Expansion of E-Banking Service in the Case of Commercial Bank of Ethiopia

Items related to ICT infrastructure	Median	Mode
Using internet banking is difficult due to low internet access in Ethiopia	2	2
Internet connection was not good enough to perform online transactions in Ethiopia	2	2
Lack of available ICT infrastructure	2	2
Mobile banking services may not perform well because of network problems	2	2

Source: Own Survey (2016)

The above table shows that poor ICT infrastructure in Ethiopia for sufficient hindered to use online banking service, with median and mode value of 2.00. Similarly the others question raised as does Internet connection was not good enough to perform online transactions in Ethiopia, Is there lack of available ICT infrastructure and does mobile banking service may not perform well due to network problem have the median and mode value of 2.00, which indicated that lack of available ICT infrastructure in the country inhibits to use E-banking system. Similarly, according to an interview script received from the CBE E-payment manager indicates that the poor quality of telecommunication network service is a major obstacle for all banks in Ethiopia to effectively deliver some services such as internet banking, mobile banking and others.

3. Poor Competition in the Banking Sector

As it is stated in different E-banking literature, competitive pressure is considered as driver for the expansion of E-banking in developed country. For example, the study of Laforet & Lu (2005) and Salwani (2009) suggests that, the foreign funded banks are more competitive in securing corporate clients over the Chinese banks because they are perceived to offer better services and

more stringent security measures given their longer experience in E-banking development. However, poor of competition among local banks and the entire absence of foreign banks in Ethiopian that perhaps improve completion hinder the expansion of E-Banking system. Respondents were asked whether poor competition among banks in Ethiopia influence expansion of E-banking and the result obtained from survey is presented in Table 4.5.

Table 4.5:- Competition among Banks in Ethiopia as Barrier for E-Banking Expansion

	Frequency	Percent (%)
Strongly agree	20	15.9
Agree	59	46.8
Neutral	13	10.3
Disagree	29	23.0
Strongly Disagree	5	4.0
Total	126	100.0

Source: Own Survey (2016)

A considerable proportion the respondent 46.8%, agreed that poor competition in the Ethiopian banking sector and absence of foreign bank operators as barrier as one of the barriers for the expansion of E-banking system in the country. Similarly, an interview result revealed that, the Ethiopian banking industry did not consider about competition with foreign banks and such policies could discourage the banking sector of the country to adopt and expand state of the art E-banking system in the country.

4. Lack of adequate Government Support

The questionnaire result about government support was shown on table 4.6 as follows.

Table 4.6:- Lack of Government Support as Barrier of E-Banking Expansion in the Case of Commercial Bank of Ethiopia

Items related to government support	Median	Mode
Lack of sufficient government support will affect customers willingness to use technological innovation	3	4
Customers may not willing to accept E-banking service	4	4

Source: Own Survey (2016)

Respondents were asked whether lack of government support is an inhabiting factor for the expansion of E-banking system in commercial Bank of Ethiopia, The result revealed a median and mode value of 3 and 4 respectively from this result the mode value is the better to relay for conclusion rather the median because the mode value shows as the most frequency occurring respondents values. If we examine the mode value 25.2% of them disagreed with the idea that the poor expansion of E-banking system in the commercial bank of Ethiopia is linked to the lack of government support rendered to the Bank, the other issue raised as the willingness of customer to accept E-banking service have a median and mode value of 4 which implies that unwillingness of customers to accept E-banking system is not an important factor in affecting the expansion of technological innovation in the case of commercial Bank Ethiopia.

Similarly the interview result conducted with E-payment managers confirms that, the commitment of Ethiopian government improving the national ICT infrastructure encourages the commercial Bank of Ethiopia to adopt different technological innovation and the sluggish development in this respect has much to do with other factors.

4.3 Perceived Benefits/Drivers on the expansion of E- banking System in Case of Commercial Bank of Ethiopia

An advantage that is expected to be gained from the expansion of E-banking covers both direct and indirect benefits for the banking industries. Direct benefits include savings on operational cost, improved organizational functionality, productivity gain, improved efficiency, saving of 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 (Iacouou 1995 & Lu 2005; Kuan 2001).

Perceived benefits from the expansion of E-banking system considered in this study were classified based on Technology Acceptance Model (TAM), such as Perceived Ease of Use (PEU) and Perceived Usefulness (PU). PU was classified in terms of time and cost saving. In addition other benefits beyond cost and time saving were analyzed at the end.

In order to access online banking services, it is important that bank should have ICT infrastructure and internet facility available to facilitate their customers with all kinds of online banking services. Polatoglu *et al.* (2001) suggests many benefits associated with online banking. Customer can pay their bills, can pay their loans, credit and debit card facilities. In other words it provides freedom from location, saves time and cost.

