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St. Mary's University, Ethiopia

Examining the Effect of Electronic Banking on Bank's Performance: The Case of Bank of Abyssinia

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A Thesis Submitted for St. Mary's University, School of Post Graduate Studies, in Partial Fulfillment of the Requirements for the Award of Master of Business Administration (MBA)

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ST MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

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Tewodros Mekonen (PhD).	_____	_____
Name of Advisor	Signature	Date

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Abstract

Electronic banking is a term used for new age banking systems, represents an automated delivery of new and traditional banking products and services directly to customers through electronic, interactive communication channels. It is a service that provides customers the opportunity to gain access to their accounts, execute transactions, and obtain information on financial products and services through a public or private network, including the internet. This study aims to analyze the relationship between the application of E-Banking and the financial performance of Bank of Abyssinia. The data used is sourced from the annual report for 2014-2022. Profit before tax was used as the dependent variable and as independent variable number of atm, number of pos and number of USSD users were used. The data analysis technique used is descriptive statistics and multiple regression. The findings of this research revealed that E-banking influences financial performance of the bank positively except in the case of mobile banking. The adoption of E-banking by the bank has a high potential of improving financial performance and hence better returns to the shareholders.

Keywords: Electronic Banking, Bank of Abyssinia, ATM, POS, Mobile banking, PBT

Acronyms

ANOVA: Analysis of Variance

ATM: Automatic Teller Machine

B: Unstandardized Regression Coefficient

BOA: Bank of Abyssinia

CBE: Commercial Bank of Ethiopia

E-Banking: Electronic Banking

H: Hypotheses

NBE: National Bank of Ethiopia

PhD: Doctor of Philosophy

POS: Point of Sale

USSD: Unstructured Supplementary Service Data

PBT: Profit before tax

r: Correlation Coefficient

R: Regression Coefficient

R2: Regression Squared Coefficient

ROA -Return on Assets

ROE- Return on Equity

SMS: Short Message Service

SPSS: Statistical Packages for Social Science

TAM: Technology Acceptance Model

t: Student t Statistic

α: Cronbach's Coefficient

β: Standardized Regression Coefficient

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Chapter One
Introduction

1.1 Background of the Study

Electronic banking is a term used for new age banking system, represents an automated delivery of new and traditional banking products and services directly to customers through electronic, interactive communication channels. It is a service that provides customers the opportunity to gain access to their accounts, execute transactions, and obtain information on financial products and services through a public or private network, including the internet (Driga, and Isac, 2014).

The implementation of E-banking can bring about many competitive advantages for banks in today's highly competitive banking market. E-banking transactions are much cheaper than branch or even phone transactions (Shah & Clarke, 2009). Some of the benefits related with adoption of E-banking are it can provide a cost-effective way of conducting business and enriching relationship with customers by offering superior services, and innovative products, which may be customized to individual needs (Shah & Clarke, 2009). It is also beneficial to the easier documentation and transaction tracking, reducing the costs of printing, maintenance and distribution of banknotes, and it offers multiple payment options and gives immediate notification on all transactions on customers' account etc. (Karimzadeha et al, 2014).

In Ethiopia cash is still the most dominant medium of exchange and electronic banking is not well known. Certainly, the banking industry in Ethiopia is underdeveloped and therefore there is an all immediate need to embark on capacity building arrangements and modernize the banking system by employing the state-of-the-art technology being used anywhere in the world (Worku, 2010). Henok (2015) argued that information technology plays a key role in promoting inclusive financial system as it is the only way to reduce the cost significantly and reach the masses. But, of it doesn't mean that technologies are not suitable for financial inclusion due to affordability, accessibility, 2 security and privacy. It enhances efficiency, offers access to financial and banking services, generates new opportunities for income generation and improves governance and gives poor people a voice. Electronic payments are not currently covered in Ethiopian legal system. Lack of such legal framework may thus hinder the introduction of cost effective modern electronic payment instrument such as ATMs, credit and debit cards, mobile/telephone/internet banking (Bultum, 2014).

According to NBE annual report (2017), Ethiopian financial sector has been resilient and continued to operate under safe and sound environment. Commercial banks have continued to expand their financial intermediation and remained highly profitable. With the opening of 956 new branches in 2016/17 alone, which raised the total number of branches to 4,257 from 3,301 the year before ago. As a result, bank branch to population ratio declined from 1:27,932 people in 2015/16 to 1:22,164 people in 2016/17. About 33 percent of bank branches were located in Addis Ababa. Banks have also increased their deposit mobilization (by 29.8 percent), loan collection (by 25.9 percent) and loan disbursement (by 23.8 percent).

Net Interest Margin (NIM), Return on Assets (ROA), and Return on Equity were identified by Ahmed (2003) are in use in the literature since then. Profitability measures according to Akinola (2008) include Profit before Tax (PBT), Profit after Tax (PAT), ROE, Rate of Return on Capital (ROC) and ROA. Some other, studies on profitability have also used returns on average bank assets (ROAA), net interest margin (NIM) and return on average equity (ROAE) to measure profitability (Francis, 2013). However, owing to divergent views among scholars on the superiority of one indicator over the others as measures of profitability, there is no clear-cut stand as to which best fits. Based on the above background, this research attempted to examine the effect of electronic banking on performance of Bank of Abyssinia using Profit before Tax (PBT) as a measure of Performance and number of ATM, number POS and number mobile banking users as explanatory variable of bank's performance.

1.2 Statement of the problem

Given the competitive landscape and macroeconomic environment, the Ethiopian banking industry has been growing in key indices such as deposit, loan, revenue, branch expansion and profit (NBE annual report 2018/2019). However, customers are becoming sensitive on preference of Banks, and they are willing to switch constantly searching for better experience (Anil, 2005).

Technology has inarguably made our lives easier. It has cut across distance, space and even time. One of the technological innovations in banking, finance and commerce is Electronic Payments. Electronic Payments (e-payments) refers to the technological breakthrough that enables us to perform financial transactions electronically, thus avoiding long lines and other hassles. Electronic Payments provides greater freedom to individuals in paying their taxes, licenses, fees, fines and purchases at unconventional locations twenty-four hours a day and seven days per week (Sumanjeet, 2009). With the rapid growth of mobile phone ownership to facilitate digital payments in the developing world, shifting from cash to digital payments offers high potential payoffs for entrepreneurs worldwide (Klapper, 2017).

In developing countries, the lack of electronic banking infrastructure block impacts of the expected cost effectiveness and profitability. In some developing countries, it is not available strong effects on the profitability of electronic banking activities because of inadequate information technology infrastructure of the branch and ATM network are limited. The case is also real for online banking activities. Internet infrastructure based on relatively old technology blocks the achievement of expected performance of banks in developing countries (Alam et al., 2007, Gutu 2014).

On the other hand, recent studies one banking and performance of the banks in African countries that relatively lower level of development. For example, Abaenew et al. (2013) and Hassan et al. (2013) made studies on Nigeria and Adua and Kingoo (2012) and Nguyen Gakur Connection (2013) made studies on Kenya the electronic banking activities increase profitability on banks. Previous studies in Ethiopian e-business focus on the assessment study and the correlation between e-banking and customer satisfaction (Assefa 2013). Likewise, Gemechu (2014); Gardachew (2010) evaluated the adoption of e-banking in the context of banks perception, in addition, one research found on the effect of e-banking on performance (Tilahun2015) focus only ATM, debt card and POS.

According to Solomon (2016) the role of electronic banking on financial performance by selecting 10 banks for the period covering from 2013-2015. He has examined the roles of e-banking on return on assets and used secondary data. The study showed e-banking service has a positive role on financial performance of commercial banks. There exist a number of empirical studies concerning the impact of adoption of e-banking on the performance. Some scholars observed positive impact (Ezkel and Alaleaken (2016), Onay, et.al. (2008, Daneshvar & Rammesh (2012). The results of these study contradict Hosen and Gutu (2015) which states that e-banking is negatively correlated to bank financial performance.

It is at the center of such mixed conclusions that it becomes imperative to carry out a study in Ethiopian context whether e-banking has effect on financial performance of commercial banks in general and in Bank of Abyssinia in particular. Despite the increasing use of e-banking was observed in Ethiopia, previous studies emphasize on the adoption, customer satisfaction to measure the efficiency of e-banking. One of the reasons for the limited empirical studies in Ethiopia is that the introduction of electronics is relatively new. Moreover, the research they conducted time is long and does not show a clear picture compared to current situation. It is simply because at the time of the research the Ethiopian banks was at infant stage with this specific service, most of the bank have not started e-banking service, the number of users and the number of transactions is incomparable with current situation. This study therefore intends to fill these relevant gaps in literature by studying the different types of electronic banking services provided by the bank, and the role of the identified service on PBT as a financial performance indicator.

1.3 Research Question

The study attempts to answer the following research question:

1. What is the effect of number of ATM on the financial performance of Bank of Abyssinia?
2. How does the number POS affect the financial performance of Bank of Abyssinia?
3. What is the effects of number mobile banking users on the financial performance of Bank of Abyssinia?
4. What is the financial performance of Bank of Abyssinia as measured by Profit before Tax (PBT)?

1.4 Research Objective

1.4.1 General Objective

The main objective of this study is to examine the effect of electronic banking on performance of Bank of Abyssinia.

1.4.2 Specific Objectives

The study pursued the following specific objectives.

1. To examine the effect of number of ATM on the financial performance of Bank of Abyssinia.
2. To analyze the effects of the number POS on the financial performance of Bank of Abyssinia?
3. To investigate the effects of number mobile banking users on the financial performance of Bank of Abyssinia.
4. To assess the financial performance of Bank of Abyssinia as measured by Profit before Tax (PBT).

1.6 Significance of Study

The primary purpose of this study was an academic purpose (as a partial fulfillment for the requirements of the degree of Master of Arts in Business Administration). The study can also serve as an input or as a piece of reference for researchers who need to undertake detail study on the effect of electronic on bank performance in Bank of Abyssinia. Similarly, concerned institutions can use the output of the study to understand the current situation and develop better strategies if needed.

The study can support the existing knowledge about the effects of electronic banking implementing on the financial performances of banks. The study also generated empirical evidence that could serve as a preliminary reference for further and deeper analysis. The study also exposed the writer of this study to the research world and acquires experience as future professional. Furthermore, the major contribution of this paper lies on providing indicative information, which could inspire researchers to undertake in-depth studies on the subject.

1.7 Scope of the Study

The scope of the study can be discussed in terms of the issue under investigation, geographical area and the methodology adopted. Theme wise, the study is delimited to examine the Effect of Electronic/ Digital Banking on Bank Performance. In geographical terms, the study is delimited to Bank of Abyssinia. The study also confines to only to the performance involved with digital banking operation products. Methodologically quantitative research is implemented, approach that enables me to use statistical tools and uses both descriptive and explanatory research designs. The time dimension of the study is for nine which is based on the analysis of time series data.

1.8 Definition of key terms

The following are the key terms of the study.

Electronic banking: Electronic banking or e-banking refers to an umbrella term for the process by which a customer may perform banking transactions electronically without visiting a brick-and-mortar institution. E-banking is also the use of electronic means to deliver banking services, mainly through the Internet. The term is also used to refer to ATMs, telephone banking, use of plastic money, mobile phone banking and electronic funds transfers (Ombati et al, 2011).

Automated Teller Machine (ATM): Automated Teller Machine (ATM) is a device, which offers a range of services to users that are authorized by using a PIN-code. From a cash ATM, user is able to make payments, withdraw money or view account information (Myllynen, 2009).

Point of Sale (POS): According to Malak (2007) cited in Ayana (2014) POS 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 to debit card holder to the store's account.

Mobile Payment: Mobile payment (m-payment) is an electronic payment done using mobile devices. One of the main uses of m-payment is in mobile commerce (m-commerce). M-commerce is the buying and selling of goods and services through mobile devices. These mobile devices include mobile phones, Personal Digital Assistants (PDAs), smart phones, and laptops.

1.9 Organization of the paper

This study is organized into five chapters. In the first chapter, the general background of the study, statement of the problem, research questions, general and specific objectives, significance of the study, scope and limitations of the study were included. In the second chapter, review of related literature was incorporated. In the third chapter, the methodology part of the study is presented. The fourth chapter deals with the data analysis and interpretation conducted to reach at findings. The final chapter presents the conclusion and recommendation so the study followed by list of references

Chapter two

Review of Literature

This chapter discusses the literature related with e-banking. Accordingly, the review of the literature provides the reader with the explanation of the theoretical rationale of the problem being studied, types of electronic banking as well as what research has already been done and how the findings relate to the problem at hand. The purpose of the literature review is to avoid unnecessary intentional or accidental duplication of material already covered. This literature review was reviewed from previous past major activities that had been undertaken to address the issues in electronic banking.

