

**ST. MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES**



**ASSESSING PRACTICE AND CHALLENGES OF ELECTRONIC
BANKING PROJECT EXECUTION; CASE STUDY OF POINT OF
SALE (POS) DEPLOYMENT PROCESS BY COMMERCIAL BANK OF
ETHIOPIA (CBE)**

**A THESIS SUBMITTED TO ST. MARY'S UNIVERSITY, SCHOOL OF
GRADUATE STUDIES IN PARTIAL FULFILLMENT OF THE
REQUIREMENT FOR THE DEGREE OF MASTERS ON PROJECT
MANAGEMENT**

BY LIDIYA AMANUEL

**JANUARY, 2018
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DECLARATION

I, hereby declare that this research project is my original work and has not been submitted to any other college, or university or other institution of higher learning.

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ENDORSEMENT

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

Temesgen Belayneh (PhD)

Advisor

St. Mary's University Collage, Addis Ababa

Signature

Date: _____

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Acronyms and Abbreviations

ADSL	Asymmetric digital subscriber line
ATM	Automated Teller Machine
BSD	Banking Supervision Directorate
CBE	Commercial bank of Ethiopia
EFT	Electronic Funds Transfer
E-PAYMENT	Electronic Payment
GPRS	General Packet Radio Service
ICT	Information Communication Technology
IDT	Innovations Diffusion Theory
NBE	National Bank of Ethiopia
POS	Point of Sale
SPSS	Statistical Package for Social Sciences
TAM	Technology Acceptance Model
TAM	Technology Acceptance Model
TPB	Theory of planned Behavior
TRA	Theory of Reasoned Action
WAP	Wireless Application Protocol

Abstract

The banking industry in Ethiopia is in its early developing stage and there is a higher need to make the banking system modernize by employing different kinds of advanced technology such as Point of sale (POS) terminal. The main objective of this study is to assess the practice and challenges of the bank implementation of projects in electronic banking specifically in POS deployment process. To achieve the research objective the researcher used total population of CBE staff which are under Addis Ababa four district offices. Descriptive research design was employed in which primary & secondary data was utilized where the primary information was collected through questionnaires and semi-structured interview guides. The data was analyzed and interpreted using quantitative and qualitative methods by using frequencies, percentages and tabular descriptions. The finding of this study reveals that the most challenging factor to the implementation of POS terminal is network failure. Organizational factors such as lack of employees' skill gap in regards to POS terminal, attitude of tellers, low support and follow up, lack of integration between departments, late procurement of materials are considered as problem for implementation of POS terminal system. An effort at improving the connectivity of the network and security of transactions is recommended in order to efficiently implement POS terminal payment system. Moreover, the study recommended the bank to raise public awareness on the use of payment cards for transactions in POS terminals, should improve the internal communication coordination, should facilitate proper and sustainable trainings for its employees to implement POS terminal payment system proficiently.

Keywords: *Electronic payment, Point of Sale Terminal, Implementation, Challenges, CBE*

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In today's competitive market every organization is forced to adopt new technology that will help to improve its operational activities and achieve its goals. The banking industry in Ethiopia is in its early developing stage and there is a higher need to make the banking system modernize by employing different kinds of advanced technology.

Modern trends indicate that electronic payment systems have become a significant element in all trade and commerce activities globally. The scope of electronic payments extends from under one dollar to Multi-Million dollar transactions. Despite the benefits that electronic payment systems has brought to other economies such as the western developed countries, economies in Africa, which are still in the early stages of applying electronic payment systems are yet to experience its maximum economic and operational impact. (Sumanjeet, 2009)

On the opening of a workshop on Digital Financial Services (DFS), which was held at the Africa Union Hall, on December 09,2014, Bank Supervision Director of the National bank of Ethiopia disclosed that, all citizens can be empowered to improve their lives if they have access to the financial sector through Digital Financing Services, the director further marked that nowadays, technology has significantly changed the landscape for providing financial services. When we come to our financial sector, it is in its infancy in terms of providing technology-based products and services to its consumers. Technology contributes towards efficient financial system which in turn is among the factors facilitating inflow of foreign direct investment. (Birritu, 2015)

Given the low access points of different e-banking channels like ATMs, POS and other e-banking service; the options to transfer money and access bank services without entering in to the branch is limited. Therefore, banks need to develop their ability to give alternative channel of service delivery with lots of benefits for both the banks and their customers. Hence, realizing the importance of adopting technology in providing banking services to potential customers is very important.

Recognizing superior value of rendering advanced technological service to customers, this research aims to understand the main factors that affect the proper implementation of POS deployment process of the bank. Although there are a lot of other variables other than implementation of the POS deployment which can influence the outcome of projects this

research focused on the activities which have direct influence on the outcome of expected deliverables, particularly on deployment and activation implementation of POS terminals in CBE. Accordingly, the study prioritized internal and external factors mainly perceived usefulness, perceived ease of use attitude towards use of POS terminals and Infrastructures as external factors. Organizational factors viewed the variables of Operational Factor and Payment mode factors as core indicators to reveal POS terminal project implementation and challenges of the bank.

1.2 Background of the Company

Commercial Bank of Ethiopia was established in August 1942 as a state bank of Ethiopia by proclamation with the aim of providing commercial banking service to the public. But a year later, in addition to its commercial banking functions, the bank was entrusted with three basic duties of a central bank i.e. controlling the issuance of currency, holding the foreign reserves of the country and acting as fiscal agent of the government. Since its creation up to 1963 GC CBE combined these official and private functions acting at the same time as a Central Bank of Issue and the only important deposit Bank operating in the country. CBE was incorporated as a share company in December 1963 GC, to take over the commercial banking activities of the former state bank of Ethiopia and carry on all types of banking business and operations. It's the commercial successor of the former state bank of Ethiopia to whom all the branch network and established business of its predecessor were transferred in 1963 GC

Facts and Figures

Facts about CBE

- The first bank in Ethiopia to introduce ATM service for local users.
- It has strong correspondent relationship with more than 50 renowned foreign banks like Commerz Bank A.G., Royal Bank of Canada, City Bank, HSBC Bank, etc.
- CBE has more than 6985 POS.
- CBE has a SWIFT bilateral arrangement with more than 700 others banks across the world.
- Pioneer to introduce Western Union Money Transfer Services in Ethiopia early 1990s and currently working with other 20 money transfer agents like Money Gram, Atlantic International (Bole), Xpress Money, etc.
- CBE has opened four branches in South Sudan and has been in the business since June 2009.

- CBE has reliable and long-standing relationships with many internationally acclaimed banks throughout the world.

1.3 Statement of the Problem

Electronic Banking has been widely used in developed countries and is rapidly expanding in developing countries. In Ethiopia, cash is still the most dominant medium of exchange, and electronic payment systems are at an early stage. In the face of rapid expansion of electronic payment systems throughout the developed and the developing world, Ethiopia's financial sector cannot remain an exception in expanding the use of the system. (Gardachew, 2010)

According to the newly revised E- payment procedure of the bank, electronic payment is spreading rapidly as it leads to much lower costs and greater competition in the financial services. The adoption and growth of E- payment facilities is becoming imperative towards creating a cashless society. (E- Payment procedure CBE, 2016). One of CBE vision in 2025 is to create a cashless society, in order to reach its vision the bank engaged in electronic banking aggressively and started deploying POS to different merchants since 2012 to present time. Even though the numbers of merchants who are using the service are increasing it's not going as planned.

According to the bank Performance assessment of POS Management report (2016). The bank adopted different ways to deploy POS to different customers by recruiting potential merchants, deploying & follow up of POS through the bank different departments, such as E- payment, district marketing officers, and branches marketing officers until the POS deployment process is outsourced by the bank. The bank has been deploying POS terminals at different merchant sites such as hotels, supermarkets, drugstores etc. since 2012. According to the annual plan of the bank, in 2014/2015 fiscal year, the bank planned to deploy 4000 POS machines at different merchants' outlets. However, according to the report of the first three quarters (nine months) of 2014/15, the bank managed to deploy only 1162 POS machines (38.7% of the target or 29.1% of the annual plan) (CBE Informer, May 2015).

On the contract signed between the bank and POS agent, it was stated that the agent would be in charge to deploy and activate 6000 POS as well as the activation of existing POS terminals deployed by the bank. Yet, during the project year and including the six months extension of the project, the agent managed to deploy only 3276 POS machines (54.6% of the project's plan). (Mesfin, 2017)

Implementation of POS is considered as one of the core income streams for CBE and service advantage to compete in the banking industry in the nation. Nonetheless, insufficient attention has been given to measure success and reliability of the project up to now. Since the implementation of POS terminals as a payment system initiated by CBE about six years ago, there has not been any due diligence work in this area.

Due to this reason the bank POS terminal implementation practice shows that there are existing challenges that affect the process of deployment in the Commercial bank of Ethiopia. Furthermore, while there are studies on electronic banking adaptation such as ATM, mobile banking, etc. there has been inadequate empirical literature on POS terminals especially in the practice and challenges of implementation.

