St. Mary's UNIVERSITY

SCHOOL OF GRADUATE STUDIES

FACULTY OF BUSINESS

Challenges in Adoption of Electronic Banking in the case of Nib international Bank s.c

A Final thesis submitted to St.Mary's University Faculty of Business School of Graduate Studies For Partial Fulfilment Of The Requirement Of Masters In General Business Administration

ADVISOR: Dejene Mammo (ASST. PROF)

By: Mehireteab Gezahegn

June 2016

Addis Ababa

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Declaration

I declare that this thesis Challenges in Adoption of Electronic Banking in the case of Nib international Bank s.c , 2016 constitute my original work, that it had not been submitted for post graduate program in this university or other universities and that all sources of materials used for the thesis have been properly acknowledged.

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This is to certify that Mehireteab Gezahegn has carried out his research work on the topic entitled “Challenges in Adoption of Electronic Banking in the case of Nib international Bank s.c.” The work is original in nature and is suitable for submission for the reward of the MBA Degree in General Business Administration.

Advisor Dejene Mammo (ASST. Prof) _____

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Approved by the board of examiner

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ENDORSEMENT

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

Advisor _____ **Signature &** _____

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LIST OF ACRONYMS

AIB – Awash international bank s.c

ATM – Automated teller machine

AVR -Automated voice response

CBE - Commercial bank of Ethiopia

DOI- Diffusion of innovation

E – Commerce - Electronic commerce

E – Payment - Electronic payment

IT - Information technology

NBE – National Bank of Ethiopia

NIB – Nib International bank s.c

Pos - Point of sale machine

Abstract

This thesis aims to examine the challenges in adoption of E-banking in the case of Nib international bank s.c. This study has covered the challenges facing Nib international bank s.c due to adoption of e-banking services; purposive sampling method and simple random sampling has been conducted for this case study, 100 respondents selected as a sample from a population of 2,500 employees and its customers of E banking product users, it consists of IT staff, other banking staff and customers of E-banking facilities. Both qualitative and quantitative methods are used to present the results. Descriptive statistics is applied to describe the demographic variables. Finally, cross case analysis present staff perception about e-banking challenges. Analysis shows that the bank faced different challenges like technological risks (system failure, processing error, software defects, operating mistakes, inadequate recovery capabilities) where the banks should constantly upgrade E banking technology to overcome the risks. Security challenges (control weakness, security shortcomings, malicious attacks, hacking incidents and fraudulent actions), the banks should adequately place both application and general control mechanism and involve their staff in training to curb the challenges. Finally, cost challenges associated with legal requirements and implementation cost, banks should comply with legal requirements and have cost effect strategies in place.

Key words- *Electronic banking, Internet banking, Adoption, Challenges of e-banking, Information technology*

CHAPTER ONE

1.1 INTRODUCTION

Information technology is considered as the key driver for the changes taking place around the world. Due to a pervasive and steadily growth of information and communication technology, the world banking industry is entering into new phenomena of unprecedented form of competition supported by modern information and communication infrastructure. E-commerce has become a buzzword for companies over a couple of years with increased awareness about the use of computers and internet (Gardachew 2010).

The information and communication applications are dominant concern to the banks in today's business environment and Internet has become the major stage for all financial, banking and commercial transactions in the present scenario. Statistics show that Africa is lagging behind in the adoption of E banking. However, according to Jensen (2003), there is some e-commerce activity in Africa, with South Africa, Egypt, Morocco, and Tunisia taking the lead. Most rural areas in Africa, where the majority of small and medium businesses are concentrated, have no Internet facilities and thus are unable to engage in e banking activities. According to Jensen (2003), most countries in Africa, except South Africa, have Internet infrastructure only in their major cities."

The rapid growing information and communication technology is knocking the front door of every organization in the world, where Ethiopian banks in general and Nib international bank s.c particularly would never be exceptional. In the face of rapid expansion of electronic payment (E-payment) systems throughout the developed and the developing world, Ethiopian's financial sector cannot remain an exception in expanding the use of the system (Gardachew 2010). Technological innovations play a crucial role in banking industry by creating value for banks and customers, that 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 not well developed in Ethiopia.

Electronic commerce (e-commerce) has become a very important technological advancement for businesses in changing business practices (Brodie et al., 2007; Gonza´lez et al., 2008; Lichtenstein and Williamson, 2006).In particular, industries that are information-oriented such as the banking services are expected to experience the highest growths in e-commerce (Ibrahim et al. 2006; Hughes, 2002). Inevitably, this phenomenon has sparked a lot of attention in the academic literature lately (Gan et al., 2006; Pikkarainen et al., 2006; Shamdasani et al., 2008).

Banking has always relied on information technology (IT) to acquire, process, and deliver its services to all relevant users. Beside IT is critical in the processing of information, it also provides a way for the banks to differentiate their products and services, and provide convenient, reliable, and expedient services (Tan and Teo, 2000).
As a result, banks have invested more in technology and information to achieve maximum return and attract large number of clients. One of the advanced services that have been introduced by banks is electronic banking or e-banking.

E-banking is defined as the automated delivery of new and traditional banking products and services directly to customers through electronic and interactive communication channels (FFIEC, 2003). It includes the systems that enable financial institutions, customers, individuals or businesses, to access accounts, transact business.

The evolution of electronic banking started from the use of automatic teller machines (ATM) and has passed through telephone banking, direct bill payment, electronic fund transfer and the revolutionary online banking (Alter, 2002). The future of electronic banking according to some is the acceptance of WAP enabled banking and interactive-TV banking (Petrus& Nelson, 2006).

A recent e-banking development is wireless internet application of banking commonly known as M-banking (mobile banks). With combination of two most recent technological advancement, internet and mobile phones, a new service (mobile data service) is thus enabled and the first wireless internet commercial transactions were performed by the banking industry (barnes and corbitt, 2003).
Strategic implementation and customer perception of M-banking services are been explored with a focus on the customer creation and better understanding about the customer perceived value of M-banking services. For instance, mobile internet services have been quite popular

in Japan (over 60 million users in 2003) especially for those individual consumers. As such it is not surprising to see the increased interest among Ethiopians

There is a lack of case studies reporting the actual experience of banks on implementing e-banking, this gap in research poses problem for banks because the limitations in relation to this area means difficulties for them in planning and implementing e-banking (Daniel, 1999; Southard, P.B. and K. Siau, 2004). According to Christopher et al (2006), E banking has become an important channel to sell the products and services and is perceived to be necessity in order to stay profitable in successful.

There are many advantages of online Banking. It is convenient, it isn't bound by operational timings, there are no geographical barriers and the services can be offered at a very small cost (IAMAI"s, 2006). Electronic banking has experienced explosive growth and has transformed traditional practices in banking (Gonzalez et al., 2008).

The importance of e-banking as a financial service delivery is growing because of its wider reach and low cost per transaction. The internet as a channel for service delivery is fundamentally different from other channels, such as branch networks or telephone banking, because of its interactive nature. Therefore, it brings up unique types of challenges and requires novel solutions (King and Liou, 2004; Southward and Siau, 2004; Yan and Parade, 1998)

Franco and Klein (1999) stressed the importance of upgrading the existing technological infrastructure to bring up to the speed with the internet trade. Storey et al(2000) state that technology failure lead to loss of custom, often forever. Shortcomings in technological infrastructure are often the biggest hurdle in adoption of the e-banking channels and its integration with other channels (Shah et al., 2003)

Security is mentioned as a very critical factor by Enos (2001), Turban et al (2000) and Regan and Macaluso (2000). Lack of it, or consumers fear about it, Security has been widely recognized as one of the obstacle to the adoption of electronic banking and it is considered an important aspect in the debate over challenges facing internet banking (Feinman et al., 1999). The performance evaluation of e-banking website requires a model that enables us to address the various imperatives factors and criteria related to the quality and performance of e-banking websites.

Regulatory risks which are brought about by the fact that the Internet allows services to be provided from anywhere in the world, regulators require banks to provide their services from a remote location through the Internet to be licensed (Sarel and Mamorstein, 2003). Licensing would be particularly appropriate where supervision is weak and cooperation between a virtual bank and the home supervisor is not adequate.