2.1 Review of Theoretical Literature

2.1.1 Definition of E-Banking

Electronic banking or e-banking refers to an umbrella term for the process by which a customer may perform banking transactions electronically without visiting a brick-and-mortar institution (Ombati et al, 2011). E-banking is also the use of electronic means to deliver banking services, mainly through the Internet. The term is also used to refer to ATMs, telephone banking, use of plastic money, mobile phone banking and electronic funds transfers. Daniel, (1999), defines E-banking is as the automated delivery of new and traditional banking products and services directly to customers through electronic, interactive communication channels.

E-banking means a system through which financial service providers, customers, individuals and businesses are able to access their accounts, do transactions and obtain latest information on financial products and services from public or private networks, such as the internet. For example, using intelligent devices such as personal computer, automated teller machines (ATMs) and personal digital assistant (PDA), customers access e-banking services and do their transactions with less effort as compared to the branch-based banking. The term “e-banking” refers to a method of banking through which customers are able to carry out their banking transactions electronically without visiting a bank branch (Simpson, 2002).

The concept of e-banking is a delivery channel for banking services. Banks have used electronic channels for years to communicate and transact business with both domestic and international corporate customers. With the development of the Internet and the World Wide Web (WWW) in the latter half of the 1990s, banks are increasingly using electronic channels for receiving instructions and delivering their products and services to their customers. This form of banking is generally referred to as e-banking or Internet banking, although the range of products and services provided by banks over the electronic channel vary widely in content, capability and sophistication.

Salehi, and Zhila, (2008), describes e-banking as an electronic connection between bank and customer in order to prepare, manage and control financial transactions. Electronic banking can also be defined as a variety of following platforms: (i) Internet banking (or online banking), (ii) telephone banking, (iii) TV-based banking, (iv) mobile phone banking, and e-banking (or offline banking). According to Shan, T.C. (2004), Electronic banking (e-banking) can be defined as the automated, smooth and efficient delivery of modern and traditional banking services through electronic and communicative channels. It includes the systems that customers use to access accounts, transact businesses and obtain information through networks, including the internet. Electronic banking is, therefore, a general term describing the whole process of performing such transactions without the need to physically visit the financial institution. All of the following terms refer to different forms of electronic banking; personal computer (PC) banking, online banking, home banking, mobile banking and virtual banking.

Virtual banking is the situation where banks do all their transactions online by the use of mobile, emails and Automated Teller Machines without having a physical location while online banking involves the bank having a physical location but offering services online. Internet banking is called transactional online banking, because it involves provision of facilities such as accessing accounts, funds transfer and buying financial products or services online. According to Arunachalam and Sivasubramanian, (2007), Internet (electronic) banking is where a customer can access his or her bank account via the Internet using personal computer (PC) or mobile phone and web-browser. In addition, Ongkasuwan, and Tantichattanon, (2002) further defines Internet (electronic) banking service as banking service that allows customers to access and perform financial transactions on their bank accounts from their web enabled computers with Internet connection to banks' web sites any time they wish. Internet banking service also enables bank customers to perform transactions

such as transfer and payments, access of latest balance, statement viewing, account detail viewing, customization, print, downloading of statements and obtaining a history statement on all accounts linked to the bank's customers‟ unto Bank (TMs).

According to Khan, (2007), Internet (electronic) banking includes the system that enables financial institution customers, individuals or businesses, access accounts, transact business, or obtain information on financial products and services on public or private network including Internet. Internet (electronic) banking is the act of conducting financial intermediation on the Internet (Kim et al., 2006). It is that process whereby the customer is able to access, control and use his/her account over the Internet. It should be noted, however, that the terms used to describe the various types of electronic banking are often used interchangeably.

2.1.2 Dimensions of E-Banking

ATM (Automated teller machine): - Automated teller machine is a computer-controlled device that dispenses and provides other services to customers who identify them with a personal identification number (PIN). An ATM device allows a bank customer to withdraw cash from his account via a cash dispenser (Machine), and the account is debited immediately. A fundamental advantage is that it needs not to be located within the banking premises. It is usually in stores, shopping malls, fuel stations etc. It saves customers time in service delivery as alternative to queuing in bank halls, customers can invest such time saved into other productive activities. ATMs are a cost-efficient way of yielding higher productivity as they achieve higher productivity per period than human tellers (Ojokuku & Sajuyigbe, 2012).

The number of ATMs (NATM) can be measured by counting the ATM terminals that have been installed by the bank.

Point of Sale Terminals: - This mode of e-banking handles cheque verification, credit authorization, cash deposit and withdrawal and cash payment. It enhances electronic fund transfer at the Point of sales. Thus, customers' accounts would be debited immediately with the cost of purchase in an outlet such as a petrol station or supermarket. The implication of this is that customers can make payment for goods and services without necessarily encountering physical cash as the purchase price would be debited on the buyer's card and credited on the seller's account (Ojokuku & Sajuyigbe, 2012).

The number of POS (NPOS) can be measured by counting the POS machines that have been installed by the bank.

Mobile banking (USSD): - This mode of e-banking primarily uses mobile phones as electronic devices. Mobile phones give customers the opportunity to operate their account with bank if their phones and network services provider support the SMS (short messaging service) which would enable the customer check account balance (Ojokuku & Sajuyigbe, 2012).

"USSD" refers to Unstructured Supplementary Service Data (USSD) unique to GSM (Global System for Mobile Communication). It is a capability built into the GSM standard phones to support transmitting of information over the signaling channels of the GSM network. USSD provides session-based communication, enabling a variety of applications. USSD based mobile banking can be used for fund transfers, checking account balance, generating bank statements, among other uses.

2.1.3 Bank Performance

In general, the performance is defined as the achievement of the objectives set forth by the firm (the bank) within the agreed time and with minimal costs while using the available resources. (Chenini Hajer, 2016). Many variables have been used by different researchers to measure banks performance. Net Interest Margin (NIM), Return on Assets (ROA), and Return on Equity were identified by Ahmed (2003) and are in use in the literature since then. Profitability measures according to Akinola (2008) include Profit before Tax (PBT), Profit after Tax (PAT), ROE, Rate of Return on Capital (ROC) and ROA. Some other, studies on profitability have also used returns on average bank assets (ROAA), net interest margin (NIM) and return on average equity (ROAE) to measure profitability (Francis, 2013). However, owing to divergent views among scholars on the superiority of one indicator over the others as measures of profitability, there is no clear-cut stand as to which best fits. This research attempts to examine the effect of electronic banking on performance of Bank of Abyssinia, by using Profit before Tax (PBT) as a measure of Performance.

2.1.4 Evolution of E-Payment

The astonishing growth and sophistication of information and communication technology (ICT) is changing societies' ways of life in various parts of the world. One of the leading areas where this is manifested is the way business is conducted. The growth of the Internet and World Wide Web (WWW) has made electronic commerce (e-commerce) possible. E-Commerce in its simplest sense is trading electronically. It offers consumers and merchants convenience and speed. The success and growth of e-commerce, however, depends on efficient electronic payment (e-payment) system. E-payment, the transfer of values electronically, it in turns depend on secure ICT infrastructure, efficient legal and regulatory regime, and widespread awareness among the public and business (Kidan, 2005).

While various large merchants issued their own credit cards in the 1940s and 50s in the US, the history of general purpose payment cards (not limited to use at a single merchant) begins in the US state of California. In 1958, Bank of America, which had a dominant market position in the state, mailed unsolicited credit cards, consisting of a paper card, with a revolving, unsecured $300 credit line, to several thousand people in a small city outside of San Francisco. It franchised the operations, called Bank Ameri card, to other banks in the 1960s, and formalized itself as a separate organization called Visa in 1976. A rival group of California banks created a similar card-based network in 1979 which is called MasterCard (Raja, 2008).

Electronic banking is the term that describes all transactions that take place among companies, organizations, and individuals and their banking institutions. First conceptualized in the mid-1970s, some banks offered customers electronic banking in 1985. However, the lack of internet users, and costs associated with using online banking, stunted growth. The Internet explosion in the late-1990s made people more comfortable with making transactions over the web. While financial institutions took steps to implement e-banking services in the mid-1990s, many consumers were hesitant to conduct monetary transactions over the web. It took widespread adoption of electronic commerce, based on trailblazing companies such as America Online, Amazon.com and eBay, to make the idea of paying for items online widespread. By 2000, 80 percent of U.S. banks offered e-banking. Customer use grew slowly. At Bank of America, for example, it took 10 years to acquire 2 million e-banking customers. However, in 2001, Bank of

America became the first bank to top 3 million online banking customers, more than 20 percent of its customer base (Batchelor, 2017).

Along with this Raja (2008) argued E-commerce is undergoing huge growth in terms of the volume of goods and services that are being traded on-line. New areas such as B2B and the related business to government (B2G) e-commerce are developing as well as the potential for large numbers of people engaging in e-commerce. Even the most optimistic estimations of e-commerce still place the goods value at less than 1% of the total value of goods and service traded in the conventional economy, so as larger numbers of people come on-line, there is plenty of scope for growth. In order to bring an on- transaction to completion, payment must be fully integrated into the online dialogue. Banks will find a demand from their large business clients to effect high value bank mediated transfers of funds easily and efficiently. The emergence 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 (Tekabe et. al, 2016).

2.1.5 Technology Acceptance Model

Technology acceptance model (TAM) was originally proposed by Davies in 1986. This mode was designed to forecast the user's acceptance of information technology and usage in an organizational setting. David, C. (2004) posits that firms are adopting technology to cope with the dynamics of the external environment. This model has been tailored in a manner that can accommodate changes for improved costs reduction and efficiency. Technology Acceptance Model deals with perceptions as opposed to real usage, the model suggest that users, the key factors that influence their decision on how, where and when they will use it (Davis, 1989).

The factors to consider are: Perceived usefulness (PU). According to Davis, it is the degree to which a person believes that using a particular system will lead to improved performance (Britton, & McGonegal, 2007). Perceived ease-of-use (PEOU) is explained as the degree to which a person believes that using a particular system would results to improved productivity. The TAM was proposed by Davis, (1989), this model expounds on the attitude behind the objective to use technology or a service. This theory is relevant to this study since it explains user's acceptance of information technology and usage in an organizational context. Acceptance is the first process in technology use and has a bipolar implication. First of all, acceptance is a precursor to adoption and hence this theory complements the preceding theories. Acceptance dictates the attitude and

perception of the users which eventually affects efficiency of use and hence performance. Strategic adoption as well as operational efficiency and hence productivity of systems are a function of acceptance of the technology. It is thus plausible to conclude that without acceptance, the rest of the theories would be redundant and invalid. Though acceptance is an initial phase, it is also an attitude shaping facet that influences adoption and effectiveness of use (Davis, 1989).

2.1.6 Bank Profitability

According to literatures, bank performance studies have been started in the late 1980s and/or early 1990s. These studies revolve on different theories. For Instance, the signaling theory, which elaborates the relationship between capital and profitability, suggests that higher capital is a positive signal to the market of the value of bank. (Berger, 1995) By the same token, a lower leverage indicates that banks perform better than their competitors who can't raise their equity without further deteriorating the profitability (Ommeren, 2011).

Bankruptcy cost hypothesis on the other hand, argues that in case where bankruptcy costs are unexpectedly high, a bank holds more equity to avoid period of distress (Berger, 1995). Hence, both the signaling theory and bankruptcy cost hypothesis support the existence of a positive relationship between capital and profitability. However, the risk-return hypothesis suggests that increasing risks, by increasing leverage of the firm, leads to higher expected return (profitability) on one hand and it will definitely reduce the equity to asset ratio (represented by capital) on the other hand. Thus, risk-return hypothesis predicts a negative relationship between capital and profitability. (Obamuyi, 2013)

Contrary to the above argument, Modigliani - Miller theorem conclude that no relationship exists between the capital structure (debt or equity financing) and the market value of the bank (Modigliani and Miller, 1958). In other words, no relationship exists between equity to asset ratio and funding costs or profitability under perfect market. However, when the concept of Money Market's perfect market is scrutinized there is no such a thing in the real world owing to agency problem, information asymmetry problem, existence of transaction costs, etc. Thus, when the perfect market does not hold there could be a possible negative relationship between capital and profitability. (Ommeren, 2011).

