THE EFFECT OF LENDING INTEREST RATE VOLATILITY ON FINANCIAL PERFORMANCE OF BANKS SECTOR IN KENYA

BY

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DECLARATION

I, the undersigned, declare that this research project is my original work and has not been submitted to any other college, institution or university for academic credit.

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DEDICATION

This project is dedicated to my family for the love, patience and faith they had in me throughout the study period and the entire course.

To my lovely husband Leonard Mochoge and my two lovely daughters Sally and Melissa who have remained sources of inspiration for whatever i set to achieve.

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ABBREVIATION AND SYNONYMS

ANOVA	- Analysis of Variance
CPI	- Consumer Price Index
CBK	- Central Bank of Kenya
GDP	- Gross Domestic Product
ICT	- Information Communication Technology
NIM	- Net Interest Margin.
ROA	- Return on Assets
ROE	-Return on Asset

ABSTRACT

The financial institutions are essential for the growth and sustainability of the economy. A connection amid the financial performance and interest rates of a firm exists for it is one on the major economic factor that influences the economic growth. The rate of interest influences the capital cost to the investor and the returns of various bank savers. The aim of this research was to discover the effect of interest rate volatility on the Kenya commercial banks performance in financial area. The research employed a descriptive survey and the population of this study was averages of all commercial banks in Kenya 42 in total, hence a census was carried out because of its relatively low population size. The study used quarterly secondary data which was gathered between 2007 and 2016 period. To analyze the collected data the regression model was adopted. The findings revealed that the relationship between rates of interest volatility and commercial banks financial performance was negative and insignificant whereas the relation between credit risk and commercial banks in Kenya financial performance was positive and insignificant. The results also established that the relationship amid financial performance and inflation of the commercial banks was negative and vital while the relationship amid real GDP and financial performance of was positive and significant. The research settled that Kenyan commercial banks financial performance is not significant influence by interest rates volatility and credit risk. The study also concluded that inflation and economic growth significantly affects the Kenyan commercial banks performance. The research recommended that the CBK should come up with policy mechanisms to counter the effects of inflation and to foster economic growth.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The financial institutions are important for the growth and sustainability of the economy. There is a link amid the financial performance of a firm and interest rates for it is one on the major economic factor that influences the economic growth. The interest rate influences the cost of capital to the investor and the returns of various bank savers. The overall cost of capital and debt-equity choice of the firm is affected by the change of the interest rates and thereby sets a response of the financial institutions in order to achieve a wanted amount of the capital stock and its overall performance of the firm. According to Casu, 2006, the interest rate is among the essential aspects that impact the financial performance of the financial institutions especially commercial banks.

Interest rate has been of interest by different scholars and researchers in the economic and financial environment. The classical theory recognizes the interest rates as a major influence on the investment and willingness of the investors to save, hence a major consideration in the varying financial market (Maynard, 2014). The Keynes liquidity theory identifies the interest rate on the demand and supply of money in an economy, thus being a determinant on the level of the liquidity in an economy (Keynes, 1936). The loanable fund theory which is an elaboration of the classical theory in terms of the spread of the investment due to the level of the demand and supply of money in an economy of the loanable funds (Kumar, 2015)

It is recognized a correlation relation between financial performance of the financial institutions and interest rate, which shows both the long and short term interest rates has an effect on the net margins (NIM) of the commercial banks. It is then prudent for the net interest rates flow through the financial institutions be managed and controlled in order to positively affects the profitability of the commercial banks, for the development of the commercial banks are essential for the growth of the economy; however, other changes to economic conditions have a relatively higher effect on the commercial banks financial performance (Genay, 2014).

1.1.1 Lending Interest Rate Volatility

An interest rate is a borrower paid price so as to access and utilize resources at that particular time rather than later in the future (Casa, Girardone & Molyneux, 2006). According to Crowley (2007) defines interest rate as the price paid by the borrower to use the money from one who loans out. Interest is one of the major components of the economy for it does not only affect the financial institutions but the economy in general; for the economic growth is directly correlated with the interest rate setting. Interest rate volatility is the rate offered on the borrowed amount that is dynamic since it depends on the base rate that is not constant as well (Genay, 2014).