Therefore, banks are increasingly faced with a perceived conundrum: customers may appreciate the convenience of e-banking but as they migrate away from traditional banking, the extent of personal interaction with bank staff decreases as does the switching cost and ultimately long- term customer commitment (Sarel and Mamorstein, 2003). Yet, such a conundrum exists only because bank managers view traditional and online banking as mutually exclusive or substitutable. This view is also evident in the conceptualization of academic research in this area because many researchers who investigate trust in the e-banking context have limited the scope of their study to constructs that concern only virtual attributes or the internet

1.1.1. Evolution of E-banking in Ethiopia

The banking industry in Ethiopia is governed by the companies Act, the banking Act, the commercial bank of Ethiopia Act, and the various prudential guidelines issued by the National bank of Ethiopia (NBE). The commercial bank of Ethiopia which falls under the ministry of finance is responsible for formulating and implementing monetary policies and fostering the liquidity, solvency and proper functioning of the financial system. NBE publishes information on Ethiopia‘s commercial banks and non-banking financial institutions, interest rates and other publications and guidelines Commercial banks in Ethiopia are going through massive transformation efforts to cope with the constantly changing business environment. Increasing domestic and global competition, economic downturn, rapidly changing market trends, and volatile financial markets have all added to the pressure on organizations to come up with effective responses to survive and succeed.

The role of banks in an economy is paramount because they execute monetary policies and provide means for facilitating payments for goods and services in the domestic and international trade (Shambe, 2003).

Electronic innovation in banking industry can be traced back to 1970, when the computerization of financial institutions gained momentum (Malak 2007), however; a visible presence of this was evident to the customers since 1980, with the introduction of ATM.

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 (AVR) technology. By using the AVR Technology, banks could offer telephone banking facilities for financial services. With further advancements in technology, banks were able to offer services, through PC owned and operated by costumers at their convenience, through the use of intranet propriety software. The users of these services were, however, mainly corporate customers rather than retail ones (Sohail & Shanmugham, 2003). The security first network bank was the first Internet banking in the world that was built in 1995 in USA. After that some famous banks introduced their internet banking one after another, such as Citibank and bank of America.

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 had 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.

By the end of 2008 Wegagen Bank has signed an agreement with Technology Associates (TA), a Ethiopian 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 (Asrat, 2010).

The agreement signed by three private commercial banks to launch ATM and POS terminal network, in February 2009 is welcoming strategy to improve electronic card payment system in Ethiopia. Three private commercial banks - Awash International Bank S.C., Nib International Bank S.C. and United Bank S.C. have 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 POSs 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).

Nib International Bank (NIB) was established on 26 May 1999 under license no. LBB/007/99 in accordance with the Commercial Code of Ethiopia and the Proclamation for Licensing and Supervision of Banking Business Proclamation no. 84/1994, starting from its establishment to date, Nib International Bank S.C. was rendering service traditionally, However, since August, 2012 Nib International Bank S.C has begun giving E- banking service with Awash International Bank S.C. and United Bank S.C by jointly established a company called Premiere Switch Solutions S.C to do E banking services (Nib international bank 2013).

1.2 Statement of the problem

The popularity of electronic banking (e-banking) is experiencing explosive growth as traditional banking practice has been transformed, placing opportunities for banks in Ethiopia to maximize their share in the market, gaining competitive edge and improving on their profitability. However, there are serious challenges associated with internet banking. The challenges that banks may encounter while banking through the internet, due to which many still prefer to go directly to the banks instead of using this facility (Klinkerman, 2000; 2001)

For proper implementation of E-banking, banks should ensure that all necessary infrastructures, workforce, and banking functions are in place and working at maximum efficiency. E-Banking is getting more sophisticated. They have given banks a potential they could only dream about and have given bank customers high expectations. The changes that

new technologies have brought to banking are enormous in their impact on officers, employees, and customers of banks. Advances in technology are allowing for delivery of banking products and services more conveniently and effectively than ever before - thus creating new bases of competition. Rapid access to critical information and the ability to act quickly and effectively will distinguish the successful banks of the future in the absence this limits the success of e-banking hence there is a need for banks to assess their readiness to offer E banking services to their clients. The ability to adopt global technology to local requirements: An adequate level of infrastructure and human capacity building are required before developing countries can adopt the global technology for their local requirements (Lose 2013). On other hand, consumers are expected to have basic knowledge and internet availability which impacts on the willingness to use this facility. Adoption of e-banking also poses operation challenges which is Legal and Reputational challenges, in order to protect banks against business, legal and reputation risk, e-banking services must be delivered on a consistent and timely basis in accordance with high customer expectations for constant and rapid availability and potentially high transaction demand. The bank must have the ability to deliver e-banking services to all end-users and be able to maintain such availability in all circumstances. Effective incident response mechanisms are also critical to minimise operational, legal and reputational risks arising from unexpected events, including internal and external attacks that may affect the provision of e-banking systems and services.

E-banking increases security challenges, potentially exposing hitherto isolated systems to open and risky environments. Banks are finding that their systems are being probed for weaknesses hundreds of times a day butdamage/losses arising from security breaches have so far tended to be minor. Technology challenges, if business relies on information technology (IT) systems such as computers and networks for key business activities you need to be aware of the range and nature of risks to those systems. (Basel Committee on Banking Supervision, 2003).

All this challenges has triggered the urge to study on the challenges that these banks face due to the adoption of these services. The studies cited above have been done in other countries whose strategic approach in regard to e-banking is different from that of Ethiopian banks. Very limited study has been done on the challenges of E-banking in the banking industry 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.

The study conducted by Gardachew (2010) on practices, opportunity and challenges of e - banking, analyzed the main challenges and opportunities of E-banking. He came up with the challenges being low level of internet penetration and poorly developed telecommunication infrastructure, lack of suitable legal and regulatory framework for ecommerce and e-payment. In addition to these he also mentioned high rates of illiteracy high cost of internet and absence of financial networks that link different banks as challenges of E banking.

A research undertaken by Ayana (2014) on factors affecting adoption of E-banking system in Ethiopian banking industry, focused on factors that affect adoption of E-banking in Ethiopian banking industry. The study statistically analyzes data obtained from survey of staffs of 4 purposely selected banks using qualitative and quantitative research approach on a research framework developed based on technology-organization-environment mode (TOE). And conclude E-banking system such as ATM, mobile banking, internet banking and others were not well adopted by Ethiopian banking industry, due to low level of ICT infrastructure and lack of legal frameworks at NBE. In addition to this the result of the study also showed that security risk and lack of trust on the use of technological adoption are other major barriers for the system. Limited technical and managerial skills available in Ethiopian banks were also mentioned as an influential factor for the choice of technology in Ethiopian banks.

A study undertaken by Senait (2007) on prospects and challenges of E-banking focused on prospects and challenges of E-banking in Ethiopia. In her study she mentioned determinant factors of E-banking in Ethiopia include technological and infrastructural requirement, customers' attitude, capacity of existing banks and capacity of regulatory and supervisory organs.

By undertaking the study the researcher explored risks and challenging areas under e-banking adoption from the start to the end of E-banking implementation will be considered. Although there are many research works conducted worldwide, there are very few or limited published works that tried to investigate the challenges in adoption of electronic banking in Ethiopia. This goes a long way in adding past findings value and enable users of the information have a deeper understanding of the need for a sound implementation of e-banking services.

1.3 Research Question

This research is remedying the lack of studies on the E-banking in Nib international bank s.c. This research deals with intention toward E-banking usage. So research questions of this study will be;

- What are the technological risks facing banks due to adoption of e-banking?
- How security challenges affect e-banking?
- What are the costs of challenges facing banks due to adoption of e-banking?

1.4 Objective of the study

1.4.1 General objective

The research aims at enriching the knowledge and understanding of factors affecting adoption of E-banking services in Nib international bank S.c (an IT innovation). The main objective is to identify the challenges of e-banking in the Nib international Bank s.c

1.4.2 Specific objectives;

- To investigate the technological risks facing banks due to adoptions of e-banking
- To analyze security challenges affecting e-banking.
- To investigate cost challenges facing banks due to adoption of e-banking.

1.5 Significance of the study

The findings of this research would be helpful to all the user groups of E-banking services. They include: CEOs and bank managers who implement E-banking services and makes operational and strategic decisions. The professionals involved with on-line applications as well as IT. Agents who are able to understand the challenges on behave of their clients and indicate future potential demand for different E-banking services.

The research will also indentify the technical and the Challenges in Adoption of Electronic Banking in Ethiopian Banking Industry in Ethiopia and suggests ways by which they could be tackled.

Furthermore, the outcome of the study is expected to assist other researchers for further studies in the area of electronic banking.