4.3.1 Perceived Ease of Use

One of the basic benefits related with the use of E-banking system is the perceived ease of use. Giglio (2002) suggests that expansion on online banking services reduce the workload over the banking staff and it is easy to have more satisfied customers. Similarly Robinson (2000) indicated that online banking provides convenience not only to bankers but also to customers.

Table 4.7:- Perceived Ease of use of E-Banking system among Commercial Bank of Ethiopian Employees

Items related to ease of use of E-Banking	Median	Mode
E banking makes it easier for me to do banking	2	2
In the case of mobile banking, our customers can simply use banking service by using their cell phone	2	2
From the bank perspective it is easy to use mobile banking to accomplish banking task	2	2
Using E-payment system (like debit card, salary card, ATM or visa card) simplify the activity of workers to deliver service	2	1
Our bank provide guidelines on the use of electronic banking facility	2	2
The management of the bank provides training courses for its staff when introducing new services.	2	2
E-banking system helps to perform banking task in a simple way	2	2

Source: Own Survey (2016)

Respondents were asked to rate the level of agreement/disagreement to seven items that were deemed to measure the perceived ease of use of E-Banking system. The result for all statements indicated that the median and mode values are 2, which means that respondents are agreed with the idea that perceived ease of use in terms of simplifying banking activities is a factor that facilitate the expansion of E-banking system in the case of Commercial Bank of Ethiopia. More over the interview result also supported the result of questionnaire survey that it indicated, it is an option less to implement E-banking system to simplify the banking activities and improve customer satisfaction.

This result of this study are also consistent with the findings of Khalid et al (2006) who shows that there is a clear agreement about the importance of making the E-banking service because it is easy to deliver service to customers, The findings of this study is also in line with the result found by Hoppe et al. (2001) which suggest that the more complex a new technology is perceived to be, the less likely it will be to expand and the more ease of use the more likely to easily spread out.

4.3.2 Perceived Usefulness

Perceived usefulness is a factor that helps measure the success of E-banking expansion. Hoppe et al. (2001) indicated that perceived relative advantage has a positive influence on the expansion of Internet Banking and it is compatible with their values to be expanded by users. Perceived usefulness can be measured in terms of time and costs saving which both are examined in this study and the results are presented and discussed below.

1. Time saving

According to an interview result, one of the basic benefits considered in the expansion of E-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 were in line with the study of Karjaluoto et al. (2002), which identifies time saving as a major benefit for to expand online banking system.

Regarding time saving as driver for the expansion of E-banking system, respondents were asked whether they are strongly agreed, Agreed, Neutral, disagreed or strongly disagreed and the result of survey were shown on the following table

Table 4.8:- Time Saving Benefit of E-Banking System as Perceived by Employees of Commercial bank of Ethiopia

Item related to Time saving benefit of using E-banking	Median	Mode
Using E-banking such as, Internet banking ,Mobile banking, ATM and other services enables users to complete banking activities more quickly and easily	2	1
E-banking such as, Internet banking ,Mobile banking, ATM and POS services are convenient, in terms of time saving	1	1
E-banking such as, Internet banking ,Mobile banking, ATM and POS services are convenient, in terms of 7 days and 24 hours services	1	1
E-banking is more accessible to users than visiting a bank	2	1

Source: Own Survey (2016)

Respondent rated that using E-banking such as internet banking, mobile banking, ATM and other services enables users to complete banking activities more quickly and easily with a median and mode value of 2 and 1 respectively. Respondent either agreed or strongly agreed about the perceived usefulness of E-banking system in terms of saving the time needed to effect different transaction. These results imply, that using online banking system helps to perform banking activities within a short period of time. Clients can simply check their balance, transfer funds and pay their bills online with just a click of mouse and a touch of button. On the other hand using internet banking is more convenient in terms of saving time and delivering of bank service to customer 24 hours a day and 7 days a week. This was rated with median and mode value of 1. The result shown on the above table 4.9 also revealed that the median and mode value for the question using E-banking is more accessible for user than stopover to a bank is 2.00 and 1.00 respectively, which indicates that, without visiting brick and mortar, customers can get bank service by using E-banking system. In line with the finding of Balachandher *et al.* (2010) suggests that, one of the implications of E-banking is that it should reduce the need to visit bank branches to get services.

2. Cost saving

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 E-banking system like, ATM, internet banking, mobile banking and others, banks can cut down substantial operation costs. Banks can save huge amount of money by reducing costs associated to payment 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 higher technology and higher skills have posted a higher turnover for 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 transaction over Electronic fund transfer. Result regarding cost factor is shown on table 4.9 as follows.