This concern demands the study to provide information on the bank practice and challenges to the implementation of POS terminals and creates an opportunity to obtain feedback from the major stakeholders regarding the challenges they face.

Therefore, to be able respond to both internal and external factors on the practice and challenges of POS deployment process of the bank it is necessary to investigate, identify, and understand factors that influence the implementation of POS and their effect to meet the desired deliverables by identifying practice and possible challenges. Therefore, the focus of this case study will be to establish what factors significantly affect practice of the implementation or execution of CBE project related with POS recruitment, deployment and activation by gathering data from key stakeholders who involve in the process.

1.4 Research Questions

In order to understand and analyze the above problems the researcher developed these questions.

1. What are the internal factors that affect POS deployment practice of CBE?
2. What is the capacity of the bank in POS deployment implementation?
3. What are the external challenges faced in performing POS deployment process?

1.5 Research Objectives

1.5.1 General Objective

The general objective of the study is to assess the practice and challenges of the bank implementation of projects in the POS deployment process.

1.5.2 Specific Objectives

- To examine internal factors that affect POS deployment practice of CBE.
- To assess the capacity of CBE in implementing the POS activities.
- To identify the external challenges faced in performing POS deployment process.

1.6 Significance of the Study

This study intends to make contribution through the findings; which is useful source of information for banks to review their areas which need improvements and enhance the way of project implementation system. Second, the conclusions and recommendations of this study will provide necessary suggestions that will help the bank to improve its project implementation technique more effectively. Third, the study findings is useful in guiding academicians and other readers/researchers for further and future referencing as starting point to carry out similar research on the topic and add to their existing knowledge.

1.7 Scope of the Study

To study all the practice and challenges of implementing various Electronic-Payment Projects in CBE, it would require extensive research, much more time, detail information, and energy. Therefore, this study is limited only to the following:

1. The study is limited to the Challenges and opportunities of implementing various Electronic-Payment Projects in Commercial Bank of Ethiopia, specifically that of Point of Sale (POS) Terminals.
2. This study only use four district office located under Addis Ababa city who are directly involved in POS terminal implementation process.

1.8 Definition of Terms

- **Point of Sale Terminal (POS):-** is electronic device used for authorizing and processing bank card transactions at point of sale.

- **Transaction:-** act between cardholder and merchant or cardholder and financial institutions which result in the sale of goods/services and cash withdrawal.
- **Settlement:** - is a term used to represent what happens after the sale to settle the account balances between all parties
- **Merchant:** - an entity that contracts with an acquirer to originate transactions and accepts cards for payment.
- **Authorization:-** the consent given by a participant (or a third party acting on behalf of that participant) in order to transfer funds or securities.
- **Attitude:** - refers to the degree of evaluative affect that an individual associates with using the target system in his or her job
- **Perceived usefulness:** - is defined as the degree to which an individual believes that using a particular system would enhance his or her job performance.
- **Perceived ease of use:** - is defined as the degree to which an individual believes that using a particular system would be free of physical and mental effort.
- **A cashless society:** - is a gradual movement of the payment system of an economy from the use of physical cash to a systemic adoption of other non- physical cash mode of payment in settlements of all types of transaction both in the public and private sectors of an economy.
- **Acquirer:-** financial institution that contract with merchants to accept payment cards for the payment of goods and services
- **Issuer:** - financial institution and member of international payment system that hold contractual agreement(s) with, and issue cards, to card holder.

1.9 Limitation of the Study

The main limitation of the study is inadequate practical and empirical analysis on the practice and challenges of implementing POS terminals in Ethiopian banking industry context. Cost and time limitations to further investigate the problems in all CBE district, branches, merchants of the bank, individual cardholders, and different sectors. Last but not least the study is limited to only CBE POS deployment practice so it can't be used to generalize for all the electronic banking service of the bank and other banks that operate in Ethiopia.

1.10 Organization of the Study

The first chapter of the paper discussed the introduction; statement of the problem, research question, research objective, significance of the study. Second chapter will be literature review section. Then the third chapter conveys research design & methodology and the fourth chapter is the presentation, analysis and interpretation of data. On the fifth chapter, conclusions and recommendations will be forwarded based on the study findings.

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Literature

Secondary data from academic books by well recognized authors, published articles, international organizations reports, training manuals & report documents, different websites and unpublished research reports were reviewed to build literature foundation.

2.1.1 Definition of E-banking

E-banking has a variety of definitions all refer to the same meaning, the following section show some of these definitions. E-banking is a form of banking service where funds are transferred through an exchange of electronic signal between financial institutions, rather than exchange of cash, checks, or other negotiable instruments (Kamrul, 2009). E-banking, also known as electronic funds transfer (EFT), is simply the use of electronic means to transfer funds directly from one account to another, rather than by check or cash (Malak, 2007).

2.1.1.1 Types of E-banking

E-banking can defined as a variety of platforms such as internet banking or (online banking), TV-based banking, mobile phone banking, and PC (personal computer) banking (or offline banking) whereby customers access these services using an intelligent electronic device, like PC, personal digital assistant (PDA), automated teller machine (ATM), point of sale (POS), kiosk, or 6 touch tone telephone (Alagheband, 2006). According to Alghaeband; there are different types of E-banking and some of the basic are discussed as follow:

1. Automated Teller Machines (ATM) - It is an electronic terminal which gives consumers the opportunity to get banking service at almost any time. To withdraw cash, make deposits or transfer funds between accounts, a consumer needs an ATM card and a personal identification number (PIN).

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

3. Internet / extranet banking- It is an electronic home banking system using web technology in which Bank customers are able to conduct their business transactions with the bank through personal computers.

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

2.1.2 Electronic Payments

2.1.2.1 Overview of Electronic Payments

The development of inexpensive computers and the spread of the Internet now make it cheap to pay bills electronically. In the past, you had to pay your bills by mailing a check, but now banks provide a web site in which you just log on, make a few clicks, and thereby transmit your payment electronically. Not only do you save the cost of the stamp, but paying bills becomes (almost) a pleasure, requiring little effort. Electronic payment systems provided by banks now even spare you the step of logging on to pay the bill. Instead, recurring bills can be automatically deducted from your bank account. Electronic payments technology can not only substitute for checks, but can substitute for cash, as well, in the form of electronic money (or e-money), money that exists only in electronic form. The first form of e-money was the debit card. Debit cards, which look like credit cards, enable consumers to purchase goods and services by electronically transferring funds directly from their bank accounts to a merchant's account. Debit cards are used in many of the same places that accept credit cards and are now often becoming faster to use than cash. At most supermarkets, for example, you can swipe your debit card through the card reader at the checkout station, press a button, and the amount of your purchases is deducted from your bank account. Most banks and companies such as Visa and MasterCard issue debit cards, and your ATM card typically can function as a debit card. (Mishkin, 2004)

As we look into the future and try to discern what will happen to money, we should remember that 150 years ago there was virtually no paper currency in circulation. The first credit card was issued in the early 1950s; the first ATM was installed around 1970. Not until the mid-1990s could we shop via the internet. Forecasting most of these developments, as well as any other trend in technology, is nearly impossible. After all, who could have predicted even 20 years ago that today we would be able to check our bank balances, buy and sell stocks, and pay

our utility bills 24 hours a day, seven days a week from the comfort of our homes? (Cecchetti&Schoenholt, 2015)

The developments in e-money are exciting and lead some commentators to predict a "cashless society." In reality, though, an entirely cashless (or checkless) society is unlikely for two key reasons. First, the infrastructure for an E- payments system is expensive to build. Second, many households, and firms worry about protecting their privacy in an electronic system that is subject to computer hackers. While the flow of paper in the payments system is likely to continue to shrink, it is unlikely to disappear. (R. Glenn & A. Patric, 2014)

According to Tan, (cited by Tella&Abdulmumin, 2015) E- payment is a payment system in which monetary value is transferred electronically or digitally between two entities as compensation or consideration for the receipt of goods or services. An entity in this regard refers to a bank, business, government or even an individual customer (Tan, 2004, 3). According to this author, any payment not affected by paper-based instruments is considered an E- payment transaction. It should be noted that advances in technology in some parts of the world make it possible for cheques to be treated as E- payment instruments.

2.1.2.2 Electronic Payment Forms

Electronic payments systems in the developing world can be divided most broadly between those that rely on a bank and those that rely on a non-bank entity.

i. Those that rely on banks include:

E-money and plastic, including debit and credit cards: stored-value or pre-paid devices, generally card based, relying on traditional magnetic stripe or chip technologies linked to a remote account.

These are cards that have all the customers' information which are used for transaction any time they are needed. It could be credit card or debit card. Credit cards are plastic cards encoded with electromagnetic identification; it is incorporated with circuit on which value is loaded. It can be used by customers to perform transactions on ATMs by the issuing banks at strategic locations as well as point of sale terminals with designated signs of the producer of such card. It is preloaded with money. It is like a credit giving to customers by his bank. Debit card on the other hand is an electronic card with very advanced feature including the use of microchip, whereby transaction is validated against the chip rather than a magnetic stripe. It enables the

holder to make withdrawals and purchases charged directly to funds in his/her account and your money is immediately deducted from your account when used.