1.6 Scope of the study

In pursuance of the objective of the study, the research paper focuses on examining the challenges in adoption of electronic banking in Nib International Banks. The study involved staff from the Information Technology (IT) Department, E banking department, Nib international bank Main branch electronic banking product users. These respondents were selected because of the extensive use of E-banking facilities or products and their close proximity to the researcher. The study laid emphasis on challenges in adoption of E-banking in the case Nib international bank.

1.7 Limitation of the Study

While conducting the study, the sample is taken only from one private commercial bank and doesn't include the remaining commercial banks that are operating in the country. Hence the generalizations may not be applicable to them it is also faced that respondents were not properly responded to the whole content of the questionnaire due to misunderstandings, lack of knowledge, or commitment to the subject matter. However, to minimize these problems, the researcher used interceptive questionnaire technique which are distributed to the Bank's employee are selectively distributed for those individuals the researcher believe that they have the potential, ability and capacity to respond the questioner properly.

1.8 Organization of the Thesis

This study consists of five chapters. The first chapter is an introductory part where background of the study, statement of the research problem, objectives of the study, significance of the study, scope and limitations of the study are dealt with, chapter two deals with review of literature. The research methodology is examined in chapter three. In the fourth chapter, the results of the study are presented and discussed in detail. Finally, the paper ends up by conclusions and providing recommendations to promote e-banking service in Nib International Banks.

CHAPTER TWO

LITERATURE REVIEW

Introduction

The literature review is a critical evaluation of existing related literature review on the challenges of e-banking in the growth of banking sector, which serves as the background of this study. It also highlights concepts of technological innovation and the risks associated with E-banking as well as the objective of the study.

2.1. Theoretical and conceptual Literature Review

2.1.1. Diffusion of innovation theory (DOI)

Diffusion of innovation (DOI) theory is concerned with the manner in which innovations spread through social system (Rogers, 2003). Rogers describes diffusion of innovation as the process by which an innovation is communicated through certain channels over time among the members of social systems. It is a special type of communication in that the messages are concerned with new ideas, Rogers (2003)

Much of the DOI research examinations on how adopter's perceptions of the characteristics of an innovation impact adoption decisions, IT innovations have been studied using this perspective. However, in order to explain the rate of adoption Rogers suggested measurement of the following perceived characteristics of innovations which explain the rate of technology adoption:

Relative Advantage; Degree to which an innovation is seen as being superior to its predecessor

Complexity (case of use); Degree to which an innovation is seen as being relatively difficult to use and understand

Compatibility; Degree to which an innovation is seen as being consistent with existing beliefs values, experiences and needs

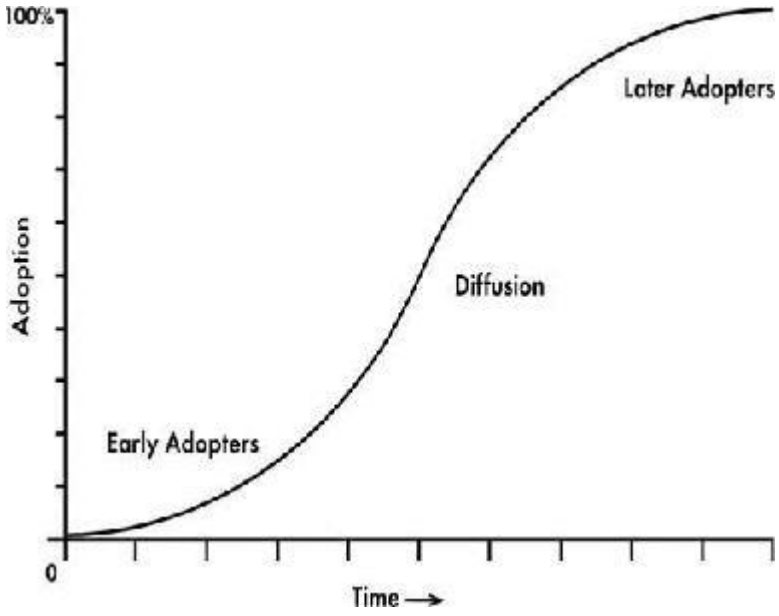
Result Demonstrability; Degree to which the outcomes of using in innovation are apparent

Image; Degree of which the use to the innovation is seen as chancing to an individual's image or social status;

Trustworthiness; Degree to which consumers have confidence in the electronic marketer's reliability and integrity

Individuals are seen as possessing different degrees of willingness to adopt innovations such as e-banking and thus it is generally observed that the portion of the population adopting an innovation is approximately normally distributed overtime (Rogers, 1995). Breaking this normal distribution into segments leads to the segregation of individual into the following five categories of individual innovativeness (from earliest to the latest adopters): innovators (venturesome, educated, multiple info sources), early adopters (social leaders, popular, educated), early majority (deliberate, many informal social contacts), late majority (skeptical, lower socioeconomic), laggards (neighbors and friends are main information source, fear of debt), Rogers (1995) members of each category typically possess distinguishing characteristics as shown below:

Fig 2.1 diagram/ schematic of theory



Source: Rogers (1995)

E-banking: A concept of technological innovation

Pikarainen, Karjaluoto, and Pahnila (2004) defines E-banking as an,internet portal, through which customers can use different kinds of banking services ranging from bill payment to making investments". Internet banking gives customers access to almost any type of banking transactions at the click of a mouse .Indeed the use of the internet as a new alternative channel for the distribution of financial services has become a competitive necessity instead

of just a way to achieve competitive advantage with the advent of globalization and fiercer competition Flavián, Torres, &Guinalíu, (2004); Gan, Clemes, Limsombunchai, &Weng, (2006). All banks using the internet as an additional channel or a bank using only the internet as delivery channel are now on equal footing to offer their banking services on the internet and to compete for customers around the world. As Karjaluoto, Mattila, and Pento (2002, p.261) put it „this could be the reason why the internet is widely seen as the most important delivery channel in the era"

E-banking is beneficial for both the provider and the customer. The rationales of banks" usage of the internet banking technology from the bank"s perspective are mainly related to cost savings Robinson, (2000); Sathye, (1999). Banks use online banking as it is one of the cheapest delivery channels for banking products Pikkarainen et al., (2004). Such service also saves the time and money of the bank with an added benefit of minimizing the likelihood of committing errors by bank tellers Jayawardhena& Foley, (2000). Internet banking offer services regardless of geography and time and banks thus provide its services to the customers for them to use at their convenience. As Karjaluoto et al. (2002, p. 261) argued „banking is no longer bound to time and geography. Customers over the world have relatively easy access to their accounts, 24 hours per day, and seven days a week". The author further argued that, with internet banking services, the customers who felt that branch banking took too much time and effort are now able to make transactions at the click of their fingers.

Competition is yet another important rationale, as with increasing competitive pressure from existing firms and new entrants in the market, internet banking strategy has been an interesting way to retain existing customers and attract new ones. The use of internet banking as an alternative channel has also been allowing banks to target different demographic segments more effectively. Beckett,A. (2000) believes that the supply of internet banking services enables banks to establish and extend their relationship with the customers. There are other numerous advantages to banks offered by online banking such as mass customization to suit the likes of each user, innovation of new products and services, more effective marketing and communication at lower costs Tuchilla, (2000), development of non-core products such as insurance and stock brokerage as an expansion strategy, improved market image and better and quicker response to market evolution Jayawardhena& Foley,(2000). Benefits for the end users are numerous as well and includes convenience of the service (time saved and globally

accessible service), lower cost of transaction and more frequent monitoring of accounts among others.

2.2. Trends in Electronic Banking

Considering trends in electronic banking, it's observed that E-banking is gaining ground. Banks increasingly operate websites through which customers are able not only to inquire about account balances and interest and exchange rates but also to conduct a range of transactions. Unfortunately, data on E-banking are scarce, and differences in definitions make cross-country comparisons difficult. Even so, one finds that Internet banking is particularly widespread in Austria, Korea, the Scandinavian countries, Singapore, Spain, and Switzerland, where more than 75 percent of all banks offer such services. The Scandinavian countries have the largest number of Internet users, with up to one-third of bank customers in Finland and Sweden taking advantage of E-banking Sujana Adapa (2011)

2.2.1. Internet Banking

Internet banking or online banking refers to the performing of transaction and payments over the web through the bank. The customer are allowed to do the banking out banking hours and from anywhere through the internet Awamleh et al (2003)

Whether the bank is a traditional brick and mortar institution or a web-only bank with no brick and mortar branches, online banking lets one connect to the bank through the internet and do things such as view your accounts, transfer money between accounts, view images of cancelled checks, print copies of those cheques and bills online.