Table 4.9:-Cost Saving Benefit of E- Banking System as Perceived by Employees of Commercial Bank of Ethiopia

Item related to cost saving benefit of using E-banking	Median	Mode
The transactions in Internet banking are at a lower price, or at no cost	2	2
Using technological tools like ATM helps to perform transaction at lower cost	2	2

Source: Own Survey (2016)

Respondent rated that Internet banking and using technological tools like ATM helps to perform transaction at lower cost with median and mode scores of 2. The result implies that, using technological tools such as internet facilities and ATM machines resulted in performing of banking duties at lower prices. Similarly, an interview result also indicates that, the basic benefit a firm or customers gained from the expansion of E-banking is its cost minimization. This finding is consistent with the previous studies of Poon (2008), and Balachandher et al. (2010), in which both studies found, cost minimization as an important factor for the expansion of E-banking system.

4.4 Summary of the Chapter

In this chapter, data obtained from survey, interview and documents has been analyzed. Three basic factors were used to analyze the barriers for the expansion of E-banking system, technological factor, organizational factor and Environmental factor. On the other hand perceived ease of use and perceived usefulness, are two basic factors used as a driver for the expansion of E- banking.

Chapter Five

Summary of the findings, Conclusion and Recommendation

5.1 Summary of findings

Guided by the technology-organization–environment (TOE) framework and technology acceptance model (TAM), this study has identified a number of barriers and benefits/drivers for E-banking expansion. TOE, is classified in to three factors to determine barriers for the expansion of E-banking system. The technological barriers, identified in this study were security risk and lack of trust on the technological innovation used by banking industries. The finding identified under technological factor were also consistent with other studies on technology adoption in different countries, Ghazi and Khalid (2012) & Sathye (1999), both of them found that security risk is the major barrier for the expansion of E-banking system.

In the case of organizational factor, financial cost as well as human resource is considered, in this study financial cost were not considered as barrier for the expansion of E-banking in Commercial Bank of Ethiopia and it is consistent with the finding of Rasoulina (2006). On the other hand lack of technical and managerial skills to use and implement the system is considered as barrier for the expansion of E-banking in the Bank.

Most barriers to E-banking expansion identified in this study were come from external Environments; specifically poor legal framework regarding E-banking system at national level, lack of ICT infrastructure, and lower competition between local and entire absence foreign banks. Interestingly, lack of Government support was not taken as barriers for the expansion of E-banking system in Ethiopia.

The study also identified basic benefit a firm could get from the expansion of E-banking system. Those benefits were considered as a driving force for the expansion of the system. The benefits were classified based on technology acceptance model (TAM) as perceived ease of use and perceived use fullness. Perceived ease of use is taken as a major benefit of using E-banking system. At the same time this finding supports the study of Giglio(2002) and Robinson (2000).The other benefit found in the study were based on its usefulness in terms of time and cost saving. These are two basic benefits that drive banking industry to enlarge technological innovations.

In general, the finding of the study, contributes to the expansion of E-banking, such as enhancing customer satisfaction, reduce the number of customers come to banking hall, increase the productivity of banks, increase reliability and accessibility of banking service, creating good relationship between clients & bank and also used as a better information control.

5.2 Conclusion

This study aims at investigating the main barriers and drivers of expansion of E-banking in Commercial Bank of Ethiopia. To achieve the proposed objective two basic frame works were used, i.e. Technology-organization-Environment (TOE) and technology acceptance model (TAM). On the other hand both quantitative as well as qualitative (mixed) research approach was employed in the study E-banking system; such as ATM, mobile banking, internet banking and others were not well inflate by Commercial Bank of Ethiopian. This is due to low level of ICT infrastructure and poor legal frame works at NBE, which can initiate banking industry to implement the system. In addition to the above two basic factors affecting expansion of E-banking in the Bank, result of the study also shows that security risk and lack of trust on the use of technological adoption are other major barriers for the system. The level of security risk associated with E-banking product or service, such as ATM, internet banking, mobile banking and others, pose different challenges Bank. Improvements are required to ensure client confidence. Lack of competition among local and entire Absence foreign banks is also another challenge for the expansion of E-banking in the Bank.

Technical and managerial skills available in Bank for the expansion of E-banking are also limited. This is influencing the choice of technology in Bank. On the other hand, the study reveals that the benefits of technological innovation are well known to the bank and represent a formidable force to drive expansion of the system. In general perceived Ease of use is one of the basic benefits for E-banking, in which it enables bank staff to perform banking activities in a simple way. The other driving force for the expansion of the system is perceived usefulness, in which, it is used for time saving and cost reduction. This and the other benefit identified in the study were considered as a very great potential for bank to improve their public image.