Olweny and Shipho (2011) argued that the Market Power theory (MP) assumes bank profitability is a function of external market factors, while the Efficiency Structure (ES) theories and the balanced portfolio theory largely assume that bank performance is influenced by internal efficiencies and managerial decisions. Despite the existence of several models to deal with bank specific aspects, none of the models are believed to be sufficient to express all bank specific behaviors in a holistic manner.

2.1.7 Limitation of Traditional Payment System Relative to Electronic Payment

Given the liquidity and transactional anonymity of cash, cash payments are subjected to "leakage" (payments that do not reach the recipient in full) and "ghost" (fake) recipients, particularly in the context of government transfers. By moving to digital payments, the traceability of the payment process is improved. First, recipients have digital records of the amount of the payments they are to receive. Second, digital payments generally require more strict identification documentation making it harder for ghost recipients to remain undetected. Given the lack of digital-payment penetration, governments, consumers, and financial providers in Sub-Saharan Africa are still bearing the high cost of cash payments costs associated with manual acceptance, record keeping, counting, storage, security, and transportation (World Bank, 2014).

A study made by Girma (2016) indicated that the bricks and mortar approach (traditional Banking) requires expensive investment and not economically feasible for financial institution. Otherwise, financial inclusion would be a nightmare in Ethiopia unless banks should make strategic shift to alternative channels like E- Banking. Moreover, E-banking technology enhanced accessibility of the bank services to both existing and new customers and also created better relationship among banks and clients. Moreover, cash can easily be stolen and is usually not convenient for large amount of transactions. Cash also does not provide a float (the period of time between a purchase and actual payment for the purchase). It also forces the payer and the payee to physically present themselves. Thus, cash is not a convenient means of payment for e-commerce (Kidan, 2005).

2.1.8 The Need for Electronic Payment

Muche (2010) on her study, mentioned that electronic banking allows banks to expand their markets for traditional deposit taking and credit extension activities, and to offer new products and services or strengthen their competitive position in offering existing payment services. In addition, electronic banking could reduce operating costs for banks. More broadly, the continued development of electronic banking and electronic money may contribute to improving the efficiency of the banking and payment system and to reducing the cost of retail transactions nationally and internationally. Adoption of e-banking service have the benefit of attracting high value customers, enhanced image, larger customer coverage, improvement of organizational efficiency, and load reduction from the view point of the bank.

2.1.9 Overview of Banking and Banking Practice in Ethiopia

It was in 1905 that the first bank, the -Bank of Abyssinia, was established based on the agreement signed between the Ethiopian Government and the National Bank of Egypt, which was owned by the British. According to the agreement, the bank was allowed to engage in commercial banking (selling shares, accepting deposits and effecting payments in cheques) and to issue currency notes. The agreement prevented the establishment of any other bank in Ethiopia, thus giving monopoly right to the Bank of Abyssinia. Apart from serving foreigners residing in Ethiopia, and holding government accounts, it could not attract deposits from Ethiopian nationals who were not familiar with banking services (Fasil, & Merhatibeb, 2009).

The Ethiopian Government, under Emperor Haile-Selassie, closed the Bank of Abyssinia and established the Bank of Ethiopia which was fully owned by Ethiopians. The Bank started operation in 1932. The majority shareholders of the Bank of Ethiopia were the emperor and the political elites of the time. The Bank was authorized to combine the functions of central banking (issuing currency notes and coins) and commercial banking. With the Italian occupation (1936- 1941), the operation of the Bank of Ethiopia came to a halt, but a number of Italian financial institutions were working in the country. These were Banco Di Roma, Banco Di Napoli and Banca Nazionale del Lavora. It should also be mentioned that Barclays Bank had opened a branch and operated in Ethiopia during 1942-43. With the departure of the Italians and the restoration of Emperor Haile Selassie's government, the State Bank of Ethiopia was established in 1943. In 1963, the State Bank of Ethiopia split into the National Bank of Ethiopia and the Commercial Bank of Ethiopia S.C.

with the purpose of segregating the functions of central banking from those of commercial banking. The new banks started operation in 1964 (Fasil, & Merhatibeb, 2009).

The first privately owned company in banking business was the Addis Ababa Bank S.C., established in 1964. The Bank carried out typical commercial banking business. Banco Di Roma and Banco Di Napoli also continued to operate. Thus, until the end of 1974, there were state owned, foreign owned and Ethiopian owned banks in Ethiopia. The banks were established for different purposes: central banking, commercial banking, development banking and investment banking. Such diversification of functions, lack of widespread banking habit among the wider population, the uneven and thinly spread branch network, and the asymmetrical capacity of banks, made the issue of competition among banks almost irrelevant (Fasil, & Merhatibeb, 2009).

Following the 1974 Revolution, on January 1, 1975 all private banks and 13 insurance companies were nationalized and along with state owned banks, placed under the coordination, supervision and control of the National Bank of Ethiopia. The three private banks, Banco Di Roman, Banco Di Napoli and the Addis Ababa Bank S.C. were merged to form ― Addis Bank. Eventually in 1980 this bank was itself merged with the Commercial Bank of Ethiopia S.C. to form the ―Commercial Bank of Ethiopia, thereby creating a monopoly of commercial banking services in Ethiopia. In 1976, the Ethiopian Investment and Savings S.C. was merged with the Ethiopian government saving and Mortgage Company to form the Housing and Savings Bank.

The Agricultural and Industrial Development Bank continued under the same name until 1994 when it was renamed as the Development Bank of Ethiopia. Thus, from 1975 to 1994 there were four state owned banks and one state owned insurance company, i.e., the National Bank of Ethiopia (The Central Bank), the Commercial Bank of Ethiopia, the Housing and Savings Bank, the Development Bank of Ethiopia and the Ethiopian Insurance Corporation. After the overthrow of the Dergue regime by the EPRDF, the Transitional Government of Ethiopia was established and the New Economic Policy for the period of transition was issued. This new economic policy replaced centrally planned economic system with a market-oriented system and ushered in the private sector. Several private companies were formed during the early 1990s, one of which is Oda S.C. which conceived the idea of establishing a private bank and private insurance company in anticipation of a law which will open up the financial sector to private investors (Fasil, & Merhatibeb, 2009).

Studies made regarding the financial sectors in Ethiopia witness its infancy and dominancy by the state-owned Commercial bank. Keatinge (2014) strengthen this claim declaring, State owned CBE dominate the sector with assets accounting for approximately 70 percent of the industry's total holdings. The dominance of public sector banking certainly restricts financial intermediation and economic growth. It contrasts with regional and international peer countries where banking industries have a much higher share of private sector and foreign participation. (Keating, 2014) Literatures revel, compared to most countries, Ethiopia has taken a cautious approach toward the liberalization of its banking industry. For all intents and purposes, its industry is closed and generally less developed than its regional peers (Keating 2014 and Harvey1996).

The Ethiopian financial sector is dominated by the banking sector. Banks are the important component of any financial system. They play important role of channeling the savings of surplus sectors to deficit sectors. The efficiency and competitiveness of banking system defines the strength of any economy. Like other developing countries in Ethiopia banks plays a vital role in the process of economic growth and development. Despite a rapid increase in the number of financial institutions since financial liberalization, the Ethiopian banking system is still underdeveloped compared to the rest of the world. Cash is still the most dominant medium of exchange. The use of checks is mostly limited to government institutions, NGOs and some private businesses (Garedachew, 2010).

Commercial banks in Ethiopia provide the same services with the same operational style that they used to offer before decades. The common banking functions provided by public and private banks in Ethiopia are deposit mobilization, credit allocation, money transfer and safe custody. Banks in Ethiopia are unable to improve customer service, design flexible and customized products, and differentiate themselves in a market where product features are easily cloned. Ethiopian banking is unable to come from long way of being sleepy to a high proactive and dynamic entity. The customers of Ethiopian commercial banks have missed to enjoy with the technological advancement in banking sector which has been entertained elsewhere in Africa and the rest of the world. The modern banking methods like ATMs, Debit cards, Credit cards, Tele banking, Internet banking, Mobile banking and others are new to the Ethiopian banking sector.

E-banking which refers to the use of modern technology that allows customers to access banking services electronically whether it is to withdraw cash, transfer funds, to pay bills, or to obtain

commercial information and advice are not known in Ethiopia. In Ethiopia it is impossible to withdraw money without presenting the passbook and money transfer is allowed only in between branches of the same bank. However, from the public and the economy there is a strong need for strengthening linkages among banks to allow healthy flow of financial resources among financial institutions and optimize the contributions of the entire financial system to the development processes as a whole (Garedachew, 2010).

2.1.10 Determinants of Bank's Profitability

Theoretically factors affecting bank profitability are mainly divided into two categories as internal and external variables. The internal (bank-specific factors) are factors that are related to internal efficiencies and managerial decisions. The efficiency theory highly assumes as bank performance is influenced by those internal factors that are related to internal efficiencies and managerial decisions. Such factors include determinants such as bank size, capital adequacy, liquidity risk, operational efficiency (expenses management), management efficiency, employee efficiency and funding cost. On the other hand, the capital asset pricing theory assumes as bank profitability is a function of external market factors.

Bank specific variables are variables that affect the profitability of a specific bank. These factors are within the scope of the bank and are easy to be manipulated and differ from bank to bank. Andreas, and Gabrielle, (2009) stated that the bank profitability is usually measured by internal determinants which include bank specific variables. Athanasoglou et al, (2006) argued that profitability is a function of internal factors that are mainly influenced by a bank's management decisions and policy objectives such as the level of liquidity, provisioning policy, capital adequacy, expense management and bank size, and the external factors such as Gross Domestic Product, Inflation, Interest rate, macroeconomic policy stability and other macroeconomic factors.

The impact of size on a bank's performance has been greatly argued among researchers. De Jonghe, (2010) concludes that small banks are better able to withstand difficult economic conditions, while Barros, Ferreira and Williams (2007) argue that small banks are more likely to get good performance and less chances of getting bad performance. Conversely, large banks are less likely to obtain good performance and a greater chance of getting bad results. Barros et al. (2010) responded to the argument of economies of scale and argued that some costs can be reduced simply by increasing the size.

Needless to say, even though the main focus of this particular study is mainly confined to quantitative measure of both bank specific and macroeconomic variables; It should be properly noted that quantitative performance measurements by their nature are not comprehensive enough since they lack to incorporate qualitative elements such as monetary policy, regulation and supervision, financial sector openness, institutional environment, financial sector and non-bank, the management style and risk taking behavior of the bank itself. Any financial sector indicators lacking these qualitative elements could not be complete enough to capture the true level of the sector (Creane, et.al 2004).

2.1.11 Electronic-Banking and bank's Performance

The banking sector is considered to be an important source of financing for most businesses. The common assumption, which supports much of the financial performance research and discussion, is that increasing financial performance will lead to improved functions and activities of the organizations. The subject of financial performance and e-banking into its measurement is well advanced within finance and management fields.

Commercial banks assaulted by the pressure of globalization and competition from nonbanking functions must find new ways to add value to the services. The question "what drives performance?" is at the top in understanding superior performance and hence striving for it. Substantial research efforts have gone into addressing this question, starting from the strategic level and going down to operational details. Customers in developing economies seems to keep the "technological factors" of services as the yardstick in differentiating good and bad services and the human factor. The variation in services offered by the banks develops the excellence for service quality. Banking is no longer regarded as a business dealing with money transaction alone, but it also seems as a business related to information on financial transaction (Padwal, 1995). Several innovative IT based services such as Automated Teller Machines (ATM), Internet banking, Mobile and POS banking, Anywhere-Anytime banking have provided a number of convenient services to the customer so as the service quality improves, the probability of customer satisfaction increases as the result the performance of the bank will also increase. E-banking is an improvement over traditional banking system because it has reduced the cost of transaction processing, improved the payment efficiency, financial services and the banker-customer relationship.

2.2 Review of Empirical Literature

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. Dashen bank, a forerunner in introducing e-banking in Ethiopia, has installed ATMs at convenient locations for its own cardholders (Garedachew, 2010). By the end of 2008 Wegagen Bank has signed an agreement with Technology Associates (TA), a Kenyan based information technology (IT) firm, for the development of the solutions for the payment system and installation of a network of ATMs on December 30, 2008 (Asrat, 2010).