Many banks makes it easier for the customer to manage their account by allowing one to set up e-mail alerts to be notified when checks clear or when balance slips below a certain level.

The benefits of E-banking are known and unanimous, though there are some reservations mainly in terms of security of the system. However, this study is not aimed at analyzing the rationales or benefits of internet banking but, as spelled out previously, rather to investigate the possible challenges that have been encountered due to the adoption of E-banking services in Ethiopia.

Below we discuss the theoretical underpinnings and provide some empirical evidences on these possible challenges. It should be noted that empirical evidences has been indeed scarce in the literature until now.

2.2.2. Security risk

Security has been widely recognized as one of the obstacle to the adoption of electronic banking and it is considered an important aspect in the debate over challenges facing internet banking (feinman et al., 1999). The performance evaluation of e-banking website requires a model that enables us to address the various imperatives factors and criteria related to the quality and performance of e-banking websites.

Daniel (1997) argues that, due to the relative newness of this rapidly growing industry, banks as well as consumers had serious concerns about the security of Internet access to client accounts, which was the biggest challenge. The advances in Internet security and the advent of relevant protocols such as OFX, SET, etc. has put banks in perspective again as financial intermediaries and facilitators of complete commercial transactions via electronic networks and especially via the Internet Stamoulis, (2000).

Several studies including Schultz et al. (2001) suggest that security measures that are inconvenient for users may weaken E-banking prospect, for example because of lack of user acceptance or outright resistance. Dourish and Redmiles (2002) propose a distinction between theoretical and effective security. Theoretical security concerns the level of security that is technically possible; whereas effective security concerns the level of security achieved in practice, and is typically lower than theoretical security. Several studies including Jih et al. (2005) indicate that user adoption of E-banking is affected by perceived security. This supports a view of security as crucial to the overall usability of E-banking systems. E-banking increases convenience, but as Schaechter points out, it also opens a bank to security issues. For example, a criminal might hack into the bank's server in order to acquire bank account data, or a software glitch might cause the bank to unwittingly distribute personal data to the wrong person. To make matters worse, technology is not static. Banks that use Internet banking have to constantly update their software and hardware to make sure that compatibility issues and increased knowledge of security systems do not increase their security risks. However there have been plenty of cases in which web surfers were accidentally exposed to the financial details of online bankers. Internet security had a setback

when bank managers admitted a serious flaw in the system of the latest online banking operation. This flaw allowed customers to access account detail of other clients (Morgan Stanley, 2004)

In common with many electronic surveys that point to information security being the number one concern for both business and consumers (Enst& young, 1999), this uptake is being challenged by concern of users and potential users towards the security and privacy of internet banking transaction as well as confidentiality regarding the processing of personal information (Hutchinson & warren, 2001). Consumers associate security risk with the loss of bank account or credit account numbers, passwords, etc., which can result to loss of money. Customers tend to purchase only if they perceive that credit card and other sensitive information is safe. Previous research has shown that perceived security risk is an important predictor of internet banking adoption (Daniel, 1999; Lee et al., 2005).

Security has to do with the possibility that consumers‟ personal information will be disclosed either inside or outside the company, Gerrard and Cunninggham (2003) found that consumer worry that the bank may share customers with other companies in the banking group and thus use the information to try to sell additional products. Perceived fears of the divulgence of personal information and feelings of insecurity have a negative influence on internet banking services use (Howcroft et al., 2002).

However, with the advance in technology, many banks have taken the adequate measure to ward off any problem related to the security of internet banking which can be expensive over time. Customers can also follow some simple precautionary measures, like not disclosing the password and pin number to anyone, changing the password at regular intervals and installing antivirus software to ensure tight security measures.

2.2.3. Technological risks

Technology risks which are the risks that are associated with systems failures, processing errors, software defects, operating mistakes, hardware breakdowns, capacity inadequacies, network vulnerabilities, control weaknesses, security shortcomings, malicious attacks, hacking incidents, fraudulent actions, and inadequate recovery capabilities (Supervisory and Regulatory Guidelines, 2006).

Information technology developments affect the risk profile of banks. Some banking risks are heightened whereas others are reduced. Operational, legal and strategic risks deserve particular attention (ECB, 1999). Price Water House Coopers (2000), states that the Internet increasingly puts investors at risk through exposure to cyber-crime, mis-selling and direct marketing of unregulated financial services (fraud). According to ECB (1999), operational risk can increase with technological developments to the extent that banks do not upgrade their systems of internal control to cope with the new operational environment. Additionally, legal risk is linked to the uncertainty surrounding the applicable laws and regulations on a number of aspects relating to technology such as the legal status of remote banking, validity and proof of transactions and the respect of customers‟ privacy. Timmers (2000) supports this view, highlighting the key features of the Internet such as 24 hour availability, almost immediate access, and the absence of physical borders. Indeed, the Internet has been one of the key drivers in promoting E-banking in the banking sector Bielski L, (2000). The opportunities for banks in the Internet arena are varied. Despite this plethora of opportunities, threats to the E-banks abound. One major threat to banks is the "Internet only" virtual banks. With US$ 2 million, one can set up a fully-functional, Internet Only bank and provide payment services on the Internet.

For availing the benefits of online banking one should have access to the internet. For this purpose, he should own a desktop, laptop and an internet connection. This reason limits the usage of online banking, as sometimes it's almost impossible to have an internet connection, to serve the purpose. One might also face problem if the internet connectivity breaks down during an ongoing transaction, or if someone eavesdrop his user name and password, while accessing it in a cyber cafe.

Sometimes, internet banking can be time consuming and tedious, as many websites take quite a long time to get started. Besides this, your internet bank account may also take considerable time to get started. You may also encounter technical difficulties and connectivity problems while conducting internet banking transaction. Of course, there is a customer care department in almost every bank to look such matters, but often you may not be able to get the necessary assistance due to the congestion in the computer and telephone network. On the other hand, in normal banking, you can simply converse with the bank official to sort out any problems. The Internet banks serve also as gateways offering identification and authorization services to a number of third party service providers. There are user-friendly opportunities for

conducting business over the Internet with telephone companies, Energy Company, tax board and other institutions.

2.2.4. Cost challenges

The cost of adoption of e-banking has been high due to either requirements which are necessary and mandatory for the bank or risks associated with adoption of the e-banking as discussed below; The first requirement is regulatory licenses which are brought about by the fact that the Internet allows services to be provided from anywhere in the world, regulators require banks to provide their services from a remote location through the Internet to be licensed. Licensing would be particularly appropriate where supervision is weak and cooperation between a virtual bank and the home supervisor is not adequate and this increases the cost of operation. Licensing is the norm, for example, in Ethiopia where banks that have adopted these services are required to adhere

Secondly, operational costs which refers to potential losses resulting from inadequate systems, management failure, faulty control, fraud and human error. Many of the recent large losses related to derivatives are the direct consequences of operational failure. Derivative trading is more prone to operational cost than cash transactions because derivatives are, by their nature, leveraged transactions. This means that a trader can make very large commitment on behalf of the bank, and generate huge exposure in to the future, using only small amount of cash. Very tight controls are an absolute necessary if the bank is to avoid huge losses IMF (2002).

Operational risk includes" fraud, for example when a trader or other employee intentionally falsifies and misrepresents the risk incurred in a transaction. Human factor risk is really a special form of operational risk. It relates to the losses that may result from human errors such as pushing the wrong button on a computer, inadvertently destroying files, or entering wrong value for the parameter applications. Regulators and supervisors must also ensure that their staffs have the relevant technological expertise to assess potential changes in risks, which may require significant investment in training and in hardware and software. (Basel Committee on Banking Supervision, 2003).

2.3. Empirical Literature Review

Related studies were conducted on the challenges that affect implementation of E-banking. But relatively not much is done in Ethiopia. Under this section some of the researches conducted around E-banking will be discussed

Gardachew (2010) conducted research on the opportunities and challenges of E-banking in Ethiopia. The aim of his study was focused on analysing 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 neighbouring 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.