The regulator ensures that the interest rate does not fluctuate too much in order to have a stable economy and to control risks. The fluctuations of the interest rate are highly reciprocal to the investors' behaviors in terms of lending patterns. For when the interest rates fall, the investors borrow and the spending pattern raises and when the interest rates are high tend not to borrow and the spending pattern reduces in the economy (Onuonga,

2014). Too much variation in the interest rates leads to inefficient and unstable economy which makes the country to be unproductive and at the same time it affects the ability to make effective and valuable financial decisions (Cecchetti, 2008)

Despite the Central Bank of Kenya directive on the interest rates setting to the borrowed amount in the commercial bank, there is need for the commercial banks to incorporate the interest rates management system in order to determine different interest rates and maturity offered to their clients. The commercial banks offers diverse financial service that makes them vulnerable to the uncertain economic environment which makes them dependent on the economic conditions for instance the interest rate being offered (Sashoo, 2012). The financial performance of the commercial is depends hugely on the interest for it affects the operational mechanism which eventually affects the profitability of the commercial banks. There is need for interest rate management basis on the financial performance of the bank by applying financial performance measurement tools such as ROA, NIM, and ROE among others (Bosworth, 2014)

1.1.2 Financial Performance

Financial performance means the measurement of how efficiently an organization can make use of its available resources to be profitable in the market. According to Genay (2014), financial performance is the capacity of a firm to accumulate a sustainable profit from its client. Profitability is one of the key indicators of the financial performance which refers to the overall amount of cash generated from the operations of the firm after deducting all the expenses and operational costs (Abertazzi & Gambacorta, 2006). Making profit is one of the ways a commercial bank can be sure about its sustainability in

the financial market, for the bank is able to increase its capital position and give the clients a good customer service and to keep them to continue borrowing for future returns (Onuonga, 2014)

The commercial banks financial performance is influenced by several factors whose indicators differ from one factor to another. However, there are some specific indicators which have been used by the commercial banks over the years in order to determine their financial performance in the financial market for instance the operating income which entails the income from the operating activities, net profit which entails the income after deducting all the expenses and costs (Bikker, 2010). The operating income is one of the most indicator of the Kenyan commercial banks financial performance, for it is being determined by the interest rates of assets. Operating income is at the highest when the overall interest rates are at maximum peak and this applies to fluctuating interest rates and this explains why most bank interest rates with the total operating income (Kalari & Kool, 2205)

The operating expense is also one of the indicators of the commercial bank financial performance for it entails all the expenses incurred by a commercial bank in the ongoing operations. The interest rates are key indicators as they determine the interest payment rates of the liabilities and especially on deposits. Interest rate being a variable to the total operating expenses is an essential element of the financial performance. The operating income and operating expense are the main indicators of the performance of the commercial bank put it consideration there are the main indicators that are directly influenced by the interest rate putting other factors constant. Return on Assets (ROA) is a measure that can be used to determine the commercial bank profitability relative to the

bank size which it entails comparing the net income with the assets. Net Interest Margin (NIM) is used to determine the equity holder's shares while the return on equity (ROE) gives the shareholders the exact amount earned by the commercial bank in return to their equity (Bikker, 2010)

1.1.3 Lending Interest Rate Volatility and Financial Performance

Interest rate is the highest determinant of the operating income of a bank in a given year. A similar trend is also observed when it comes to the operating expenses, where again the expenses of running the bank are majorly determined by the interest rates. Subsequent indicators are all determined by these two indicators, therefore, interest rates generally determine the financial performance of a bank.

Nevertheless, to completely understand how the interest rates impacts the financial performance of a bank, we need to highlight the two key principles of interest rates that affect a bank. First, all banks make a profit from the difference between the lending rates given to the borrowers and the deposit rates given to the customer making deposits into the banks. This always results in a lending spread that falls once the yield curve flattens (2014Genay). Secondly, bigger rates of interest decrease the current discounted value of the assets. This is because banks grip onto fixed income assets e.g. bonds and loans. Furthermore, banks meet bigger losses when the duration of their assets increases relative to that of the liabilities (King, 2015).

The empirical relation amid rates of interest and commercial banks financial performance has been confirmed in various studies previously undertaken. Sattar and Khan (2014) in their study concluded that interest rates considerably affect the bank's interest income.

They further proved that banks' income is related to interest rates that shows that the financial performance of commercial banks and the interest rates offered to investors cannot be separated. Another study by Okoye and Onyekachi (2013) supports the connection amid interest rates and financial performance of bank and go further to conclude that the two are intertwined and hence the significant relationship.