In general, the findings of this study offer additional insights into the current E-banking expansion situation and its implications for E-banking growth for the bank. Furthermore, the

understanding of the barriers to E-banking expansion identified in this study may help to identify the best course of actions to promote its development. It will also be valuable to all banking industries of the country to increase their awareness and understanding of E-banking benefits.

5.3 Recommendations

E-banking system is a new financial evolution in Ethiopia, but it's an important issue, because it has a great impact on the whole banking system, at the same time it's difficult and need a lot of efforts to be spread out and accepted by the banking industry, so it need a lot of efforts to succeed. Based on the above conclusion, the researcher recommends the following points:

- ✓ In order to successfully facilitate E-banking expansion in Commercial Bank of Ethiopia, national bank of Ethiopia, (NBE) needs to urgently execute a clear set of legal frame works on the use of technological innovation in banking sector.
- ✓ For the successful implementation of E-banking system ICT infrastructure, is a major prerequisite, so government, should support banking sector by investing on ICT infrastructure development since the only net work provider ETHIO TELE COM is owned by government.
- ✓ In order to survive, Commercial Bank of Ethiopian need to move away from traditional bases of retail bank competition to a new technology based form of competition by focusing on cost reduction, customer retention, awareness, credibility, security, ease of use, and wider scope of products and services.
- ✓ To exploit the benefit of E-banking system, Commercial Bank of Ethiopia needs to familiarize its customers with the processes and benefits of the system.
- ✓ The Bank should pay special attention to deliver service to customers by using E-banking system, which can easily be accessible.

References

- Abiy, D 2008, *capital, weekly news paper*, March, 17, 2008.
- Access Capital 2010, *Banking Sector Review*, investing in Ethiopia.
- Aghdassi, M. Persson, L., & Ghasemi, R 2007. „Association between strategic values and E-banking adoption in Iranian banks’, *research paper, industrial marketing and purchasing group*, <http://www.impgroup.org/uploads/papers/4803.doc>, Viewed in November 2011,
- Ahmed, H 2011, ‘E-banking Adoption Model in Palestine’, MA thesis, An- Najah National University, Palestine
- Alagheband, P 2006, Adoption of electronic banking services by Iranian Customers, MA thesis, Lulea University of Technology, <http://www.epubl.ltu.se/1653-0187/2006/49/LTU-PB-EX-064SE.pdf> Viewed 10 September 2011,
- Alemayehu, G and Jacqueline, I 2011, *Remittance Market in Africa*, Ethiopian case, book chapter, 113-132
- Alhamadni, M, Aljaderi, A, Qandelji, A, Bani Hani, A & Abu zeneh, F 2006, *Research Methodology; First Book: The basics of scientific research*, 1st Edition, Amman Arab University for Graduate Studies.
- Alsabbagh, I and Molla, A 2004, ‘Adoption and use of internet banking in the Sultanate of Oman’, *Journal of internet banking and commerce*. 9(2)
- Asrat, S 2010, Reporter, weekly news paper. E banking services introduced by Zemen Bank
- Amanyehun, R 2011, *Mobile Commerce First from Dashen*, Addis Fortune News, Available at: <http://www.addisfortune.com/archive/2011/January/week4/>, Viewed September 14, 2011.
- Andersen, K and Dedrick, J 2003, ‘Governance initiatives creating a demand driven E-commerce approach’ The case of Denmark. *The information society*, 19(3): 98-105.
- Balachandher, K, Santha, V & Norhazlin, I 2010, ‘Electronic Banking in Malaysia: A Note on Evolution of Services and Consumer Reactions’, *International Journal of Business and Management Science*.
- Banji, O & Catherine, A 2004, ‘Internet Access in Africa: Empirical Evidence from Kenya and Nigeria’, 21(1): 67-81.
- Binyam, T 2009, *Daily Monitor*, February, 20, 2009, ATM Distribution of United Bank

Booz, R, Allen, G & Hamilton, L 1997, 'Internet banking', A global study of potentials. Booz, Allen and Hamilton Inc. New York, NY.

Chiu Chang, 2007, "Factors affecting the adoption of electronic signature: Executives Perspective of hospital information department", *Decision Support Systems*, 44(4):350-359.

Chong, S & Pervan, G 2007, Factors Influencing the extent of deployment of electronic commerce for small business and medium sized enterprises", *Journal of Electronic commerce in organizations*, 5(1):22.

Cox, D 1967, 'The audience as communicators', Graduate School of Business Administration, Harvard University, Boston, MA thesis, 172-87.