Internet-based payments: relying on an existing bank account and providing access and funds transfer capabilities remotely via email or web application.

Moreover, according to Alabar & Timothy, (cited by Million, 2013) internet banking allows customers of a financial institution to conduct financial transactions on a secure website operated by the institution, which can be a retail or virtual bank, credit union or society. It may include of any transactions related to online usage. Banks increasingly operate websites through which customers are able not only to inquire about account balances, interest, and exchange e rates but also to conduct a range of transactions. (Alabar, T. Timothy, 2012).

Mobile payments: - mobile phone based applications using chip, SMS, or WAP or other software driven mobile interface providing access to an existing bank account or credit card account.

As per Tiwari, (cited by Million, 2013) mobile banking (also known as M-Banking) is a term used for performing balance checks, account transactions, payments, credit applications and other banking transactions through a mobile device such as a mobile phone or Personal Digital Assistant (PDA).

Correspondent banking or branchless banking: third-party systems in which a non-bank retail outlet serves as the agent for an existing bank using POS terminals already present in the retail outlet.

A Point of Sale terminal (POS) is an electronic device used to process card payments at retail locations. It reads card information and it process payment on that card for the transaction effected immediately. This is an important infrastructure for an effective E- payment system and will enhance efficient cashless policy.

ii. Those that do not require any bank involvement include:

E-purses: - Stored value and pre-paid cards not linked to an existing bank account can be recharged by retail agents of the non-bank entity or by third parties.

Mobile wallets: - Stored value and pre-paid mobile phone applications, based on an embedded.

SIM chip or other technology (e.g., M-PESA in Kenya), or based on an interface permitting access to a remote account with a non-bank entity. Bill Maurer, Retail Electronic Payments Systems for Value Transfers in the Developing World retrieved from

http://www.socsci.uci.edu/~wmmaurer/bio/Maurer -Electronic_payment_systems.pdf

2.1.3 Benefits of Electronic Payment

The study by (Bogota, 2013) titled "Electronic payment methods, e-commerce and economic activity: Theory and new evidence for developing and emerging countries" shows that electronic payments are not only an alternative for reducing costs with respect to other payment methods, such as cash and checks, but can also generate significant benefits for increasing economic development. The evidence shows that making payments by cash or check not only comprises 'costs' which include not only costs to produce it, but also costs for handling, printing, transporting, and securing it. In this sense, electronic payments have become a more efficient process and contribute to the improvement in the economic growth and market development in both developed and emerging countries.

<http://newsroom.mastercard.com/documents/study -the benefits-of-electronic-payments/>

According to the article retrieved from

<https://thatcreditunionblog.wordpress.com/2017/10/16/benefits-risks-of-electronic-paymentsystems/>

E- Payments have several benefits, which were never available through the traditional modes of payment. Some of the most important are: Privacy, Integrity, Compatibility, Good transaction, efficiency, Acceptability, Convenience, Mobility, Low financial risk, Anonymity, and so on. Perhaps the greatest advantage of E- payments is the convenience. Individuals can pay their bills and make purchases at unconventional locations 24 hours a day, 7 days a week, and 365 days a year. There is no waiting for a merchant or business to open. The cost of

E- Payment is yet another benefit. For the majority of merchants, vendors, and businesses, there is no fee or charge to pay online. For others, the fee is nominal. Compared to the cost of postage, check writing fees and trips to the post office, individuals paying their bills online can save hundreds of dollars per year. In this day and age, reducing expenses is quite important for many individuals. Moreover, despite the belief of many to the contrary, E- payments are secure. According to Cobb, 2005, electronic payments have a significant number of economic benefits

apart from their convenience and safety. These benefits when maximized can go a long way in contributing immensely to economic development of a nation.

Automated electronic payments help deepen bank deposits thereby increasing funds available for commercial loans – a driver of all of overall economic activity. Efficient, safe and convenient electronic payments carry with them a significant range of macro-economic benefits. “The impact of introducing electronic payments is akin to using the gears on a bicycle. Add an efficient electronic payments system to an economy, and you kick it into a higher gear. Add better-controlled consumer and business credit, and you notch up economic velocity even further.”

2.1.4 Point of Sale (POS)

POS is an electronic payment device, which enables individuals to make purchases with electronic cards. POS accepts ATM cards for payment of goods and services. This card stores account information on microchips. The microchip contains a purse in which monetary value is held electronically. The card can be used to make purchase of goods and services online, in hotels, supermarkets, shopping malls, and other market places. POS allows cardholders to have a real-time online access to funds and information in their bank account through debit or cash cards.

A Point of Sale terminal (POS) is an electronic device used to process card payments at retail locations. It reads card information and it process payment on that card for the transaction effected immediately. This is an important infrastructure for an effective E-payment system and will enhance efficient cashless policy. (Ibrahim & Maiwada, 2014)

POS networks link point-of-sale terminals and allow the use of payment cards for the purchase of goods and services in various locations. Debit cards are linked to a bank account and allow cardholders to charge purchases on POS or ATM withdrawals directly and individually to this account. Consequently, when a cardholder uses a debit card, the amount is typically debited from the account either immediately or within a few days and there is no postponement of payment. (European Central Bank, 2010)

2.1.4.1 POS System Stakeholders

According to Gomzin, (cited by SANS Institute, 2014) the primary stakeholders for today's POS systems are as follows: consumers, merchants, acquirer, issuer, card brand companies, payment processors, payment gateways, software vendors, and hardware vendors. Consumers

are those people that use payment cards for the purchase of goods. Merchants are businesses who accept payment cards as a form payment for goods and services. Merchants are also the implementers of the POS systems.

- **An acquirer:** - also referred to as an acquiring bank, handles authorization requests from payment processors and settles the transaction with the card issuer.
- **Issuers:** - provide the cards to consumers and maintain the payment card accounts.
- **Card Brands** also referred to as card networks (e.g. VisaNet), manage the overall process of authorization and settlement.
- **Payment gateway:-** though they are not always used, provide the ability to switch between payment processors without having to make significant changes to a store's payment application.
- **Software vendors:** - provide the payment application and other software used in the payment process.
- **A payment processor:-** receives transactions from merchants and then contacts the proper acquirer (i.e. a middle man).
- **Hardware manufacturers:-** develop the pin pads and magnetic stripe readers (MSR) that most of us have used at store to swipe our payment card when paying for a good or service (Gomzin, 2014).

2.1.4.2 POS Payment Process

As per Gomzin, 2014 (Cited in SANS Institute, 2014), with a firm understanding of the overall POS system's technologies and stakeholders, the final area to look at before digging into the cyber security details is the actual payment process. In general, there are two payment process stages: authorization and settlement.

- **Authorization:** -is a term used to represent the state of the payment process to the point where the purchase is finalized. This stage is where most attacks occur as the payment card data is sent through the entire system.
- **Settlement:** -is a term used to represent what happens after the sale to settle the account balances between all parties (i.e. Merchant, acquirer, and issuer). Though, this stage is not normally thought of as a vulnerable stage, there is some weakness in the fact that most store transactions are stored at the store for a set period of time in a large group known as a batch.

2.1.5 E- payment development in CBE

Electronic payment is mostly referred to automated payment or banking channels that allows delivery of banking services in an effective, efficient and convenient way via electronic channels such as ATM, POS terminals, mobile phones, internet, and personal computers. The CBE is a pioneer to introduce electronic payments in the country when it launched proprietary ATM system in 2002. However, the bank found it important to set up a new solution for electronic payment services which is capable of supporting its business growth requirements. Accordingly, the bank has implemented card payment services, mobile payment, and internet banking. (E- Payment procedure, CBE, 2012)

According to the newly revised E- payment procedure of the bank, electronic payment is spreading rapidly as it leads to much lower costs and greater competition in the financial services. The adoption and growth of E- payment facilities is becoming imperative towards creating a cashless society. The most recognized drivers for growth of e-banking include convenience, reliability, wider availability, affordability and usefulness of the services are increasingly sought for ease of livelihood of the populace at large. Electronic payment assists in attracting un banked individuals into the banking system allowing improvement in personal money management along with enhanced financial empowerment. (E- Payment procedure, CBE, 2016)

2.1.5.1 The forms of E- payment in CBE include:

- Automated teller machines (ATM) (introduced in 2002)
- Point of Sale (POS) (introduced in 2012)
- Payment Cards (Debit, Prepaid) (introduced in 2012)
- Internet banking (introduced in 2012)
- Mobile banking; (introduced in 2012)

2.1.5.2 POS Terminal at CBE

According to different booklets and the E- payment procedure of the bank, POS Terminal is a modern electronic instrument that enables customers to make payments for their shopping using different kinds of cards.

2.1.5.2.1 Types of POS Terminal at CBE

Taking the business process of businesses and service organizations in to consideration, the Commercial Bank of Ethiopia has introduced two types of Point of Sale terminals.

A. Fixed Type POS terminal /DIALUP or ADSL

This machine performs all the functions of POS Terminal but requires direct telephone line connection for its operation. So, the machine is designed and advisable for business organizations that have permanent or fixed payment center.