A research undertaken by Ayana (2014) on factors affecting adoption of E-banking system in Ethiopian banking industry, focused on factors that affect adoption of E-banking in Ethiopian banking industry. The study statistically analyzes data obtained from survey of staffs of 4 purposely selected banks using qualitative and quantitative research approach on a research framework developed based on technology-organization-environment mode (TOE). And conclude E-banking system such as ATM, mobile banking, internet banking and others were not well adopted by Ethiopian banking industry, due to low level of ICT infrastructure and lack of legal frameworks at NBE. In addition to this the result of the study also showed that security risk and lack of trust on the use of technological adoption are other major barriers for the system. Limited technical and managerial skills available in Ethiopian banks were also mentioned as an influential factor for the choice of technology in Ethiopian banks.

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.

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 Ecommerce 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 Ccmmerce 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 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.

It is therefore necessary to carefully deal with these challenges to ensure the systems continue to operate effectively. The challenges include among others: lack of experts, legislation challenges, accuracy, convenience, and accessibility challenges by both customers and banks. Measures such as training of operators, observation of the law in relation to the adoption of these services, following regulators rules, keeping the facilities operational and ensuring customer satisfaction among others is very essential. This ensures continued adoption of E-banking services in the future.

Chapter Three
Research Design and Methodology

A research design is plan for collecting and utilizing data so that desired information can be obtained with sufficient precision. The study adopted quantitative research method and used descriptive method of data analysis to obtain the desired results of the study. In the course of analyzing the problems, primary data collection procedure was employed. In order to find answer to the research questions, closed ended questionnaire was used as a main tool. Descriptive study is concerned with determining the frequency with which something occurs or the relationship between variables (Churchill, 1991). According to cooper (1996), a descriptive study finds out who, what, where, and how of a phenomenon as it exist in situation. The aim is at finding out the challenges in adoption of electronic banking on the growth of commercial banks in Ethiopia.

Kothari (2004) explained that, research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure; it will constitutes a blue print for the collection, measurement and analysis of data. The research adopted a case study design the challenges in adoption of Electronic banking in Nib international bank S.c.

3.1. Method of data Collections

The necessary data for this study is collected from primary sources. In order to gather the data from relevant sources, primary data collection instrument is used. The survey instrument, questionnaire was developed and adopted after thorough review is made on different researchers work was done. The questionnaire was structured in closed-ended type of questions and responses to the questions were measured on a five Likert rating scale. The questionnaire was divided into two sections. Part one captured general information about the respondents while part two captured information about the technological risks, security challenges and cost challenges faced in adoption of E-banking services. Five point Likert scales that are: 1(strongly disagree), 2(Disagree), 3(Neutral), 4(Agree), 5(strongly agree) are used for the total of 24 questions to measure the responses. Questionnaires were distributed to all E-banking professional staffs of the banks in Nib international banks' which implement E-banking and customer of electronic banking product users.

Additional data were obtained by examining various documents including bank reports, local and international articles related with issues of E-banking system, research reports, books and journal articles.

3.2. Validity and Reliability

To ensure validity of the research instrument to be used in collecting data the researcher ensured that the questionnaire was submitted to the supervisor to check for validity and assess the relevance of the questions and content to the study. The challenges that are used to describe in the adoption of E-banking implementation were developed and adopted after thorough review is made on different researchers work was done.

3.3. Population and Sampling technique

. A sample is an element selected to represent the population while a sampling technique is a framework which the researcher uses to help in the selection of a sample. Sampling involves technique used in selecting items for sample (Kothari, 2004).

The target population for this study was employees of the bank as a whole and its customers of electronic banking product users which is 2500, according to this population the sample size was 100 respondents from among departments of the bank as well as customers of branches.

Forty (40) representative respondents were interviewed in of Head office and (40) Main branch staff. They consist of IT staff, other banking staff and (20) customers of E-banking facilities. These categories of respondents were interviewed at Head office and Main branch making a total sample of 100. The questionnaires were self administered to the respondents.

Purposive sampling technique was used for staff in the IT department of the banks this is because the selected respondents which is related to the subjects based on their perception of the characteristics of the study in order to got workable data from the general population and avoid one-sided and lacking in any real proof and while simple random sampling technique was employed for other respondents.

3.4. Data collection instruments

The researcher relied on primary data sources. The primary sources involved self administered questionnaires. The questionnaire was used because the researcher considered it to be more convenient as respondents could answer at their convenience (See Appendix 1).

The questionnaire was developed by the researcher based on the research questions and the literature. Closed – ended questions were used. The questionnaire began with an introductory statement, which specified the purpose of the research as purely academic. Respondents were encouraged to be objective in their responses since they were assured of confidentiality.

3.5. Methods of Data Analysis

Data from the structured self administered questionnaire was properly organized through data coding, cleaning and entering. Once the data captured from the two intended sources, then data analysis followed to make the raw data ready for interpretation and report writing. Before processing the responses, the completed questionnaire was edited for completeness and consistency. The data was then coded and analyzed with the help of a computer. MS Excel was used. Data was first analyzed according to descriptive statistics which includes percentages, frequencies and measures of central tendency.

3.6. Data finding presentation methods

After data was analyzed it was presented by the use of pictorial representations such as tables, pie charts and bar graphs.

3.7. Ethical Issues

Ethics is one of the major considerations in research. Hence the study has incorporated the following ethical considerations.

- Respondents were clearly communicated about the objective of the study before they were asked to give their answer.
- Respondents were not asked about their name, race and religion etc.
- The questionnaire was distributed after getting the consent of the banks.

CHAPTER FOUR
DATA ANALYSIS, INTERPRETATION AND REPRESENTATION

4.1 Introduction

This chapter represents the results of the data collected from the field, presented, analyzed and interpreted by the researcher to give a clear picture of the findings after the fieldwork research.

This chapter focuses on analysis of data and presentation of research findings and discussion. The study is designed to discuss the Challenges in Adoption of Electronic Banking in the case of Nib international Bank s.c. The findings are based on questionnaires, observation schedule and documentary review as used and once established in chapter three. The main objective of this study is to investigate the Challenges in Adoption of Electronic Banking in the case of Nib international Bank s.c.

The presentation of findings in this chapter based on the three research objectives that aimed to find answer to the projected research questions. The objective of this study included: to investigate the technological risks facing banks due to adoptions of e-banking, to analyze security challenges affecting e-banking, and to investigate cost challenges facing banks due to adoption of e-banking. During the administration of this study the actual sample of 100 respondents were selected. This sample included customers and staff of Nib international bank s.c. Questionnaires were prepared in English. Accordingly, the respondents gave their responses about Challenges in Adoption of Electronic Banking in the case of Nib international Bank s.c. Therefore: the data found from the respondents were analyzed and discussed in line with the research questions as follows. Therefore this chapter provides the information explaining the data, which are then presented in tables, charts, frequencies and percentages.

Generally speaking, the analysis was done in primary data sources. The primary data were analyzed using frequency distribution tables.

4.2 Presentation of Findings

Table 1: Response Rate

Categories	**Respondents**	**Percentage**
Responded	90	90
Not responded	10	10
Total	**100**	**100**

From the table.1 the researcher prepared and issued out 100 questionnaires to the respondents. However, 10 questionnaires were never responded. It is evident that 90% questionnaires have been analyzed, while 10% questionnaires were not responded.

4.2.1. Demographic data of respondents

The demographic information of the respondents in this study comprised of sex, experience, and age.

Table 2: Demographic characteristics of respondents

		Frequency	**Valid Percent**	**Cumulative Percent**
	Male	55	61.11	61.11
	Female	35	39.89	100.00
Experience	Less than 1 year	0	0	0
	1-5 years	40	44.44	44.44
	6-10 years	25	27.78	72.22
	More than 10 years	25	27.78	100.00
Age	Below 25 year	10	11.11	11.11
	25-35 year	35	38.89	50.00
	36-45 year	25	27.78	77.78
	More than 46 year	20	22.22	100.00
Total		71		

Respondents were characterized basing on their gender, experience and age. With regard to of gender, 55 respondents who covered 61.11% of the respondents were found to be males while 35(38.89%) were female. This implies that majority of respondents who participated in the study were males. The result for gender shows that the customer's attitude towards e-banking adoption is higher for males. A result that potential shows that males are more likely to adopt and use e-banking services than females. It may simply indicate that it is more convenient for male to use e-banking than females. In terms of experience 40 (44.44%) respondents have less than five year experience, 25(27.78%) respondents have experience between five and ten years, 25(27.78%) respondents have experience more than10 years. It is evident that there is no respondent with less than 1 year relation with the bank. On the other hand the age range of the respondents, 10(11.11%) are below 25 years age, 35(38.89%) between age of 25-35 years, 25(27.78) between 36-45 years and 20(22.22) of the respondents has age above 46 years.