Creswell, W 2003, *Research Design: Qualitative, Quantitative and Mixed Approaches*, " 2nd edition. Sage publication, California.

combanketh.et/EPayment/cardbanking.aspxo

Daghfous, N and Toufaily, E 2007, The adoption of E-banking by Lebanese banks: success and critical factors, research paper, University du Quebec a Montreal Retrieved from:

Dashen bank 2011, *Annual Report*, available at: <http://www.dashenbank.com>

Davis, F 1986, A Technology Acceptance Model for Empirically Testing New 84 End- User Information Systems: Theory and Results, Boston, MIT, Phd thesis.

Davis, F & Warshaw, P 1989, 'User Acceptance of Computer Technology: A Comparison of Two Theoretical Models", *Management Science* 35(8): 982- 1003.

DeCoster, J 2004, *Data Analysis in SPSS*, <http://www.stat-help.com/notes.html> Viewed, January 24, 2012

D'Souza, E 2002, *How Well Have Public Sector Banks Done?* Economic and Political Weekly, 2(9): 867-870.

Efendioglu, A and Yip, F 2004, "Chinese culture and e-commerce: An Exploratory study Interacting with Computers", 16:45-62.

Eldabi, T 2002, 'Quantitative and qualitative Decision Making Methods in Simulation Modelling", *Management Decision*, 40(1):64-73

Ellis, J 2009, "Open source software adoption by South African SMEs: Barriers and Enablers", In *SACLA*. Mpekweni Beach Resort, South Africa.

Forster, T 1998, *Industrial Marketing Communication: "An Empirical Investigation on the use of Marketing Communication Tools"* Licentiate Thesis, Lulea University of Technology.

Furst, K & Nolle, D 2002, „Internet banking: developments and prospects“, *working Paper from office of the comptroller of the currency, administration of National banks*. <http://www.occ.gov/ftp/workpaper/wp2000-9.pdf>, viewed 12 September 2016

Gardachew, W 2010, `Electronic -banking in Ethiopia: practices, opportunities and Challenges“, *Journal of internet Banking and commerce*,15(2):2-9

Gerrard, P & Cunningham, J 2003,`The diffusion of internet banking among Singapore consumers“, *International Journal of Bank Marketing*, 21(1):16- 28.

Gerrard, P, Cunningham, J & Devlin, J 2006,` Why consumers are not using Internet Banking: a qualitative study“, *Journal of Services Marketing*, 20(3):160–168.

Getahun, N 2008, Policy initiatives for improved financial service provision: the case of Ethiopia, National Bank of Ethiopia.

Ghazi, A & Khalid, A 2012, `E-business Enablers and Barriers: Empirical study of SME in Jordanian communication sector“, *Global journal of Business Research*, 6(3):1-15.

Gibbs, J, Kraemer, K and Dedrick, J 2003, „Environment and Policy factors shaping E-commerce diffusion: a cross-country comparison’, *The information society*,19(1):18.

Giglio, V 2002, `Privacy in the world of cyber banking: emerging legal issues and how you are protected“, *International Journal of Bank Marketing*, 14(3):48-60.

Graziano, M & Raulin, L 1997, *Research Methods: A process of Inquiry*, 3rd Ed. Wesley Educational Publisher Inc. New York, Addison.

Grover, V 1993, “An Empirical derived model for the adoption of customer- based inter organisational systems’, *Decision Science*, 24:603-638.

Hair, et al. 2006, *Marketing Research, with in changing information environment*, 3rd edition, Tata McGraw-Hill Publishing Company limited, New Delhi.

Hoppe, R Newman, P & Muger, P 2001, `Factors affecting the adoption of internet banking in South Africa’ a comparative study.

Iacovou, L 1995, “Electronic data interchange and small organizations: Adoption and Impact of Technology”, *MIS Quarterly*, 19(4): 465-485.

Jayawardhena, C & Foley, P 2000, „Changes in the banking sector: the case of Internet banking in the UK“ Internet Research“, *Electronic Networking Applications and Policy*, 10(1):19-30.

