A TRANSACTION COST ANALYSIS OF COMMERCIAL BANK OF ETHIOPIA: *An Empirical Analysis*

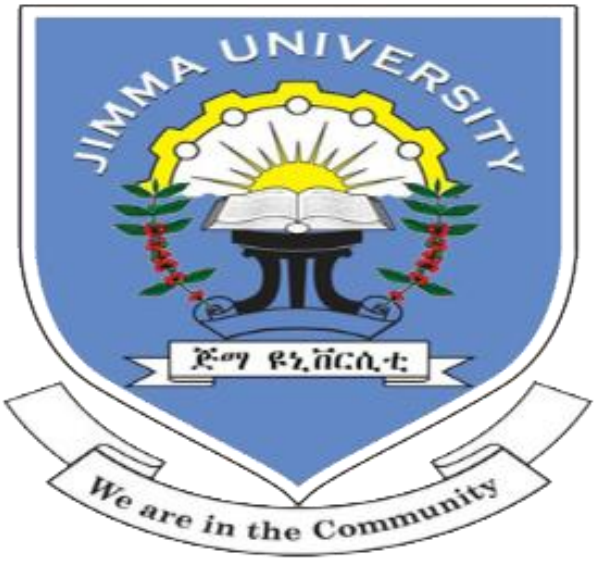
A Thesis Submitted to the School of Graduate Studies of Jimma University in Partial Fulfillment of the Requirements for the Award of the Degree of Master of Business Administration (MBA)

By

Tenagne Beyene Bekele

Under the Supervision of

Mr. Eshetu Yadecha
And
Mr. Erko Teferi



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ABSTRACT

Banks are engaged in the transaction business and hence they are designed to minimize transaction costs. While transaction costs are the fundamental competitive platform in the banking industry it is believed that transaction costs are high among the developing countries banking sector. The Ethiopian banking institutions are infant to the extent that they are less competitive compared to similar economy banks. Of a number of factors limiting the competitiveness of developing economy banks high transaction costs is the major factor. Analyzing determinant factors that builds banking transaction costs taking into account the experience of Commercial Bank of Ethiopia is the main objective of this research. Descriptive statistical analysis and regression analysis methods have been employed to examine changes in the CBE transaction costs due to changes in institutional reform and deregulation, technical innovation, economic growth, competitive environment and governance structures. Both the descriptive analysis and the regression analysis results suggest that CBE is in a relatively better position in terms of addressing the issue of transaction costs. The findings displayed a reduction in transaction costs, especially, in the areas of bank account opening service and banking transaction service units which are core activities of the Bank. Factors contributing to this development are the introduction of e-banking technology, human resource development, ICT infrastructure and system development, domestic intra-industry competition and National Bank policy and regulatory support. On the other hand, both the descriptive analysis and the regression analysis results prevailed a relatively built up transaction costs in the credit service and non-core banking service units and as well related with National Bank policy and regulatory service support. Hence, since the future of the banking industry depends on domestic and international competitiveness, commercial bank of Ethiopia is expected to pay strategic attention to transaction costs. Technology aided banking, human resource development, institutional and system reforms, product and service innovation, focus on core business and upgrading competitiveness are critical in this regard. Since the future of the banking industry relies on the economy of transaction costs future research should focus on measurement issues and analytical approaches or methodologies.

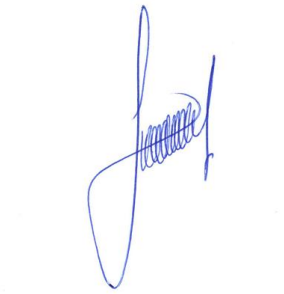
Key Words: Transaction Cost, New Institutional Economics, Banking Services, e-Banking, Competitiveness

DECLARATION

I declare that the research Report entitled:

"A Transaction Cost Analysis of Commercial Bank of Ethiopia: An Empirical Analysis"

submitted to Research and Postgraduate Studies' Office of Business and Economics College is original and it has not been submitted previously in part or full to any university.



Tenagne Beyene

Date: August 2020

CERTIFICATE

We certify that the Research Report entitled:

"A Transaction Cost Analysis of Commercial Bank of Ethiopia: An Empirical Analysis"

was done by **Tenagne Beyene Bekele** for the partial fulfilment of Masters Degree under our Supervision.

_____	_____
Mr. Eshetu Yadecha	**Mr. Erko Teferi**
(Main Advisor)	(Co-Advisor)

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS

ATM: Automatic Teller Machine

CBE: Commercial Bank of Ethiopia

GDP: Gross Domestic Product

EPRDF: Ethiopian Peoples' Revolutionary Democratic Front

ICT: Information and Communication Technology

NIE: New Institutional Economics

OLS: Ordinary Least Square

TC: Transaction Cost

TCA: Transaction Cost Analysis

TCE: Transaction Cost Economics

TFP: Total Factor Productivity

USA: United States of America

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

The concept of transaction costs is emanated from the problems of costly exchange or market failure (Coase 1937). This concept has given birth to the field of Transaction Cost Economics (TCE) and has been attracting Nobel Laureate economists and politicians where they have gone through a macro and micro level examination of transaction costs (Menard & Shirley, 2014). Further discussions on transaction cost economics led to the opening up of a new branch of economics school of thought under the umbrella of New Institutional Economics (NIE).

The transaction cost economics (TCE) or the new institutional economics (NIE) school of thought challenged the founding assumptions of the market mechanism (perfect information, perfect market, rational decision and costless exchange) and considered transaction costs, property rights and contracts as loopholes where the market mechanism fails to do its intended objectives (Williamson, 1995). Hence, according to Arrow (1969) transaction costs refer to costs of running economic operations that are not part and parcel of the neoclassical production costs. Williamson (1995) specifically associated transaction costs with asset specificity and designing, implementing and monitoring of contracts and property rights.

Theoretical and empirical research on transaction costs suggested that the components of transaction costs and their proxy measures vary depending on the sources of transaction costs and the particular industry under consideration. In this regard, transaction costs or market inefficiency could appear inform of opportunity costs, non-market expenses, resources spend in waiting, getting permit to do business, cutting organizational red tapes, bribing officials, etc. Also, costs associated with information asymmetry, designing, negotiating and administering contracts and property rights, and governance structures are considered as transaction costs (Wang, 2003).

The banking industry is a transaction costs industry. Banks serve as intermediary between the lenders (depositors) and borrowers (potential investors). Different research works suggest that

there is a strong linkage between financial intermediaries and economic growth, i.e. one has a positive (negative) spillover effect over another (Baker and Jorgensen, 2012). But, a study reports suggest that transaction costs are high in the banking industry especially among the developing country banks (Baker and Jorgensen, 2012). Since the industry is the center of economic growth and development, the banking industry is under pressure to reduce transaction costs. Institutional reform and deregulation, e-banking, product and services innovation, competitive platform, and system development are among the list of transformations being made in the banking industry to reduce transaction costs (Baker and Jorgensen, 2012).

Whether institutional reform and deregulation, technical innovation, policy and strategy packages and e-banking business hits the banking business transformation target is open to research and varies across countries and banking units. The purpose of this research is to investigate the transaction costs of the banking industry in Ethiopia with particular emphasis to Commercial Bank of Ethiopia (CBE). Basically, the banking industry transaction costs can be looked from the point of lenders (depositors), borrowers (investors) and the financial intermediary itself. This research limits itself to analyzing transaction costs from the financial intermediary side taking into account the developments in the Commercial Bank of Ethiopia (CBE).

1.2 BACKGROUND OF THE ORGANIZATION

The Ethiopian banking industry is a century old industry. It has begun during the reign of Menilik II with a franchised bank and gradually developed into having an indigenous and foreign owned banks (Bezabeh & Desta, 2014). During the socialist military rule (1974 – 1991) all banks have been nationalized and turned into state owned banks. That time banks were small in number, relatively undeveloped, closed and totally inefficient (Bezabeh & Desta, 2014; Tesfaye, 2016 and Biresaw, 2018).

Since 1991 the EPRDF government has introduced major reforms that have changed the plight of the banking sector. Among the popular banking sector reforms include: (1) the legalization of domestic private investment in the banking and non-banking financial sector, (2) the restructuring of the Development Bank of Ethiopia and Construction and Business Bank as commercial banks and recently the merger of Construction and Business Bank with Commercial Bank of Ethiopia, and (3) the introduction of new banking and monetary proclamations that gave

the necessary authority to National Bank of Ethiopia (Bezabeh & Desta, 2014). As a result today 16 privately owned commercial banks and two state owned commercial banks are operating in Ethiopia.

Notwithstanding these developments, the banking sector in Ethiopia is still inefficient, less competitive and pre-occupied by traditional products and services. Bezabeh and Desta (2014) examined the banking sector reform in Ethiopia and recommended the provision of foreign bank operators, the privatization of state owned commercial banks, the determination of interest rates and exchange rates by market forces and the provision of more regulatory and supervisory power to the National Bank of Ethiopia as a remedy to the renaissance of the banking sector in Ethiopia.

The history of Commercial Bank of Ethiopia dated back to the establishment of the state bank of Ethiopia in 1942. In 1963 the then state bank of Ethiopia legally confiscated to Commercial Bank of Ethiopia. In 1974, CBE merged with the privately owned Addis Ababa Bank and recently (in 2017) merged with Construction and Business Bank of Ethiopia. Especially, since 1974, CBE has been playing a dominant role in the development of the country and current statistics showed that CBE accounts nearly 70% of the total banking sector assets.

The total asset of commercial bank of Ethiopia has reached Birr 565.80 Billion in 2018 and has been operating in more than 1280 branches. The Bank has more than 18.8 million customers and 1.7 million mobile bank users. It has 1708 ATM outlets, 36,768 internet bank users and 4.4 million CBE card holders. The Bank's deposit level and its total income has reached 451.8 Billion Birr and 37.24 Billion Birr, respectively in 2018 (CBE, 2018).

The vision of CBE is "to become a world-class commercial bank by the year 2025" and its core missions are: (1) meeting stakeholders' needs through enhanced financial intermediation, (2) supporting national development priorities, and (3) winning public confidence. And this is being done through employing state-of-the art technology and highly motivated, skilled and disciplined employees (CBE, 2018). Also, the bank has strong correspondent relationships with more than 50 renowned foreign banks, and more than 20 money transfer agents. It has opened four branches in South Sudan and has been in the business since June 2009.

This study covers the CBE operational period 1981 – 2018. Attempt will be made to examine transaction costs of CBE using descriptive statistics analysis and regression analysis methods.

Putting an appropriate policy and strategy options to arrest the issue of transaction costs is the ultimate goal of this research.

1.3 STATEMENT OF THE PROBLEM

Financial markets and financial institutions play a central role in the process of economic development, in particular, in resource accumulation, resource allocation and resource development. Specifically, financial institutions mobilize resources and put it into more productive uses. The role of financial institutions in economic growth and development is well substantiated by empirical research but varies in terms of place and time (Mohammed, 2015; Zwedu, 2014; Bezabeh & Desta, 2014; Scholtens & Wensveen, 2003; Swain, 2008; Oracle Financial Services, 2017 and Fries &Taci, 2004).

The banking industry primarily plays an intermediary role between depositors and borrowers. The banks mobilize resources from depositors or savers and then create opportunities for borrowers or investors who seek the financial resource for business or trade or construction or any other value adding activities. Put simply, banks mobilize savings and provide credit to sustain manufacturing, agricultural, commercial and service enterprises which in turn opens job opportunities and hence enhance incomes for consumption and savings. Meaning the banking industry plays an important role in financing economic and social development activities which in return boosts the performances of the banking industry. Financial institutions administered savings and investments which are determinant macroeconomic development variables. The management of savings and investment are, thus, an important but challenging task of the financial institutions. (Fries & Taci, 2004; Swain, 2008; Scholtens & Wensveen, 2003; Selvavinyagam, 1995; and Zwedu, 2014).

But for the banking industry to play its central role in the economic growth and development of nations its operational activities has to be efficient and effective. Otherwise the banking industry failures will send shock waves affecting economic organizations and the social fabrics of a nation. Recent developments signify that bank failures in one country could have a potential global impact. Keeping banks efficient and effective is, thus, a national and global agenda (Bezabeh & Desta, 2014; Mohammed, 2015; Fries &Taci, 2004; and Swain, 2008).

The digital information and communication technology (ICT) developments specifically open ample opportunities for the banking industry to cut its operational costs and improve the quality of its services and customer satisfaction. Especially a reduction in the banking transaction costs is a breakthrough for the performance of the industry which has become a competitive platform (Me, 2017; Michen, Lule & Muketha, 2013)

The concept of transaction costs backs to the 1937 and 1978 works of Ronald Coase and Williamson, respectively (North, 1990). The two Nobel prized scholars and many others have undertaken a profound research on the concept of transaction cost economics and have created a room for the emergence of a new school of economics (New Institutional Economics) divergent from the Neo-classical school of thought (North, 1990). Transaction costs reflect the costs of economic organizations both outside the firm and inside the firm and are fundamental to measure the efficiency of economic and social enterprises outcomes (Coase 1937; and Williamson 1995).

Transaction costs broadly refer to the costs involved in the process of exchange. These are costs that prevent markets from operating efficiently or factors that prevent markets from indulging free and fair competition (Williamson, 1979). In the banking industry transactions cost could occur both from the depositor, borrower and financial intermediary side (Williamson, 1979; Choudhury, 2004; Palia & Porter, 2007; Allen, 1999; Baker & Jorgenson, 2012; and Menard & Shirley, 2014)

While transaction costs are the fundamental competitive platform in the banking industry it is believed that transaction costs are high among the developing countries banking sector (Bezabeh & Desta, 2014). The Ethiopian banking institutions are infant to the extent that they are less competitive compared to similar economy banks. Whereas, the EPRDF government of Ethiopia has introduced different reforms to improve the efficiency and competitiveness of the banking sector (Bezabeh & Desta, 2014). These include: addressing the wide – spread problem of non-performing loans of state owned banks, reorganizing Development Bank of Ethiopia and Business and Construction Bank as commercial banks and recently merging Construction and Business Bank with Commercial Bank of Ethiopia; opening up the banking sector to private domestic investment; introducing a new banking act to give more regulatory autonomy to the National Bank of Ethiopia; and allowing and promoting e-banking across the public and private

banks (Bezabeh & Desta, 2014; Zwedu, 2014; and Biresaw, 2018). The intention of these reforms relies on three primary objectives: to expand customer access and reach the un-banking citizens; to improve banks operational efficiency; and encourage competition. There are significant achievements in this regard but the coverage, the efficiency, the quality of services, and the competitiveness levels are far below expectations (Bezabeh & Desta). For instance of the 18 commercial banks, the state owned Commercial Bank of Ethiopia constitutes about 70% of the customer base (deposit value), asset value and loan capital value . In addition, no foreign bank is yet allowed to operate in Ethiopia due to protecting local banks from foreign competition (Bezabeh & Desta, 2014; and Biresaw, 2018). The banking sector is preoccupied by tight regulations and traditional products and services and number of factors are limiting the performance and competitiveness of Ethiopian banks. And of a number of factors limiting the performance and competitiveness of Ethiopian Banks high transaction costs is the major factor. Analyzing the transaction costs of the Commercial Bank of Ethiopia is the main purpose of this research. Putting forward policy and strategy issues that possibly reduce Ethiopian banks transactions cost is the ultimate goal of this research.

But, examining transaction costs from the point of depositors, borrowers and the financial intermediaries is a cumbersome and time taking task. Hence, this research is limited to examining transaction costs from the financial intermediary or the bank's side. This research, thus, focuses on answering the following questions.