4.2.2 Challenges of e Banking

Table 3: E-banking challenges

	frequency	**Valid Percent**	**Cumulative percent**
Strongly Agree	75	83.33	83.33
Agree	10	11.11	94.44
Normal	5	55.56	100.00
Disagree	0	0	
Strongly Disagree	0	0	
Total	**90**	**100**	

Related to the issues of e banking challenges from the above table, it is observed 75(83.33) of the respondents strongly agree, 10(11.11%) agree, 5(5.56%) neutral. More than half of the respondents strongly agreed with the stated point. On the other hand 16% of the respondents positively answer the question and adoption of e banking is challenge for banks. The challenges to the adoption of e banking include, lack of adequate financial, lack of suitable legal and regulatory framework for e-commerce and e-payment, high rates of illiteracy, 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, lack of reliable power supply is a key challenge for smoothly running e-banking in Ethiopia and telecommunications infrastructure for the new technologies resistance to changes in technology among customers and staff (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-Banking in Ethiopia.

4.2.3 Technological risks

Table 4: Extent of technological risks

	frequency	**Valid Percentage**	**Cumulative**
Strongly Agree	45	50	50
Agree	20	22.22	72.22
Normal	10	11.11	83.33
Disagree	15	16.67	100
Strongly Disagree	0	0	
Total	**90**	**100**	

From table 4.6 above, it was established technological risks do hinder adoption of e banking with 45(50%) strongly agree 20(22.22%) Agree 10(11.11%) Normal and 15(16.67%) Disagree. It implies that more than 50% of the respondents agreed that the issues raised in this study in relation with technological risks are availability of technology infrastructure for implementation of E-banking, quality of telecommunication network and technology being compatible with expectations and requirement of banks. On the other hand technological risks are also considered as possible risk a firm faces while adopting technological innovations in a bank. Information technology developments affect the risk profile of banks. Some banking risks are heightened whereas others are reduced. Operational, legal and strategic risks deserve particular attention (ECB, 1999).

4.2.4. Discussion on Technological risks related issues

Table 5: Technological risks affect the adoption of e banking

Description	Strongly agree(5)		Agree (4)		Neutral (3)		Disagree (2)		Strongly disagree (1)		Total	
	F	%	F	%	F	%	F	%	F	%	F	%
System failure	10	11.11	30	33.33	35	38.89	15	16.67	0	0	90	100
Processing error	15	16.67	15	16.67	25	27.78	30	33.33	5	5.55	90	100
Software defects	30	33.33	25	27.78	20	22.22	10	11.11	5	5.55	90	100
Operating mistake	15	16.67	20	22.22	25	27.78	20	22.22	10	11.11	90	100
Inadequate recovery capabilities	35	38.89	25	27.78	15	16.67	10	11.11	5	5.55	90	100

Note: 'F' stands for frequency and'%' stands for valid percentage value

Regarding technological risks affect the adoption of e banking it is the shown from the above results, it is evident that majority of respondents 30(33.33%) & 35(38.89%) indicated that system failure affects to Agree and Neutral respectively, 10(11.11%) said strongly agree & 15(16.67%) disagree. Majority of respondents indicated that a system failure can occur because of a hardware failure or a severe software issue, causing the system to freeze, reboot, or stop functioning altogether. If a system failure continues the bank has suffered a problem with the electronic payments system a complex technical issue within systems. The bank is running tests across its servers to try and identify the exact problem.

With processing error majority 25(27.78%) & 30(33.33%) indicated that neutral and Disagree respectively and 15(16.67%) strongly agree, 15(16.67%) agree and the remaining 5(5.55%) strongly disagree with processing error affects the adoption of e banking.

Majority of respondents indicated that software defects affect e banking adoption with 30(33.33%) which is the highest percent of respondents answered that software defect affect the adoption of e banking Strongly Agree, 25(27.78%)similarly agree, 20(22.22%) neutral, 10(11.11%) disagree on this issue and 5(5.55%) disagree about the risk related to the

software defect. As observed the highest percent of respondents aware of the bank can use risk analysis to highlight the areas of an application that would have the largest impact on business operations if they failed. Not only does risk analysis allow you to make more informed decisions about how critical the risk is, it also allows the IT department to be more effective in dealing with pressure from other parts of the business to go live with software applications **(***Sarah Saltzman, 2015)*

For the question related to the operating mistake affect the adoption of e banking 15(16.67%) strongly agree, 20(22.22%) agree, 25(27.78%) neutral, 20(22.22.7%) disagree and 10(11.11%) strongly disagree on the point. E-banking activities will increase the complexity of the institution's activities and the quantity of its transaction/operations risk, especially if the institution is offering innovative services that have not been standardized. Since customers expect e banking services to be available 24 hours a day, 7 days a week, financial institutions should ensure their e-banking infrastructures contain sufficient capacity and redundancy to ensure reliable service availability and carefully consider customer expectations and the potential impact of service disruptions on customer satisfaction and loyalty.

Regarding to the question inadequate recovery capabilities affect the adoption of e banking was indicated as in the above table that 35(38.89%) respondents strongly agree, 25(27.78%) agree, 15(16.67%) neutral, 10(11.11%) disagree and 5(5.55%) respondents strongly disagree. From this it is observed the inadequacy of security will potentially lead to financial losses, punitive measures by regulators and negative media publicity. Security was rated in some research as the most important issue of online banking services (Salam Matalqa, 2015). Generally the increase of the usage of e banking technologies to deliver banking services, payments, corporate cash management or fund transfer brings benefits to customers, while it introduces a lot of security issues and constraints. International organizations such as The Basel committee have addressed these risks through different frameworks. These organizations proposed frameworks for internal control systems issued in September 1998, sound practices for the management and supervision of operational risk issued in February 2003, Risk Management for Electronic Banking and Electronic Money activities issued in March 1998 and Risk Management Principles for Electronic Banking. These frameworks amongst others represent a good baseline to define key principles that will address the technology risks in inadequate capabilities issues in a banking environment (Modern

Technology and E-Banking Services Risks, Annex No. (192), Circular no. (105/2012)). A risk analysis approach is often used to develop a risk management plan and to adopt a model that protects administration information assets as well as mitigates the potential damage that may arise from unexpected adverse events or incidents (Aalberts and Dorofee 2002). A rapid recovery capability under this circumstance is crucial.

4.2.5 Security challenges

Table 6: Extent of security challenges

	frequency	**Valid Percent**	**Cumulative Percent**
Strongly Agree	75	83.33	83.33
Agree	10	11.11	72.22
Normal		5.56	94.44
Disagree	0	0	100
Strongly Disagree	0	0	
Total	**90**	**100**	

The study also sought to establish the extent that the security challenges affect e banking adoption.

From the study, the majority of respondents as shown by 75(83.33%) said strongly agree, 10(11.11%) agreed and the rest 5(5.56%) neutral. Majority of the respondents agreed there is great extent of Security challenges, security breaches essentially fall to three categories; Breaches with serious criminal intent (fraud, theft of commercially Sensitive or financial information), breaches by casual hackers' (defacement of web sites or 'denial of service'-causing web sites to crash), and flaws in systems design and/or set up leading to security breaches (genuine users seeing/being able to transact on other users 'accounts). All of these threats have potentially serious financial, legal and reputational implications. Therefore it's clear that security challenges a critical issue on e banking adoption.

4.2.6. **To what extent security challenges affect the adoption of e banking**

Table 7: Individual Security challenges

Description	Strongly agree(5)		Agree (4)		Neutral (3)		Disagree (2)		Strongly disagree (1)		Total	
	F	%	F	%	F	%	F	%	F	%	F	%
Control weakness affect the adoption of e banking	50	55.56	25	27.78	15	16.67	0	0	0	0	90	100
Security Shortcomings affect the adoption of e banking	60	66.67	15	16.67	10	11.11	5	5.56	0	0	90	100
Malicious attacks affect the adoption of e banking	75	83.33	10	11.11	5	5.56	0	0	0	0	90	100
Hacking incidents affect the adoption of e banking	80	88.89	10	11.11	0	0	0	0	0	0	90	100
Fraudulent action affect the adoption of e banking	65	72.22	15	16.67	0	0	5	5.56	5	5.56	90	100

Note: 'F' stands for frequency and '%' stands for valid percentage value

Regarding to control weakness of security challenges majority of the respondents addresses the issues it affect e banking adoption to 50(55.56%) Strongly Agree, 25(27.78%) respondents agree 15 (16.67%) neutral. Security controls are technical or administrative safeguards or counter measures to avoid, counteract or minimize loss or unavailability due to threats acting on their matching vulnerability, i.e., security risk. This implies that the extent of control weakness affect security challenges in adoption of e banking according to the respondents.