Jensen, S 2003, `The Evolution of the Internet in Africa“ in Beebe,

- Johns, R 2010, Likert items and scales: survey question bank: methods of fact sheet, University of Strathclyde.
- Joseph, M & Stone, G 2003, "An empirical evaluation of US bank customer Perceptions of the impact of technology on service delivery in the banking Sector", *International Journal of Retail & Distribution Management*, 31(4):190-202.
- Kamrul, H 2009, E-Banking in Bangladesh: The Future of Banking, School of Business Studies, MA thesis, State University of Bangladesh
- Karjaluoto, H, Mattila, M and Pentto, T 2002, "Factors underlying attitude Formation Towards online banking in Finland", *International Journal of Bank Marketing*, 20(6):261-272.
- Kassim, N 2005, "E-banking service quality: Gaps in Qatari banking industry", *Journal of internet and Commerce*, 7(1)
- Kerem, K 2003, "Adoption of electronic banking: underlying consumer behavior and critical success factors" Case study of Estonia", paper presented at the 2003 conference of the technology and everyday life network, London, U.K.
- Khalfan, A, Alrefaei, S & Al-Hajery, M 2006, "Factors influencing the adoption of internet banking in Oman: a descriptive case study analysis", *international journal of financial services management*, 1(2/3):155-172.
- Khanfar, K Rashed, A, Elzamly, M & Elmasri, A 2006, Customer Satisfaction with internet banking web Site: Case study on the Arab Bank, Research paper, The Arab Academy for Banking and Financial Sciences, Jordan.
- Kuan, Y and Chau K 2001, "A Perception-based model for EDI adoption in small business using a Technology-Organisation-Environment Framework", *Journal of Information and Management*, 35:507-512.
- Laforet, S. 2005, "Consumers' attitudes towards online and mobile banking in China", *International Journal of Bank Marketing*, 23(5):362-380.
- Laukkanen, T 2008, "Internet banking vs. Mobile banking innovators and adopters", *Journal of financial service marketing*, 13(6):788-797.
- Leedy, P 1989, *Practical Research, Planning and Design*, 4th ed. Macmillan.
- Leelapongprasut, P, Praneetpolgrang, P & Paopoun, N 2005, "A qualitative Study Of internet banking in Thailand", *International journal of the computers , the International and management*, 13(3):1-16.

- Lu, 2005, "Internet banking: strategic response to the accession of WTO by Chinese banks", *Journal of Industrial Management & Data Systems*, 105(4):429-440.
- Malak, J 2007, Readiness of the Palestinian banking sector in adopting the electronic banking system: exploratory study, MA thesis, The Islamic University of Palestine.
- Martinsons, G 2001, „Electronic commerce in China: emerging success stories’, *Information & Management*, 39:571-579.
- Masrom, M. and Hussein, R. 2008, User acceptance of information technology: understanding theories and models. Kuala Lumpur: Venton. Masters thesis
- Mattila, M 2003, "Internet banking adoption among mature customers: early majority or laggards", *Journal of Services Marketing*, 17(5):514-28.
- McNabb, D 2004, *Research method for political science: Quantitative and Qualitative Methods*, Prentice-Hall of India, New Delhi.
- Mitchell, W 1999, 'Consumer perceived risk: conceptualisations and models', *European Journal of Marketing*, 33(1/2):163-95.
- Mols, K 1998, 'The behavioural consequences of PC banking', *International Journal of Bank Marketing*, 16(5):195-201.
- Naichiamas, D & Frankfort, C 1996 *Research Methods in the Social Sciences*, 5th edition. CA Arnold, Santa Cruz.
- Pham, L 2010, 'A conceptual framework for E-banking service quality in Vietnam', *The Business Studies Journal*, 4(3):1-19.
- Pikkarainen, T, K. Karjaluoto, & Pahnla, S 2004, 'Consumer acceptance of Online Banking: an extension of the technology acceptance model', *Internet Research*, 14(3):224-235.
- Polatoglu, V & Ekin, S 2001, 'An empirical investigation of the Turkish consumers Acceptance of Internet banking services', *International Journal of Bank Marketing*, 19(4):156-165.
- Poon, W 2008, 'Users adoption of E-banking services: The Malaysian perspective', *Journal of Business & Industrial Marketing*, 21(1): 59-69.
- Quaddus, M, and Hofmeyer G 2007, „An investigation into the factors influencing the adoption of B2B trading exchanges in small businesses’, *European Journal of Information Systems*, 16:202-215.
- Ram, S & Sheth, N 1989, 'Consumer resistance to innovations: the marketing problem and its solutions', *The Journal of Consumer Marketing*, 6(2):5-14.

Rosalina, M & Javaheri, M 2006, `Drivers and Barriers of implementing E- commerce in Iran. Naragh University of Iran.

Robinson, T 2000, `Internet banking`, *Information Week*,17(4):104 -106.

Rogers, M 2003, *Diffusion of Innovations*, 5th edition, New York: Free Press.

Salman, S & Kashif, S 2010, Electronic banking & E-readiness adoption by Commercial Banks in Pakistan, Master's Thesis, Linnaeus University, School of Computer science, physics and mathematics.

Salwani, 2009, "E-commerce usage and business performance in the Malaysian tourism sector: empirical analyses, *Information Management & Computer Security*. 17(2):166-185.

Sathye, M 1999, `Adoption of Internet banking by Australian consumers: an empirical investigation`, *International Journal of Bank Marketing*, 17 (7):324-34.

Scupola, A 2003, „The Adoption of Internet Commerce by SMEs in the South of Italy: An Environmental, Technological and Organizational Perspective“, *Journal of Global Information Technology Management*, 6(1):51-71.