B. Movable Type of POS Terminal /GPRS

This machine performs all the functions of a POS Terminal without requiring connection to a direct telephone line. It functions well in areas where there is mobile telephone connection and it demands adequate mobile network coverage. It is recommended for business and service organizations that do not have fixed payment centers and in areas where the direct telephone line is incapable of carrying information.

2.1.6 E-banking Technology Adoption models

Adoption: is defined as the act or process of beginning to use something new or different (M. Webster). Technology adoption is the process of beginning to use new technology or different technology by customers, organizations etc. As result of the dynamism of the information and communications technology innovative technological products are released. And the growth of nations, organizations and individuals is highly dependent on how best they adopt the technology in their operations. In order to understand how people can acceptor adopt technology various models are developed and used. In the following paragraphs some technology acceptance models are briefly discussed which include: -

- The Theory of Reasoned Action (TRA)
- Theory of planned Behavior (TPB)
- Innovations Diffusion Theory (IDT)
- Technology Acceptance Model (TAM)

2.1.6.1 The Theory of Reasoned Action (TRA)

According to The Theory of Reasoned Action (TRA), beliefs influence attitude and social norms which in turn shape a behavioral intention guiding or even dictating an individual's behavior (Ajzen&Fishbein, 1980; Leach, Hennessy &Fishbein, 1994). Intention is the cognitive representation of a person's readiness to perform a given behavior, and it is

considered to be the immediate antecedent of behavior. TRA has two core constructs as can be seen from figure two below of intention: (1) attitude toward behavior (ATB) and (2) subjective norm (SN) associated with that behavior. The attitude toward the behavior (ATB) is the previous attitude of a person toward performing that behavior. It suggests that people think about their decisions and the possible outcomes of their actions before making any decision to be involved or not involved in a given behavior. This theory views the intention of an individual whether to perform a given behavior or not as the immediate determinant of action, and attitude is determined by the person's beliefs and evaluation of behavioral outcomes. So an individual, who strongly believes that positive outcomes will result from performing a particular behavior, will have positive attitudes towards that behavior. On the other hand, if a person strongly believes that a particular behavior will have a negative outcome, then there will be negative attitudes towards that behavior. Subjective norm (SN) is the social pressure exerted on the person or the decision maker to perform the behavior. SN refers to an individual's perception about what other people think of his or her behavior in question (Leach, Hennessy & Fishbein, 1994).

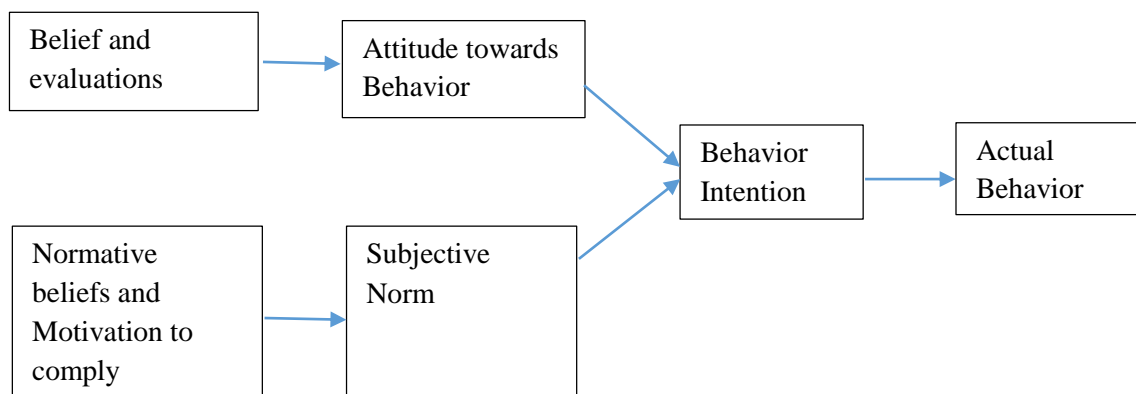


Figure 1: The theory of Reasoned Action Conceptual Model (Ajzen & Fishbein, 1980)

TRA is a general well-researched intention model that has been applied extensively in predicting and explaining behavior across many domains and virtually any human behavior (Ajzen&Fishbein, 1980). Information science researchers often use this theory to study the determinants of information technology innovation usage behavior (Han, 2003). Although current models of technology acceptance have their roots in many diverse theoretical perspectives, much literature related to technology acceptance begins studies with the Theory of Reasoned action (TRA).

2.1.6.2 Innovations Diffusions Theory

The Innovation Diffusion Theory has been used to study a variety of innovations. Rogers identifies five attributes of an innovation that influence the adoption and acceptance behavior: relative advantage, complexity, compatibility, trial ability, and observe-ability. In the Information Systems field, (Moore and Benbasat, 1991) expand this attributes set to study information technology acceptance. The set includes:

- **Relative Advantage:** - “the degree to which an innovation is perceived as being better than its precursor”.
- **Ease of use:** - “the degree to which an innovation is perceived as being difficult to use”.
- **Image:** - “The degree to which use of an innovation is perceived to enhance one's image or status in one's social system”.
- **Visibility:** - The degree to which one can see others using the system in the organization.
- **Compatibility:** - “the degree to which an innovation is perceived as being consistent with the existing values, needs, and past experiences of potential adopters”.
- **Results Demonstrability:** - “the tangibility of the results of using the innovation, including their observation - ability and communicability”.
- **Voluntariness of Use:** - “the degree to which use of the innovation is perceived as being voluntary or of free will”.

Innovation diffusion research regards individuals’ perceptions about these characteristics of an information technology as important factors in influencing an individual’s acceptance behavior (Agarwal and Prasad, 1991, 1998; Karahanna et al., 1999; Plouffe et al., 2001).

2.1.6.3 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was developed from TRA by Davis (Davis 1985). He proposed that systems use is a response that can be explained or predicted by users' motivation which in turn is directly influenced by an external stimulus consisting of the actual systems features and capabilities.

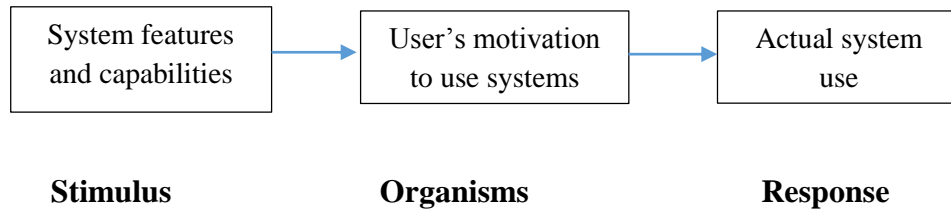


Figure 2: Conceptual Model for Technology Acceptance Model (Davis 1985, P.10)

Davis further developed his conceptual model to propose Technology Acceptance Model (TAM) as follows:

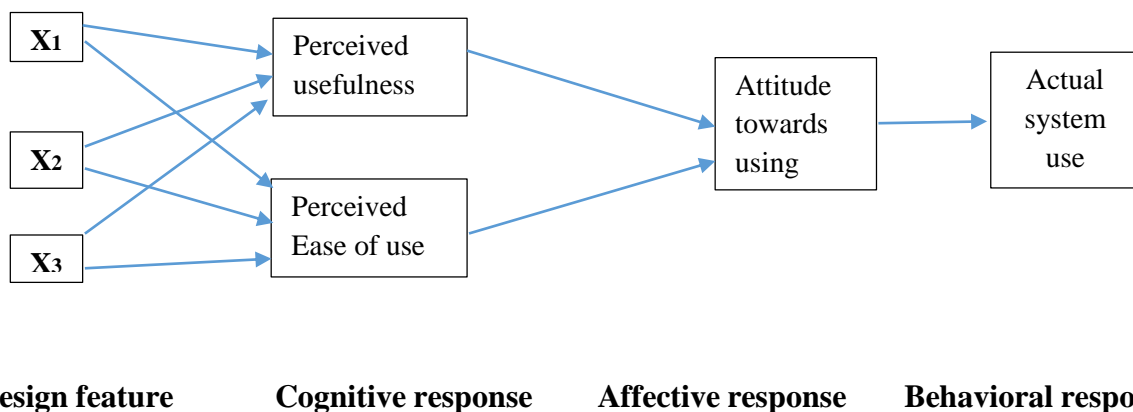


Figure 3: Developed Technology Acceptance Model – TAM (Davis, 1986)

In his conceptual model Davis suggest that users' motivation can be explained by three factors: perceived ease of use, Perceived Usefulness, and Attitude toward Using the System. According to the model a potential user's overall attitude towards using a given system is hypothesized to be a major determinant of whether or not he actually uses it. Attitude towards using, in turn, is a function of two major beliefs: perceived usefulness and perceived ease of use perceived ease of use has causal effect on perceived usefulness. Design Features directly influence perceived usefulness and perceived ease of use and design features is an external variable hence it affects the attitude and behavior indirectly through perceived usefulness and perceived ease of use.