1. What banking services are the sources of transaction costs and how are these transaction costs explained?
2. To what extent are significant banking transaction costs and what is their influence in competitiveness and business income?
3. What is the trend of the CBE transaction costs?
4. What measures have been taken to reduce transaction costs and what has not been taken and why?
5. What is to be done to address the issue of CBE transaction costs?

1.4 OBJECTIVES OF THE STUDY

The main objective of this study is to examine the transaction costs of commercial Bank of Ethiopia. The specific objectives are:

- To identify the type and significance of transaction costs of Commercial Bank of Ethiopia
- To highlight the influence of transaction costs on the CBE performance and competitiveness
- To examine the changes in transaction costs due to the development of e-banking and banking reforms.

1.5 SIGNIFICANCE OF THE STUDY

The comparative advantage of the banking institutions relies on their ability to reduce transaction costs. In this regard, this study will help: (1) to identify and measure the Ethiopian banking industry transaction costs and there by suggest mechanisms to reduce them, (2) to enlighten the Ethiopian banking institutions to look both inside and outside and thereby be competitive, (3) to enlighten the banks corporate governance and public policy makers to re-think the banking sector competitiveness in the international arena, and (4) to serve as a steppingstone for further research in the competitiveness of the Ethiopian banking industry.

1.6 SCOPE OF THE STUDY

The banking transaction costs are depositor related, borrower related and the financial intermediary related. The magnitude of transaction costs among these segments is different and needs a special treatment. For example, the transaction costs from the borrower side is sever among the developing countries banking sector and a sound explanation can be put forward. Quite a number of literatures have examined loan or credit problems but some have not looked at it from the transaction cost or market failure point of view. So measuring and analyzing transaction costs from the borrower, depositor (lender) and financial intermediary side is a time taking and costly business. Hence, this research limits itself into measuring transaction costs from the financial intermediary side taking into account commercial bank of Ethiopia.

Again transaction cost analysis is best suited when a comparative analysis is made. Ethiopia ownes 18 commercial banks and making a comparison, at least, among state owned commercial banks, on the one hand, and privately owned commercial banks, on the other hand, will produce a sound efficiency comparison and hence policy and strategy dialogue. But, this too is a time taking and costly research operation. This research, thus, limits itself into examining the transaction costs of a prominent bank which has a deterministic power in the economy of the nation and as well the development of the banking sector, Commercial Bank of Ethiopia.

Transaction costs are hard to identify measure and quantify. In a country like Ethiopia measuring non-marketing transaction costs is hard to find and hence qualitative exploratory research is a helping hand. This research, however, attempts to capture transaction costs using descriptive statistics analysis and regression analysis methods leaving the exploratory research to other scholars.

1.7 ORGANIZATION OF THE STUDY

The remaining sections of the study are organized as follows. Following the introduction section two reviews conceptual, methodological and empirical discussions of transaction costs taking into account discussions on transaction cost Economics (TCE) or the New Institutional Economics (NIE) as a pillar. Section three clarifies the transaction cost analysis methodology and the data inputs employed in the study. Section four discusses the outcomes of the research analysis results and findings. Final section concludes the analysis, put policy and strategy recommendations to reduce transaction costs and suggest further research works.

CHAPTER TWO

REVIEW OF LITERATURES

2.1 THEORETICAL LITERATURE

The concept of transaction costs is rooted on the neoclassical perfect market paradigm. Prominent neoclassical economists viewed the price mechanism as the only tool to adjust supply with demand and production with consumption. The underlying assumptions of this economic system are: information is perfect; individuals are rational and exchange is instantaneous and costless. Whereas, advocates of New Institutional Economics (NIE) challenged this economic system posing the issues of: information asymmetry, bounded rationality, asset specificity, risk and uncertainty and opportunism (Menard & Shirley, 2014). Among these include, Coase (1937), Williamson (1978), and North (1990). The New Institutional Economics advocates developed three concepts to address the issues of market or economic system failures: transaction costs, property rights and contracts (Menard & Shirley, 2014).

On the other hand, politicians and economists always question why are some countries rich and some countries poor? Why not some electorates meet their promises to their constituents? Etc. But, no one produces logically grounded correct answer. What is common among politicians and economists is the inefficiency of the political market (North, 1990). According North, political markets are more prone to inefficiency than economic markets. Hence, North (1990) further extended the concept of transaction costs to explain the fundamentals of state in economic development. Or, though political correctness or perfection is impossible to realize North (1990) proposed the power of state and its institutions to reduce political transaction costs or address political market failures. The late Prime Minister of Ethiopia MeleseZenawi was an advocate of developmental state and a critic of Neoclassical (Neoliberals) developmental model. Melese's argument was that state intervention is an absolute necessity when markets fail to do their intended job or when development transaction costs are getting high.

Therefore, the concept of transaction costs emanates from the problems of costly exchange or market failure (Coase, 1937). This has given birth to the field of Transaction Cost Economics (TCE) and has attracted and is attracting quite a number of scholars in studying transaction costs both at macro and micro levels (Menard & Shirley, 2014). Again, the study of transaction cost economics leads to the study of institutions which in itself paves the way for the emergence of a branch of economics school of thought under the umbrella of New Institutional Economics (Hardt, 2009). Accordingly, the concept of transaction costs is hard to simplify and easily capture: it is broad, complex and multidisciplinary (North, 1990). For instance, transaction costs in Coase (1937) refer to "the costs of using the price mechanism "or "the costs of carrying out a transaction by means of an exchange on the open market." This in economics terminology refers to payments by buyers that are not accounted by sellers and/or payments by sellers that are not conceived by buyers. In finance, a transaction cost refers to the premiums above the market price and/or discounts below the market price (Kissell, 2014).

According Arrow (1969), transaction costs refers to costs of running the economic system on top of the production costs which are the foundation of the neoclassical analysis. Williamson (1995) in his discussions of transaction cost economics associated transaction costs with problems of contracting, property rights governance and asset specificity. For example, Williamson (1995) identified ex ante and ex post transaction costs of business contracts. The first one i.e. ex ante transaction costs include costs of contract drafting, negotiation, and safeguarding an agreement. While ex post contract transaction .costs include mal-adaption costs, bargaining costs and setup and running costs. Hence, according Williamson (1995), what matters in a transaction cost analysis is not the absolute magnitude of transaction costs but for the relative or comparative costs. And such analysis can be carried out without employing complex mathematical models.

Theoretical and empirical research on transaction costs suggest that the components of transaction costs and their proxy measures varies depending on the sources of transaction costs and the particular industry under study (Kissell, 2014). Figure 1 depicts the sources of transaction costs and the proxy measurement variables (Own simplification).

In an imperfect world where moral hazard and adverse selection has taken an institutional metaphor transaction costs are imminent everywhere across the social, economic, political, legal, environmental and technological spheres. According scholars (For example, North, 1990; and Williamson, 1995), transaction costs exist everywhere except in a one-man Robinson Crusoe economy and a completely communist society.

The banking industry is known as a transaction cost industry. And this is not because the financial market is exceptionally imperfect but because banking is all about transaction and transactions by virtue of economic law are not Pareto efficient (Polski, 2011). So, the banking industry is under pressure to reduce transaction costs because the industry is the center of economic growth and development (Baker & Jorgensen, 2012). Digitalization of the banking products and services is one important tool to reduce transaction costs. Institutional reform and deregulation is another grand opportunity to squeeze transaction costs. Creating a competitive environment is also a leeway to shape the banking institutions and improve their efficiency (Kissell, 2014).

Banking transaction costs can be classified as depositors (savers) related transaction costs, borrowers (investors) related transaction costs and the banking institution (intermediary service provider) related transaction costs (Kissell, 2014; Choudhury, 2oo4; Masuko&Marufu, 2003). Since changes in bank industry influences changes in the economy; changes in the economy also influences the performances of the banking industry (Oracle Financial Services, 2017). But the banking industry transaction costs are not bounded only by depositors, borrowers and the banking firms. For instance, government policy and regulations have a significant impact on the efficiency (transaction costs) of the banking industry. Likewise the success (failure) of the banking industry determines the performance of the economy. Not only this, since the banking industry is operating globally, for instance, the failure of one bank or a group of banks will have a significant wave shock to the global economy (Oracle Financial Services, 2017; Swain, 2008; and Scholtens&Wensveen, 2003; Meyer & Cuevas, 1990; Wink, Sheng and Eid, 2010). A recent example in this case is the 1997 Asian financial crisis and the 2008 USA financial crisis.

Transaction costs of the banking industry are exceptionally high in developing countries (Meyer & Cuevas, 1990). The costs of mobilizing savings, lending for investment and other uses and recovering funds are high for banking institutions. Borrowing costs especially for small loans and non-performing loans are large among financial institutions of developing countries (Meyer & Cuevas, 1990). Hence, attention should be placed on measuring transaction costs and identifying ways to reduce them. Transaction cost analysis is a profound tool to achieve thus results. It helps to diagnosis, for instance, pre-investment, intraday and post-investment transaction costs and thereby design mitigation mechanisms (Kisell, 2014; Meyer & Cuevas, 1990; and Selvavinayagam, 1995)

In sum, transaction cost economics scholars argue that agents or firms make decisions on different types of transactions and do this in a costly way (Lakis, 2012). Accordingly, the New Institutional Economics advocates suggests that, among others, institutions and organizations are a medium for reducing transaction costs and obtaining a higher efficiency in economic performance (Williamson, 1979). But, Menard (2001) identifies two major weaknesses in the current New Institutional Economic theory. One is the analysis of transaction costs in lee of dynamism in innovation, especially in information and communication technology. Menard (2001) argued that technological innovation has completely shifted institutional and organizational structures and operational transactions and through it transaction costs and operational efficiencies. Second, is the issue of interaction between institutional environments and governance structures. Comparative transaction cost analysis reveals that institutional and organizational performance varies across countries, sectors and firms depending on the institutional and organizational framework. This suggests transaction cost economics theory is a far more developing theory and hence needs to adjust itself to the dynamic and changing world (North, 1990).

2.2 METHODOLOGICAL LITERATURE

According Williamson (1995) the conceptual discussion on transaction costs is extensive but methodological discussions lag both in quantity and quality. This is mainly because transaction costs have large unobservable components and hence their measure is indirectly conceived from the behavior of economic agents in the market. In addition, Menard (2001) suggested that lack of

adequate models is the fundamental shortcoming of the transaction costs theory. Menard 2001) argued that most mathematical models in transaction cost analysis are limited to the study of micro firms and the study of governance structures. And since these models are not satisfactory alternative approaches such as game theory are needed to validate their relevance.

Because the transaction cost analysis is short of standard models different scholars' proposed different non-standard models to economize on transaction costs. These include: customer and territorial restrictions, vertical integration, franchising, outsourcing, digital infrastructure, regulations, and governance. But, depending on the nature of the firm, non-standard models of the like offered little transaction cost economizing (Williamson, 1995)

2.3 EMPIRICAL LITERATURE

When it comes to empirical testing and analysis (statistical and econometric) transaction costs analysis is a success story and over the past two decades quite a number of transaction costs analysis have been made across countries and organizations. But collecting adequate transaction cost data and information has remained a challenge and risks the research outcomes (Menard, 2001).

Ning Wang (2003) have undertaken a survey of transaction cost analysis undertaken by different researchers. For example, Wallis and North (1986) showed an effort to measure the USAs economy-wide transaction costs and found that the transaction sector's share of GDP has climbed from 25 percent in 1930 to 35 percent in 1990. Alexandra and Benham (1998) have undertaken comparative country studies to measure the costs of exchange and found that while the price of installing a telephone line in Malaysia is USD$130 it was USD $6000 in Argentina. Gebre-Medhin (2001) surveyed the costs that Ethiopian traders face in the grain market and found that transaction costs accounted for about 19 percent of the total costs. Zylbersztajn and Graca (2002) measured the startup costs in the Brazilian garment industry. The researchers found that transaction costs on average accounts 11.3 percent of the GDP per capita plus the potential investor is expected to pass through nine administrative procedures with a time cost of 64 days. Regarding transaction costs associated with ethnic concentration of business, Wang (2003)

mentioned Jewish diamond dealers in New York City, Chinese businessmen in Southeast Asia and Korean dry cleaners in the United States.

Financial transaction costs pre-occupied depositors, borrowers and financial intermediaries. The level and distribution of these costs among the participants are influenced by changes: in technology, in consumer preferences, in financial regulations and in the internal efficiencies of the financial institutions. In this regard, Rohayu & Rahadian (2015); Fries & Taci (2004); Krugel (2007); Zupanovic, Hell & Pavalic (2015); Lajili& Mahoney (2006); Berger (2003); Meyer & Cuevas (1990); Du (2011); Me (2017); Liu (2016); Michen&Muketha (2013); and Shaikh (2014) have studied the impact of e-banking in the transaction costs of the banking industry and almost all researchers found that technological innovations have significantly reduced transaction costs and boosted the operational efficiency of the financial institutions. But, when it comes to credit to micro and small enterprises or small loans from the banks and micro finance institutions, in general, quite a number of researchers (For example, Masuko & Marufu (2003); Choudhury (2004); Henry (2010); Rohayu&Rahadian (2015); Wawira (2013); Shankar (2008); and Naguvava (2016)) across the different continents came into a conclusion that transaction costs are alarmingly high and is frustrating the poor and the economy.

On the other hand, Polski (2011) has conducted a time series transaction costs analysis in the US commercial banking industry over the period 1934 – 1998. The researcher classified the banking transaction costs into two components: interest expense i.e. total interest paid and accrued on all interest bearing liabilities and non-interest expenses which include: employee salaries and benefits; occupancy expense, and other miscellaneous expenses, i.e. fees paid to directors, trustees and advisory board members, legal fees, advertising, public relations and promotion, charitable contributions, office supplies, information processing, telephone expenses, examination and audit fees, etc. The researcher found that total transaction costs increased from 69 percent of total income in 1934 to 85 percent in 1989 and then decreased to 77 percent in 1998.

Hieltjes and Petrova (2013) conducted a randomized controlled trail to examine the impact of financial literacy training, marketing and information session and zero transaction costs on bank

account uptake and use in Ethiopia. The controlled group was Sher Ethiopia Rose farm employees and the Bank into consideration was Zemen Bank. The researchers found that financial literacy training and information session had no effect on bank account uptake and use. However, reducing transaction costs had an effect on bank account uptake and use.

Kudoh and Sano (2015) have conducted an empirical analysis of transaction costs in the Japanese stock market. This study classified transaction costs into two: market related quantitative data, i.e. bid-ask, spread, market liquidity indicators, depth, and price fluctuations; and investors related data including costs associated with commissions, order placement method and trading volume. The researchers studied transaction costs of institutional investors and found that the average transaction costs of investors have decreased to about seven basis points. According Kudoh and Sano (2015), three factors are responsible for the reduction in transaction costs. One is changes in the execution benchmark of market participants; second is the increasing use of electronic trading; and third is the spread of alternative trading venues.

Bezabeh and Desta (2014) examined the banking sector reform in Ethiopia especially the reform's impact on the efficiency of the banking sector and found a glimmer result. On the one hand, the banking reform of the current government has survived the fragile and inefficient state-dominated banking business of the socialist military government (1974 – 1991) and, on the other hand, more solid reform is expected to improve the efficiency and performance of banking sector. These include: (1) allowing foreign banks to operate in Ethiopia, (2) privatizing the dominating state owned commercial banks, (3) allowing market forces to determine interest rates and foreign exchange rates, and (4) upgrading the regulatory and supervisory capacity of the National Bank of Ethiopia.