For the other question related to the Security Shortcomings of security challenge 60(67.67%) respondents strongly agree security short comings affect adoption of e banking, 15(16.67%) of the respondents agree on security challenge,10(11.11%) said neutral and the rest 5(5.56%) disagree. Regarding to the question about malicious attacks 75(83.33%) respondent strongly agree 10(11.11%) and the remaining 5(5.56%) of respondents answered neutral on the point.

For the question related to hacking incidents majority of the respondents which is 80(88.89%) and 10(11.11%) of respondents said strongly agree and agree hacking incidents in security challenge greatly affect in adoption of e banking respectively.

Regarding to the other question fraudulent action related to security challenges 65(72.22%) respondents strongly agrees 15(16.67%) respondents agree 5(5.56%) disagree and 5(5.56%) respondents also strongly disagree on this point. From the above the majority of the respondants indicated that the main risks associated with e-Banking are strategic, operational, legal and reputational. Security is considered the central operational risk of e-Banking. According to Sokolov (2007) some of the specific problems cut across risk categories as control weakness ,security Shortcomings, malicious attacks ,hacking incidents and fraudulent action which is breach of security allowing unauthorised access to customer information can be classified as an operational risk, but such an event also exposes the bank to legal risk and reputational risk Customer education on security risks, the precautions and the knowledgeable use of technologies can play also an important role for consumer protection and for limiting reputational risk. The technology-related frauds in the banking sector are adding huge to the losses (Singh, 2013). A study by (Fitzergerald, 2004) concluded that security is one of the major concern area for which people do not adopt e-banking. It is highly essential to protect customers‟ data and provide safe transaction s preventing frauds (Enos, 2001; Turban et al., 2000; Regan & Macaluso, 2000).Generally all the security challenges affect the adoption of e banking.

4.2.7 Solution on security challenges

Table 8: placing adequately both application and general control mechanism

	frequency	**Valid Percent**	**Cumulative percent**
Strongly Agree	75	83.33	83.33
Agree	15	16.67	100
Normal	0	0	
Disagree	0	0	
Strongly Disagree	0	0	
Total	**90**	**100**	

From the above analysis majority 75(83.33%) of the respondents agreed with statement that placing adequately both application and general control mechanism, training and educating e bank users help in reduction of security challenges. Due to the increase in sophistication and globalization of cybercrime and exposure to fraud, the majority of respondents states that Nib international bank s.c would like to offer some education on how to combat users of electronic banking credentials or bank account(s) from being compromised, on how the users protect their password security. A password represents a shared secret, known only by the end-user and the system they are authenticating against. The system cannot differentiate the real user from another user who also knows the password. For this reason, it is essential that users keep their password private and immediately report any suspected security violations.

Thus banks should take that measure to reduce the impact of security challenges on adoption of e banking.

4.2.8 Cost challenges

Table 9: Extent of cost challenges

	Frequency	**Percentage**	**Cumulative percent**
Strongly Agree	35	38.89	38.89
Agree	30	33.33	72.22
Normal	15	16.67	88.89
Disagree	10	11.11	100.00
Strongly Disagree	0	0	
Total	**90**	**100**	

The respondents were also requested to indicate the extent that cost challenges affect adoption of e banking services. According to the findings the majority of respondents strongly agreed that 35(38.89%) respondents strongly agree, 30(33.33%) of the respondents agree, 15(16.67%) said neutral and the rest 10(11.11%) respondents disagree. According to the above facts the bank development modernization is the key to survival in today's E banking business and is exemplified by introducing new technologies and methods to improve the development processes as result of this adoption of e banking in terms of cost is very high. Implementing web technology as a business channel requires organizational ability and resources to utilize web technology more efficiently, such as hardware and software. So can the shortage of knowledgeable personnel, even if the technology is there. The lack of experience and knowledge in using online business can be a challenge and slow down adoption. Customer knowledge barrier may come from a lack of diffusion capability, and the lack of investment in training for internal employees. (Chircu and Kauffman, 2000).

4.2.9 Individual cost challenges

Table 10: Individual cost challenges

Description	Strongly agree(5)		Agree (4)		Neutral (3)		Disagree (2)		Strongly disagree (1)		Total	
	F	%	F	%	F	%	F	%	F	%	F	%
Cost of legal requirements	30	33.33	25	27.78	10	11.11	15	16.67	10	11.11	90	100
Implementation cost	65	72.22	20	22.22	5	5.56	0	0	0	0	90	100

Note: 'F' stands for frequency and'%' stands for valid percentage value

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. Operating a financial institution always carries certain legal risks, especially when e-banking services are applied. The key issues that banks must take notice consist of customer protection laws and confidentiality of information. Certain areas of laws concerning e-banking services are unclear as the legal system is not yet developed enough to comply with the implementation of e-banking (Schaechter 2002, 18). It

is observed that, cost of legal requirements is not that much issue for adoption of e banking according to the respondents answer in the way.

Regarding to the question to implementation cost of e banking the majority of the respondents said the implementation cost for e banking innovation has many components – initial investment costs, operational costs, and utilisation costs. Rothwell and Gardiner (1984:88) observe that there are two fundamental sets of factors affecting user needs, namely price factors and non-price factors. To this extent Gupta (1988:353) identifies price as a major factor in brand switching. If consumers are to use new technologies, the technologies must be reasonably priced relative to alternatives. Otherwise, the acceptance of the new technology may not be viable from the stand point of the consumer.

Banks must make sure that the systems are well integrated and more convenient to the customer. Consumers do not want to navigate from website to website to access services, web services have to be convenient, easier to use, and less expensive than the alternative traditional banking to win the loyalty of customers (Cronin, 1998 cited in Shah et al, 2009). The interactive nature of e- banking brings more understanding of the customer.

According to Franco and Klein (1999) the data gathered about customer-bank interaction can be analysed using mining techniques and this marketing decision support capability will ultimately determine the success of the banks in implementing electronic banking services. Orr (2004) sees provision of a pleasant experience on the delivery channels as one of the key requirements in adopting successful e-banking services. Therefore banks face cost of implementation as the biggest challenge in adoption of e banking.

4.2.10 Solutions of cost challenges

Table 11: Legal requirements and usage of cost effective strategies

Description	**frequency**	**Valid Percentage**	**Cumulative**
Strongly Agree	90	100	100.00
Agree	0	0	
Normal	0	0	
Disagree	0	0	
Strongly Disagree	0	0	
Total	**90**	**100**	

All the respondents agreed with the statement that compliance with the legal requirements and usage of cost effective strategies in implementation of e banking services reduces cost

challenges. Hence the bank should take that measure to reduce cost challenges in e banking adoption because the 21st century will bring about an all-embracing convergence of computing, communications, information and knowledge. This will radically change the way we live, work, and think. The growth of high speed networks, coupled with the falling cost of computing power, is making possible applications undreamed of in the past. Voice, data, images, and video may now be transferred around the world in micro-seconds. This explosion of technology is changing the banking industry from paper and branch banks to' digitized and networked banking services. The e banking changes the focus of the branch from being a high cost transaction centre to a provider of a wide range of services like Tele banking, customer service kiosks, ATMs, and remote electronic banking.

4.2.11 Solutions on e-banking challenges

Table 12: Constantly upgrading e banking technology

Description	**frequency**	**Valid Percentage**	**Cumulative**
Strongly Agree	85	94.44	94.44
Agree	5	5.56	100.00
Normal	0	0	
Disagree	0	0	
Strongly Disagree	0	0	
Total	**90**	**100**	

From the above findings majority of the respondents 85(94.44%) strongly agreed with the statement that constantly upgrading e banking technology will help to overcome technological risks, with the rest indicating Agree. Thus upgrading technology can reduce the technological challenges from general overview of electronic banking technological risk like hardware and software failure may come from power loss or data corruption, malicious software designed to disrupt computer operation, viruses may damage computer code that can copy itself and spread from one computer to another, often disrupting computer operations and human error that results incorrect data processing, careless data disposal, or accidental opening of infected email attachments. In order to overcome technological risk constantly update the banks software frequently to ensure Nib have the latest security patches. This includes the computer's operating system and other installed software's, besides

maintain active and up-to-date antivirus protection provided by a reputable vendor. And Schedule regular scans of your computer in addition to real-time scanning and finally by using firewalls on your local network to add another layer of protection for all the devices that connect through the firewall.