According to Davis (1985):

- **Use:** - refers to an individual's actual direct usage of the given system in the context of his or her job.
- **Attitude:-** refers to the degree of evaluative affect that an individual associates with using the target system in his or her job
- **Perceived usefulness:** - is defined as the degree to which an individual believes that using a particular system would enhance his or her job performance.
- **Perceived ease of use:** - is defined as the degree to which an individual believes that using a particular system would be free of physical and mental effort. Perceived ease of use is hypothesized to have a significant direct effect on perceived usefulness, since all else being equal a system which is easier to use will result in increased job performance (i.e., greater usefulness) for the user.

2.1.7 Infrastructure

Banking Supervision Directorate (BSD) of the National Bank of Ethiopia (NBE) stated the challenges for the application of technology in Ethiopian banks as follows: "despite all its advantages, technology is not free from risks. That means, we cannot be free from cyber security threat. Disruptions related to frequent power and network failures could also be perceived. These together with high initial investment cost, lack of expertise, lack of adequate legal/regulatory framework for e-commerce and E- payment, low level of internet penetration, and less developed telecom infrastructure in remote areas are the main challenges." (Birritu, 2017) In addition, the annual performance reports of CBE indicated that, Network & Power interruption, low level of public awareness in using E -payment products and services, employees' lack of awareness on E- payment products are some of the challenges for adopting E- payment products and services. (Annual Performance report, 2013/14)

2.2 Empirical Literature Review

Practice and Challenges of Implementing Point of Sale (POS) Terminal

Ayana, (2014) study was about Factors Affecting Adoption of Electronic Banking System in Ethiopian Banking Industry. The aim of this paper is to identify factors that affect adoption of E-banking in the Ethiopian banking industry. The study was conducted based on the data gathered from four banks in Ethiopia; three private banks (Dashen bank, Zemen bank and Wegagen bank) and one state owned bank (commercial bank of Ethiopia). In his finding of the study it was indicated that, the major barriers Ethiopian banking industry faces in the adoption

of Electronic banking are: security risk, lack of trust, lack of legal and regulatory frame work, Lack of ICT infrastructure and absence of competition between local and foreign banks.

Beza, (2014) the study was about Assessment of the Opportunities and Challenges for the Adoption of E-banking Service in Ethiopia. The general objective of the study was to assess the current extent and practices, benefits realized by banks, driving forces, opportunities and challenges for the adoption of e-banking service in Ethiopia. From this general objective, the study explores five issues. An exploratory research design was employed to conduct this study. The findings revealed that: Among the different driving forces that initiate banks to adopt e-banking services: Chances of risk, Lack of suitable legal and regulatory framework, absence of financial networks that links different banks, Low level of internet penetration and poorly developed telecommunication infrastructure, high cost of internet, security concerns are among the major challenges for the adoption of e-banking service in the country.

Zulu B,(2006) in the study E- payment a challenge for Africa identified the challenges in Africa as inadequate telecommunication infrastructure, which include: connectivity failure in telephone lines; low Internet bandwidth; high Internet cost, unavailability of dedicated data service networks; and close financial networks as well as frequent power interruption. Similarly, he identified lack of proper legal and regulatory framework and low level of credit access as the other challenges.

Gardachew, (2010) conducted research on the Opportunities and Challenges of E-banking in Ethiopia. His study focused on analyzing the status of electronic banking in Ethiopia and finding of the study he identifies some challenges of using E-banking system, such as, lack of suitable legal and regulatory frame works for E-commerce and E- payments, political instability in neighboring countries, high rates of illiteracy and absence of financial networks that links different banks. According to Gardachew (2010), Opportunities offered by ICT through e-learning programs and Commitment of the governments on development of ICT infrastructures is considered as drivers of using Ecommerce and E-payment systems.

2.3 Conceptual Framework

In this research paper since the variables of interest are highly technology related and technology related conceptual frameworks is used. The following conceptual framework is designed by the researcher to show interdependences of external variables and organizational factors on POS implementation process.

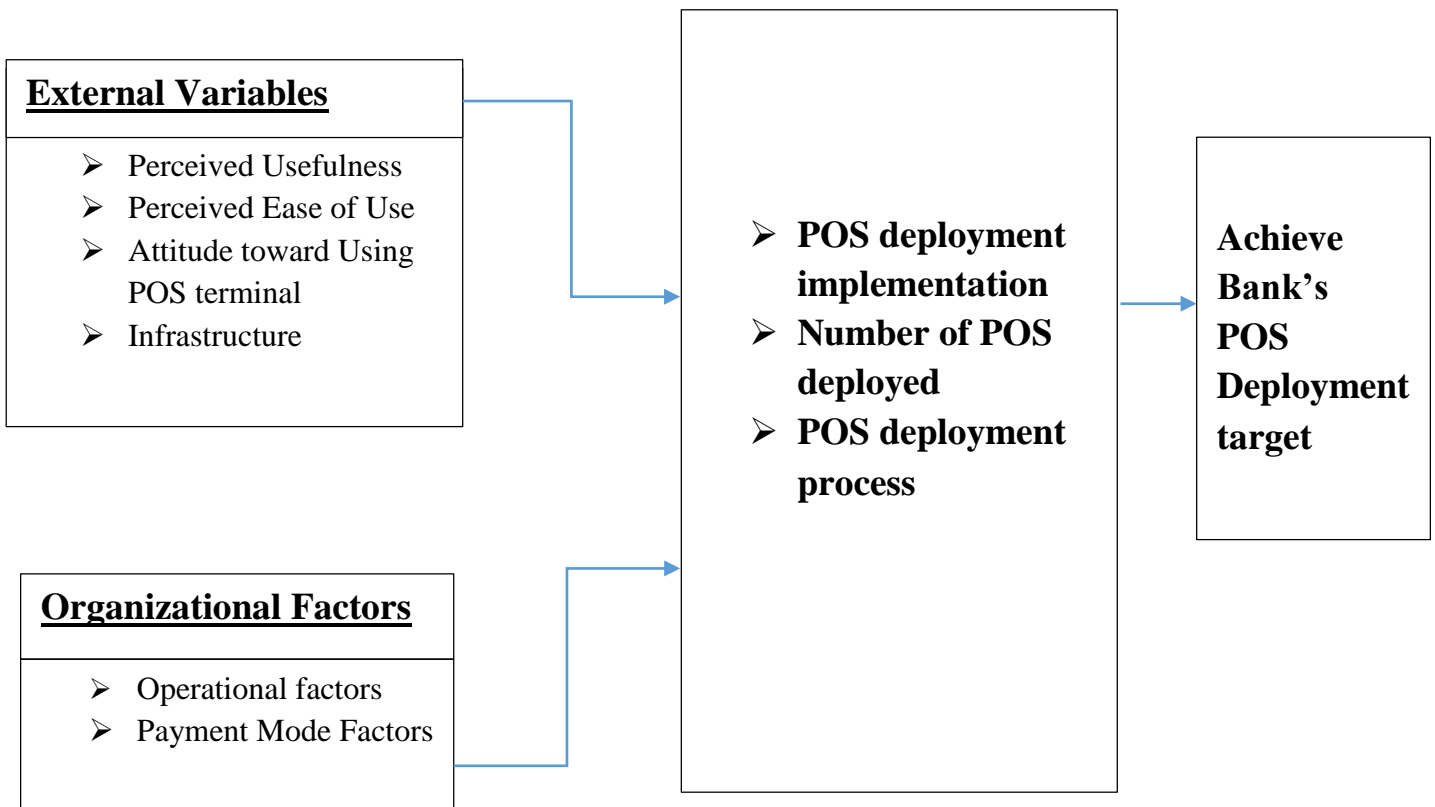


Figure 4: Conceptual Framework Adopted for the Research from TAM (Davis, 1989) with operational and payment mode factor as an Additional Factor by the Researcher

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. In it we study the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them. It is necessary for the researcher to know not only the research methods/techniques but also the methodology Khotari (2004).

This chapter will deal with the method that will be used in this study. The chapter is organized in the following sub topics; study design, target population and sampling, source of data, data collection instrument, data collection procedure, reliability and validity.

3.1.1 Study Design

Descriptive research is best suited to studies aimed at finding out the prevalence of a phenomenon situation, problem, attitude or issue, by taking a cross-section of the population (Ranjit, 2011). Thus, descriptive research design was found suitable for this study to deeply assess CBE practices & challenges associated with POS deployment process. Moreover, cross-sectional design was chosen as the researcher is only planning to have single contact with respondents.

According to MacDonald, S & Headlam, N. (2012), mixed use of qualitative and quantitative approaches provides the potential to mitigate each methods limitation by filling the gap of the other methods. Therefore, the study applied combination of these approaches in order to ensure result quality and comprehensiveness.

3.1.2 Target Population

The study considered all relevant employees involved in POS deployment process as target population. In that respect, targeted population for this study is E- Payment business solution department manager, E- Payment business solution marketing officers, four district office managers, district marketing officers who participate in the process, four branches managers and marketing officers who participate in the process. The target population are selected because they are directly involved with the POS deployment process. Therefore, the total population for the study is 40 CBE employees from the mentioned departments. Since the

number of total population is manageable the researcher used indicated total population for the study.