Zemen Bank, the only Ethiopian bank anchored in the idea of single branch banking, by launching full-blown internet banking, a service which is new to Ethiopian banking industry in the year 2010. The bank tested the venture through its first phase of the online service, and now it is already started the full-fledged version, which enable customers to make online money transfer freely. Previously, the online banking service, delivered by the bank, only gave access to bank statements and exchange rate information. The new and never-been-tried service proposed by the bank is to include free account money transfer, corporate payroll uploading system where employers could upload payroll to the system and make payments to individual worker's accounts online and online utility bill settlement system, when utility companies are ready (Asrat, 2010).

The number of banks which deliver E-banking service is increase gradually up to 2011 and reaches 4. Surprisingly, on June 2012, 3 banks enter into the market with consortium which makes the provider of E-banking service to 7. And at the end of 2013, Berhan International Bank joined group and makes the provider of E-banking service in to 8.now all commercial banks start e-banking service for their customers using et-switch solution (NBE website and Et-switch website).

Certainly, the banking industry in Ethiopia is underdeveloped and therefore, there is an all immediate need to embark on capacity building arrangements and modernize the banking system by employing the state-of-the-art technology being used anywhere in the world. With a growing number of import-export businesses, and increased international trades and international relations,

the current banking system is short of providing efficient and dependable services and therefore all banks operating in Ethiopia should recognize the need for introducing electronic banking system to satisfy their customers and meet the requirements of rapidly expanding domestic and international trades, and increasing international banking services (Garedachew, 2010)

The agreement signed by three private commercial banks to launch an Automated Teller Machine (ATM) and Point of Sale terminal (POS) 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).

A number of empirical studies exist in the literature, which have examined the performance of banks offering internet and mobile banking services. Egland et al. (1998) was the first important study, which estimated the number of US banks offering electronic banking and analyzed the structure and performance characteristics of these banks. It found no evidence of major differences in the performance of the group of banks offering internet banking activities compared to those that do not offer such services in terms of profitability, efficiency or credit quality. However, transactional internet banks differed from other banks primarily by size.

In contrast to the results of Egland et al. (1998), Furst et al. (2002) found that banks in all size categories offering e-banking were generally more profitable and tended to rely less heavily on traditional banking activities in comparison to traditional banks. Similarly, Hasan et al. (2002) found that the e-banking institutions were performing significantly better than the traditional banking groups.

Karimzadeh, (2014) studied electronic banking effect on commercial bank profitability in Iran. The study sought to establish whether there exists a relationship between the dependent variable, ROA and the independent variables consisting of No. of ATM, Terminal Branches, POS, Market

Concentration, Bank Size, and Credit Cards for period 2004-12.Result confirmed that number of terminal branches, ATMs, Credit Cards, POS, Bank Size has a positive and significant impact on the profitability of banks while Market Concentration has had a negative and significant impact on bank profitability because it reduces competitiveness and efficiency of banks so increase in e-banking channels increases the bank services to the customers, which lead towards increase in deposit and ultimately bank's profitability.

A study done by Sujud, & Hashem, (2017) on the effect of Bank Innovations on Profitability and Return on Assets (ROA) of Commercial Banks in Lebanon. They sought to establish whether there was relationship between the dependent variables Profit and ROA and the independent variables: ATM, POS, Mobile Banking, Debit & Credit Cards, Internet Banking and EFT. For this study, data was collected from 200 employees, and it was found that 59.3 per cent variation in profitability was explained by these variables and among all independent variables it was found that only EFT has significant impact on profitability of commercial banks in Lebanon. Secondly, 97.7 per cent variation in ROA was explained by these variables and among all only debit and credit cards had positive and significant contribution in ROA. Overall, it can be concluded that bank innovations potentially lead to higher profitability and higher return on assets of commercial banks.

Sarokolaei, (2011) "Investigating the effect of E-Banking on Increasing of Bank Revenues" Factors: Bank Cards, ATM, POS, Internet Bank, Mobile Bank as proxy for e-banking, to know the effect of E Banking on service fees. The study was done in Iran on Private Banks of 2009-2011.By using Regression and Correlation Analysis, it was assessed that ATM, POS, Bank Card, Internet Bank, Telephone Bank and Service Fee had a positive and significant relation. So Electronic Banking can increase the revenue of private banks because E-Banking helps in reducing cost of service.

Alipour, and Salehi, (2010), in their study entitled "E-Banking in Emerging Economy: Empirical Evidence of Iran", focused mainly on advantages of e-banking. The results of this study showed that e-banking serves several advantages to the Iranian banking sector, however, the study also showed that the Iranian customers had not enough knowledge regarding e-banking which was rendered by the banking sector in Iran. The introduction of e-banking in Iran has led to more use of ATM in Iran. The authors came to conclusion that the active ATM in the banking sector will cause a decrease in cash circulation and the efficiency of the banking sector will increase.

Floros, and Gordian, (2015), in their paper showed how useful the number of ATMs is for modeling and estimating banking efficiency. To estimate banking efficiency, they employed DEA and Free Disposal Hull (FDH) methods. The result of the study showed that large banks were more efficient than medium and small sized banks in Greece. Furthermore, banks with a large number of ATMs were more efficient than those with a smaller number of ATMs. However, provision of e-banking services by banks did not influence their efficiency scores. Goodarzi, and Zebidi, (2008), in their study entitled "Impact of e-Banking Development on Profitability of Commercial Banks", examined the relationship between e-banking development and profitability of banks with the help of econometric models. The result of paper showed that the increase in number of ATM of each bank had a positive effect on profitability of that bank (ROA) and this effect strengthen by joining of each bank to Interbank Information Transfer Network of the country. Therefore, the study concluded that e-banking had a significant effect on banking profitability.

Using a panel data of fifteen Jordanian banks for the period of 2000–2010, Al-Smadi, and AlWabel, (2011) studied the impact of e-banking on the performance of Jordanian banks. In their study, performance of banks was measured by ROE and two sets of control variables were used. Using pooled OLS regression technique they found significant negative impact of e-banking on financial performance of banks. Since adoption of e-banking technology involves cost, this might take time to recover cost and experience profits.

Using panel data of 13 banks over the period of 2003–2013, Siddik, er. al., (2016), empirically investigated the impact of e-banking on the performance of Bangladeshi banks measured in terms of Return on Equity, Return on Assets and Net Interest Margin. Results from pooled ordinary least square analysis showed that e-banking began to contribute positively to banks‟ Return on Equity with a time lag of two years while a negative impact was found in first year of adoption.

Ongare, (2013), did a study on the effect of electronic banking on the financial performance of commercial banks in Kenya, the study sought to establish whether there exists a relationship between the dependent variable, for example, performance measured by profit after tax and the independent variables consisting of number of ATMS, number of debits and credit cards issued to customers, number of point of sales terminals and the usage levels of Mobile banking, Internet banking and Electronic funds transfer, as components of e-banking. The study used secondary data which was collected from the annual report of commercial banks and Central Bank of Kenya. The

study used both descriptive and inferential statistics in analyzing the data. The findings of the study were that e-banking has a strong and significant effect on the profitability of commercial banks in the Kenyan banking industry. Thus, there exists positive relationship between e-banking and bank performance. The significance test showed that the influence of bank innovations on bank profitability was statistically significant meaning that the combined effect of the bank innovations in this research was statistically significant in explaining the profits of commercial banks in Kenya.

Josiah, and Nancy, (2012) studied the Relationship between Electronic Banking and Financial Performance among Commercial Banks in Kenya from 2006 to 2010 using descriptive and inferential statistics. The study established whether there was relationship between the dependent variable return on assets and the independent variables: investments in e-banking, number of ATMS and number of debits cards issued to customers as proxy for e-banking. The study revealed that e-banking had strong and significance marginal effects on returns on asset in the Kenyan banking industry by making workers performance more effective and efficient. ATMs, Debit Card had significant influence on performance of banks by bringing services closer to its customers and hence improved industry performance. Thus, there exists positive relationship between e-banking and bank performance.

Joseph, (2017) studied the Impact of Electronic Banking on the Profitability of Commercial Banks in Kenya. Ordinary Least Square (OLS) multiple regressions were used to obtain the results and Data collected from 43 commercial banks from January 2007 to June 2015 (34 Quarters). The study concluded that ATM Transactions and POS transactions had positive and significant effect on ROE whereas mobile banking transactions had negative and insignificant effect on bank profitability.

Gambo. & Arikpo (2013) studied-banking and Bank Performance: Evidence from Nigeria, the study sought to establish whether there exists a relationship between the dependent variables=ROA, ROE and Net Interest Margin, Independent Variables=Loan/ Assets, Loan/Deposit, Equity/Total Assets, Operating Expenses/Total Assets, Logarithm of Total Assets, Log of Operating Expenses, E-banking. Macroeconomic Variables= Inflation, Cyclical Output=GDP, Bank consolidation. Data was collected from 8 commercial Banks of 1999-2010. Using Ordinary Least Square Regression Model, it was reported that in the first year of adoption, negative impact was observed but e-banking contributes positively to bank performance after two

years of adoption in terms of ROA and NIM due to financial cost of adopting e-banking. So, investment in E-Banking should be rational so as to justify cost and revenue implications on bank performance.

As it is stated in different E-banking literature, competitive pressure is considered as driver for the adoption of E-banking in developed country. However, lack of competition in Ethiopia among local and foreign bank hinders Ethiopian banking industries to adopt E-banking system. Lack of competition between Ethiopian banking sector and foreign bank is considered as barrier for the adoption of E-banking system. Ethiopian government did not allow foreign banks to operate in the country, these is due to protecting of local banks from the well-developed foreign bank competition. Therefore, Ethiopian banking industry did not consider about competition with foreign banks and such policies could discourage banking sector of the country from the adoption of E-banking system. Government support is the major driver for the adoption of E-banking. Lack of government support is an inhabiting factor for the adoption of E-banking in Ethiopia (Bultum, 2014). Lack of competition in Ethiopia among local and foreign banks hinders Ethiopian banking industries to adopt E-banking system. Ethiopian government did not allow foreign banks to operate in the country, these is due to protecting of local banks from the well-developed foreign bank competition. Therefore, Ethiopian banking industry did not consider about competition with foreign banks and such policies could discourage banking sector of the country from the adoption of E-banking system (Gemechu, 2012).

The Ethiopian government has given a considerable attention to ICT as expressed in its ICT Draft Policy. Moreover, the State-owned Ethiopian Telecommunication Corporation has invested huge fund to implement state-of-the-art telecommunication infrastructure that provides national information link. This has an essential role in laying the foundation for e-payment (Kidan, 2005). Ethiopia's electronic banking system needs suitable legal and regulatory frameworks to make the sector internationally competitive. Despite the industry's rapid progress, it is still at premature stage. E-banking is comparatively new to Ethiopian banking industry and the country's largest commercial bank; Commercial Bank of Ethiopia (CBE) pioneered the introduction of Automated Teller Machine (ATM) in 2001. Electronic banking has brought about commendable results in easing transactions and building institutional and financial capabilities of banks in its short history in Ethiopia's banking industry. The banks aggressive move to introduce and expand electronic banking service is paying them off in enhancing organizational efficiency and profitability. The e-

banking practice in the country is growing at a significant level and the government, through National Bank of Ethiopia (NBE), has been playing a pivotal role in supporting the activity by introducing and implementing different electronic payment infrastructures. Capitalizing on the existing e-banking platforms, the state-owned CBE and private banks have continued their high competition in providing services, including ATM, Point- of -Sale (POS), Internet Banking, and Mobile Banking, among others. Poor infrastructure and internet connection, frequent power interruption, absence of financial networks that link different banks as well as lack of skilled human resources are factors contributing to the slow penetration of the technology. Unavailability of legal and regulatory frameworks regarding e-banking at national level is a key challenge the sector has been facing. Electronic payments are not currently incorporated into Ethiopia's legal system and such gaps in legal frame work hinders the expansion of cost effective modern electronic payment instruments such as ATM, mobile and internet banking, among others. Thus, banks show reluctance in implementing e-banking services, paying too much attention instead of competing through traditional ways such as opening new branches (Derso, 2018).