In general, different scholars have undertaken profound research and have pointed out that different types of market failures are emanating from high transaction costs. Agent-specific (e.g. ethnic biasedness of business), rather than transaction- specific is a good example. In other words, the market is actor-sensitive: it may fail for some individuals, but it thrives for others (Wang, 2003). And the concept of transaction cost economics or new institutional economics is

rooted in response to market failures. Transaction cost analysis, thus, become a popular decision making tool which in retrospect is believed to enlighten the shadows of market failure.

2.4 RESEARCH GAP

The above literature review suggested the important attention given to transaction costs. This invites scientific research dealing with clinical examination of the sources and impacts of transaction costs in an industry and hence suggesting mitigation mechanisms that significantly reduces transaction costs. However, such research efforts are limited in a country like Ethiopia. This research attempts to examine the transaction costs of the commercial bank of Ethiopia and hence contribute a piece towards filling the research gap of the banking Industry.

2.5 CONCEPTUAL FRAMEWORK

Sources of transaction costs are confined with market failure mechanisms. These include: asymmetric information, bounded rationality, risk and uncertainty, asset specificity, opportunism, governance, property rights and contract management. With this transaction costs appear in the economy and business in form of commissions; opportunity costs; interest and non-interest expenses; resources spent on waiting and getting permits to do business, cutting through the red tapes, bribing officials, etc.. Also, costs of information collection and analysis; costs of institutional inefficiency or poor governance; agent specific costs; costs of business entry and exit; costs of enabling legislations including lobbying costs; policy design and implementation costs; monitoring and persecution costs; and support and administrative costs reflect transaction costs of an industry or economy. Figure 1 depicts the conceptual framework of transaction costs which is derived from the theoretical and empirical review of literatures.

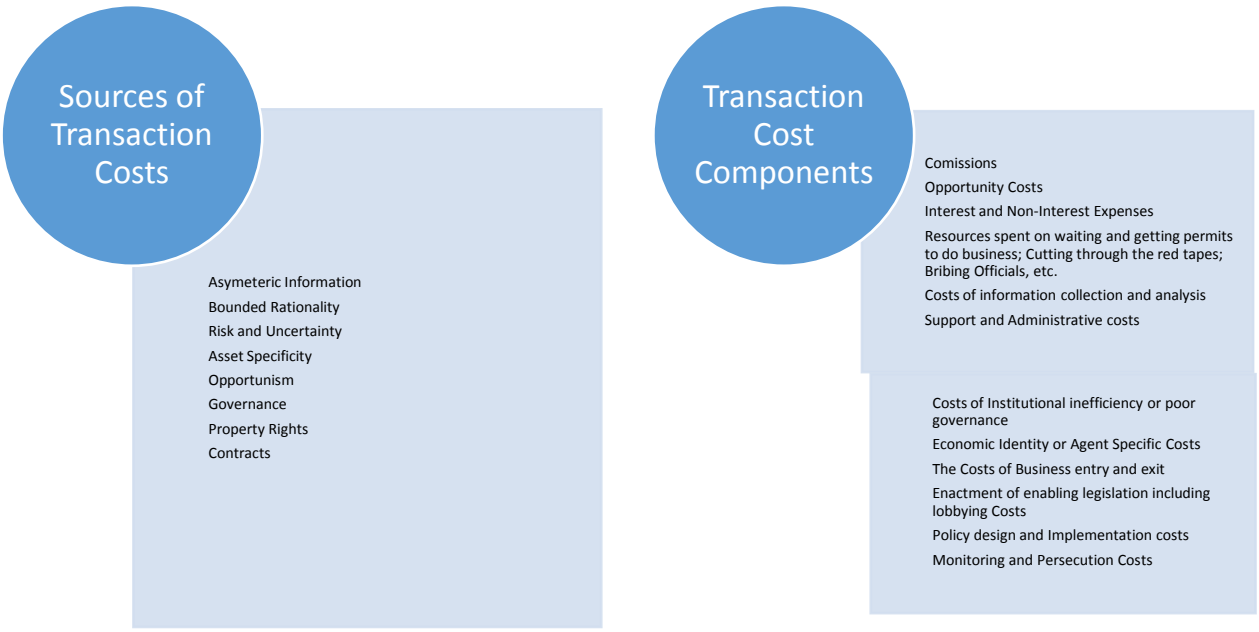

Figure 1: Conceptual Model of Transaction Costs

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 RESEARCH DESIGN

Transaction cost analysis is short of standard models and is facing serious difficulties in direct measurement of transaction costs (Williamson, 1995). The methodological and measurement problems, however, did not limit researchers from conducting an empirical investigation of transaction costs. Within this environ this research considered descriptive statistical analysis and econometric methods. The descriptive statistical analysis is based on a questionnaire data collected from the sample population of the CBE South Addis Ababa District branches and the econometric analysis approach considered time series secondary data for the period 1981 – 2017. The Bank's cost and output data was organized from its data base.

Total Factor Productivity (TFP) and Transaction Costs analysis (TC) have synonymous conceptual definitions. While TFP refers to the growth in output unexplained by the growth in major inputs in the production process (Comin, 2006), transaction costs refers to costs that are not accounted by market or exchange prices (Coase, 1937 and Williamson, 1995). But both sound similar instance in which they challenged or diverged from the neoclassical assumptions of perfect market. Accordingly, scholars tend to use a modified cobb-Douglas production function to determine the level of total factor productivity which is captured by the constant alpha (Ark, 2014 and Liu, 2003). The regression analysis section of this research employed a general cost function similar to the modified cobb-Douglas production function where the constant is assumed to capture transaction costs.

On the other hand, the descriptive analysis considered questionnaire data collected from a sample of 355 respondents from 35 CBE branches of South Addis Ababa District. The questionnaire data was organized and made ready for interpretation using Statistical Package for Social Sciences (SPSS) version 21.

This research clinically examines the transaction costs of Commercial Bank of Ethiopia. The descriptive analysis demonstrated changes in the Bank's transaction costs along with technological, institutional and economic changes. While the regression cost analysis estimates transaction costs of the Bank through a total factor productivity approach. And this is the center piece of this research.

3.2 DATA SOURCES AND COLLECTION METHODS

This study used secondary and primary data sources to establish regression and descriptive analysis. Ordinary Least Square (OLS) regression method of Cobb-Douglas Cost Function is used to process the secondary data and the primary data is used to establish descriptive analysis. A triangulation check is used to ascertain the validity and reliability of the research outcomes.

3.2.1 SECONDARY DATA

The banking transaction costs differ among borrowers, depositors and the intermediary bank itself. This research considered the intermediary bank's transaction costs which constitute endogenous and exogenous features (Polski, 2011). The endogenous transaction costs are costs associated with internal operations of the bank which includes deposit mobilization costs, default loans, opportunity costs of system failure, opportunity costs of power failure, frauds, promotion and advertisement costs, social responsibility costs, training costs, system maintenance costs, etc. While exogenous costs are associated with regulatory agency related costs (for example, while the Commercial banks pay seven percent interest for depositors the National Bank of Ethiopia pays three percent interest on the banks reserve amount which is 27 percent of the deposits amount), government policy related costs (mainly related with adverse selection and moral hazard), socio-economic related changes, international banking service related costs, competition related costs and politics oriented costs. A good part of these costs are hard to single out and measure. This study attempted to capture part of these costs using a structured questionnaire.

Unlike others this research attempted to capture transaction costs from a total factor productivity measurement approach. Since the modified neoclassical production function residual explains total factor productivity, the residual of the cost function (modified neoclassical cost function) is assumed to explain transaction costs (Liu, 2003 and Tovar, Jara-Diaz & Trujilla, 2003). The

constant or residual of the cost function is believed to portray transaction costs that are accumulated beyond the direct operational costs. To do so the researcher used secondary data accessed from the commercial bank of Ethiopia data base. The time series data covered the period 1981 – 2017. The cost data (dependent variable) incorporated both interest and non-interest expenses and the output data (independent variables) that covered loan and deposit amounts and total income. Interest expenses represent costs of liquid assets or deposits and non-interest expenses include salaries and benefits of employees; electricity, telecom and IT related expenses; branch offices rental expenses; management service expenses (including payments to the board); non-performing loans or defaults; marketing and promotion expenses; e-banking infrastructure related expenses; and other miscellaneous expenses.

The bank used to have saving or current account deposit, time deposit and demand deposit. It also sales government bonds to mobilize savings. Though each component of a deposit has different use value and bears different transaction costs this research considered a lump sum of the deposits as one major and determining output of the bank. Likewise loan quality varies in terms of time or loan period, investment specificity, the borrower experience, etc. But this research considered the total loan amount assuming the total figure will average out the pluses and minuses in loan quality differences. Since the Ethiopian banking sector is traditional and the financial market is practically non – existent, other major banking service output is hard to find. The Bank's income is derived from interest related services (interest income), commission based services (Commission income) and other service incomes. These services income is considered as the third output that influences the costs of the banking sector and hence transaction costs.

3.2.2 PRIMARY DATA

The Commercial Bank of Ethiopia has more than 35,000 employees working in more than 1280 branches. Addis Ababa Region alone is organized in four districts and owned more than 400 branches. This research employed purposive sampling technique to establish the target population. In this regard South Addis Ababa District was selected which is organized in 102 branches (including head office). The South Addis Ababa district branches employed 3121 employees which are used for this research as a target population. Then Yamane's (1967) formula is used to calculate the sample size.

Yamane's (1967) sample size determination formula:

$$n = \frac{N....}{1 + N\,(e)^2}$$

Where n is the sample size, N is the population size, and e is the level of precision. When this formula is applied using the above target population at 95% confidence level we get the following sample size.

$$n = \frac{3121}{1 + 3121\,(0.05)^2}$$

$$= 355 \text{ (sample size)}$$

Then, the 102 South Addis Ababa district branches are arranged alphabetically and the sample branches are drawn using a systematic random sampling technique. With this technique 35 branches have been identified which accommodates nearly 1000 employees. Systematic sampling method was used to distribute the questionnaire within a specific branch.

A structured questionnaire with a five – point Likert scale was organized to address the issues of transaction costs in the Commercial Bank of Ethiopia. To assess the reliability and validity of the questionnaires a pre – test was made at one branch where 20 employees (5.6% of the sample size) have participated. This branch was selected on a non-probability mechanism (purposive sampling) and the result was promising to collect and organize the data from the given sample size. The final version of the questionnaire is shown in Annex 1.

The primary data was analyzed by the use of descriptive statistics such as mean, standard deviation, frequency and percentages. The information is displayed in tables. The description, interpretation and communication of findings were established through the use of SPSS (version 21).

While collecting the primary data ethical considerations were in place and the respondents were communicated that the data and information collected will be used for academic purposes only and the information given is 100 percent confidential.

3.3 METHOD OF DATA ANALYSIS

The neoclassical economists define Total Factor Productivity (TFP) as "the portion of output not explained by the amount of inputs used in production", (Hulten, 2001 and Prescott, 1997). This portion of output commonly known as the "Solow residual" is measured using a growth model in particular a cobb-Douglas production function (Ark, 2014). This model or production function is rooted on the fundamental principles of the neoclassical theory i.e. perfect competition, constant returns to scale, perfect information or data measurement, unitary substitutions between factor inputs (labour and capital), equality of marginal cost and marginal product, neutral technical progress and perfect market (Hulten, 2001, Prescott, 1997 and Ark, 2014). So, according neoclassical economists total factor productivity is assumed to measure the effects of technological change or progress (Comin, 2006). But, other economists relaxed the neoclassical production function for a total factor productivity to measure a range of other effects beyond technological change. This includes research and development (R & D), soft wares and systems, human capital skills, branding, marketing, policies and strategies, institutional reforms, management, etc. This means total factor productivity measures can be influenced by any externalities such as imperfect competition and scale returns (for example increasing returns to scale), (Prescott, 1997, Hulten, 2001, Comin, 2006 and Ark, 2014).

This research analysis methodology is derived from the modified version of the neoclassical production function used to measure total factor productivity. The fundamental argument is that the method that is used to measure efficiency gains (outputs) due to unexplained inputs could also measure the inefficiencies (costs) of the firm due to transaction costs. The modified total factor productivity measure violates the core assumptions of neoclassical economic theory and likewise the transaction cost economics challenged the neoclassical theory of the firm and established a new economic theory of the firm known as transaction cost economics (TCE) or new institutional economics (NIE).

There are different cost function techniques that measure the systematic relationships between costs and outputs. Among these include cobb-Douglas cost function, trans-log cost function, and quadratic cost function (Tovar, Jara-Diaz and Trujillo, 2003, and Liu, 2003). All cost functions assume that firms are trying to minimize costs but their technical fitness varies from firm to firm.

It is widely known, however, that the appropriate cost functional form must be non-negative, linearly homogenous, concave and non-decreasing in factor prices and output ((Tovar, Jara-Diaz and Trujillo, 2003; Liu, 2003). In addition to these generic conditions, a cost function must meet other requirements including: (1) the function must provide cost levels at zero level of output commonly known as fixed costs, (2) the function must not prejudge the presence or absence of any cost property playing an important role in the analysis of the industry, (3) the function must not require the estimation of an excessive number of parameters, and (4) the function must not impose restrictions on the value of the first and second partial derivatives (Gronberg et al, 2005). Therefore, it is clearly advisable to use a functional form that is not bounded by technical functional form restrictions.

This study argued that transaction costs cannot be simply measured. In addition, transaction cost analysis has no a clear cut methodology to infer a systematic analysis. Despite this limitations quite a number of scholars have employed different statistical and econometric models to capture transaction costs and their implications on the economy of the firm. This study considers Cobb-Douglas cost function to measure the transaction costs of the banking industry taking into account commercial bank of Ethiopia as a case study. This study believes and is different from others that the constant or residual of the cost function captures the transaction costs of the bank. The Cobb-Douglas cost function to be considered is a modified neoclassical type, but whether it meets all the necessary conditions of a cost function is subject to question. This research believes that other researchers will refine the technicality of this approach.

Accordingly the general form of the cost function is the following:

$TC = f(D, L, Q)$……(1)

TC, the total cost, is a function of banking outputs viz. deposits (D), loans (L) and other service incomes (Q). Total costs cover interest and non-interest expenses of the Bank.

The Cobb-Douglas cost function takes the form:

$TC = A\, D^{a} L^{b}\, Q^{c}$……..(2)

Taking the natural log of both sides gives us the following cost equation:

$\ln TC_t = A + a \ln D_t + b \ln L_t + c \ln Q_t + e_t$ ……..(3)

Where:

TC is the total cost (dependent variable)

D, L, and Q are deposit, loan and other service outputs of the bank, respectively (independent variables)

A, is the constant. This constant or residual is expected to reflect the magnitude of transaction costs in the bank and is the central area where this study is deviated from others.

a, b, and c are the coefficients or simply represent the marginal costs of deposit, loan and other services, respectively. Also the summation of the parameters reflect the scale economies of the bank.

e, is the statistical error term

t is the time period that is considered (1981 – 2017)

It is also specified that:

A>= 0, a>= 0, b>= 0 and c>= 0

Ordinary Least Square (OLS) regression method is used to estimate the parameters.

On the other hand, the primary data was analyzed using descriptive statistics analysis method. SPSS version 21 was used to organize the primary data in descriptive format. The questionnaire data was grouped in five sections of the banking services where transaction costs are expected to appear traditionally. These include: bank account opening services, banking transaction services, banking credit services, international banking and other banking services and central bank policies and regulations. Then, the respondents' data was organized in tables for interpretation and analysis.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 INTRODUCTION

Financial markets and financial institutions serve a catalytic role in the process of economic growth and development. The banking industry, in particular, plays an intermediary role between lenders (depositors) and investors (borrowers). But for the banking industry to play its intended role its operational activities are expected to be efficient and effective. Otherwise failure in the banking industry will send shock waves towards the economic, social and political development pillars. The 1997 and 2008 banking industry shocks were a good example.