Shah, M, Branhganza, A, Khan, S, & Xu, M, 2005, A survey of critical success factors in E-banking, research paper, European and Mediterranean Conference on information systems UK.

Sheshunoff, A 2000, `Internet banking: an update from the frontlines`, *ABA Banking Journal*, 92(1):51-55.

Silverman, D 2001, "*Interpret ting qualitative Data*, 2nd Ed. Sage Publication Ltd. London.

Stockdale, R 2006, „A classification model to support SME E-Commerce adoption Initiatives“, *Journal of Small Business and Enterprise Development*, 13(3):381-394.

Sohail, S & Shanmugham, B 2003, `E-banking and customer preferences in Malaysia: an empirical investigation, information sciences-informatics and computer Science`, *international journal of banking*, 150(3/4):207-217.

Tan, Z & Wu, O 2002, „Global and National Factors Affecting E-commerce Diffusion in China, in Globalisation and E-Commerce., Centre for research on information technology and organizations: Irvine.

Tornatzky, G & Fleischer, M 1990, *The Process of Technology Innovation*, Lexington, MA, Lexington book.

Trappey, C.V. and Trappey A.J.C 2001, „Electronic commerce in Greater China’, *Industrial Management & Data Systems*, 101(5):201-209.

Turban, D 2008, *Electronic commerce: a managerial perspective*, 4th Edition, Prentice Hall.

- Wondwossen, T and Tsegai, G 2005, 'E-payment: challenges and opportunities in Ethiopia', *Economic commission for Africa*, Addis Ababa Ethiopia.
- Yang, Y 1997, The security of electronic banking, a research paper presented at the national formation systems security conference U.S.A.
- Yesegat, W A 2009, Value added tax in Ethiopia: A study of operating costs and Compliance, Phd thesis, University of New South Wales.
- Yin, R 1989, "Case Study Research Design and Methods: Applied Social Research Methods" Series, vol. 5, Sage publications.
- Yin, R 1994, *Case Study Research Design and Methods, applied Social Research Methods Series*, 2nd Edition, Sage Publishing, Newbury.
- Zhao, *et al.* 2008, „Perceived risk and Chinese consumers' internet banking Service Adoption“, *International Journal of Bank Marketing*, 26(7):505-525.
- Zhao, L, Koenig-Lewis, N, Hanmer-Lloyd, S & Ward, P 2010, 'Adoption of Internet Banking services in China', *International Journal of Bank Marketing*, 28(1):7-26.
- Zhu, K, Kraemer, K & Xu, S 2003, „Electronic business adoption by European firms: a Cross country assessment of the facilitators and inhibitors“, *European Journal of Information Systems*, 12(4):251-268.
- Zhu, K & Kraemer, K 2006, „The process of innovation assimilation by firms in different countries: A technology diffusion perspective on E- Business', *European journal of information system*, 52(10):1557-1576.

APPENDIX

General Instruction

This questionnaire contains two sections and 6 pages that will be expected to take approximately 15 to 20 minutes to complete. Please provide your responses to the questions based on the instructions under each section. If you have comments or if you want to provide further explanations, please use the space provided at the end of the questionnaire.

Section I: Demographic profile of respondents

Please indicate the following by ticking (v) on the spaces in front of the response options:

1. Gender: Male Female
2. Age: 20-30 31-40 41-50 51-60
3. Educational level: Diploma holder First degree holder
Masters degree Above
4. Position on the Bank: Customer Service Officer (CSO) Customer Service Manager
Other
5. Monthly income (in Eth. Birr): 1200-2400 2401-3000 3001-4000
4001 - 6000 Above 6000

Section II

Questionnaires related with challenges and drivers of expansion Electronic banking system.

Below are lists of statements pertaining to Adoption of E-banking? Please indicate whether you agree or disagree with each statement by ticking (v) on the spaces that specify your choice from the options that range from ""strongly agree" to „strongly disagree" .Each choice was identified by numbers ranged from 1 to 5.