Solomon, W. (2016) conducted research on the Roles of E-banking on Financial Performance of Commercial Banks in Ethiopia. The study used secondary data and employed purposive sampling technique to select ten commercial banks operating in Ethiopia covering the periods from 2013 to 2015.Using ROA as one of the most fundamental indexes of profitability, key explanatory variables were identified to disclose their relationship and influence on financial performance of commercial banks. These independent and other control variables are value or price of transaction of ATM, value or price of transaction of POS, debit card, number of automated teller machine terminals, number of point of sale terminal and market share of banks.

Result exhibited that numbers of ATM terminals, number of POS terminals and bank market share had positive and significant role on financial performance of commercial banks measured by return on asset. The study showed that increased number of ATM, POS and market share had a positive role on the financial performance of commercial banks with many banking institutions indicating that increased market share allowed a company to achieve greater scale in its operations which generally improved its profitability.

Girma, (2016) conducted research about the impact of ICT on the performance of Ethiopian banking industry using secondary data over the period 2010 – 2014. Data analysis was carried out

in panel environment. The study employed purposive sampling technique to select the required sample of banks from commercial banks in Ethiopia. Using ROA as a measure of performance in the study and the explanatory variables were ICT investment, ATM, POS, INF, BRAN and GDP. The finding shows that the ICT, ATM and POS have no statistically significant effect on return on asset on commercial banks in Ethiopia. Moreover, result showed that the POS, ICT and number of branches have negative effect on return on asset on commercial banks in Ethiopia.

Research undertaken by Uvaneswaran et. al., (2017*)*, on Challenges in e- banking Services and its impact on profitability of public sector bank in Ethiopia particularly Commercial Bank of Ethiopia (CBE) before and after introduction of e-banking services. To meet this objective, a stratified-random sampling design was used. Data were collected both from primary and secondary sources. The primary data were collected from e-banking customers of the seven Dessie town branches and the secondary data were collected from the banks financial statement and analyzed to see the relationship between e-banking service and profitability of CBE. Finally, presentation and appraisal were illustrated in simple descriptive statistics, relative ranking score and t test. This paper highlights that the e-banking services has any impact on the profitability of CBE in terms of three financial performance indicators of ROA, ROE and, NIM.

A study conducted by Gardachew, (2010), on practices, opportunities and challenges of E banking in Ethiopia, analyzed the main challenges and opportunities of E-banking. After conducting a survey 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 e-commerce and e-payment, high rates of illiteracy, high cost of internet, absence of financial networks that link different banks, lack of reliable power supply and cyber security issues. And mentioned opportunities offered by ICT through e-learning programs, with the help of nongovernmental agencies like ECA and World Bank to developing countries to design national strategies like e-commerce and commitment of the government on ICT as prospects for E banking development.

Abraham (2012) described that among the common problems known in Ethiopian which were related to electronic banking few of them were lack of banking services through the web or other electronic means such as using mobile phone, weak telecommunications, lack of Internet awareness, broken and slow Internet connections, data and network security and privacy, lack and

limitation of government policies, regulations and e-commerce laws, as well as legislation to protect workers and to make the Internet secure.

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. The Ethiopian banking system is very much behind compared to the rest of the world. Cash is still the most dominant medium of exchange.

Previously the banking industry was without simple electronics like ATM and SMS alert. This made all customers of banks to personally walk to the banking hall to be able to transact simple transactions like checking account balances, verifying deposits and making withdrawals. This led to long queues, energy exacting and time consuming, and on the whole it was costly. Physical cash, long distant travelling and paperwork characterized most of the payment systems in Ethiopia. However the situation has changed in recent times due to the introduction of electronic banking services into the Ethiopian banking industry by various financial institutions.

Hypotheses of the Study

1. **Effect of NATM on Bank Performance**

The finding of Al-Samadi and Al-Wabal (2011), Khrawish and Al-Sa'di (2011), Sumra et al. (2011), Hosein (2013), Malhotra and Singh (2009), Gutu (2014) studies upon developing countries such as India, Pakistan, Jordan, and Romania show that electronic banking applications specifically, ATM diminishing operational costs and increasing profitability performance of banks. From this the hypothesis Number of ATM has a positive impact on Banc Performance can be drawn.

2. **Effect of NPOS on Bank Performance**

The finding of Abaenew et al. (2013), Hassan et al. (2013), Oyewole et al. (2013) made studies on Kenya and the result showed that POS has positively Effect on bank performance measured by ROE. From this the hypothesis Number of POS has a positive impact on Banc Performance can be drawn.

3. Effect of NUSSD on Bank Performance

The findings of Munyok, (2015) and Muturi, (2015) revealed that mobile banking affects financial performance positively. From this the hypothesis Number of USSD users has a positive impact on Banc Performance can be drawn.

2.2.4 Research Gap

From the review of the relevant literature relating to the roles of electronic banking on financial performance of commercial banks, it's possible to see the existence of knowledge gap. Even though studies were undertaken by (Solomon, 2016) and Girma, (2016), they failed to include important variables such as number of mobile banking users and value of transaction using mobile banking. These variables were very important variables which can significantly affect ROE of commercial banks in Ethiopia.

Besides, other research works conducted in Ethiopia in relation to electronic banking focused on e-banking adoption, barriers and benefits, challenges and prospect, customer satisfaction and behavior towards e-banking but, this research will focus on the roles of e-banking on the financial performance of the banks. This makes the study more relevant and therefore intends to fill these relevant gaps in literature by examine the roles of e-banking on the financial performance of the bank by using variables, number of mobile banking users, number of ATM, and number of POS as a proxy of e-banking and Profit before Tax (PBT) as a measure of performance which were not included in previous studies.

2.3 Conceptual Framework

A conceptual framework is a research tool intended to assist a researcher to develop awareness and understanding of the situation under analysis and to communicate it. When clearly articulated, a conceptual framework has potential usefulness as a tool to assist a researcher to make meaning of subsequent findings. It forms part of the agenda for negotiation to be scrutinized, tested, reviewed and reformed as a result of investigation and it explains the possible connections between the variables (Smyth, 2004).

A conceptual framework for the present study shows the relationship of e-banking services on financial performance of Bank of Abyssinia and has been depicted in the Figure below. The Figure conceptualizes that e-banking services (Automatic Teller Machines, Point of Sale terminals and bank size) impact on financial performance of BOA ascertained through Profit before Tax (PBT).

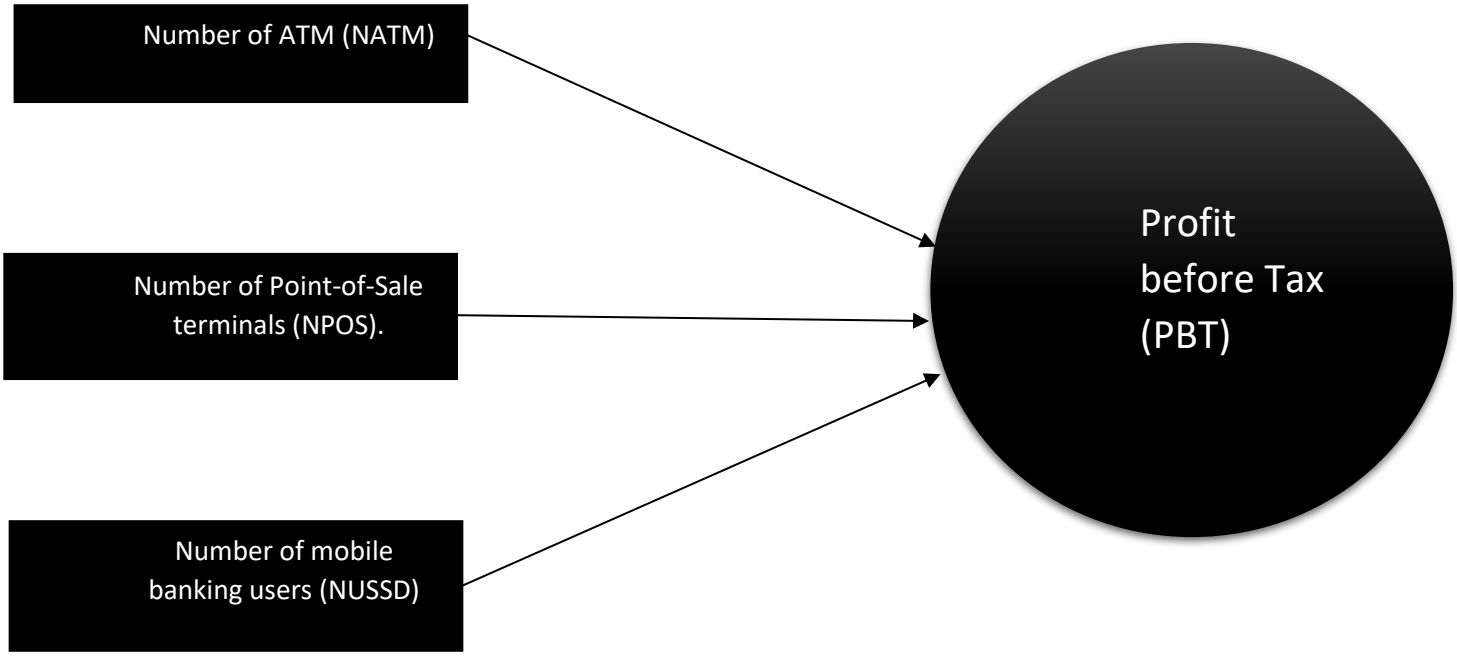


Figure 2.3.1 Conceptual framework Conceptual framework

developed based on the review of literature-Abaenew et al. (2013), Munyok, (2015) and Sumra et al. (2011)

Chapter Three

Research Design and Methodology of the Study

3.1. Introduction

Research methodology is the procedures by which researchers go about their work of describing, explaining and predicting phenomena (Rajasekar et al. 2013). This section explains the research methodology that was applied to obtain representative data from commercial banks in Ethiopia. This study also aims to examine the role of electronic banking on financial performance of commercial banks in Ethiopia. Accordingly, this chapter discusses the research procedure that is used to carry out this study. In case, it starts by discussing research design followed by the nature and instruments of data collection and sampling design. The subsequent section presents and discusses method of data process and analysis. The final two sub parts present variables definition & hypothesis development and operationalization of study variables.

3.2. Research approach

Different scholars define research approaches as, plans and the procedures for research that span the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation. There are three common types of research approaches: qualitative, quantitative and mixed approaches. In any form of research, it is required to either count things and/ or talk to people. Quantitative as the name suggests, is concerned with trying to quantify things; it asks questions such as ‘how long’, ‘how many’ or ‘the degree to which’. Qualitative research involves the collection, analysis, and interpretation of data that are not easily reduced to numbers. Mixed methods research resides in the middle of this continuum because it incorporates elements of both qualitative and quantitative approaches (Anderson, 2010).

According to Creswell (2009) Quantitative research is a means for testing objective theories by examining the relationship among variables. These variables in turn, can be measured, typically on instruments so that numbered data can be analyzed using statistical procedures. Experimental designs are research approach for obtaining information about causal relationship and also allowing research to assess the correlation between one variable and another (Kothari 2004).

Considering the research problem and objective along with the philosophy of the different research approaches, the quantitative nature of the data collected, quantitative research approach is found to be appropriate for this study.

3.3. Research Design

Research design is a plan outlining how information is to be gathered for an assessment or evaluation that includes identifying the data gathering method(s), the instruments to be used, how the instruments would be administered, and how the information would be organized and analyzed (Assumptah, & Muhari, 2017). Explanatory research design is used to meet the overall objective of the study and to test hypotheses under it.

3.4. Data type and Data Source

The study will employ a quantitative research approach by using secondary data gathered from National Bank of Ethiopia and published annual audited financial statements, which were calculated in Ethiopian Birr as of June 30 of each year from 2014 to 2022 of the bank which is readily available on its website and archives as well as the bank specific variable data: No of ATM installed, No of debit cards issued, Number of mobile banking users, Value of ATM transactions and Value of transactions executed by mobile banking are gathered from the banks head office (e-banking departments) by the researcher. Financial statements and other published and unpublished documents are also used to construct the literature part of this thesis and cited accordingly.

3.5. Sampling Technique and Sample Size

A population can be defined as all people or items (unit of analysis) with the characteristics that one wishes to study (Bhattacherjee, 2012). The target population for this study is Bank of Abyssinia. The sample of the study constitute a nine year financial data collected from the bank

3.6. Tools of Data collection

The study used secondary data collected from the annual report of the bank and National Bank of Ethiopia and, published and unpublished reports obtained from E- banking departments of the bank. Secondary data refers to that statistical material, which is not originated by the investigator himself, but which he obtains from others records (Gupta, 2004). The data was collected using a data collection sheet which was edited, coded, and cleaned. Data was mainly obtained covering the period from 2014 to 2022. Additional data will be obtained by examining various documents, including, research reports, books and journal articles.