However, the development of digital information system and communication technology (ICT) has opened ample opportunities to revolutionize the banking operational services and hence helps to reduce operational costs, improve service quality and attend customer satisfaction. The banking industry development and, in particular, the reduction in banking transaction costs is not only associated with the development of information and communication technology. Other factors like human resource development, research and development, governance, and policies and regulations also contributed a significant amount towards the efficiency and effectiveness of the banking industry, in general, and the reduction in transaction costs, in particular.

This research is designed to examine the transaction costs of Commercial Bank of Ethiopia. Both primary and secondary data and information has been collected and analyzed in the following sections. The first section offered descriptive analysis using primary data. In this section transaction costs are examined from the point of view of bank account opening services, banking transaction services, banking credit services, international banking and other services and central bank bank policies and regulations. The second section demonstrated a regression analysis using a 37 years secondary data and the third section triangulated the descriptive analysis with that of the regression analysis. Final section tabled concluding remarks.

4.2 DESCRIPTIVE ANALYSIS

This section analyzed primary data collected from 253 respondents from 35 Commercial Bank branches of South Addis Ababa District. The questioners were designed using a five – point Likert scale and the information is organized for analysis using SPSS version 21.

4.2.1 SAMPLE PROFILE

The sample profile or demographic information outlined the selected characteristics of the respondents or study participants. The sex composition showed that of the total participants 157 (62.1 percent) are males and 96 (37.9 percent) are females (Table 1).

Table 1: Gender of Respondents

Gender	Frequency	Percent
Male	157	62.1
Female	96	37.9
Total	253	100.0

The age distribution of respondents is displayed in Table 2. The result indicates that the majority of the respondents are in the age bracket of 20 to 30 (67.6 percent) followed by the ages from 31 to 40 (28.1 percent). This is an indication of the young bankers occupying the Commercial Bank of Ethiopia.

Table 2: Age Distribution

Age	Frequency	Percent	Cumulative Percent
20-30	171	67.6	67.6
31-40	71	28.1	95.7
41-50	9	3.6	99.2
greater than 50	2	.8	100.0
Total	253	100.0	

In relation to the educational status of the study participants the majority are Bachelor Degree holders (67.2 percent) followed by Master's Degree holders (31.2 percent). This too highlights Commercial Bank of Ethiopia is occupied by educated labour force Table 3 highlights educational status of respondents.

Table 3: Educational Status

Educational Status	Frequency	Percent	Cumulative Percent
Diploma	4	1.6	1.6
Bachelor	170	67.2	68.8
Masters	79	31.2	100.0
Total	253	100.0	

Table 4 displays the work experience of respondents. The respondents who have 0 to 5 years work experience accounted 52.6 percent followed by the 35.2 percent respondents who have work experiences between 6 and 10 years.

Table 4: Work Experience of Respondents

Work Experience	Frequency	Percent	Cumulative Percent
0-5	133	52.6	52.6
6-10	89	35.2	87.7
11-15	19	7.5	95.3
16-20	10	4.0	99.2
greater than 20	2	.8	100.0
Total	253	100.0	

According Table 5, officers dominated (73.5 percent) the banking job position which is a sign of healthy job structure. Middle managers accounted 10.7 percent followed by senior managers that accounted 8.3 percent.

Table 5: Job Position

Position	Frequency	Percent	Cumulative Percent
Officer	186	73.5	73.5
Middle Manager	27	10.7	84.2
Senior Manager	19	7.5	91.7
Other	21	8.3	100
Total	253	100.0	

4.2.2 BANKING TRANSACTION COSTS

This section examines banking transaction costs related with bank account opening services, banking transaction services, banking credit services, international banking and other business services and National Bank policies and regulations.

4.2.2.1 BANK ACCOUNT OPENING SERVICES

The degree of agreement of the respondents on the bank account opening services was assessed based on eight statements. Table 6 shows the respondents response on the given statements. The average level of agreements for bank account opening service demonstrated that 38.8 percent of the respondents strongly agree that transaction costs in the bank opening services are on the decline, 32.4 percent of the respondents just agreed, 14.4 percent are neutral and the remaining 14.4 percent of the respondents showed disagreement with the statements. Consequently, the majority of the respondents which accounted on average 71.2 percent have shown agreement on the given statements. This agreement proved a declining transaction costs in the bank account opening services. It is believed that the CBE's transaction costs in the account opening services have declined partly to address the competition from domestic private banks, partly due to the introduction of e-banking services and partly to cope up with the growing monetization of the economy.

Table 6: Bank Account Opening Services

	Frequency (%)

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
BAOS1: Eligible citizens can open account	13 (5.1)	8 (3.2)	16 (6.3)	48 (19)	168 (66.4)
BAOS2: No charge to open account	16 (6.3)	14 (5.5)	6 (2.4)	36 (14.2)	181 (71.5)
BAOS3: No queue while opening account	18 (7.1)	39 (15.4)	53 (20.9)	98 (38.7)	45 (17.8)
BAOS4: Investment to attract new customers	14 (5.5)	17 (6.7)	35 (13.8)	101 (39.9)	86 (34)
BAOS5: Opening account by choice	17 (6.7)	12 (4.7)	38 (15)	95 (37.5)	91 (36)
BAOS6: Pressure to open account	24 (9.5)	20 (7.9)	55 (21.7)	102 (40.3)	52 (20.6)
BAOS7: Bank choice by efficiency & packages	26 (10.3)	35 (13.8)	67 (26.5)	91 (36)	34 (13.4)
BAOS8: Bank choice by reliability & trust	9 (3.6)	9 (3.6)	21 (8.3)	85 (33.6)	129 (51)
Average	**17 (6.8)**	**19 (7.6)**	**36 (14.4)**	**82 (32.4)**	**99 (38.8)**

The CBE recent history demonstrated that branches and employees are evaluated on the number of new accounts they have opened per month or new customers they have attracted. Special windows and officers are assigned for bank account opening services in each branch and depositors are prized occasionally on lotto bases. This experience has been spread to other private commercial banks and transaction costs in the account opening services are practically reduced to near zero.

4.2.2.2 BANKING TRANSACTION SERVICES

Table 7 shows the degree of agreement of respondents on the assigned statements of banking transaction services. The statements or variables are 32 in number but broken into internet based transaction services, ATM based transaction services, Mobile banking based transaction services, and the Bank branches efficiency and effectiveness. Of the total respondents an average of 154 (60.8 percent) respondents agreed that transaction costs of CBE have been reduced due to the introduction of internet based banking, ATM banking, mobile banking and the increase in number and improvements in the efficiency and effectiveness of banking branches. On the other hand, respondents demonstrated that queuing occurred due to power or system failure (63.7 percent) and customer complaints on internet banking (only 45.9 percent agreed), ATM services failure (only 40.7 percent agreed) and mobile banking system failure (only 38.4 percent agreed) are little addressed and hence built up transaction costs. These transaction costs will definitely have a dwindling effect on the CBE customer base. But contrary to this the respondents acknowledged that the CBE success is associated with e-banking (66.0 percent), employees'

efficiency and effectiveness (79.8 percent) and an overall reduction in transaction costs (68.8 percent).

Table 7: Banking Transaction Services

Statements	Frequency (%)				
	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
BTS1: IT banking reduces queuing	15 (5.9)	18 (7.1)	37 (14.6)	96 (37.6)	87 (34.4)
BTS2: IT banking reduces transaction costs	11 (4.3)	14 (5.5)	22 (8.7)	100 (39.5)	106 (41.9)
BTS3: IT banking improves efficiency	13 (5.1)	9 (3.6)	18 (7.1)	93 (36.8)	120 (47.4)
BTS4: IT banking frequents system failure	14 (5.5)	47 (18.6)	71 (28.1)	71 (28.1)	50 (19.8)
BTS5: IT banking is hampered by power failure	13 (5.1)	55 (21.7)	66 (26.1)	80 (31.6)	39 (15.4)
BTS6: Queuing is due to power or system failure	12 (4.7)	29 (11.5)	51 (20.2)	114 (45.1)	47 (18.6)
BTS7: Queuing is due to efficiency of officers	37 (14.6)	57 (22.5)	51 (20.2)	78 (30.8)	30 (11.9)
BTS8: IT banking reduces transaction costs	20 (7.9)	25 (9.9)	48 (19)	88 (34.8)	72 (28.5)
BTS9: IT banking reduces service payments	18 (7.1)	22 (8.7)	56 (22.1)	104 (41.1)	53 (20.9)
BTS10: Customers access banking information	19 (7.8)	22 (8.7)	46 (18.2)	99 (39.1)	67 (26.5)
BTS11: Customers enjoy friendly environment	20 (7.9)	33 (13)	57 (22.5)	94 (37.2)	49 (19.4)
BTS12: Complaints on IT banking is minimal	22 (8.7)	66 (26.1)	84 (33.2)	62 (24.5)	19 (7.5)
BTS13: Customers complaints are addressed	22 (8.7)	58 (22.9)	57 (22.5)	88 (34.8)	28 (11.1)
BTS14: Sufficient ATM machines are available	25 (9.9)	50 (19.8)	48 (19)	90 (35.6)	40 (15.8)
BTS15: ATM cards are delivered on time	29 (11.5)	52 (20.6)	53 (20.9)	91 (36)	28 (11.1)
BTS16: ATM machines operate properly	24 (9.5)	55 (21.7)	44 (17.4)	103 (40.7)	27 (9.5)
BTS17: ATM machines save customers time	13 (5.1)	11 (4.3)	24 (9.5)	103 (40.7)	102 (40.3)
BTS18: ATM machines reduces transaction costs	4 (1.6)	14 (5.5)	25 (9.9)	102 (40.3)	108 (42.7)
BTS19: ATM machine services are secured	12 (4.7)	25 (9.9)	40 (15.8)	98 (38.7)	78 (30.8)
BTS20: Complaints on ATM services are minimal	27 (10.7)	68 (26.9)	55 (21.7)	76 (30)	27 (10.7)
BTS21: Mobile banking users are increasing	13 (5.1)	14 (5.5)	29 (11.5)	134 (53)	63 (24.9)
BTS22: Mobile banking security is well addressed	11 (4.3)	25 (9.9)	54 (21.3)	110 (43.5)	53 (20.9)
BTS23: Mobile banking reduces transaction costs	16 (6.3)	19 (7.5)	33 (13)	117 (46.2)	68 (26.9)
BTS24: Complaints on mobile banking are low	29 (11.5)	56 (22.1)	71 (28.1)	73 (28.9)	24 (9.5)
BTS25: Bank branches are adequate	16 (6.3)	24 (9.5)	33 (13)	99 (39.1)	81 (32)
BTS26: Branches are equipped with technology	29 (11.5)	43 (17)	53 (20.9)	86 (34)	42 (16.6)
BTS27: Information materials are available	18 (7.1)	50 (19.8)	59 (23.3)	92 (36.4)	34 (13.4)
BTS28: Branches are transaction cost conscious	11 (4.3)	36 (14.2)	80 (31.6)	104 (41.1)	22 (8.7)
BTS29: Success is associated with e-banking	13 (5.1)	26 (10.3)	47 (18.6)	118 (46.6)	49 (19.4)
BTS30: Success is associated with employees	6 (2.4)	16 (6.3)	29 (11.5)	103 (40.7)	99 (39.1)
BTS31: Success is associated with low TC	8 (3.2)	22 (8.7)	49 (19.4)	115 (45.5)	59 (23.3)
BTS32: CBE offers better banking services	7 (2.8)	30 (11.9)	37 (14.6)	81 (32)	98 (38.7)
Average	**17 (6.76)**	**34 (13.5)**	**48 (19)**	**96 (37.8)**	**58 (23)**

Overall, 23 percent of the respondents strongly agree with the statements on banking transaction services, 37.8 percent of the respondents agree, 19 percent are neutral and the remaining 20.26 percent of the respondents exhibit disagreement. Otherwise, as mentioned above, specifically the

development of information and communication technology has lend ample opportunities to the banking industry to reduce transaction costs.

4.2.2.3 BANKING CREDIT SERVICES

The study participants who have demonstrated an agreement with the statements of the banking credit services accounted, on average, 41.8 percent. Those who have displayed neutral positions accounted 36.7 percent and the remaining 21.5 percent signaled disagreements on the given statements. This suggests the presence of transaction costs in the CBE credit service department. Among the factors that builds transaction costs in the credit service unit are: (i) inefficiency in the Bank's credit management services (on average only 51.8 percent of the respondents agreed that the Bank offers a relatively better credit management service); (ii) behavioural problems of borrowers (on average only 30.5 percent of the study participants agreed that borrowers are dependable and trustworthy); and (iii) loan defaults and corrupt practices (on average only 34.7 percent of the study group agreed with decreasing loan defaults and minimal corrupt practices). The overall picture signals the presence of transaction costs where the Bank needs to address the issue in a systematic and strategic mechanism. Otherwise the damaging effects of credit related transaction costs will be out of hand. One, it will damage the reputation of the Bank. Two it will affect the financial performance of the Bank. And, three, its negative spillover effect will undermine the national economic growth and development. Table 8 summarizes the response of the study participants on the statements of the banking credit services.

Table 8: Banking Credit Services

Statements	**Frequency (%)**				
	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
BCS1: The Bank offers better borrowing terms	39 (15.4)	56 (22.1)	69 (27.3)	56 (22.1)	33 (13)
BCS2: The Bank is trusted on its loan facilities	33 (13)	51 (20.2)	73 (28.9)	71 (28.1)	25 (9.9)
BCS3: The Bank requires asset collateral	10 (4)	23 (9.1)	92 (36.4)	92 (36.4)	36 (14.2)
BCS4: No loan default	5 (2)	34 (13.4)	117 (46.2)	74 (29.2)	23 (9.1)
BCS5: Borrowers sometimes are not reliable	11 (4.3)	38 (15)	109 (43.1)	72 (28.5)	23 (9.1)
Statements	**Frequency (%)**				
	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
BCS6: Borrowers never hide that impacted the bank	17 (6.7)	71 (28.1)	107 (42.3)	43 (17)	15 (5.9)
BCS7: Borrowers provide trustworthy information	13 (5.1)	61 (24.1)	91 (36)	67 (26.5)	21 (8.3)
BCS8: Loan officers are dependable	8 (3.2)	23 (9.1)	80 (31.6)	111 (43.9)	31 (12.3)
BCS9: The bank monitors its loan facilities	8 (3.2)	21 (8.3)	66 (26.1)	130 (51.4)	28 (11.1)

BCS10: Loan defaults are decreasing	14 (5.5)	37 (14.6)	108 (42.7)	82 (32.4)	12 (4.7)
BCS11: Corrupt practices are non-existence	22 (8.7)	48 (19)	111 (43.9)	57 (22.5)	15 (5.9)
BCS12: Credit services are efficient & effective	18 (7.1)	49 (19.4)	82 (32.4)	83 (32.8)	21 (8.3)
BCS13: Credit section is well equipped	18 (7.1)	29 (11.5)	92 (36.4)	91 (36)	23 (9.1)
BCS14: Borrowers share service costs	10 (4)	27 (10.7)	102 (40.3)	100 (39.5)	14 (5.5)
BCS15: The bank restricted opportunism & corruption	14 (5.5)	28 (11.1)	78 (30.8)	101 (39.9)	32 (12.6)
BCS16: Loan administration costs are increasing	15 (5.9)	23 (9.1)	101 (39.9)	91 (36)	23 (9.1)
BCS17: Liquidity is serious problem	27 (10.7)	37 (14.6)	81 (32)	72 (28.5)	36 (14.2)
BCS18: TC of credit management are increasing	6 (2.4)	30 (11.9)	114 (45.1)	83 (32.8)	20 (7.9)
BCS19: Lending interest rates are related with TC	20 (7.9)	42 (16.6)	90 (35.6)	81 (32)	20 (7.9)
Average	**16 (6.4)**	**38 (15.1)**	**93 (36.7)**	**82 (32.4)**	**24 (9.4)**

4.2.2.4 INTERNATIONAL BANKING AND OTHER BUSINESSES

The Ethiopian banking industry is pre-occupied with traditional banking products and services. The international banking services are limited with forex services, L/C processing, money transfer and other related traditional services. Other businesses of the Bank includes selling government bonds, purchasing treasury bills, selling private company shares, collecting service bill payments for public organizations, and etc. Notwithstanding the traditionalism of banking products and services, the CBE international banking services and other businesses need to be efficient and effective.