3.1.3 Source of Data

The researcher used both primary and secondary data. Primary data was gathered directly from the respondents through adopted questionnaire from Mesfin B, (2017) and interview guide questions developed by the researcher. Secondary data was collected from the bank internal documents, published and unpublished studies, books and websites.

3.1.4 Data Collection Instruments

Primary data collection questionnaire only incorporated close ended questions. To deeply assess the practice and challenges further, the researcher conducted interview with key informants guided by pertinent interview questions. The closed ended questionnaires are desired for simplicity and to get definite answers. The interview was used to get appropriate data through open discussion for information which is difficult to manage using questionnaire.

3.1.5 Data Collection Procedure

Since the researcher is fulltime employee of the bank, access to primary and relevant secondary data was not a challenge. Adopted questionnaire was distributed and collected personally from mentioned respondents.

3.1.6 Data Processing and Analysis

The data collected was analyzed by using both qualitative and quantitative methods, depending on type of data collected. The data was cleaned, categorized and coded in a way it is suitable to be electronically and manually analyzed. Thus, quantitative data was encoded and processed by SPSS version 20. SPSS software and Microsoft excel was used to analyze the coded primary data. Tables, frequency, and percentages presentations were used to summarize and present the findings. Moreover, the primary data obtained from the interview sessions were interpreted qualitatively in a way it doesn't pose any misunderstanding for the reader.

3.1.7 Research Ethics

The researcher assures this study is free from fabrication, falsification and plagiarism. In this research the researcher gave appropriate credit for ideas and respondents attitudes. The researcher collected the data from respondent and all the data gathered were not omitted or changed. All primary and secondary information in this process is treated with utmost confidentiality and diligence.

CHAPTER FOUR DATA ANALYSIS AND PRESENTATION

4.1 Introduction

Data collected using different techniques were analyzed and interpreted. A total of 40 questionnaires were distributed to CBE staffs in E- payment process, districts and branch offices found in Addis Ababa. 40 questionnaires useable valid information with no non – respondent was obtained. In addition to the survey questionnaire, the researcher conducted an interview with key informant managers and team leaders at the mentioned work units and, reviewed some available bank documents regarding POS terminal services. Data gathered using both applied tools is presented in an integrated manner.

4.1.1 Demographic Information of the Respondents

Demographic profiles of the respondents who participated in the study were analyzed using descriptive analysis with the help of SPSS. The result of the survey is shown in Table 4.1 as follows.

Table 4. 1: Demographic profile

Variable	Category	Frequency	Percent
Gender	MALE	16	40.0
	FEMALE	24	60.0
	Total	40	100.0
Age of the respondent	21-29	27	67.5
	30-39	13	32.5
	Total	40	100.0
Level of education	BACHLOR'S DEGREE	24	60.0
	MASTER'S DEGREE	16	40.0
	Total	40	100.0
Years of experience in the organization	LESS THAN A YEAR	1	2.5
	1-5 YEARS	25	62.5
	6-10 YEARS	13	32.5
	MORE THAN 10 YEARS	1	2.5
	Total	40	100.0
Position of work	MARKETING OFFICER	18	45.0
	Other , team leader, C.S.M,	22	55.0
	Total	40	100.0
Years of experience in	LESS THAN 1 YEAR	4	10.0
	1-2 YEARS	6	15.0
	2-3 YEARS	17	42.5

POS s related activities?	3-5 YEARS	13	32.5
	Total	40	100.0

(Source: Survey result, 2018)

The demographic information of respondents who took part in the study, shown in Table 4.1 reveals that 16 (40%) were male while 24 (60%) were female. Regarding the respondents' educational qualification, the results as shown in the above table, indicates that 24 (60%) of the employees of the bank hold bachelor degree and 16 (40%) of the employees of the bank hold master's degree. On the respondent's years of experience in the organization, the results indicate that majority (i.e. 25(62.5%)) of the employees of the bank have 3-5 years of working experience. This is followed by 13 (32.5%) respondents who have their years of working experience between 6 - 10 years; 1 respondent representing (2.5%) have more than 10 years of working experience and 1 respondent representing (2.5%) have less than a year working experience in the bank. On the other hand, when we see the job positions of the employees of the bank who participated on the survey, 18(45 %) are marketing officers; 22 (55%) are customer service managers from different branches team leaders and managers at different unit of the bank.

On the response to the question about years of experience with POS related activities, the result shows that 17 (42.5%) of the total respondents have been doing POS related activities for more about 2-3 years; 13(32.5%) respondents have been doing POS related activities for 3-5 years, 6(15%) for 1-2 years and 4(10%) for less than a year have been working in POS related activities. The demographic profile of the respondents shows that the combination of personnel the bank has are young, first degree holders, and experienced.

4.2 Practice and challenges of Implementing Point of Sale (POS) Terminal

4.2.1 External Variable

Perceived usefulness

Result obtained from survey respondents of employees of CBE regarding their perception towards the usefulness of the POS terminal payment system using descriptive statistics are shown below:-

Table 4. 2: Perceived Usefulness

S. no	Questions	Strongly agree f (%)	Agree f (%)	Neutral f (%)	Disagree f (%)	Strongly disagree f (%)	Total f (%)
1	Merchants perceive that using POS terminal would enhance their business performance.	13 (32.5%)	15 (37.5%)	1 (2.5%)	10 (25%)	1 (2.5%)	40 (100%)
2	Merchants prefer cash over POS terminals	11 (27.5%)	22 (55%)	3 (7.5%)	3 (7.5%)	1 (2.5%)	40 (100%)
3	Merchants have low awareness about the possibilities, advantages/ disadvantages involved with POS terminal	15 (37.7%)	21 (53.5%)	1 (2.5%)	2 (5%)	1 (2.5%)	40 (100%)

(Source: Survey result, 2018)

Result obtained from the survey of respondents of CBE's staff regarding merchants' perception towards the usefulness of the existing POS terminal payment system using descriptive statistics are depicted in table 4.2:- The result shows that merchants perceived that using POS terminal payment system would enhance their job performance. 13(32.5%) and 15 (37. %) respondents strongly agree and agree respectively. Even though, about 69% of the respondents from employees of the bank agreed with the statement "Merchants perceive that using POS terminal would enhance their business performance." Yet 82% of the respondents from the bank's employees believe that merchant prefer cash over POS terminals. In the 3rd question majority of the respondents agreed that merchants have low awareness about the benefit of POS terminals.

Perceived Ease of Use

Result obtained from survey respondents of employees of CBE regarding their perception towards the ease of use of the POS terminal payment system using descriptive statistics are showed below:-

Table 4. 3: Perceived Ease of Use

S. no	Questions	Strongly agree f (%)	Agree f (%)	Neutral f (%)	Disagree f (%)	Strongly disagree f (%)	Total f (%)
1	Our POS terminal is easy to use by consumers	4 (10%)	24 (60%)	1 (2.5%)	3 (7.5%)	6 (15%)	40 (100%)

2	Merchants think that using POS terminals is more sophisticated than cash.	12 (30%)	18 (45%)	3 (7.5%)	7 (17.5%)	–	40 (100%)
3	The ease of use for POS terminal depends on prior experience with other technologies such as mobile and computer.	8 (20%)	14 (35%)	11 (27.5%)	6 (15%)	1 (2.5%)	40 (100%)

(Source: Survey result, 2018)

In the above table the research finding indicated on the ease of use, a total of 28(70%) respondents (of which 4 (10%) strongly agree & 24 (60%) agree) agree on the ease of POS terminal in conducting transaction in business premises. But, a total 30 (75%) respondents (of which 12(30%) Strongly Agree & 18(45%) agree) Agree of the respondents agree with the statement "Merchants think that using POS terminals is more sophisticated than cash." Though there are employees who think the distributed POS to merchants are easy to use, there are respondents who disagree about the POS terminal payment system simplicity to use. On the additional comment one customer wrote that "Customer think making payment is difficult until they start using after that if there is follow up by the bank they don't mind using POS for payment." On the other hand when employees asked about previous technological knowledge of merchant is depends on the ease of POS usage 55% (8% &14 %) respondents agreed that their previous experience matters. In general, the results of the study showed that the perception of the majority of staff towards perceived usefulness and perceived ease of use variables become promising to continue deployment of the POS terminal. The result of this finding is consistent with the study by (Omotayo and DahunsiOrganisations, 2015) which stated that organizations would be motivated to adopt a technology such as POS due to its ease of use. According to respondent CBE POS is simple, easy to use, clear, and understandable and does not require a lot of mental effort. This could be considered as an opportunity for the bank to enhance its deployment process by upgrading its implementation system.