3.7. Variables Definition and Hypothesis Development

It is the process of strictly defining variables into measurable factors. The process defines vague concepts and allows them to be measured, empirically and quantitatively (Creswell, 2009). A variable is a measure characteristic that assumes different values among subject, Mugenda, and Mugenda, (2003). Independent variables are variables that a researcher manipulates in order to determine its effect of influence on another variable. Kombo, and Tromp, 2006), states that independent variable (explanatory variable) is the presumed change in the cause of changes in the dependent variable; the dependent variable attempts to indicate the total influence arising from the influence of the independent variable Mugenda, and Mugenda, (2003).

3.7.1. Dependent Variable

More than any other accounting measure, profits demonstrate how well management is doing in investment and financing decisions. Profitability ratios measure how effectively a firm's management is generating profits on sales, total assets, and stockholders‟ investment. Therefore, anyone whose economic interests are tied to the long-run survival of a firm will be interested in profitability ratios (Moyer, James, & William, 2006). As concluded by extensive Prior academic research there are different accounting-based measures for banks‟ profitability of which Profit before Tax (PBT) was used for this research.

3.7.2. Independent and Other Control Variable

Independent variables are explanatory variables that explain the dependent variables. In case the independent variables included in this study were: number of ATMs installed, number of mobile banking users and number of POS installed.

3.8. Method of Data analysis

To achieve the objectives the study, nine years (2014 to2022) time series data of bank of Abyssinia was used. The collected time series data was analyzed using descriptive statistics and multiple regressions. The analysis of the descriptive statistics, the mean, and standard deviation, maximum and minimum values was used to analyze the trends of the data.

3.9. Model Specification

The researcher formulates some econometric model which is a representation of the basic features of an economic phenomenon to achieve the broad research objective. It is an abstraction of the real world. The specification of a model is based on the available information relevant to the study in question. This is to say, the formulation of an economic model is dependent on available information on the study as embedded in standard theories and other major empirical works, or else, the model would be theoretical.

The literatures reviewed in the previous chapter identified the roles of e-banking on financial performance of commercial banks. This chapter presents a framework of analysis based on these studies and involves adopting a model that would help demonstrate the significance (responsiveness) of certain key variables in influencing the financial performance the bank. The performance indicator utilized for this study was Profit before Tax (PBT) and the major determinants (independent variables) considered were: No of ATM terminals, number of mobile banking users and No of POS terminals. Accordingly, the study adopted a model that existed in most literatures, like: Hall, and Weiss, (1967); Al-Sa‟di (2011), Al-Smadi, and Al-Wabel, (2011), and Ongare, (2013), Kashif, Kamboh, & javaid, (2016) and Joseph (2017). According to Brooks (2008), the general multivariate regression model with K independent variables can be written as follows:

$Yi = \beta 0 + \beta 1X1i + \beta 2X2i + \ldots + \beta kXki + \varepsilon i$ (i 1, 2, 3…, n)

Where Yi is the i^{th} observation of the dependent variable, X1i… Xki are the ith observation of the independent variables, β0,…,βk are the regression coefficients, εi is the ith observation of the stochastic error term, and n is the number of observations. Hence, the roles of e-banking on profitability of commercial banks can be modeled as described below: -

PBT= β0+β1NATMi,t +β2NUSSDi,t + β3NPOS+ Є i,t

Where;

PBT = Profit before Tax

NATM= Number of ATM installed by the bank

NPOS= Number of POS installed by the bank

NUSSD= Number of mobile banking users

βo = Constant term

β1, 2, 3…6 are parameters to be estimated

Є = is the error component for Bank i at time t assumed to have mean zero E [Є it] =0

i = number of banks i = 1; and

t = the index of time periods and t = 1- 9

3.10 Ethical consideration of the study

Working with human participants in research always raises ethical issues about how you treat them. People should be treated with respect, which has many implications for how exactly how researcher deals with them before, during and after the research (Headlam, 2010). Honesty was essential, not only to enable straightforward, above-board communication, but to engender a level of trust and credibility in the outcomes of the research. The research was designed, reviewed and undertaken to ensure integrity and quality. Respondents will be informed fully about the purpose, methods and intended possible uses of the research, what their participation in the research entails and what risks, if any, are involved.

Chapter Four

Data Analysis, Interpretation and Discussion

4.1. Introduction

This chapter presents the descriptive statistics, Pearson correlation analysis, and time series data regression analysis of the study variables. The first section presents the descriptive statistics which summarizes the main features of the study variable with measures of central tendency and measure of dispersion. The second section presents the Pearson correlation analysis that shows the degree of association between the study variables. The third section presents different test results that associated to the linear regression model. The last section presents the regression analysis results of the fixed effect estimation.

4.2. Descriptive Statistics

Descriptive statistics is the term given to the analysis of data that helps describe, show, or summarize data in a meaningful way. Descriptive statistics are very important because if we simply presented the data, it would be hard to visualize what the data was showing, especially if there was a lot of it. Descriptive statistics therefore enables us to present the data in a more meaningful way, which allows simpler interpretation of the data.

The research statistics of each variable of the study have been discussed here under. The variables included the dependent and independent variables. The dependent variable used in this study to measure the performance is PBT whereas the explanatory variables are number of ATM, Mobile banking and POS. Accordingly, the summary statistics for all variables are presented below in table 4.1. The descriptive table included mean, maximum, minimum, standard deviation, and observations of both of dependent and independent variables of the study. Basically, a small standard deviation means that the values in a statistical data set are close to the mean of the data set, on average, and a large standard deviation means that the values in the data set are farther away from the mean, on average. The standard deviation measures how concentrated the data are around the mean; the more concentrated, the smaller the standard deviation. The general rule stated that the higher value of standard deviation implies greater spread of data, smaller the standard deviation shows the data is concentrated around the mean.

Table 4.1 Descriptive statistics of variable

Variable	observation	Mean	Std. deviation	minimum	maximum
PBT	9	1,276,666,667	1289573573	350000000	4650000000
Number of ATM	9	325	387.697	25	1100
Number of POS	9	258	212.3541	30	800
Number of Mobile banking users	9	418,030	365,132.8	6000	930,213

Source: SPSS Output, 2023

As depicted on the above table 4.1, the mean, maximum, minimum and standard deviation values of variables, a dataset of 9 observations provides the basis for descriptive analysis. This study has used four variables for the analysis and interpretation, including one dependent variable, PBT. The mean value of bank PBT was around 1,276,666,667 for sampled Years.

About, number of ATM terminal the mean, maximum and minimum observations were 325, 1100 and 25 respectively. In addition, the values in the data set are farther away from the mean called standard deviation were 387.697, Concerning, number of POS installed by Banks the mean, maximum and minimum observations were 210, 300 and 60 respectively. In additions that the values in the data set are farther away from the mean called standard deviation were 87.128. and Number of Mobile banking users mean, maximum and minimum observations were 418,030, 930213and 6000 and 60 respectively

4.3. Correlation Analysis

Table 4.2 Correlation analysis

Correlations

		PBT	NATM	NPOS	NUssd
Pearson Correlation	PBT	1.000	.912	.966	.759
	NATM	.912	1.000	.625	.642
	NPOS	.966	.625	1.000	.677
	NUssd	.759	.642	.677	1.000

Source: SPSS Output, 2023

Correlation analysis is the statistical tool used to study the closeness of the relationship between variables Gujarati (2004). This section of the study deals with the correlation analysis of the studied variables. The purpose of undertaking correlation analysis is to check whether there is multicollinearity problem in the model and to indicate whether the variables move together or not in the same direction and the correlation coefficient indicates the strength of a linear relationship between two variables. The correlation coefficient ranges between +1 and -1. +1 indicates the

strongest positive correlation possible, and -1 indicates the strongest negative correlation possible. Therefore, the closer the coefficient to either of these numbers the stronger the correlation of the data it represents.

Based on the correlation matrix PBT had a positive correlation with number of ATM installed, number of mobile banking users and number of POS machines which indicated when those variables increased PBT would also be increased with different correlation coefficient.

4.4. Classical Linear Regression Model Assumptions and Diagnostic Test

As noted in Brooks (2008), CLRM is based on sets of assumptions: Such as the errors have zero mean, the variance of the errors is constant and finite over all variables of Xt, the errors are linearly independent of one another, there is no relationship between the error and corresponding X-variate, and the error terms are normally distributed. Hence, if these CLMR assumptions hold, the estimators determined by OLS will have a few desirable properties that is consistent, unbiased, and efficient. Thus, In order to determine the validity of the model, it should pass diagnostic tests such as; heteroscedasticity, autocorrelation, multicollinearity and normality tests.

4.4.1. Test for Average Value of the Error Term is Zero (E (ut) = 0)

The first assumption required is that the average value of the errors is zero. In fact, if a constant term is included in the regression equation, this assumption will never be violated. Therefore, since the constant term (i.e. βo) was included in the regression equation, the average value of the error term in this study is expected to be zero.

4.4.2. Tests for Multicollinearity

Table 4.3 Collinearity Statistics

Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	NATM	.217	4.612
	NPOS	.295	3.384
	NUssd	.269	3.713

a. Dependent Variable: PBT

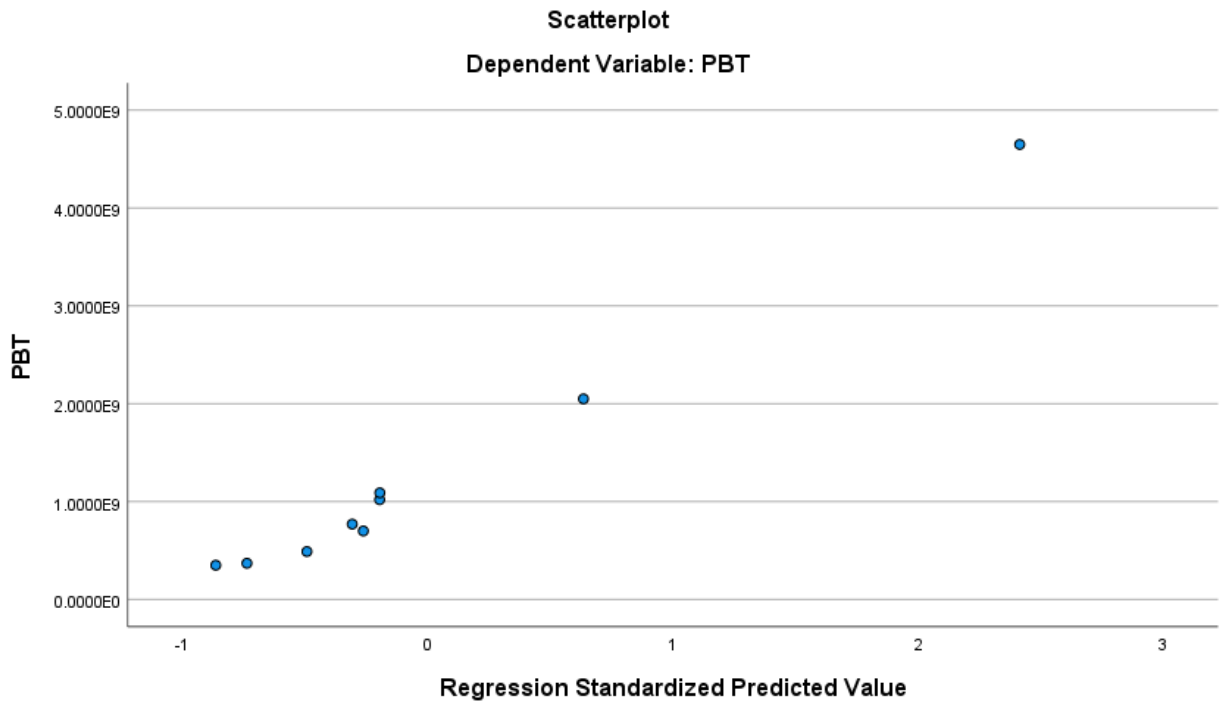
Source: SPSS output, 2023

To diagnose the existence of multicollinearity problem, Variable Inflation Factor (VIF) technique is employed. The variance inflation factor (VIF) is a measure of the reciprocal of the inter-correlation among the predictors: VIF=1/(1-R-squred) .A variable whose VIF values are greater than 10 indicate the possible problem of multicollinearity. Thus, as can be seen on table 4.3 all the values are less than 5 so there is no multicollinearity problem.