Table 9 indicates whether the Bank's international and other business operating section is conducting business with minimal transaction cost involvement. Consequently, the response of the study participants revealed that, on average, 58.3 percent of the respondents agreed with the statements that highlights low transaction costs in the Bank's international and other business operating section. On the contrary, 25.7 percent of the respondents showed neutrality and the remaining 16.0 percent disagreed with the statements that signals low transaction costs. In this regard, L/C queuing and mal-practices due to foreign exchange shortage and queuing to pay water and electricity bills are good examples of the prevalence of transaction costs in the international banking and other business services of the Bank. In addition attracting remittance through the informal channel is a costly task due to the spread of informal money transfer services which is associated with the difference in dollar to birr exchange among formal and informal actors.

The result, however, revealed that the majority are in fevour of the presence of low transaction costs in the international banking and other business services. Also, the result suggests that the Bank should focus on its core business to reduce transaction costs further more.

Table 9: International Banking & Other Businesses

Statements	Frequency (%)				
	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
IBOB1: International banking is efficient & effective	15 (5.9)	41 (16.2)	50 (19.8)	109 (43.1)	38 (15)
IBOB2: International banking is aided with technology	10 (4)	26 (10.3)	51 (20.2)	128 (50.6)	38 (15)
IBOB3: The bank has good reputation	8 (3.2)	24 (9.5)	55 (21.7)	120 (47.4)	46 (18.2)
IBOB4: TC of international banking is decreasing	8 (3.2)	30 (11.9)	104 (41.1)	83 (32.8)	28 (11.1)
Average	**10 (4)**	**31 (12)**	**65 (25.7)**	**110 (43.5)**	**37 (14.8)**

4.2.2.5 CENTRAL BANK POLICIES AND REGULATIONS

Basically, the Central Bank bad policies and regulations inflates the banking industry transaction costs. Not only is this, unless operator banks are supported by the right policies and regulations emanated from the Central Bank, the banking industry crisis will led to economic development downturn. The National Bank of Ethiopia (NBE) is in charge of banking and monetary policies representing the Federal Government. Whether the NBE policies and regulations empowered the banking industry and help banks to be efficient is hard to conclude. Because the Ethiopian banking industry is still protected from outside competition.

Table 10 demonstrates the response of the study participants on the given statements related with the Central Bank (NBE) policies and regulations. The result asserted that of the total study participants, on average, 58 percent of the respondents agreed that the Central Bank policies and regulations have been helping the Bank to be efficient and reduce transaction costs. The remaining 26.1 percent of the respondents are neutral and about 15.9 percent demonstrated disagreement with the statements that suggests that Central Bank policies and regulations less support CBE to reduce transaction costs. With this one can conclude that, yes, the NBE policies and regulations have helped the Ethiopian banking industry to be successful even at the time of global financial crisis, but protectionist policies and regulations and other favorable policies that are specific to public banks have not helped the banking industry to develop competitive power and also avoid transaction costs.

Table 10: Central Bank Policies and Regulations

Statements	Frequency (%)				
	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
CBPR1: Regulations affects the bank positively	10 (4)	22 (8.7)	76 (30)	115 (45.5)	30 (11.9)
CBPR2: Regulations positively affects performance	11 (4.3)	17 (6.7)	72 (28.5)	124 (49)	29 (11.5)
CBPR3: Public trust due to being public bank	9 (3.6)	12 (4.7)	34 (13.4)	117 (46.2)	81 (32)
CBPR4: Bank obtained special support from NBE	15 (5.9)	31 (12.3)	75 (29.6)	91 (36)	41 (16.2)
CBPR5: NBE regularly updates its regulations	4 (1.6)	18 (7.1)	65 (25.7)	121 (47.8)	45 (17.8)
CBPR6: Fair competition in the banking industry	31 (12.3)	53 (20.9)	58 (22.9)	84 (33.2)	27 (10.7)
CBPR7: The banking industry is highly protected	18 (7.1)	32 (12.6)	82 (32.4)	81 (32)	40 (15.8)
Average	**14 (5.54)**	**26 (10.4)**	**66 (26.1)**	**105 (41.4)**	**42 (16.56)**

Overall, the majority of the study participants (57.96 percent) pinpoints CBE efficiency due to NBE policies and regulations. But, about 42 percent of the respondents have doubt on the Central Bank policies and regulations towards vitalizing efficiency performance and reduce transaction costs. Special emphasis in this regard is opening up the banking industry to international competition and avoiding government biasness to public banks.

4.2.3 CONCLUSION

The Ethiopian banking industry is infant and less competitive compared to similar economy banks. Of the number of factors limiting the competitiveness of Ethiopian banks, high transaction costs is the major factor (Bezabeh and Desta, 2014). Transaction costs are ameliorated from the problems of costly exchange or market failure (Coase, 1937). The inflating factors of transaction costs are: asymmetric information, bounded rationality, asset specificity, risk and uncertainty, opportunism, contracts, property rights and governance structures (Coase, 1937; North, 1990; and Williamson, 1978, 1995, 2007). Specifically transaction costs appear in an industry inform of, for example, (i) commissions, (ii) opportunity costs, (iii) interest and non-interest expenses, (iv) resources spent on waiting, and getting permit to do business, cutting through the red tapes, bribing officials, etc., (v) costs of information collection and analysis, (vi) support and administrative costs, (vii) costs of institutional inefficiency or poor governance, (viii) economic identity or agent specific costs, (ix) costs of business entry or exit, (x) enhancement of enabling legislation including lobbying costs, (xi) policy design and implementation costs, and (xii) monitoring and persecution costs (See Figure 1).

Since the banking industry is the center of economic growth and development, the industry is under pressure to reduce transaction costs. Institutional reform and deregulation, e-banking, product and service re-innovation, competitive space and system development, and policy re-innovation are among the list of tools being used in the banking industry to reduce transaction costs (Baker and Jorgensen, 2012). Whether the Ethiopian banking industry especially the Commercial Bank of Ethiopia re-instated these transformational tools and hence significantly reduced transaction costs is the subject of this study. In this regard, 253 CBE bankers from 35 branches of South Addis Ababa District have been approached to fill a questioner broken into five sections, viz. bank account opening services; banking transaction services; banking credit services; international banking and other services; and central bank policies and regulations. Overall, the majority of the study participants suggested that the CBE enjoys a reduction in transaction costs due mainly to the introduction of e-banking, intra-industry competition, institutional reforms, sound policies and regulations, human resources development, ICT infrastructure development, and globalization. But a good some of the respondents still doubt the efficiency and effectiveness of commercial bank of Ethiopia. Specifically, in the credit service and non-core banking service units and as well related to central bank policies and regulations, the study participants suggested the prevalence of built-up transaction costs. So, if the commercial bank of Ethiopia is committed to its vision of being a world class commercial bank by 2025, then it must first deal with transaction costs in its credit service department and non-core banking service units. In addition, the Bank should avoid opportunism and as well should not take unacceptable business risks for simply being a public bank. Also, the Bank is expected to undertake institutional transformation and design a prudent strategy so as to be an internationally competitive bank where avoiding or meaningfully reducing transaction costs is a leeway.

4.3 REGRESSION ANALYSIS

This sub section attempts to examine transaction costs of CBE from empirical perspective using time series data and regression techniques.

4.3.1 INTRODUCTION

This part of the discussion used a 37 years' time series data collected from the commercial bank of Ethiopia data base. The period under study covers 1981 – 2017. Ordinary Least Square (OLS) regression method is used to examine the influence of deposits, loan and other business income on bank expenses. The Cobb-Douglas cost function format was used to regress expenses against deposits, loan and other business income. The residual (constant) or the expenses that are not explained by deposits, loan and other business income is expected to capture transaction costs.

$TC = A\ D^{a}L^{b}\ Q^{c}$ ……..4

Where:

TC is the total cost (dependent variable)

D, L, and Q are deposit, loan and other service income of the bank, respectively (independent variables)

A, is the constant.

a, b, and c are the coefficients or simply represent the marginal costs of deposit, loan and other services, respectively.

4.3.2 THE DATA

Table 11 describes the statistical data with numerical values such as mean, median and standard deviation. Further data description is made using skewedness and kurtosis where histogram and boxplots are used to check data normality and the presence of outliers.

Table 11: Summary of Data Statistics

	Variables (in millions)			
	Expense	**Deposit**	**Loan**	**Income**
Minimum	81.202	1524.629	749.518	169.346

Maximum	14330.51	364861.6	154124	31900.5
Median	545.707	14320.32	7143.591	1230.292
Mean	2005.924	50770.16	22449.73	4496.726
Standard deviations	3714.311	87346.85	39527.15	8097.693

Figure 2 displays histogram of the variables which signals skewedness or normality of the data. In this regard, while the raw data displayed a skewed histogram the logarithmic transformed data exhibited a stable histogram. This suggested to run a regression after the logarithmic transformation of the data.

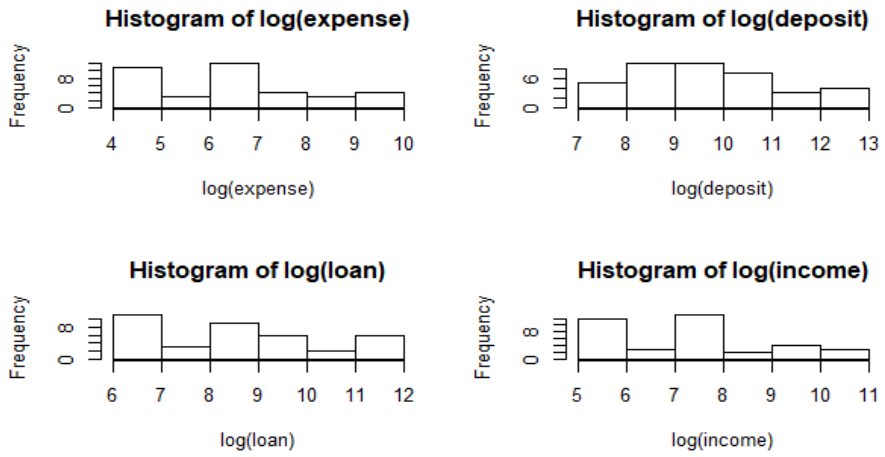

Figure 2: Histogram of Logarithmic Transformed Data

Boxplots help to explore whether there exists outliers or not. Figure 3 displays boxplots for expenses, deposits, loan and income, respectively. The boxplots exhibited some outliers in each of the variables but not extreme to run a regression.

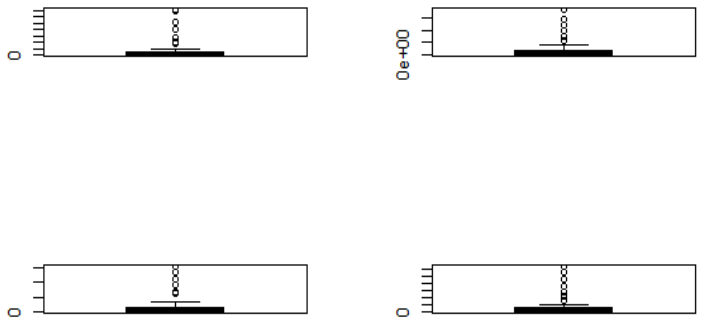

Figure 3 Boxplots

In general, both the histogram and the boxplot results guarantee to run a regression after logarithmic transformation of the data.

4.3.3 REGRESSION MODEL ASSUMPTIONS

Regression analysis makes several assumptions about the model. One is linearity of the data which implies the linear relationship between the predictors (X's) and the outcome (Y). Second is normality of residuals i.e. the residual errors are assumed to be normally distributed. Third is homoscedasticity implying homogeneity of residuals variance or constant variance. Fourth, is autocorrelation signifying the degree of correlation between the values of the same variable across different observations in the data. And finally, multicollinearity which appears when two or more independent variables in the regression model are correlated. If one or more of these assumptions are violated, then the model chosen will no more be reliable and does not help in estimating the population parameters.

Figure 4 presents the diagnosis result of certain regression model assumptions. From the diagnostic plot, a horizontal line of Residuals vs. Fitted plot showing a non-distinct pattern is an indication for a linearity relationship. Similarly, the residual points follow the straight dashed line on normal Q – Q plot indicating the residuals are normally distributed. The Scale – Location plot confirms the homogeneity of variance of the residuals. The horizontal line with equal spread points is a good indication of homoscedasticity. Finally, the Residual vs. Leverage plot data does

not present any influential points to mark. With the results of the diagnostic plot alone the model assumptions are fulfilled suggesting to running the regression analysis. But, empirical tests are more sound and exhaustive to check whether the model assumption are fulfilled to run the regression analysis. The Shapiro-Wilk's W test examines whether the underlying distribution is normal or not. The Shapiro-Wilk normality test for residuals is given as W = 0.98276, P-value = 0.8234. The P-value 0.8234 > 0.05 implies the distribution of the errors are not significantly different from normal distribution i.e. normality of the residuals. In addition, the non-constant error variance test was conducted and the output Chi-Square = 4.598989, P-value = 0.031991 suggests that the error variance is constant (homoscedasticity). Regarding multicollinearity, a Variance Inflation Factor (VIF) test was undertaken and the results showed: VIF (deposit) = 35.51254, VIF (loan) = 68.86273, and VIF (income) = 78.32938. Since the VIF results exceed 10, the regression model designed pre-hand is crippled with multicollinearity problem requiring correction. Table 12 shows the correlation matrix of the study variables.