Attitude toward Using POS terminal

Result obtained from survey respondents of employees of CBE regarding merchants attitude toward Using POS terminal using descriptive statistics are shown in the table 4.4 below

Table 4. 4: Attitude toward Using POS terminal

S. no	Questions	Strongly agree f (%)	Agree f (%)	Neutral f (%)	Disagree f (%)	Strongly disagree f (%)	Total f (%)
1	The attitude of Tellers is a challenge when transacting business with POS terminal	3 (7.5%)	21 (52.5%)	6 (15%)	10 (25%)	–	40 (100%)
2	Consumers have confidence and trust in the cash payments system than POS terminal	12 (30%)	19 (47.5%)	3 (7.5%)	4 (10%)	2 (5%)	40 (100%)
3	People are resistant to new payment mechanisms.	9 (22.5%)	21 (52.5%)	3 (7.5%)	7 (17.5%)	1 (2.5%)	40 (100%)
4	Tendency to be content with the existing payment system	1 (2.5%)	27 (67.5%)	7 (17.5%)	4 (10%)	1 (2.5%)	40 (100%)
5	Lack of Trust	6 (15%)	23 (57.5%)	7 (17.5%)	4 (10%)	–	40 (100%)
6	Lack of tip	9 (22.5%)	15 (37.5%)	9 (22.5%)	6 (15%)	1 (2.5%)	40 (100%)
7	Fear of risk	9 (22.5%)	25 (62.5%)	5 (12.5%)	1 (2.5%)	–	40 (100%)

(Source: Survey result, 2018)

The result in table 4.4 indicates that majority of employee of the bank observed that POS users at merchants' outlet (particularly cashiers and waiters) prefer to accept payment in cash than using POS terminal because of different reasons. As we can see in the above table, 21 (52.5% of the respondents %) and, 3 (7.5 of the respondents %) agree and strongly agree respectively on the attitude of teller to accept payment in POS is very challenging. A total 29 (72.5%) of respondents (of which 6(15%) strongly agree and 23(57.5%) agree) confirmed that customers have trust issue with payment transaction done through POS being credited to their account. On the interview gathered for this study with key informants “even though the bank is upgrading its system to be more efficient and reliable in POS transaction services there are some network failure issues customer face that leads customer not to want to use the POS machine on regular basis.” CBE need to work minimizing the risk factors specifically network

to reduce the risk perception of customers towards the technology and increase the use of POS terminals by customers.

Infrastructures

The descriptive analysis of the respondents about infrastructures such as network, power supply needed to use POS terminal in merchant indicated in the table 4.5 below

Table 4. 5: Infrastructures

S. No	Questions	Strongly agree f (%)	Agree f (%)	Neutral f (%)	Disagree f (%)	Strongly disagree f (%)	Total f (%)
1	Network failure is one of the challenges in using POS terminals	26 (65%)	12 (30%)	1 (2.5%)	1 (2.5%)	–	40 (100%)
2	Power outage does affect POS transaction	20 (50%)	15 (37.5%)	1 (2.5%)	3 (7.5%)	1 (2.5%)	40 (100%)
3	POS terminals are abundantly available in business premises.	5 (12.5%)	16 (40%)	4 (10%)	12 (30%)	3 (7.5%)	40 (100%)

(Source: Survey result, 2018)

Regarding the infrastructure needed for the implementation POS terminal payment system, the above table shows that a total of 38 (95%) of the respondents (of which 26 (65%) strongly agree and 12 (30%) agree) confirm that network failure is one of the challenges they face in using POS terminal. Regarding power failure a total of 35(87.5) respondents (of which 20(50) strongly agree and 15 (37.5 %) agree) of the employees agree that power outage does affect POS transaction. A total of 21(52.5%) respondents (of which 5 (16%) strongly agree and 16 (40%) agree) agreed that POS are accessible in most business areas. The above finding shows that network connectivity plays a significant role in implementing POS terminal payment system. Furthermore, on the interview gathered, respondents agree that Network & Power interruption, low level of public awareness to use E- banking are affecting the implementation process.

4.2.2 Organizational Factors

Operational factors

The descriptive analyses of respondents' towards Operational factors such as employees knowledge to answer customer questions related to POS terminal, support and follow up, procurement etc. is shown in the below table 4.6

Table 4. 6: Operational factors

S. No	Questions	Strongly agree f (%)	Agree f (%)	Neutral f (%)	Disagree f (%)	Strongly disagree f (%)	Total f (%)
1	Employees of the bank have the knowledge to answer customer questions related to POS terminal.	3 (7.5%)	15 (37.5%)	3 (7.5%)	12 (30%)	7 (17.5%)	40 (100%)
2	Unclear strategy towards electronic payment system.	2 (5%)	14 (35%)	8 (20%)	14 (35%)	2 (5%)	40 (100%)
3	Low support and follow up	14 (35%)	18 (45%)	1 (2.5%)	6 (15%)	1 (2.5%)	40 (100%)
4	Lack of Coordination and cooperation between branches, districts and E- payment process	13 (32.5%)	14 (35%)	2 (5%)	6 (15%)	5 (12.5%)	40 (100%)
5	Limited top management support	20 (50%)	15 (37.5%)	2 (5%)	3 (7.5%)	–	40 (100%)
6	Increases cost of the Bank.	12 (30%)	11 (27.5%)	10 (25%)	6 (15%)	1 (2.5%)	40 (100%)
7	POS deployment is involuntary (as they are deployed by the bank without being solicited for the merchants)	3 (7.5%)	14 (35%)	10 (25%)	10 (25%)	3 (7.5%)	40 (100%)
8	A specific legislation on consumer protection related to the usage of POS services is in place	2 (5%)	15 (37.5%)	18 (40%)	3 (7.5%)	2 (5%)	40 (100%)
9	Lack of immediate responses by the bank in solving problems	8 (20%)	21 (52.5%)	–	7 (17.5%)	4 (10%)	40 (100%)
10	Ambiguous roles and responsibilities on POS related activities (Procedural and guidance gap)	8 (20%)	22 (55%)	2 (5%)	6 (15%)	2 (5%)	40 (100%)

11	Lack of fast response in procuring goods and services in accordance with the procurement plan.	11 (27.5%)	13 (27.5%)	6 (15%)	7 (17.5%)	3 (7.5%)	40 (100%)
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(Source: Survey result, 2018)

In the above table respondents confirmed on the question about employees of the bank have the knowledge to answer customer questions related to POS terminal? A total of 18 (45%) respondents (of which 3(7.5%) strongly agree and 15(37.5%) agree) say that employees have the knowledge to answer customer request regarding with POS payment system. But 12 (30%) respondent disagree about the employees having the knowledge about POS terminals to assist or give the right response to customers. A total of 32(80%) of respondents (of which 14(35%) strongly agree and 18 (45%) agree) highly believes that there is a little follow up and a total of 35 (87.5%) respondents (of which 20 (50%) strongly agree and 15 (37.5%) agree) that there is a lack immediate response to solve problems by the bank. Concerning to a question on whether there is lack of Coordination and cooperation between branches, districts and E- payment process a total 27 (67.5%) of the respondents (of which 13(32.5% strongly agree and 14(35%) agree)confirmed that there is lack of coordination between the departments. 2(5%) of employees are neutral and a total of 11(27.5%) of the respondent (of which 6(15%) disagree and 5(12.5%) strongly disagree) don't think there is a lack of coordination between this departments. Additionally, on the interview conducted “ though there are many POS deployed in different business sectors, no measurement were taken for POS terminals which have been deployed but which are inactive for the last 2 or 3 years this shows the lack of continues follow”. According to the respondents believes internal communication system between departments are essential and the bank is trying to address different customer complaints through a well-established call centers that will give service for both employees and customers.

Payment Mode Factors

The following are descriptive analyses of respondents' towards payment mode factor.

Table 4. 7: Payment mode factors

S. No	Questions	Strongly agree f (%)	Agree f (%)	Neutral f (%)	Disagree f (%)	Strongly disagree f (%)	Total f (%)
1	Security of communication over the network	11 (27.5%)	16 (40%)	6 (15%)	5 (12.5%)	6 (15%)	40 (100%)

2	Due to delays associated with access to funds after sales from the POS terminal	14 (35%)	15 (37.5%)	5 (12.5%)	5 (12.5%)	1 (2.5%)	40 (100%)
3	Double debit of accounts for single transaction	11 (27.5%)	18 (45%)	3 (7.5%)	5 (12.5%)	3 (7.5%)	40 (100%)
4	Deducting/locking of customers account for failed transactions	15 (37.5%)	18 (45%)	2 (5%)	3 (7.5%)	2 (5%)	40 (100%)

(Source: Survey result, 2018)

In the above table 4.7 are the characteristics of payment systems that push customers to prefer cash rather than using POS to accept payment. A total of 27(67.5%) respondents (of which 11(27.5%) strongly agree and 16(40%) agree) believes that security of communication over the network are one factors that makes customers to prefer cash over POS terminal. 6(15%) of respondents are neutral and a total of 11(27.5%) of respondent (of which 5(12.5%) disagree and 6(15%) strongly disagree) believes security communication is not the factor that lead customer to prefer cash more to accept payment. On the question about delays associated with access to funds after sales from the POS terminal majority of respondents that is, 14(35%) agree and 15 (37.5%) believes that delays associated with access to funds after sales from the POS is one of the factors. In addition, double debit of customers' accounts for single transaction because of connectivity problem is another factor confirmed respondents. According to the respondents double debit of accounts for single transaction is one of the factors. A total of 29 (72.5%) respondents (11 (27.5%) strongly agree and 18(45%) agree) on the mentioned subject. On the question regarding to deducting/locking of customers account for failed transactions a total of 33(82.5%) respondent (of which 15(37.5%) strongly agree and 18(45%) agree) believes that this is one of the reason customers want to accept payment through cash instead of POS machine. Interviews conducted with some manager's they revealed that: Most merchants are not ready for the electronic card payments. Sometimes points of sales are faulty thus denying customers the opportunity of using cards to purchase items. The interviewees underscored that though the aforementioned challenges are there, most of them can be managed by making internal system of the bank more efficient.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The purpose of this study was to assess the practice and challenges of implementing various Electronic-Payment Projects in Commercial Bank of Ethiopia: selecting deployment Point of Sale (POS) as a case study. Therefore, the aim of this chapter is to present the summary of major findings, conclusions and recommendations based on the results of the analysis of the data collected.