4.4.3. Linearity

Multiple regressions can only accurately estimate the relationship between dependent and independent variables if the relationships are linear in nature. The linearity relationship between the independent variables and the dependent variable can be detected by examination of scatter plots characterized by a straight line (Jason W. & Elaine W.2002). Figure 4.1 shows scatter plots of Profit before tax (PBT) the dependent variable and electronic banking the independent variable that indicate linear relationships.

Figure 4.4.1 Scatter plot with fit line (Source SPSS output)

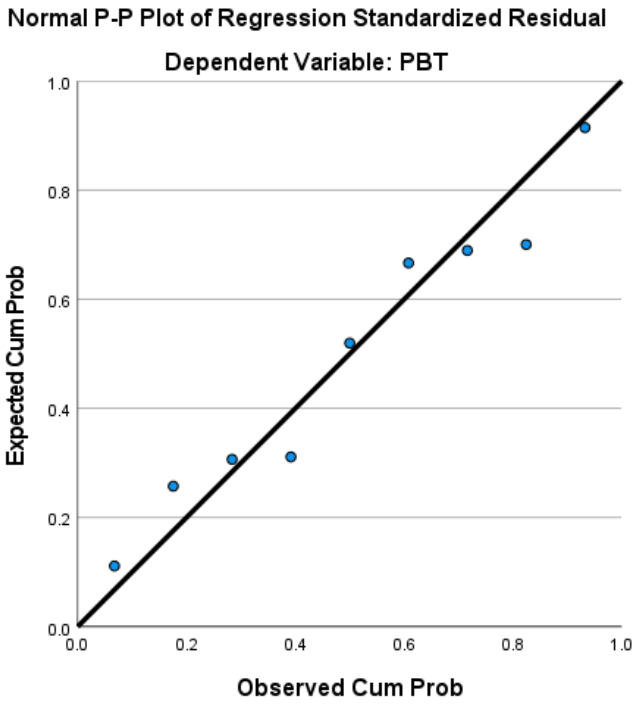


Source: SPSS Output, 2023

4.4.4. Normality

A P–P plot (probability–probability plot or percent–percent plot) is a probability plot for assessing how closely two data sets agree, which plots the two cumulative distribution functions against each other. From this plot, we get idea about outlier, skewness, and kurtosis and for this reason it has become a very popular tool for testing the normality assumption. A P-P plot compares the empirical cumulative distribution function of a data set with a specified theoretical cumulative distribution function. If it looks like straight line or there is no curve then it contains no outliers and the assumption thought to be fulfilled (Keya & Rahmatullah, 2016). Normal P-P plot of survey data presented in Figures 4.2 shows a normality pattern that the assumption of normality test is fulfilled.

Figure 4.4.2 p-p plots of standardized residuals (Source SPSS output)



Source: SPSS Output, 2023

4.5. Regression Analysis

This section presents the results and discussions of the regression output that obtained from the two models. Regression analysis is a technique used in statistics for investigating and modeling the relationship between variables (Montgomery, Peck, &Vinning, 2012). If there is more than one regressor, it is called multiple linear regressions. The relationship between the dependent variable and tree independent variables is regressed using Excel. Thus, the model used to examine statistically significant effect of E-banking and Bank performance;

PBT= β0+β1NATMi,t +β2NUSSDi,t + β3NPOS+ Є i,t

Table 4.4 Effect of E-banking on PBT

Model Summary

Regression Statistics	
Multiple R	0.994530219
R Square	0.989090356
Adjusted R Square	0.982544569
Standard Error	180712283.6
Observations	9

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	1.48037E+19	4.93457E+18	151.1033606	2.52265E-05
Residual	5	1.63285E+17	3.26569E+16		
Total	8	1.4967E+19			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Beta*
Intercept	-67861895.2	102811820.6	-0.66005927	0.538404118	
NATM	1697171.408	333662.6171	5.086489529	0.003813444	0.510237
NPOS	4426141.262	521832.8778	8.481913366	0.000374315	0.728853
NUssd	-837.762232	317.8977287	- 2.6353199	0.046235984	-0.23721

Source: SPSS Output, 2023

Accordingly, the estimation result of regression model used in this study is presented in table 4.3 related to PBT. The R-squared statistics and the adjusted-R squared statistics of the model were

98.9 % and 98.3% respectively. The adjusted- R squared of this study indicates that, 98.3% of the variation on the dependent variable PBT was explained by the changes in the independent variables. Thus, it can be concluded that, all the independent variables used in this study collectively, were good explanatory variables of the banks performance.

As it shown on the above table, the names of the explanatory variables, their (Beta) estimate (β), the standard errors of the estimates (S.E.), and the (C.R.) t statistic of each coefficient, which is simply the ratio of estimate divided by its standard error, and the p value, or the exact level of significance of the C.R. statistic. For each estimate, the null hypothesis is that the population value of that estimate is zero, that is, the regressor has no influence on the regress and, after holding the other regressor values constant. Moreover, the smaller the p value, the greater the evidence against the null hypothesis.

Hypothesis Testing

Hypothesis H1: NATM has a positive relationship with PBT of BOA. As can be observed from table above NATM (number of automated teller machine Transaction) and PBT (Profit before Tax) have a Positive β=.510 and t-value 5.086 with a P value .004 statically significant. This indicates that NATM has a significant positive effect on. Thus, the null hypothesis is rejected.

The findings of the study concur with the finding of Al-Samadi and Al-Wabal (2011), Khrawish and Al-Sa'di (2011), Sumra et al. (2011), Hosein (2013), Malhotra and Singh (2009), Gutu (2014) studies upon developing countries such as India, Pakistan, Jordan, and Romania. These studies show that electronic banking applications, specifically ATM, diminish operational costs and increase profitability performance of banks. However, customer portfolios must be expanded to increase the bank performance (Sumra et al., 2011).

Furthermore, each ATM has the capacity to carry out the same, essentially routine, transactions as do human tellers in branch offices but at half the cost and with a four to one advantage in productivity. Thus, banks can provide customers convenient, inexpensive access to the bank 24 hours a day and seven days a week (Jayawardhena and Foley, 2000).

Hypothesis H2: NPOS has a positive relationship with PBT of BOA. As can be observed from table above NPOS (number of point of sales) and PBT has a Positive β=2.76744E-11and t-value .729 with a P value 0.768858248 statically significant. Thus, the null hypothesis POS is not a

positive relationship with PBT of BOA is rejected. The findings of the study agree with the funding of Abaenew et al. (2013), Hassan et al. (2013), Oyewole et al. (2013) made studies on Kenya and the result showed that POS has positively Effect on bank performance measured by ROE.

Hypothesis H3: NUSSD has a positive relationship with PBT of BOA. As can be observed from the table above NUSSD and PBT have a close to zero β=-0.23721 and t-value -2.635 with a P value of 0.046235984 which is statically significant, but NUSSD and PBT have a negative relationship. Thus, the null hypothesis USSD is not a positive relationship with PBT of BOA is Accepted. The finding of the study disagree with the finding of Munyok, (2015) and Muturi, (2015) which stated that mobile banking affects financial performance positively.

The study succeeded in confirming electronic banking has direct effect on the financial performance of the bank. The findings of the study clearly demonstrate that there is a direct relationship between bank performance (measured by PBT) and electronic banking (measured by number of atm, pos and mobile banking users). This calls for the bank to optimally invest development of electronic banking to maximize the performance of the bank. The adoption of E-banking by the bank has a high potential of improving financial performance and hence better returns to the shareholders. The versatility of E-banking has made their adoption rate to be high among both the banks and their customers. It could have been challenging if the adoption was only with either the bank or the customers.

Chapter Five

Conclusion and Recommendation

5.1. Introduction

The basic intent of this chapter is to present the overall overviews of the research by summing up the main findings of the analysis part and give future research directions. Accordingly, the chapter starts with its discussion by briefly sum up the overviews of the study and its main findings. In section two based on the study finding the researcher highlight some recommendations for the target populations the study pivoting on.

5.2. Conclusions

The study empirically analyzed the effect of E-Banking in banks performance of BOA by constructing an econometric model to study the effect of various factors such as mobile banking users, number of automated teller machine and number of point of sale by using profit before tax as a measure of the bank's performance. Based on the findings of the study, it can be concluded that E-banking influence financial performance of the bank positively except in the case of mobile banking. The adoption of E-banking by the bank has a high potential of improving financial performance and hence better returns to the shareholders. The versatility of E-banking has made their adoption rate to be high among both the banks and their customers. It could have been challenging if the adoption was only with either the bank or the customers.

5.3. Recommendations of the study

Based on the findings in this study, it is recommended that:

The bank should embark on educating and creating awareness among their customers on the benefits if electronic banking and the charges involved.

The bank should invest more on electronic banking to reach more customers electronically.

The study has shown that electronic banking has a positive impact on the financial performance of the banks and therefore they should offer more targeted online services as well as come up with more technology based services that are easily reachable by customers.

5.4. Implication for Future Research

The study was limited on the sample size as well as type of e-banking services, as it relied on data on the banks that have significant, if not all-inclusive investment on all e-banking services. Hence, the inclusion of all other e-banking services, increasing the sample size by incorporating other banks as well as incorporating other variables to measure the performance of the banks is left for future research endeavor.

References

Ali, K., Akhtar, M.F., & Sadaqat, S. (2011), financial and non-financial business risks perspectives: Empirical evidence from commercial banks. Middle Eastern Finance and Economics ISSN:1450-28891(1)

Alipour, M. and Salehi, M. (2010): "E-Banking in Emerging Economy: Empirical Evidence of Iran", International Journal of Economics and Finance, Vol.2, No.1, pp: 201-209.

Akinola, G.O., 2008. Effect of globalization on market structure, conduct and performance in Nigerian Banking industry (Unpublished doctoral post field seminar paper, p.18). Obafemi Awolowo University, Ile –Ife, Nigeria.

Athanasoglou, Panayiotis P., Sophocles N. Brissimisa, and Matthaios D. Delis 2008, Bankspecific, industry-specific and macroeconomic determinants of bank profitability, Journal of International Financial Markets, Institutions and Money 18: 121–36.

Athanasoglou.P. Delis.M & Staikouras, CK (2006), Determinants of bank profitability in the South Eastern European region, Journal of Financial Decision Making

Berger, A. (1995), The profit structure relationship in banking: tests of market-power and efficient structure hypotheses. Journal of Money, Credit and Banking, 27 (2), 404–431

Brooks, C., (2008), Introductory Econometrics for Finance, Second edition, Cambridge University Press, New York

Bultum, A. G. (2014). Factors Affecting Adoption of Electronic Banking System in Ethiopian Banking Industry. *Journal of Management Information System and E-commerce*.

Cooper, D.C., & Schindler, P.S., (2009), Business Research Methods, Ninth edition, TataMcGraw-Hill, New Delhi

Creswell, J., (2009), Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 3rd edition, by SAGE Publication Inc., 2009

Daniel, E, (1999), Provision of Electronic Banking in the UK and the Republic of Ireland, International Journal of Bank Marketing, Vol. 17(2)

Egland, K. L., Furst, K., Nolle, D., E. & Robertson, D. (1998), "Banking over the Internet", Quarterly Journal of Office of Comptroller of the Currency, Vol.17 No 4, December.

Ene, E.E.;Itah,A.J. Impact of cashless banking on bank's profitability: Evidence from Nigeria Asian J finance. Account. 2014, 6, 362–376

Francis, M.E., (2013), „Determinants of Commercial Bank Profitability in Sub-Saharan frica", International Journal of Economics and Finance, 5(9), 134-147

Gambo.J, Arikpo, I. (2013) "E banking and Bank performance: Evidence from Nigeria", International Journal of Scientific Engineering and Technology Volume No.2, Issue No.8. pp: 766-771, (ISSN: 2277-1581).

Gardachew, W. (2010). Electronic-Banking in Ethiopia practices, opportunities and challenges. *journal of Internet banking and commerce*.

Goodarzi, . and Zebidi, H. (2008): "Tasire Bankdari Elektroniki Bar Sod Avari e Bankhaye Tejari" The Economic Research Journal of Iran, Vol.10, No.35, pp: 111-140.