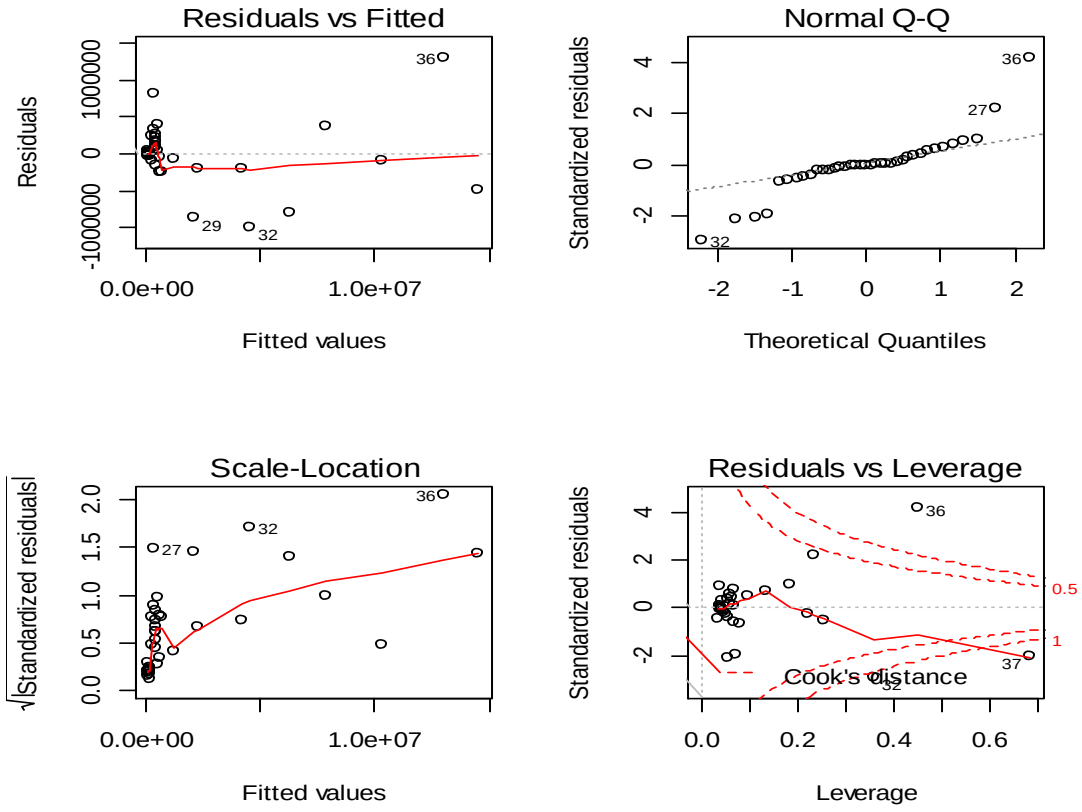

Figure 4 Diagnosis of Regression Model Assumptions

Durbin – Watson (D-W) statistics test was conducted to examine the error autocorrelation. The test result shows lag = 1, Autocorrelation = 0.1207275, D-W statistics = 1.738954 and P-value = 0.192 implying that the error autocorrelation is significantly different from zero i.e. the errors are autocorrelated.

Since the assumptions of multicollinearity and autocorrelation are violated the regression model that was designed pre-hand will no longer be reliable to employ. Hence, a partial linear regression model is considered as an alternative to address specifically the issue of multicollinearity.

Table 12: Correlation Matrix

	Deposit (D)	**Loan (L)**	**Income (Q)**
Deposit (D)	1		
Loan (L)	0.9969734	1	
Income (Q)	0.997495	0.9989741	1

4.3.4 RESULT ANALYSIS

Table 13 displays the results of linear regression equation. The partial regression model regressed the dependent variable "expenses" against the predictor variables "total deposit", "total loan" and "total income". The model is good fit for each predictor variable since the regression explains about 98 percent of variations in the expense. Also the p-values <2.2e-16 indicates that the models are good fit at five percent level of significance.

The regression results are formulated in equation form as follows:

Model 1: $TC_1 = -3.1735 + 0.9863D$

Model 2: $TC_2 = -1.55151 + 0.90904L$

Model 3: $TC_3 = -0.3611 + 0.9455Q$

The above regression equations signal total deposit (p<2e-16), total loan (p<2e-16) and total income (p<2e-16) as statistically significant predictors of expense at a significance level of five percent.

Table 13: Summary of Regression Results.

Coefficients	Estimate	Std. Error	t value	Pr(>|t|)
Regression of Expense on Deposit				
(Intercept)	-3.1735	0.2299	-13.80	1e-15 ***
deposit	0.9863	0.0235	41.96 <2e-16 ***	<2e-16 ***
Goodness of fit	R-squared= 0.9805, Adjusted R-squared= 0.98 F-statistic= 1761 on 1 and 35 DF, p-value < 2.2e-16			
Regression of Expense on Loan				
(Intercept)	-1.55151	0.20940	-7.409	1.14e-08 ***
loan	0.90904	0.02365	38.437	< 2e-16 ***
Goodness of fit	R-squared= 0.9769, Adjusted R-squared= 0.9762 F-statistic= 1477 on 1 and 35 DF, p-value < 2.2e-16			
Regression of Expense on Income				
(Intercept)	-0.3611	0.1515	-2.384	0.0227 *
income	0.9455	0.0208	45.453	<2e-16 ***
Goodness of fit	R-squared=0.9833, Adjusted R-squared= 0.9829 F-statistic= 2066 on 1 and 35 DF, p-value < 2.2e-16			

Significance. Codes: '***' 0.001 '**' 0.01 '*' 0.05

The regression equations further portray high marginal costs which explained the influence of predictor variables on expenses. The intercepts traditionally known as fixed costs are negative and high in the order of model 3, model 2, and model 1. The intercept is particular interest to this study as it is assumed to capture transaction costs. The regression equation put in Annex 1 shadows the study output due to multicollinearity problem. However, the result offered sound intercept and predictor variable coefficients which unfortunately are off the analysis due to the problem mentioned above.

According the neoclassical economists the constant or residual in a production function represents total factor productivity. Meaning it represents the contribution of productivity generating factors unlike the traditional production predictor variables. By the same token in a cost function the constant represents the costs incurred other than the costs reflected by predictor variables. Hence, the intercept in a cost function captures the magnitude and direction of transaction costs emanated due to total inefficiency and other market failure instances.

Due to multicollinearity and autocorrelation problems this study failed to employ a Cobb-Douglas cost function as was designed initially as the main analytical tool. Hence, the study was forced to pursue a partial linear regression analysis that constitute to examine the impact of predictor variables (deposit, loan and income) on total expenses one at a time. This requires to constitute three independent models which demonstrated goodness of fit and statistical significance.

The comparison of the constants suggests that transaction costs are high in the international banking and other business units (non-interest income and Model 3 constant) followed by credit service units (Model 2 constant). Transaction costs of bank account opening and banking transaction services (Model 1 constant) are relatively low compared to other services. Whereas the nominal magnitude of transaction costs in all cases are not that much big implying the banking industry transaction costs are in a declining step.

The findings of the regression analysis matches with the findings of the descriptive analysis suggesting the CBE to embodied its energy on its core business and transform its credit management system. Further, the findings suggest the Bank to continue updating its e-banking services and as well institutionalize its human resource and ICT infrastructure development efforts. Most important, the Bank and its employees are advised to be transaction cost conscious if to meet performance and economic targets and the 2025 vision.

4.4 TRIANGULATION

Both the descriptive and regression analyses suggested that commercial bank of Ethiopia is in a relatively better position in terms of addressing the issue of transaction costs. Factors contributing to this development are: the introduction of e-banking services, human resource development, ICT infrastructure development, intra-industry competitiveness and Central Bank policies and regulations.

On the other hand, both descriptive and regression analysis results prevailed the prevalence of built up transaction costs in the credit service unit and non-core banking services and as well related with banking policies and regulations. Since the future of the banking industry relies on

domestic and international competition, commercial bank of Ethiopia is expected to pay strategic attention to transaction costs. Technology aided banking, human resource development, institutional and system reforms, and product and service innovation are critical in this regard.

4.5 CONCLUSION

The banking industry is a transaction cost industry. Financial transactions entail transaction costs for all participants in the market i.e. depositors, borrowers and financial intermediaries. Depositors incur search and information costs to select a depository institution and also to perform account transactions i.e. deposits and withdrawal. Borrowers also bear explicit and implicit costs of negotiation, obtaining and repaying loans. Financial intermediaries' transaction costs are associated with costs of mobilizing deposits and costs of lending. Costs of deposit mobilization corresponds to resources utilized in handling deposit accounts, documentation, record keeping and issuing statements. Costs of lending refer to costs associated with loan processing, disbursement, monitoring and recovery. Gathering information about potential borrowers, assessment of collateral and documentation are also among lending costs (Meyer & Cuevas, 1990) But, since the banking industry is the center of economic growth and development, the industry is under pressure to reduce transaction costs. Institutional and system reforms and deregulation, e-banking, product and service innovation, competitive platform, human resource development and ICT infrastructure development are among the list of transformations being made in the banking industry to reduce transaction costs (Baker and Jorgensen, 2012).

The Ethiopian banking industry is infant and less exposed to international competition. Hence, transaction costs are the feature of Ethiopian banking industry. But, with the introduction of e-banking services, domestic intra-industry competition, human resource development, ICT infrastructure development and National Bank support, the Ethiopian banking industry has gone long distance in reducing transaction costs. Commercial Bank of Ethiopia is first mover in this regard. Nonetheless, transaction costs involved in the credit services and other banking service units and transaction costs related with National Bank policies and regulations are yet to be checked and further innovated.

This study considered both descriptive statistics analysis and regression analysis methods to examine the nature of transaction costs in commercial bank of Ethiopia banking. Both analyses asserted improvements in transaction costs but more work is expected to ensure sustainable development and stand with competitions. This being the case, this study encourages commercial bank of Ethiopia to pay strategic attention to its credit management services and as well further innovate its e-banking services and institutional and system reforms. The front line bankers are critical to the success of the Bank and hence human resource development should also be given strategic attention. Finally, commercial bank of Ethiopia should take Ethiopian Air Lines as a role model. Being public does not protect Ethiopian Air Lines from being internationally competitive and successful. This means Commercial Bank of Ethiopia should work hard to face challenges and be successful and competitive even at international arena.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY

The concept of transaction costs has emanated from the problems of costly exchange or market failure. This concept has given birth to the field of transaction cost economics (TCE) and further discussions on transaction cost economics have led to the opening up of a new branch of economics school of thought namely new institutional economics (Coase, 1937 and Menard & Shirley, 2014).

Theoretical and empirical research on transaction costs suggested that the components of transaction costs and their proxy measures vary depending on the sources of transaction costs and the particular industry under consideration (North, 1990 and Williamson, 1978, 1995, 2007). But, in general, transaction costs or market inefficiency could appear inform of opportunity costs, non-market expenses and resources spend in waiting, getting permit to do business, cutting organizational red tapes, bribing officials, etc. Also, transaction costs involved due to information asymmetry, contract and property right administration and governance structure (Wang, 2003).

The banking industry is a transaction costs industry. Study reports suggested that transaction costs are high in the banking industry, especially among the developing country banks. But, since the banking industry is the center of economic growth and development it is always under pressure to reduce transaction costs. Institutional reform and deregulation, e-banking, product and service innovation, competitive platform, and system development are among the list of transformations being made by the banking industry to reduce transaction costs (Baker & Jorgensen, 2012).

The Ethiopian banking institutions are infant to the extent that they are less competitive compared to similar economy banks. Of the number of factors limiting the performance and

competitiveness of Ethiopian banks, high transaction costs is the major factor (Bezabeh & Desta, 2014). Transaction costs of the banking industry includes: deposit mobilization costs, default loans, opportunity costs of system failure, opportunity costs of power failure, frauds, promotion and advertisement costs, social responsibility costs, training costs, system maintenance costs, regulatory agency related costs, government policy related costs (mainly related with adverse selection and moral hazard), socio-economic change related costs, international banking related costs, and politics oriented costs. A good part of these costs are hard to single out and measure. Hence, a proxy measure is a common practice where panel data collected using interview and questioner methods are dominant (Bezabeh & Desta, 2014).

The purpose of this research was to investigate the transaction costs of the banking industry in Ethiopia with particular emphasis to commercial bank of Ethiopia. Both descriptive statistical analysis and regression analysis methods were employed to organize the data and information. The descriptive statistical analysis was based on a questionnaire data collected from a sample of 253 respondents from 35 CBE South Addis Ababa District branches. While the regression analysis employed a time series (1981 – 2017) secondary data collected from CBE data base.

The descriptive analysis examined the Bank's transaction costs from the point of view of bank account opening services, banking transaction services, banking credit services, international banking and other services, and central bank policies and regulations. Overall, the majority of the study participants suggested that CBE is enjoying a reduction in transaction costs due mainly to the introduction of e-banking, intra-industry competition, institutional reforms, sound policies and regulations, human resource development, ICT infrastructure development and globalization. The responses on bank account opening services, banking transaction services, international banking services and National Bank policies and regulations asserted the above statement. Notwithstanding, a good some of the respondents still doubt the efficiency and effectiveness of CBE. Specifically, the study participants suggested the prevalence of built-up transaction costs in the credit service and non-core banking service units and as well related to NBE policies and regulations. So, if the commercial bank of Ethiopia is committed to its vision of being a world class commercial bank by 2025, then it must first deal with transaction costs in its credit service department and non-core banking service units. In addition, the Bank should avoid opportunism

and as well should not take unacceptable business risks for simply being a public bank. Also, the Bank is expected to undertake institutional transformation and design a prudent strategy so as to be an internationally competitive bank where avoiding or meaningfully reducing transaction costs is a leeway.

The regression analysis employed a 37 years' time series data collected from the commercial bank of Ethiopia data base. The period considered was 1981 – 2017. Ordinary Least Square (OLS) regression analysis method was designed to examine the influence of deposits, loan and other income (outputs) on the Bank's expenses (costs). The Cobb-Douglas cost function format was used to regress costs (expenses) against outputs (Deposit, Loan and Other Incomes). The constant or the residual alpha was assumed to capture transaction costs. But, because the assumptions of multicollinearity and autocorrelation were violated the regression model that was designed as a pre-text was not used. Instead, a partial regression model was considered where costs were regressed against each output independently. The models are found good fit for each predictor variable (output) where the regression explained about 98 percent of variations in costs. Also, the p-value <2.2e-16 indicates that the models are good fit at five percent level of significance. The comparison of the constants suggested that transaction costs are high in the international banking and other service units followed by credit service units. Transaction costs of bank account opening and bank transaction services are relatively low compared to the other services. Whereas, the nominal magnitude of transaction costs in all cases are not that much big implying the Bank's transaction costs are in a declining row.

In general, the findings of the regression analysis matches with the findings of the descriptive analysis suggesting the Bank to embodied its energy on its core business and transforming its credit management system. Further, the findings suggested the Bank to continue updating its e-banking services and as well institutionalize its human resource, ICT infrastructure and system development efforts. Most important the Bank and its employees are advised to be transaction cost conscious if to meet performance and economic targets and the 2025 vision.

5.2 CONCLUSION

Whether the Ethiopian banking industry, especially commercial bank of Ethiopia re-instated transformational tools and approaches to reduce transaction costs was the subject of this study. Primary and secondary data and information were collected and analyzed using descriptive statistics and regression analysis techniques, respectively. Both the descriptive analysis and the regression analysis results suggest that CBE is in a relatively better position in terms of addressing the issue of transaction costs. The findings displayed a reduction in transaction costs, especially, in the areas of bank account opening service and banking transaction service units which are core activities of the Bank. Factors contributing to this development are, among others, the introduction of e-banking technology, human resource development, ICT infrastructure and system development, domestic intra-industry competition and National Bank policy and regulatory support.

On the other hand, both the descriptive analysis and the regression analysis results prevailed a relatively built up transaction costs in the credit service and non-core banking service units and as well related with National Bank policy and regulatory service support. In the Ethiopian banking sector credit is not allocated on commercial criteria. And in the absence of market forces in the credit market, credit is commonly directed to inefficient borrowers and hence contributes to the build-up of non-performing loans. Further, for example, the deposit rate on savings is set by the National Bank of Ethiopia. The recent deposit rate is 7 percent and assuming an average inflation rate of 20 percent, the real negative savings rate amounted to 13 percent. The NBE interest payment on Banks reserve requirement is also significantly lower than the Banks interest payment on savings. Hence, since the future of the banking industry depends on domestic and international competitiveness, commercial bank of Ethiopia is expected to pay strategic attention to transaction costs. Technology aided banking, human resource development, institutional and system reforms, product and service innovation and sound policies and regulations are critical in this regard.

5.3 RECOMMENDATIONS

There are, at least, nine strategic areas that the commercial bank of Ethiopia should consider if to be a world class bank by 2025. First is the understanding of transaction costs among the front line bankers and the different service units. Transaction costs are different from operational costs and today the management of transaction costs determine the degree of competitiveness and organizational success. Hence, transaction costs need strategic attention if to be competitive and sustainably grow.