Note: SA- Strongly Agree, A- Agree, DA- Disagree, N- Neutral, SD- Strongly Disagree

Part one: Questionnaires related with barriers of expansion of E-banking system

The following are some barriers the company faces, when adopting E-banking system, please indicate level of your choice		SA	A	N	DA	SD
		1	2	3	4	5
I. Technological factors(Perceived risk)						
1	Customers of our bank fear risk to use automated teller machine(ATM)					
2	Lack of confidence with the security aspects considered as barrier for the expansion of E- banking system					
3	In the case of mobile banking, ATM and other services security risk affect user's decision to use the system.					
4	Customers do not trust the technology provided by the banks					
5	Lack of trust is considered as barriers for the expansion of E-banking system in Ethiopia.					
II. Organizational factors						
6	Using internet banking increases cost to do banking task					
7	Relatively using of mobile to get banking service is Expensive for customers					
8	Lack of sufficient government support will affect customers willingness to use technological innovation					
9	Customers of our bank were not familiar with service provided though ATM, Internet banking, telephone and mobile phone					
10	Lack of technical and managerial skills on the use of technological innovation.					
11	Lack of skills to implement E-banking system					

III. Environmental factors						
12	Using internet banking is difficult due to low internet access in the Ethiopia					
13	Internet connection was not good enough to perform online transactions in Ethiopia					
14	Lack of available ICT infrastructure					
15	Lack of legal frame works that enforce banking industries to adopt technological innovation					
16	Customers may not willing to accept E-banking service					

Any other barriers? Please specify below

Part two: Questionnaires related with the drivers on the expansion of E-banking system in Ethiopia.

The following are some of the perceived benefits the company derived from the expansion of E-banking system, please indicate your choice.		SA	A	N	DA	SD
		1	2	3	4	5
IV. Perceived Ease of Use						
17	E- banking makes it easier for me to do banking activities					
18	In the case of mobile banking, our customers can simply use banking service by using their cell phone					
19	From the bank perspective it is easy to use mobile banking to accomplish banking task					
20	Using E-payment system (like debit card, salary card, ATM or visa card) simplify the activity of workers to deliver service					
21	Our bank provide guidelines on the use of electronic banking facility					
22	The management of the bank provides training courses for its staff when introducing new services.					
23	E-banking system helps to perform banking task in a simple way					
V. Perceived Usefulness						
24	E-banking such as, Internet banking ,Mobile banking, ATM and POS services are enables users to complete banking activities more quickly and easily					
25	E-banking such as, Internet banking ,Mobile banking, ATM and POS are convenient, in terms of time saving					

26	E-banking such as, Internet banking ,Mobile banking, ATM and POS are convenient, in terms of 7 days and 24 hours.					
27	E-banking is more accessible to users than visiting a bank					
28	The transactions in Internet banking are at a lower price, or at no cost					
29	Using technological tools like ATM helps to perform transaction at lower cost					
30	Improve customer service					
31	Improve Speed and efficiency					
32	Reduce number of customers come to the banking lobby					
33	Increased the productivity of bank					
34	Increase reliability and accessibility					
35	Create better relationship among banks and clients					
36	Used as better information control tools					
37	No time limit to access bank account and information					

Any other benefits? Please specify

II. Interview

Please indicate the position on the spaces in front of the response options:

I. position, please

Specify _____

Section one: Interview questionnaires designed for the managers of the four selected Branches.

I. Barriers of expansion E-banking system.

1. What type of Electronic banking service do you provide? ATM, Internet banking, mobile banking or others? Please specify.
2. What are the basic barriers on the expansion of new technological innovations like ATM, internet banking and mobile banking?
3. Is the following factors considered in your institution as barriers for the expansion of technological innovation?
 - A. Security risk
 - B. Customers reluctance
 - C. lack of social awareness
 - D. cost incurred in the purchase of technological instruments
 - E. lack of competition
 - F. inadequate ICT infrastructure
4. In your opinion what are the key factors that hinder your institution to expand automated teller machine (ATM).
5. Do you see any social, Economic and legal barriers for the expansion of ATM, internet banking and mobile banking in your institution?
6. Do you think that government policy have impact on the expansion of E- banking system? (Please Specify/explain)
7. What sort of support would you expect from the government in relation to the E-banking improvement in Ethiopia?

II. Drivers that Expand E-banking system.

8. What are the benefits your institution gained from the expansion of ATM, internet banking and mobile banking system in the delivery of service to customers?
9. Concerning the drivers I want to talk about. One of these is the perceived advantages, so what are the advantages derived from the usage of technological tools like ATM, internet and mobile to deliver service to customers instead of using the traditional tools.
10. In your opinion what are the key factors that push your institution on the expansion of ATM, internet banking and mobile banking system?
11. As Your opinion, what are the advantages / reasons that you consider of implementing E-Banking system?

Interview questionnaires designed for the NBE

1. As your opinion what are the barriers and drivers on expansion new technological innovation?
2. Is there any legal frameworks at central bank to enforce banking industries to use E-banking system, such as ATM/debit card, telephone/mobile banking/internet banking?
3. Is there any special rule that guide banking industries in implementation of E-banking system?
4. Why Ethiopian government did not allow foreign banks to operate in the country? Do you think it discourage Ethiopian banking industry, on the expansion of technological innovation and compete with foreign banks?