5.1.2 Summary of Major Findings

Following the aims of the study, descriptive research approach was employed and the research design had the following major features: Self-administered questionnaires were distributed to 40 employees of the bank, semi structured interviewees with key informants was conducted to get detail information that can't be gathered through questionnaire.

The research managed to assess the practices and challenges as discussed in the study and it indicated that employee's knowledge is questionable in handling POS related question, lack of periodical formal performance appraisal by top management, unclear strategy and procedural gaps are major concerns in implementing POS terminal payment system in addition to other factors such as network failure, power outage and organizational factors such as lack of employees' knowledge to answer customers' questions related to POS terminal, low support and follow-up, late procurement of goods and service, lack of coordination and cooperation between different units of the bank such as branches, districts, and E- payment process are considered in implementing POS terminal system.

5.1.3 Conclusions

Based on the research output the following conclusions are forwarded:-

- There is a growing acceptance for POS terminals in different business sectors but there is high mistrust attitude on the service's reliability to credit their payments effectively. It is also conclusion of the researcher the bank is not doing a good job marketing the product well enough minding that most merchant's literacy level is less than average.

- There is lack of knowledge related to POS terminal, inadequate support and follow up, late procurement and lack of integration among different units of the bank regarding POS terminals activities. This can be concluded as a major gap of the bank for the implementation of POS terminal.
- The bank lacks to clear strategies and procedural guideline that explicitly state what and how to achieve the POS implementation process.
- The bank is facing network failure, power interruption and other factors such as fear of risk, loss of consumers' confidence and trust in the POS payment system. Which can be concluded that it will make customers not to use the POS as expected.
- Locking customer account, debiting account for failed transaction are factors that affect the practice of POS deployment process of the bank. Hence, proper implementation of POS deployment will help the bank to achieve its goals and to be competitive in the industry.

5.1.4 Recommendations

As per the findings from the analysis of the collected data, the following recommendations are forwarded in order to promote and develop POS terminal payment system implementation in the commercial bank of Ethiopia.

- The bank should address the benefit of POS terminal to its merchant's through awareness campaign and make the application of the POS more easy to use for customers.
- In order to motivate front line personnel's the bank should be proactive in solving customer problems in POS payment system.
- CBE should give all its employees continuous training technical knowhow to have adequate understanding of the E- payment system in general so that they can address customer request on time.
- There must be a clear strategy which states how the bank is going do regarding to POS deployment, integration between different department and update procedures that can be applicable in the working environment.
- CBE should implement a merchant follow up system on regular basis and top management should give more focus in E- banking system so that problems can be identified early and get fast solution.

- The bank should improve the procurement department, internal communication and coordination between departments to meet customers' expectations.
- The bank should initiate especial type of internet service contract with ethio- telecom to reduce frequent connectivity impediments that pose serious challenges in POS terminal implementation.
- The bank should develop a system that minimize the failure to credit customer accounts, locking their account for failed transaction and so on to protect customer and to build trust when they accept payment.

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Annex I

ST. Mary's University

College of School of Graduates

Dear Sir/Madam;

This research questionnaire aims at collecting information regarding the **practice and challenges of P.O.S deployment execution in Commercial Bank of Ethiopia.**

The purpose of these questions are to accomplish the requirement to complete masters of project management at St Mary University. Being one of the people that is employed by Commercial bank of Ethiopia, information from your practical experience about practice of P.O.S deployment is very important in making this study a success. I kindly request you to spend few minutes responding freely to the questions based on your knowledge. The information gathered will be used only for study purpose and not otherwise. You don't have to write your name.

Your assistance is appreciated!

LidiyaAmanuel

0912-218213

Section I: Demographic profile

Please respond to the following questions by choosing the letter you agree with:

1. Sex
 - A. Male
 - B. Female
2. Age
 - A. 21-29
 - B. 30-40
 - C. 41-49
 - D. 50 and above
3. What is your highest level of education?
 - A. College Diploma
 - B. Bachelor's Degree
 - C. Master's Degree
4. How long have you been working in the organization?
 - A. Less than a year
 - B. 1-5 year
 - C. 6-10 year
 - D. More than 10 Years

5. What is your position in the organization?
- A. Marketing officer C. Branch manager
 B. Customer service manager D. Other
6. For how long have you been doing POS terminals related activities?
- A. Less than 1 year C. 2 - 3 years
 B. 1 - 2 years D. 3 - 5 years

Section II: Practice and challenges of Implementing Point of Sale (POS) Terminal

The following are believed to be some challenges faced, in using POS terminals, please indicate the level of your agreement.

- NB. 1-SA = Strongly Agree 4-D = Disagree
 2-A = Agree 5-SD = Strongly Disagree
 3-N = Neutral

A. External Factors

No	Description	1-SA	2-A	3-N	4-D	5-SD
1. Perceived Usefulness - degree to which an individual believes that using a particular system would enhance his or her job performance.						
7.1	Merchants perceive that using POS terminal would enhance their business performance					
7.2	Merchants prefer cash over POS terminals					
7.3	Merchants have low awareness about the possibilities, advantages/ disadvantages involved with POS terminal					
2. Perceived Ease of Use - the degree to which an individual believes that using a particular system would be free of physical and mental effort.						
8.1	Our POS terminal is easy to use by consumers					

8.2	Merchants think that using POS terminals is more sophisticated than cash.					
8.3	The ease of use for POS terminal depends on prior experience with other technologies such as mobile and computer.					
3. Attitude toward Using POS terminal						
9.1	The attitude of Tellers is a challenge when transacting business with POS terminal					
9.2	Consumers have confidence and trust in the cash payments system than POS terminal					
9.3	People are resistant to new payment mechanisms.					
9.4	Tendency to be content with the existing payment system					
9.5	Lack of Trust					
9.6	Lack of tip					
9.7	Fear of risk					
4. Infrastructures - electronic payment infrastructures towards an efficient implementation of POS terminals						
10.1	Network failure is one of the challenges in using POS terminals					
10.2	Power outage does affect POS transaction					
10.3	POS terminals are abundantly available in business premises.					

B. Organizational/ Internal Factors

No	Description	1-SA	2-A	3-N	4-D	5-SD
5. Operational factors - Please indicate the level of your agreement how the following factors affect the adoption of POS terminal in the CBE						
11.1	Employees of the bank have the knowledge to answer customer questions related to POS terminal.					
11.2	Unclear strategy towards electronic payment system.					
11.3	Low support and follow up					
11.4	Lack of Coordination and cooperation between branches, districts and E-payment process					
11.5	Limited top management support					
11.6	Increases cost of the Bank.					
11.7	POS deployment is involuntary (as they are deployed by the bank without being solicited for the merchants)					
11.8	A specific legislation on consumer protection related to the usage of POS services is in place					
11.9	Lack of immediate responses by the bank in solving problems					
11.10	Ambiguous roles and responsibilities on POS related activities (Procedural and guidance gap)					
11.11	Lack of fast response in procuring goods and services in accordance with the procurement plan.					
6. Payment Mode Factors- the following characteristics of payment systems are among the factors that make customers of the bank not to use POS terminals						
12.1	Security of communication over the network					
12.2	Due to delays associated with access to funds after sales from the POS terminal					

12.3	Double debit of accounts for single transaction					
12.4	Deducting/locking of customers account for failed transactions					

Please provide any additional comments or clarifications on practice and challenges faced in performing P.O.S deployment process of C.B.E that may not be properly captured in this questionnaire.

Thank YOU!

Annex II

Interview Questions

1. What's your opinion about the bank the use of engaging in electronic banking, specifically the POS deployment practice of the process?
2. Does the bank face internal capacity challenges related to POS deployment management? If yes, please describe what they are and how it is affecting the process of implementation?
3. In your opinion what are the key challenges the bank face with its customers to deploy at their out let?
4. What's your opinion about management involvement and follow up in POS deployment and activation process?
5. What can be said about general attitudes of the public in institutionalizing POS terminal?
6. What kind of facility do you think would enhance the effective implementation of POS deployment? Example: - top management, employees, customers, government offices.