Second, the credit service management unit needs reform and strategic look. Transaction costs appear in this section inform of loan default, corruption, tea-money, loan administration and monitoring costs. The findings of this research supplements the said statements. Upgrading the skill of loan officers, introducing the right operational technology and system, building loan administration and monitoring capacity, managing loopholes for corrupt practices, and innovating credit management policies and regulations are a panacea for success in the credit management unit.

Third, the Bank should focus on its core business activities. Without having the necessary facilities the Bank is engaged into collecting water bills and electric bills and as well engaged into selling public bonds and private company shares, for instance. These services have created crowding in the Bank branches and hence customer complaints are increasing. This problem will be avoided if the Bank concentrates on its core product and service innovation and as well create the necessary facilities and capacity to entertain other business services.

Fourth, being a public bank does not guarantee competitiveness and organizational success. As a public bank Commercial bank of Ethiopia obtains special support from National Bank and the Federal Government. Also, for simply being a public bank CBE entertains risky loans on behalf of the government. Transaction costs in this instance appears inform of adverse selection, moral hazard, defaults, risk and uncertainty and corruption. So, if the Bank is committed to be competitive both in the domestic and international market and win the 2025 vision, then it must

follow the experience of Ethiopian Air Lines. The Air Line has a recorded history of success and international competitiveness despite being a public company.

Fifth, technology and system development. The study results suggested that transaction costs have been reduced significantly due to the introduction of e-banking services and other technology and system aided services. According the Bank officials, commercial bank of Ethiopia is first mover in terms of banking technology and system development. This has to continue in the future and as well innovation and research and development efforts should be promoted and strengthened too.

Sixth, the commercial bank of Ethiopia citizens are responsible for the resent years' success of the Bank. The front line Bankers are strategic partners and are responsible for the reduction of transaction costs. The skill of this labour force has to be updated periodically and be equipped with the latest banking technology and equipment. With regard to skill development the bank is expected to work closely with higher learning institutions and also scale up international practices.

Seventh, the National Bank of Ethiopia sets deposit and credit rates. Also, the reserve requirement of the National Bank is high with an interest rate of 3 percent. These limit commercial banks to efficiently mobilize deposits and extend credit to support the growth of businesses and the national economy. Hence, in order to enhance the banking sector, interest rates need to be market oriented and, to the minimum, domestic competitive platform should be in place.

Eighth, distribution and infrastructure costs constitute a significant portion of the commercial banks costs. Commercial Bank of Ethiopia alone operates more than 1280 branches. Thus, physical infrastructure and distribution costs, particularly branch costs, need to be managed well in order to minimize transaction costs of the traditional operating model of the banking sector.

Last but not least, product and services innovation. Research studies suggested that the Ethiopian banking industry is occupied with traditional banking products and services. This coupled with

protectionist policy will no more sustain the development of the banking industry. Social and economic development and globalization aspire innovative and diversified banking products and services. The Ethiopian banking industry, especially the commercial bank of Ethiopia should work hard to this end.

5.4 LIMITATIONS OF THE STUDY

This research is downsized by certain limitations. One is the sample population. The commercial Bank of Ethiopia population is estimated to be more than 35,000. Taking a sample of 253 from one specific Addis Ababa district will definitely undermine the research findings, especially the generalized statements, conclusions and recommendations.

Second is measures of transaction costs. The study considered five service components of the Bank and three outputs to capture transaction costs in the descriptive analysis and regression analysis, respectively. But, it would have been sufficient if we could have measured actual reduction in transaction costs say for instance due to the introduction of ATM machine. And the absence of recorded historical data has limited the research to focus on primary and proxy measure data.

Third is the scope of the study. The study considered transaction costs from the side of the intermediary bank. But borrowers and depositors have interwoven relationships with the intermediary bank. Meaning one influences the other significantly in both negative and positive directions. Therefore, it would have been nice if transaction costs have been examined both from the borrower and depositor angel too.

Fourth limitation is the technical analysis, especially the analysis of time series data. The researcher considered Cobb-Douglas cost function to run the time series analysis but when the multicollinearity and autocorrelation problems appeared other empirical analysis techniques were not considered. One big problem in this regard is the technical skill of the researcher is limited to certain empirical analysis tools only. Second, timing to return back and hence refine the data and methods of analysis was a big challenge. Hence, the study was limited to conduct a partial regression analysis so as to address the issue of multicollinearity.

Finally, the research analysis is limited to commercial bank of Ethiopia. It is believed that had transaction cost comparison was made with private banks, we might have reached into a different conclusion. But, because both private and public banks operate under the umbrella of National bank of Ethiopia i.e. they use same banking technology, offer similar products and service, share same labour force, share same market and share same government policies and regulations, significant transaction cost variations cannot be anticipated. Nonetheless, this should be proved through scientific research taking into account transaction costs from the point of view of both the intermediary banks, depositors and borrowers.

5.5 FUTURE RESEARCH

This research is expected to help as a steppingstone for future research works in the areas of banking transaction costs. The above research limitations insight where future research should focus and undertake. Particular emphasis should be given to empirical measurements and analytical tools of transaction costs. This requires clarity on the concept of banking transaction costs and their proxy measurements. And with that it could be possible to single out the economies of transaction costs on the banking industry, in particular, and the national economy, at large. On the other hand, this research suggests to conduct a qualitative or an exploratory research where transaction costs and their influence can easily be captured through knowledgeable and key players of the Ethiopian banking industry. It is believed that, in the straightjacket of data deficiency, exploratory research would bring knowledge and experience based real world facts about the economies of transaction costs and beyond.

REFERENCES

Adem, S.B. (2015), Determinants of Commercial Banks Deposit in Ethiopia: A Case of Commercial Bank of Ethiopia, MSC Thesis, Addis Ababa University, Ethiopia

Allen, D.W. (1999), Transaction Costs, Department of Economics, Simon Fraser University

Ankarloo, D. and Palermo, G. (2004), Anti – Williamson: A Marxian Critique of New Institutional Economics, Cambridge Journal of Economics, Vol. 28, No. 3

Ark, B. (2014), Total Factor Productivity: Lessons from the Past and Directions for the Future, National Bank of Belgium, Brussels

Arrow, K.J. (1969), The Organization of Economic Activity: Issues pertinent to the Choice of Market Versus Non-Market Allocation, in The Analysis and Evaluation of Public Expenditures: The PBB-System, Joint Economic Committee, 91st Cong.

Assefa, M. (2013), Performance of Commercial Banks of Ethiopia and Global Financial Crisis, MSC Thesis, Addis Ababa University, Ethiopia

Baker, D. and Jorgensen, H. (2012), The Relationship Between Financial Transaction Costs and Economic Growth, Centre for Economic and Policy Research, Issue Brief

Bartolini, L., Bertola, G. and Prati, A. (2000), Banks Reserve Management Transaction Costs and the Timing of Federal Reserve Intervention, Federal Reserve Bank of New York, New York

Berger, A.N. (2003), The Economic Effects of Technological Progress: Evidence from the Banking Industry, Journal of Money, Credit and Banking, Vol. 35

Berry, S. and Pakes, A. (2003), Production and Cost Function Analysis, Yale University

Bezabeh, A. and Desta, A. (2014), Banking Sector Reform in Ethiopia, International Journal of Business and Commerce, Vol. 3, No. 8

Biresaw, S.M. (2018), The Principle of Depositors' Protection in the Ethiopian Banking Sector, International Journal of Scientific and Research Publications, Vol. 8 Issue 11

Butter, F., Graaf, M. and Nijsen, A. (2009), The Transaction Costs Perspective on Costs and Benefits of Government Regulation: Extending the Standard Cost Model, Tinbergen Institute Discussion Paper, VU University Amsterdam

Caballero, G. and Soto-Onate, D. (2016), Why Transaction Costs are so Relevant in Political Governance? A New Institutional Survey, Brazilian Journal of Political economy, Vol. 36, No. 2

Chemutal, S.B. (2016), Effects of Agency Banking on the Financial Performance of Commercial Banks in Kenya, MBA Thesis, United States International University, Africa

Choudhury, S. (2004), Transaction Cost and Asymmetry of Information – The Twin Odds of Indian Commercial Banks in Rural Credit market: Theoretical Fragility, OKDISCD, Guwahati, Assam, India

Coase, R.H, (1937), The Nature of the Firm, Economica, New Series, Vol. 4

Cochrane, J.H. (2014), Challenges for Cost-Benefit Analysis of Financial Regulation, Journal of Legal Studies, Vol. 43

Comin, D. (2006), Total Factor Productivity, New York University and NBER

Commercial Bank of Ethiopia, Annual Report 2015/16

Denegetu, D. H. (2015), A Comparative Analysis of Banking Products Between

Commercial Bank of Ethiopia and Selected Kenyan Commercial Banks, MA Thesis, Addis Ababa University, Ethiopia
Du, J. (2011), An Empirical Analysis of Internet Banking Adoption in New Zealand, MA Thesis, Lincoln University, New Zealand
EDHEC Risk (2008), Transaction Cost Analysis A-Z, An EDHEC Risk and Asset Management Research Centre Publication
Eshetu, O.M. (2015), Determinants of Credit Constraints in Ethiopia, MSC Thesis, Universitetet I Tromos
Estache, A. and Martimort, D. (2013), Politics, Transaction Costs and the Design of Regulatory Institutions, World Bank
Fries, S. and Taci, A. (2004), Cost Efficiency of Banks in Transition: Evidence from 289 Banks in 15 Post-Communist Countries, European Bank for Reconstruction and Development, Working Paper No. 86
Fundira, T. (2004), A Transaction Cost Analysis of the Fruit Supply Chain in South Africa: A Case Study Approach, MSC Thesis, University of Stellenbosch
Geremeskel, K. (2014), Bank Selection Decisions: Factors Influencing the Choice of Banks and Banking Services
Goshu, F. and Gudu, K. (2016), Assessment of Branch Performance in Commercial Bank of Ethiopia: The Case of Gida Ayana Branch, Research Journal of Finance and Accounting, VOL. 7, No. 5
Gronberg, T. J., et al. (2005), School Outcomes and School Costs: A Technical Supplement, Texas A & M University
Hardt, L. (2009), The History of Transaction Cost Economics and its recent Developments, Erasmus Journal of Philosophy and Economics, Vol. 2, Issue 1
Hasman, A., Samartin, M. and Bommel, J. (2010) Financial Intermediaries and Transaction Costs, OFCE – Centre de Recherche en Economie de Sciences po.
Hau, H. (2006), The Role of Transaction Costs for Financial Volatility: Evidence from the Paris Bourse, Journal of the European Economic Association, Vol. 4(4)
Henry, S. (2010), Relationship Lending, Transaction Costs and the Lending Interest Rates of Commercial Banks in Uganda, MSC Dissertation, Makerere University, Uganda
Hieltjes, E.H. and Petrova, E. (2013), The Impact of Financial Literacy and Transaction Costs on Bank Account Uptake and Use: A Randomized Controlled Trail in Ethiopia, MSC Thesis, Stockholm School of Economics, Sweden
Hulten, C.R. (2001), Total Factor Productivity: A Short Biography, in New Development in Productivity Analysis, Charles R. Hulten, Edwin, R. Dean and Michael J. Harper, editors, University of Chicago Press
Klein, P.G. and Shelanski, H.A. (1995), Empirical Research in Transaction Cost Economics: A Review and Assessment, Journal of Law Economics and Organization, VOL, 11, NO. 2
Ketokivi, M. and Mahoney, J. (2017), Transaction Cost Economics as a Theory of the Firm, Management and Governance, Oxford Research Encyclopedia of Business and Management
Kissell, R. (2006), The Expanded Implementation Shortfall: Understanding Transaction Cost Components, Journal of Trading
…… (2014), The Science of Algorithmic Trading and Portfolio Management, Elsevier Inc.

Klein, P.G. (2005), The Make – or – Buy Decisions: Lessons from Empirical Studies, in Menard and M. Shirley (eds.), Handbook of New Institutional Economics, Berlin.

Klein, S., Frazier, G.L. and Roth, V.J. (1990), A Transaction Cost Analysis Model of Channel Integration in International Markets, Journal of Marketing Research, Vol. 27, No.2

Krugel, G. (2007), An Overview of the Different Mobile Banking Technology Options, and their Impact on the Mobile Banking Market, Finmark Trust

Kudoh, H. and Sano, K. (2016), Empirical Analysis of Transaction Costs in the Japanese Stock Market, Securities Analysis Journal, The Securities Analysis Association of Japan

Kuzmin, E.A., Berdyugina, O.N and Karkh, A. (2015), Conceptual Challenges of Observability for Transaction Sector in Economy, Mediterranean Journal of Social Sciences, Vol. 6, No. 4

Lajili, K. and Mahoney, J (2006), Revisiting Agency and Transaction Costs Theory Predictions on Vertical Financial Ownership and Contracting: Electronic Integration as an Organizational Form Choice, Managerial and Decision Economics, www.Interscience.wiley.com

Lidetu, Y. (2017), Assessment of Foreign exchange Risk Management Practice of Commercial Banks in Ethiopia, MBA Thesis, St. Mary's University, Ethiopia

Liu, L.G. (2003), The Cost Function and Scale Economies in Academic Research Libraries, Library Trends, Vol. 51, No. 3, The Board of Trustees, University of Illinois

Liu, J. (2016), Decision Modeling and Empirical Analysis of Mobile Financial Services, PHD Thesis, Singapore Management University

Masuko, L. and Marufu, D. (2003), The Determinants of Transaction Cost and Access to Credit by SMEs and the Poor in Zimbabwe, International Labour Organization, IFLIP Research Paper 03-9

Me, A. (2017), Empirical Analysis of Retail Customers Adoption of Internet Banking Services in Nigeria, Journal of Internet Banking and Commerce, Vol. 22, No. 1

Menard, C. (2001), Methodological Issues in New Institutional Economics, Journal of Economic Methodology, Vol. 8, No. 1

Menard, C. and Shirley, M. (2014), The Contribution of Douglass North to New Institutional Economics, in Institutions, Property Rights and Economic Growth, The Legacy of Douglass North, Cambridge University

Mergu, G. and Rao, R.V. (2014), The Penetration of Online Banking Services in Ethiopia – An Analysis of Public and Private Sector Banks, International Journal of Marketing, Financial Services and Management Research, Vol. 3 (6).

Meyer, R.L. and Cuevas, C.E. (1990), Reducing the Transaction Costs of Financial Intermediation: Theory and Innovations, International Conference on Savings and Credit for Development, Occasional Paper No. 1710, Copenhagen

Michael, B. and Michael, R. (2011), A Transaction Cost Economics View of Outsourcing, International Journal of Business, Vol.1 No.2

Michen, E.M., Lule, I. and Muketha, G.M. (2013), Transaction Costs and Facilitating Conditions as Indicators of the Adoption of Mobile Money Services in Kenya, International Journal of Adavanced Trends in Computer Science and Engineering, Vol. 2, No. 5

Mikami, M. (2011), Methodological Divergence between Coase and Williamson in the History of Transaction Cost Economics, Economic Journal of Hokkaido University, Vol. 40

Mohammed, H.K. (2015), Factors Affecting the Financing Policy of Commercial Banks in Ethiopia, International Journal of Research in Business and Social Science, Vol. 4, No. 2

Mooi, E. (2013), Transaction Cost Analysis, https://www.researchgate.net/publications/260192180

Morrison, G. (2010), Transaction Cost Analysis – A Brief Overview, Face 2 Face Forums 2010, Fix Global

Moss C.B., et al (2003), A Traslog Cost Function Analysis of U.S. Agriculture: A Dynamic Specification, American Agricultural Economics Association Annual Meeting, Montreal, Canada

Muche, B. (2010), Assessment of the Opportunities and Challenges for the Adoption of E-Banking Services in Ethiopia, MSC Thesis, Mekelle University, Ethiopia

Naguvava, H.E. (2016), Transaction Cost Determinants of Credit Governance Structures of Commercial Banks in Tanzania, PHD Thesis, University of Tanzania

National Bank of Ethiopia, Annual Report 2016/17

Nikolaeva, E. and Pletneva, D. (2015), The Role of Transaction Costs in the Business Success of Small and Medium Sized Enterprises in Russia, 13th International Symposium in Management, Procedia – Social and Behavioral Sciences

North, D. C. (1990), A Transaction Cost Theory of Politics, Journal of Theoretical Politics, Vol. 2 No. 4

…….(1990), Institutions, Institutional Change and Economic Performance, Cambridge University Press, Cambridge, UK

Oracle Financial Services (2017), Strategic Approach to Cost Efficiency in the Banking Industry: Boosting Profitability Amidst New Challenges, Oracle White Paper

Oritani, Y. (2010), Public Governance of Central Banks: An Approach from New Institutional Economics, Bank for International Settlements, BIS Working Papers, No. 299

Palia, D. and Porter, R. (2007), Agency Theory in Banking: An Empirical Analysis of Moral Hazard and the Agency Costs of Equity, Banks and Bank Systems, Vol. 2, Issue 3.