CHAPTER FIVE
CONCLUSIONS AND RECOMMEDATIONS

5.1 Introduction

The study intended to examine the main challenges in the adoption of E-banking system in Nib international banks'; through adopting quantitative and qualitative research approach. On the other hand, the purpose of this chapter is to delineate the summary of findings followed by conclusion and presents some recommendations. Specifically this work analyzed the real challenges technological, security and cost challenges hindering the growth or adoption of e - banking services by NIB.

5.2. Summary of Findings

The technological risks used in this study were availability of information technology infrastructure, quality of telecommunication network and whether the available technology being compatible with expectation of the Nib international bank. In addition to these technological risks which include system failure, processing errors, software defects, operating mistakes and inadequate recovery capabilities posed challenge to adoption and growth of e banking services. From the study it is evident that majority of respondents indicated that system failure is highly challenging to perform e banking adoption. If a system failure continues the bank has suffered a problem with the electronic payments system a complex technical issue within systems

With processing error majority indicated that it affects to Neutral and Disagree. Majority of respondents indicated that software defects affects e banking adoption with Strongly Agree. Inadequate recovery was indicated as the biggest risk with majority indicating its effect as to strongly agree and agree respectively. It also established that new technological limitation affect e banking to a Strongly Agree.

In the case of security risk related issues it is widely recognized as one of the obstacle to in adoption of electronic banking. These findings collate with those by Hutchinson and warren, (2001) who posited that the uptake is being challenged by concerns of users and potential users towards the security and privacy of internet banking transactions as well as confidentiality regarding the processing of personal information. Previous research has

shown that perceived security risk is an important predictor of internet banking adoption (Daniel, 1999).

Finally this study finds out on the issue related to cost challenge The study indicated that, majority of respondents agreed that cost of implementation is the biggest cost challenge with Strongly Agree while cost on legal requirements does not have high impact on e banking adoption as compared to cost of implementation.

5.3 Conclusion

From the research findings, the literature search and the results of the analysis of the responses to this study, the following conclusions were reached, that Nib international bank faces many challenges in e- banking adoption thus hindering growth of banks in providing of e services to their customers. Some of these challenges were security risk related issues where the banks feared losing their customers as triggered by hackers and internet and software securities.

New technological limitations where the bank fear adopting e banking services due to system incompatibility, software defects and operating mistakes.

The study also concludes that e banking challenges that affect e banking in commercial banks include security challenges such as control weakness, security shortcomings, malicious attacks, hacking incidents and fraudulent actions, and cost challenges such as cost of legal requirements and cost of implementations.

5.4 Recommendations

This study therefore recommends that's since technology risk posed great challenges on adoption of e banking, the bank should embark on simplifying the technological complexity involved in e banking. The banks should adopt user friendly systems in order to overcome the challenges. These systems should require simple procedures of operation and with few instructions. In addition the system should have recovery capabilities and control measure.

The bank should also embark on ensuring security of the users and educating and training electronic bank users on how to use and secure their transactions from unauthorized people. This could be through vigorous campaigns and advocacy through seminars and workshop. The bank should also use pamphlets in banking all and billboards to enhance customer awareness. Use of both application and general control will also reduce security challenges.

5.4.1 Areas of further research

Further research can be carried out on the effects of the e- banking challenges on the profitability of the commercial banks in Ethiopia.

Analysis can be made from different groups and possible people working in different sectors to capture the micro details of E-banking services.

5.5 Research limitation

Some respondents were not willing to disclose full information with the aim of protecting their institution and for security purpose on areas perceived to be confidential in nature.

The time available for the research was quite short and therefore the research confined to a very small sample. Due to much work the respondents did not have enough time with the researcher hence less information was obtained.

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APPENDIX A

QUESTIONNAIRE

Saint Mary's University

School of Graduate studies

Department of Business Administration

Dear respondent,

I am Mehireteab Gezahegn, a final year student pursuing master's degree in Business Administration at Saint Mary's University. Currently, The objective of this questionnaire is to carrying out a research project entitled, **Challenges in Adoption of Electronic Banking in the case of Nib international Bank s.c** for my graduate thesis. The research is for academic purposes only and will form part of the requirements that will enable me to complete my MBA program.

Tick appropriately in each part. Please answer all questions carefully

Note: all responses are handled anonymously

PART 1: PERSONAL INFORMATION

1. Gender?

Female □ Male □

2. What is your age Category?

Below 25 years □ 25-35yrs □

35-45 years □ 46 and above □

3. For how long have you served in this bank?

Less than one year □ 1-5 years □

6-10 years □ more than 10 years□

PART 2: THE CHALLENGES OF E BANKING.

Note: Please indicate your answer using the following 5-points scale where;

5= Strongly Agree (SA)

4= Agree (A)

3= Normal (N)

2= Disagree (D)

1= Strongly Disagree (SD)

a) Banks do experience challenges due to adoption of e-banking services" what is your level of agreement with the statement?

SA(5)	A (4)	N(3)	D(2)	SD(1)

PART 2(A): TECHNOLOGICAL RISKS

a) To what extent does technological risk affect e banking adoption?

SA(5)	A (4)	N(3)	D(2)	SD(1)

b) The following technological risks affect the adoption of e banking?

	SA(5)	A (4)	N(3)	D(2)	SD(1)
System failure					
Processing error					
Software defects					
Operating mistakes					
Inadequate recovery capabilities					

C) Constantly upgrading e banking technology helps to overcome technological risks? What is you level of agreement with this statement?

SA(5)	A (4)	N(3)	D(2)	SD(1)

PART 2 (B): SECURITY CHALLENGES

a) To what extent does security challenge risk affect e banking adoption?

SA(5)	A (4)	N(3)	D(2)	SD(1)

b) In your opinion to what extent, do the following security challenges affect the adoption of e banking?

	SA(5)	A (4)	N(3)	D(2)	SD(1)
control weakness affect the adoption of e banking					
Security shortcomings affect the adoption of e banking					
Malicious attacks affect the adoption of e banking					
Hacking incidents affect the adoption of e banking					
Fraudulent actions affect the adoption of e banking					

c) Placing adequately both application and general controls mechanisms, Educating and training e bank users" helps to reduce security challenges" what is your level of agreement with this statement**?**

SA(5)	A (4)	N(3)	D(2)	SD(1)

PART 2 (C): **COST CHALLENGES**

a) To what extent do the cost challenges affect e banking adoption?

SA(5)	A (4)	N(3)	D(2)	SD(1)

b) In your opinion to what extent, do the following cost challenges affect the adoption of e banking?

	SA(5)	A(4)	N(3)	D(2)	SD(1)
Cost challenges associated with legal requirements (non-conformance with laws, rules, regulations, or prescribed practices)					
Cost challenges associated with high implementation cost of both infrastructure and technology installation.					

c) Complying with the legal requirements and use of cost effective strategies in implementation of the e-banking helps in reduction of cost challenges" what is your level of agreement with this statement?

SA(5)	A (4)	N(3)	D(2)	SD(1)

Appendix B: Research project work plan

ACTIVITY	DATE
Researching of topic	May 12th to 15st 2013
Approval of topic	May 20th 2013
Development of proposal	Dec 23st to Dec 25th 2015
Refining proposal, literature review and developing data collection instrument	Dec 27st 2015 to Jan 31th 2016
Data Collection	Feb15th to Mar13st 2016
Writing analysis and interpretation of results, conclusion and recommendation	Mar 14th to Apr 10th 2016
Submitting 1st draft to Advisor and improving it based on feedback	April 11 8th to 24th 2016
Writing final version of the research report	April 25 May 5, 2016
Submitting final research paper signed by the Advisor to the respective school/Institution (3 hard copies and a soft copy in pdf format on CD)	May 6 -8, 2016
Post defence schedule	May 9 -12, 2016
Thesis defence schedule	May 22 – June 22, 2016
Submiting final version of the paper (soft copy in pdf format on CD and one bound hard copy to the respective school/Institute)	10 days after the defence date

Appendix C: Research Budget

Below is an estimated budget of what the researcher spent from the day the research commenced to the final report presentation.

Expenses	**Cost(ETB)**
Stationary	800
Travelling	1,000
Internet	500
Notebook	50
Printing	200
Photocopy services	100
Miscellaneous	1000
TOTAL	**3,650**