Gujarati N. (2004): Basic Econometrics, 4th ed. McGraw-Hill Companies

Gupta, P. K. (2008), Internet banking in india: consumer concern and bank strategies. Global journal of business research 2, 43-51.

Hall, M.; Weiss, L. 1967 Firm size and profitability, The Review of Economics and Statistics 49(3): 319–331.

Henok, A. (2015). Banking in Ethiopia Challenges and Prospects. *BIRRITU, February,Volume 119*, 9-22.

Karimzadeha et al. (2014). The effects of electronic banking expansion on profitability of a commercial bank (sepah bank of iran). *Indian Journal Scinece Research*, 305-312.

Kashif, M., Kamboh, M. & javaid, M. (2016). Impact of cashless banking on profitability: a case study of banking industry of Pakistan. A Research Journal of Commerce, Economics, and Social Sciences Print ISSN 1996-2800, Online ISSN 2410-0854 2016, Vol. 10, No. 2, pp. 82-93.

Khrawish, H.A. 2011, Determinants of Commercial Banks Performance: Evidence from Jordan. Zarqa University, 5(5), 19-45

KLAPPER, L. (2017). Why Digital Payments are Key to Entrepreneurs' Success. *World bank blogs*.

Malak, M.P. (2013) " The Effects of Financial Innovation on the Financial Performance of Commercial Banks in South Sudan", The University of Nairobi.(Research Project)

Modigliani, F and Miller, MH (1958), „The cost of Capital corporation finance and the theory of investment" The merican Review .48(3), 261-297

Mugenda, M O. &Mugenda, A. (2005), research Methods: Qualitative and quantitative Approaches, Acts press,Nairobi.

Obamuyi, T.M. (2013), „Determinants of Banks" Profitability in Developing Economy: Evidence from Nigeria", Emerging Markets Review, 2(8), 97-111

Olweny, T & Shipo, MT 2011, Effects of banking sectoral factors on the profitability of commercial banks in Kenya, Economics and Finance Review, Vol. 1, no. 5, pp. 1- 30.

S.K. and Moses K (2015), Effects of Internet Banking on the Financial Performance of Commercial Banks in Kenya a Case of Kenya Commercial Bank. International Journal of Scientific and Research Publications, Volume 5, Issue 5, May 2015 ISSN 2250-3153

S.M nd M .Eldana C. Kassa & S.M Hamid (2017),"Challenges In E- Banking Services And Its Impact On Profitability Of Public Sector Bank In Ethiopia", International Journal of Marketing & Financial Management, ISSN: 2348 –3954

Sarokolaei, M. ., Rahimipoor, ., Saraei,S. & Vakilzadeh,Z. " Investigating the effect of EBanking on Increasing of Bank revenues (Case Study:Iranian Private Banks)".

Selling, T.I. and C.P. Stickney, 1989, The effects of business environment and strategy on firm"s rate of return on assets, Financial Analysts Journal, 45(1): 43-68

Shah, M., & Clarke, S. (2009). *E-banking management : issues, solutions, and strategies.* New York: Hershey.

Siddik, Sun, Kabiraj, Shanmugan, Yanjuan, (2016), impacts of e-banking on performance of banks in a developing economy: empirical evidence from Bangladesh. Journal of Business Economics and Management, Volume 17(6): 1066–1080

Solomon, W. (2016). Role of Electronic Banking on Financial Performance of Commercial Banks in Ethiopia. Thesis. Addis Ababa.

Sujud, H. & Hashem, B. (2017) "Effect of Bank Innovations on Profitability and Return on Assets (ROA) of Commercial Banks in Lebanon", International Journal of Economics and Finance; Vol. 9, No. 4, pp: 35-50, ISSN 1916-971.

Sumanjeet, S. (2009). Emergence of Payment Systems in the Age of Electronic Commerce: The State of Art. *Global Journal of International Business Research*.

Uche, Charles , Amah, Peter (2018). Impact of Information Technology on Performance of Banks in Nigeria: American Journal of Humanities and Social Sciences Research (AJHSSR), Volume-02, Issue-08, pp-92-100

Wong, J. (2004), Market Structure, Competition and Intermediation in the Latin American Banking Industry, Goethe University Frankfurt Working Paper.

Appendixes

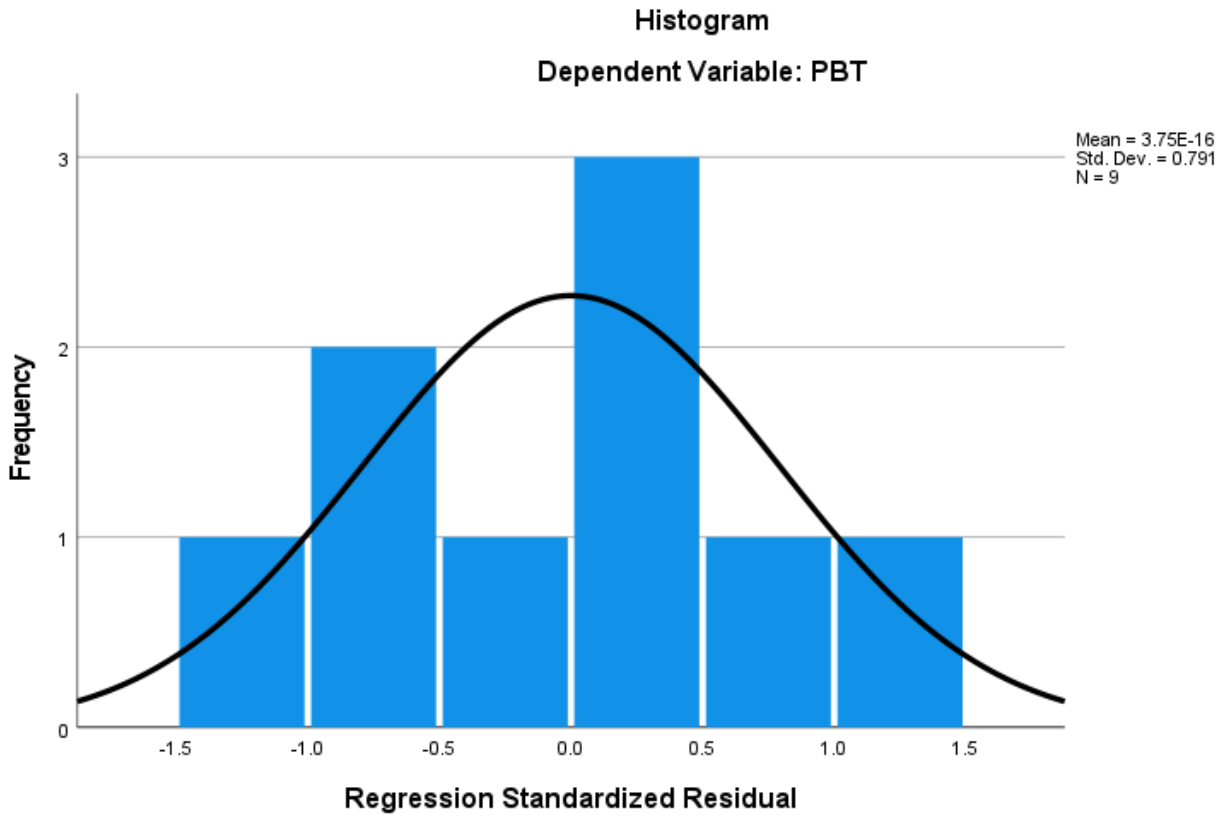
Appendix I: Correlation Matrix

Correlations

		PBT	NATM	NPOS	NUssd
Pearson Correlation	PBT	1.000	.912	.966	.759
	NATM	.912	1.000	.625	.642
	NPOS	.966	.625	1.000	.677
	NUssd	.759	.642	.677	1.000

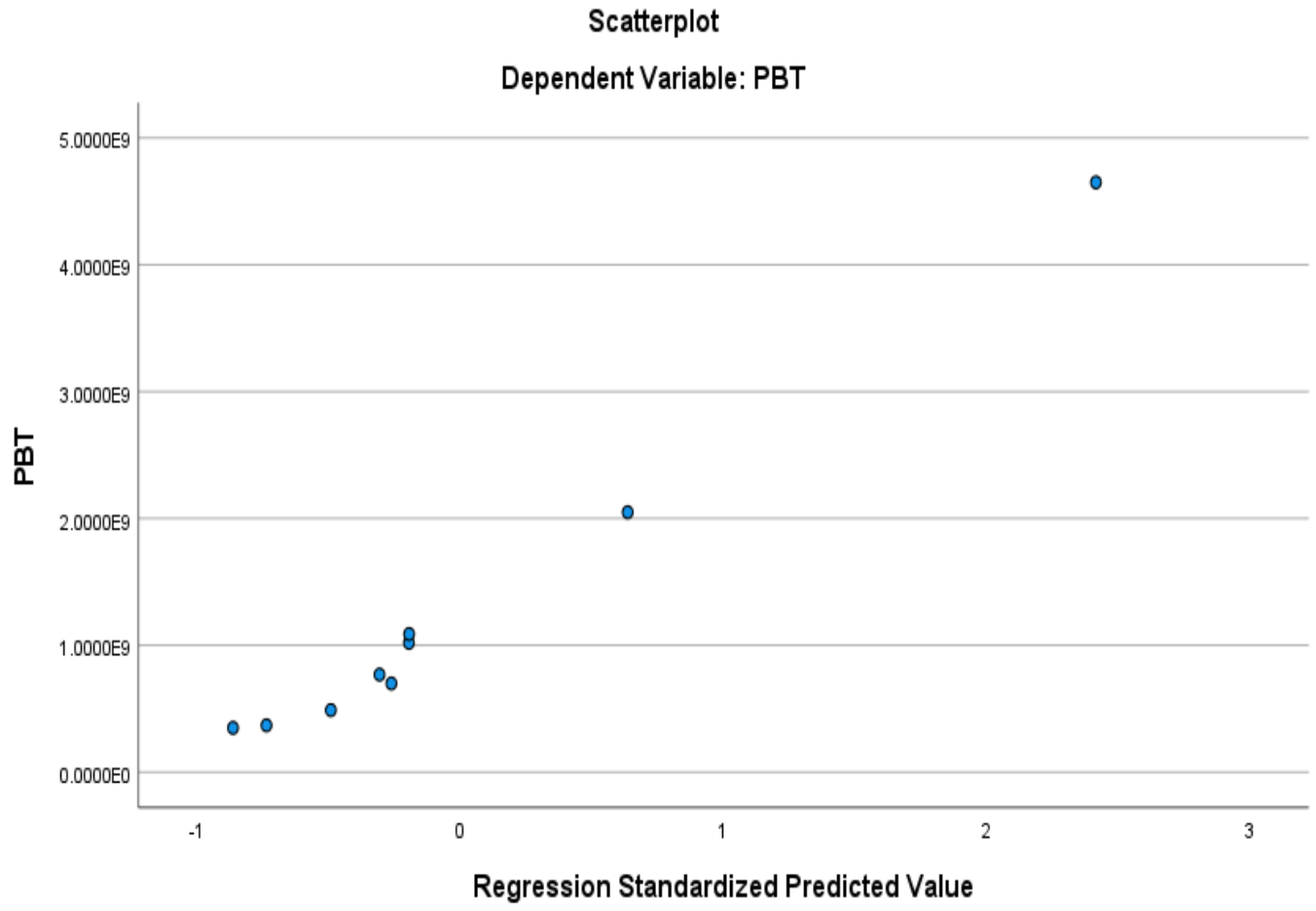
Source: SPSS Output, 2023

Appendix II: Histogram



Source: SPSS Output, 2023

Appendix III: Scatter Plot



Source: SPSS Output, 2023

Appendix IV: Regression

Model Summary

Regression Statistics	
Multiple R	0.994530219
R Square	0.989090356
Adjusted R Square	0.982544569
Standard Error	180712283.6
Observations	9

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	1.48037E+19	4.93457E+18	151.1033606	2.52265E-05
Residual	5	1.63285E+17	3.26569E+16		
Total	8	1.4967E+19			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Beta*
Intercept	-67861895.27	102811820.6	-0.66005927	0.538404118	
NATM	1697171.408	333662.6171	5.086489529	0.003813444	0.510237
NPOS	4426141.262	521832.8778	8.481913366	0.000374315	0.728853
NUssd	-837.7622324	317.8977287	-2.635319969	0.046235984	-0.23721

Source: SPSS Output, 2023