Polski, M. (2011), Measuring Transaction Costs and Institutional Change in the U.S. Commercial Banking Industry, U.S. Naval War College, Researchgate

Prescott, E.C. (1997), Needed: A Theory of Total Factor Productivity, Research Department Staff Report 242, Federal Reserve Bank of Minneapolis

Rohayu, S. and Rahadian, G. (2015), The Influence of Mobile Banking Transaction used on Cost Reduction of SMEs Employers, First International Conference on Economics and Banking, Atlantis Press

Scholtens, B. and Wensveen, D. (2003), The Theory of Financial Intermediation: An Essay on What it Does (Not) Explain, SUERF- The European Money and Finance Forum, Vienna

Selvavinayagam, k. (1995), Financial Analysis of Banking Institutions, FAO Investment

Centre, Occasional Paper Series No.1
Serres, A. et al (2006), Regulation of Financial Systems and Economic Growth in OECD Countries: An Empirical Analysis, OECD Economic Studies No. 43
Shaikh, M.A. (2014), Ethiopian Banker's Perception of Electronic Banking in Ethiopia: A Case of Adama City, International Journal of Science and Research Publications, Vol. 4, Issue 9
Shankar, S. (2008), Transaction Costs in Group Micro-Credit in India, Institute for Financial Management and Research, Chennai, India
Shin, J. (2002), Institutional Change, Transaction Cost and Transition cost, Department of Economics Working Paper No. 0207, National University of Singapore
Swain, B.k. (2008), Pricing of Bank Products and Services, Macro-Research Report (, (2007/2008), Indian Institute of Banking and Finance, Mumbai
Tadelis, S. and Williamson, O. (2010), Transaction Cost Economics, University of California, Berkeley, USA
Tesfay, A.W. (2016), A Comprehensive Measure of Business Performance: A Study of the Commercial Banking Industry in Ethiopia, PHD Thesis, South Africa University
Tisdell, C. (2004), Transaction Costs and Bounded Rationality – Implications for Public Administration and Economic Policy, The University of Queensland Australia
Teshome, F, (2017), Determinants of Commercial Banks Deposit in Ethiopia, MSC Thesis, Addis Ababa University, Ethiopia
Tovar, B., Jara - Diaz, S., and Trujillo, L. (2003), Production and Cost Function and their Application to the Port Sector, World Bank Policy Research Working Paper 3123
Umer, A. (2015), Determinants of Non-Performing Loan: An Empirical Study on Commercial Banks of Ethiopia, MSC Thesis, Addis Ababa University, Ethiopia
Wang, N. (2003), Measuring Transaction Costs: An Incomplete Survey, Ronald Coase Institute, Working Paper Series No. 2
Wawira, N.J. (2013), Contributions of Agency Banking of Financial Performance of Commercial Banks in Kenya, MBA Thesis, Kenyatta University, Kenya
Williamson, O.E. (1979), Transaction Cost Economics: The Governance of Contractual Relations, Journal of Law and Economics, Vol. 22, No. 2
……(1985), The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting, Free Press, New York
……..(1995), Hierarchies, Markets and Power in the Economy: An Economic Perspective, in Menard, C. (ed.), Transaction Cost Economics: Recent Development, Northampton, Edward Elgar Publishing Inc.
…….(2007), Transaction Cost Economics: An Introduction, Economics Discussion Papers, Discussion Paper 2007-3
……..(2010(, Transaction Cost Economics: The Natural Progression, American Economic Review 100
Wink, M.V., Sheng, H.H. and Eid, W. (2010), Transaction Costs: An Empirical Analysis of their Relationship with Investment and Foreign Direct Investment, ISSN 0034-7590
Woodward, S. (1988), A Transaction Cost Analysis of Banking Activity and Deposit

Insurance, Cato Journal, VOL. 7, No. 3, Cato Institute
Yamane, Taro (1967), Statistics: An Introductory Analysis, 2nd ed. New York, Harper & Raw
Zupanovic, I., Hell, M. and Pavlic, D. (2015), Cost – Benefit Analysis of the ATM Automatic Deposit Service, Croatian Operational Research Review, CRORR 6
Zwedu, G.A. (2014), Financial Inclusion, Regulation and Inclusive Growth in Ethiopia, ODI Working Paper 408
Zylbersztajn, D. (2003), Costs, Transaction, and Transaction Costs: Are there Simple Answers for Complex Questions? Ronald Coase Institute, Chicago, USA

ANNEX I

QUESTIONNAIRE

Dear Respondent:

I am conducting a research study on **"The Transaction Cost Analysis of the Commercial Bank of Ethiopia."** The objective of this study is to identify and analyze the transaction costs of the Commercial Bank of Ethiopia and is conducted in partial fulfillment of an MBA Degree from Jimma University.

I am very pleased to have you as my respondent and really appreciate your contribution to this academic exercise. I believe your inputs will provide valuable information in organizing findings for my research project. But the information given will be treated as private and confidential and will only be used for the purpose of this research only.

Sincerely Yours,

Tenagne Beyene

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Part I: General

1. Gender
   a. Male b. Female
2. Age
   a. 20 – 30 b. 31 – 40 c. 41 – 50 d. >=51
3. Education
   a. Certificate b. Diploma c. Bachelor Degree d. Masters e. PhD f. Other……..
4. Experience in the Banking Industry
   a. 0 – 5 Years b. >5 – 10 Years c. >10 – 15 Yearsd. >15 – 20 Years e. >20 Years
5. Position
   a. Officer b. Middle Manager c. Senior Manager d. Other……..

Part II: Banking Services Management

Please **TICK** the appropriate box that reflects how strongly you agree or disagree with each statement.

1 = you strongly disagree 2 = you disagree 3 = neutral

4 = you agree 5 = you strongly agree

Bank Account Opening Services	1	2	3	4	5
1. Any eligible citizen can open an account at CBE					
2. Customers are not charged for opening accounts					
3. Customers do not waste time or queue while opening bank account					
4. The Bank spends time, material and financial resources to attract new customers					
5. Customers come to open account at CBE by choice					
6. Individuals and institutions are indirectly pressured to open account at CBE					
7. Customers open account at CBE due to service efficiency and interest packages					
8. Customers open account at CBE due to reliability and trust issues					
Banking Transaction Services					
9. Internet based banking reduces queuing customers					
10. Internet based banking reduces transaction costs of the bank					
11. Internet based banking improves the bank's service efficiency and effectiveness					
12. Internet based banking service is always hampered by system failure					
13. Internet based banking service is repeatedly hampered by power failure					
14. Customers queuing in the bank are associated with either system or power failure					
15. Customers queuing in the bank are associated with efficiency of officers					
16. Transaction costs of internet based banking are low and reducing					
17. Customers payment for transaction services are low and reducing due to the adoption of IT technology and system					

18. Customers easily access information about the Bank products and services					
19. Customers enjoy friendly environment while at the bank					
20. Customers complaint on internet based banking services is minimal					
21. Customers complaints are properly addressed at the bank					
22. The bank has sufficient number of ATM machines					
23. The Bank delivers ATM cards at reasonable time					
24. The bank ATM machines deliver the required service promptly					
25. Customers save time and money due to ATM services					
26. The introduction of ATM machines reduces the bank's transaction costs					
27. ATM machines service security is well addressed by the bank					
28. Customers complaint on ATM machines service is minimal					
29. Mobile banking service users are on the increase					
30. Mobile banking security is well addressed by the bank					
31. Mobile banking services significantly reduce the banks transaction costs					
32. Customers complaint on mobile banking services is minimal					
33. The bank has adequate branches at the right locations					
34. The bank branches are equipped with the necessary technology and equipment					
35. Information materials associated with the banking services are adequately available at the branch					
36. The bank branches are transaction cost conscious					
37. The bank's success is associated with the introduction of e-banking services					
38. The bank's success is associated with its employees performance and hard work					
39. The bank's success is associated with the combined effect of reducing transaction costs					
40. CBE offers better banking services compared to others					
Banking Credit Services					
41. The bank offers better borrowing terms to borrowers compared to other banks					
42. The bank is trusted for availing loan facilities at all times whoever is eligible					
43. The bank declines the borrower an offer if not submitting sufficient asset collateral					
44. The bank borrowers keep their promises					
45. The bank borrowers are sometimes unreliable					

46. The bank borrowers never hide something that may impact the bank negatively					
47. The bank borrowers always provide a truthful picture of their business					
48. The bank has confidence on its loan officers					
49. The bank closely monitors the borrowers and loan settlements					
50. The bank's loan default rate is decreasing					
51. Corrupt practices in the credit service section are non-existence					
52. The bank's credit service process is efficient and time and money saving					
53. The bank's credit section is equipped with specialized loan officers and service infrastructure					
54. The borrowers share in the payment of loan facilitation and contract administration services					
55. The bank has strict restriction regarding opportunism and corrupt practices related with loan facilitation					
56. The bank's loan administration costs are increasing					

57. Liquidity is serious problem of the bank					
58. The bank's transaction costs of credit management are on the increase					
59. The bank's lending interest rates depends on the transaction costs of the loans					
International and other Businesses					
60. The bank's international and other businesses (e.g. money transfer, import-export facility, forex, bond, Treasury bill, etc.) are efficient and effective					
61. The bank's international and other businesses are aided by technology and human development					
62. The bank has good reputation in the international banking industry					
63. The transaction costs of international and other banking businesses are decreasing					
Central Bank Regulations					
64. The National Bank of Ethiopia (NBE) regulations affects positively the service delivery performance of CBE					
65. The NBE regulations affects positively the financial performance of CBE					
66. The CBE enjoys public trust for being a state owned bank					
67. The CBE obtains special support from NBE and the government for being a state owned bank					
68. The NBE regularly updates its regulations taking into account the developments of the banking industry					
69. There is fair competition within the Ethiopian commercial banking industry					
70. The Ethiopian banking industry is highly protected					

Thank you very much for your valuable time and information

ANNEX II

SUMMARY OF COBB-DOUGLAS COST FUNCTION ESTIMATES

The Cobb Douglas cost function is generated and the summary is displayed in the following table.

Coefficients	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	-1.7948	0.3406	-5.269	8.34e-06 ***
deposit	0.4258	0.1045	4.074	0.000272 ***
loan	0.1231	0.1344	0.916	0.366158

income	0.4174	0.1486	2.810	0.008273 **
Goodness of fit	Multiple R-squared=0.9898, Adjusted R-squared= 0.9888 F-statistic= 1064 on 3 and 33 DF, p-value < 2.2e-16			

Significance codes: '***' 0.001 '**' 0.01 '*' 0.05

The regression equation of the dependent variable ***expense*** against the predictor variables ***total deposit, total loan*** and ***total income*** was run. The model is found good fit because the regression explains 98.8 percent of variations in the expenses. Also, the p-value < 2.2e-16 indicates that the model is good fit. The fitted regression equation is;

TC = -1.7948 + 0.42580 D + 0.1231 L + 0.4174 Q

From the above fitted regression equation, total deposit (p=0.000272) and total income (p=0.008273) are found to be statistically significant predictor of expense at a significance level of 5% whereas the total loan is statistically insignificant (p=0.366158).

ANNEX III

COMMERCIAL BANK OF ETHIOPIA TIME SERIES DATA

Time series Data				
Budget year	**Total Banking service costs (Expenses)**	**Total deposit**	**Total Loan**	**Total income**
1981	81,202,000	1,524,629,000	873,942,000	169,346,000
1982	85,627,000	1,719,310,000	916,095,000	175,951,000
1983	90,294,000	2,028,947,000	871,791,000	182,813,000
1984	95,215,000	2,320,290,000	828,304,000	181,356,000
1985	102,914,000	2,677,615,000	759,212,000	197,625,000

1986	113,253,000	3,047,127,000	749,518,000	191,314,000
1987	102,814,000	3,262,569,000	873,231,000	211,658,000
1988	116,031,000	3,556,535,000	1,100,228,000	213,594,000
1989	125,445,000	3,763,631,000	1,042,567,000	212,578,000
1990	138,374,000	4,230,984,000	934,541,000	198,689,000
1991	147,141,000	4,421,216,000	841,050,000	215,814,000
1992	148,937,000	5,012,734,000	979,368,000	355,643,000
1993	240,839,000	5,957,379,000	2,199,021,000	628,989,000
1994	344,828,000	7,456,859,000	2,856,063,000	908,537,000
1995	420,190,000	9,610,092,000	4,467,565,000	1,143,638,000
1996	564,370,000	11,186,451,000	6,394,513,000	1,111,971,000
1997	501,156,000	12,613,194,000	7,143,591,000	999,381,000
1998	545,707,000	14,320,320,000	8,088,024,000	1,230,292,000
1999	528,959,000	13,691,700,000	8,430,129,000	1,319,357,000
2000	591,556,000	15,639,740,000	8,908,549,000	1,343,153,000
2001	643,917,000	17,537,357,000	8,556,863,000	1,227,414,000
2002	875,587,000	18,530,727,000	7,356,953,000	1,299,347,000
2003	513,382,000	19,514,857,000	6,091,112,000	1,268,419,000
2004	562,200,000	22,439,133,000	6,307,556,000	1,278,313,000
2005	603,671,000	25,379,620,000	7,732,848,000	1,288,284,000
2006	654,356,000	28,142,776,000	7,657,790,000	1,298,333,000
2007	1,104,960,000	32,993,865,000	8,375,076,000	1,308,460,000
2008	1,104,106,000	37,000,993,000	16,275,113,000	2,972,013,000
2009	1,192,862,000	43,480,354,000	20,256,701,000	4,289,166,000
2010	2,032,732,000	55,549,858,000	23,572,806,000	4,859,777,000
Budget year	**Total Banking service costs (Expenses)**	**Total deposit**	**Total Loan**	**Total income**
2011	3,946,803,000	85,425,289,000	35,099,262,000	8,121,138,000
2012	3,587,873,000	120,115,523,000	60,940,262,000	11,214,135,000
2013	5,504,954,000	154,438,279,000	69,674,773,000	14,050,520,000
2014	8,245,211,000	194,051,865,000	90,842,595,000	17,924,423,000
2015	10,204,557,000	242,497,030,000	113,489,073,000	22,867,927,000
2016	14,330,507,000	288,495,585,000	135,029,819,000	28,018,993,000
2017	14,026,650,000	364,861,639,000	154,124,041,000	31,900,504,000

Source: Commercial Bank of Ethiopia, Information & System management Unit