1.1.4 Commercial Banks in Kenya

This are monetary institutes involved in the creation of money and credit services, they are essential to the economy of the country for they provide benefits to the lenders, depositors and contribute to the economic efficiency and development (Thomas, 2006). All commercial banks in Kenya despite their sizes and location provide basically similar services to the clients (Saunders and Cornett, 2003). The Kenyan commercial banks differ in the composition of liabilities and assets they hold. Their development was related to the commercial connections in East Africa, in which over the time the Kenyan Commercial banks have realized growth through the use of Information Communication Technology (ICT) and new paradigms of operations which has led to improved customer service and expansion of commercial bank services (Sashoo, 2012). Currently, there are 42 in operation (CBK, 2017)

In Kenya they are controlled by the CBK, the Banking Act and the Companies Acts of Kenya, which offer guidance in the operations of the commercial banks. The CBK implements regulatory frameworks and policies in order to maintain and achieve economic growth in the country through the banking industry (CBK, 2016). Despite the regulation by the CBK, the interest rate is still a major concern in the banking industry,

especially after the liberation of the interest rate ceiling of the borrowed amount in the commercial bank which has led to low economic development (Were and Wambua, 2017). There was need to understand how the interest rate was determined for it has affected the operations of the banking industry which eventually affected the commercial banks financial performance.

The banking industry has always shown exponential growth in the profitability and financial performance until the curbing of the interest rates in which it shows a reduction of 3.4% as from December 2016 to March 2017. The reduction can be attributed to the banks to reduce their interest rates (Cytton, 2015). But the profitability of the Kenyan commercial banks has shown constant or improved financial performance despite the reforms that has recently happened in the banking industry (Were and Wambua, 2013)

1.2 Research Problem

The financial institution promotes economic growth through the provision of the financial services in an economy. Due to correlation relationship between the interest rates and financial performance, there is high need of the commercial banks to have the evaluation of the interest rates in order to enhance financial efficiency (Peng, 2002). For all the operations in the commercial banks are affected by the interest rates charged in all the services offered in the banks. The performance of the financial institutions also determines the productivity of the economy, thus there is need of proper rationale of the interest rates in order to have effective operational efficiency in the commercial banks (Estrella, 2001).

In Kenya, the CBK recognizes commercial banks importance in the economy for it ensures macroeconomic stability and the existence of effective monetary policy execution and development of an economy is determined by the performance of the banking industry (Hartmann, 2004). The interest curbing affects the financial performance of commercial banks. Operational efficiency of the banks is greatly affected by the interest rates which eventually affect its financial performance, which has been a major issue for the bankers and makers of policies that forms the basis of this study. The variation of the interest rates has made the commercial banks to shy away to give loans which has led to loss of customers in which it has affected their financial performance. Proper interest rates works in both the commercial banks and customers favor for the banks' risk tolerance rises and the customers is able to borrow therefore refining the financial performance of the commercial bank. Rates of Interest is among the major players in the financial performance in the financial sector (Gardner, 2005)

Several researchers both locally and globally, have provided insights on the effects of fluctuating rates of interest and banks performance. Ngugi (2001) studied on the interest rates variation and banks performance where there was a negative relation amid banks performance and interest rates although the study did not focus on the all operational banks. Sattar and Khan (2014) established a relationship between interest rate and banks financial performance being a global study in Pakistan there some variation may existence creating the difference in their operational structure. Malik (2015) studied on the consequences of interest rates on profitability of banks. The established a positive correlation relation amid rates of interest and profitability although the study only focused on the ROA, ROE and NIM.

From the aforementioned studies it is evident that no study has been done to the best knowledge of the researcher on the variation of the rate of interest on the financial performance considering the internal and external factors that has an influence on the financial performance especially due to the reforms that has happened recently on the commercial bank sector. Hence, this research tends to gap fill through answering: What is the effect of interest rates volatility on the financial performance of Commercial Banks in Kenya?

1.3 Research Objective

To conclude the impact of interest rate volatility on the Kenyan commercial banks financial performance.

1.4 Value of the Study

The regulators of the banking industry like the CBK and Banking Acts in the developing of the regulation policies to govern the financial institutions in Kenya such as commercial banks. These policies will ensure efficient operations of the banking industry in order to meet the economic needs. Some of these policies were adopted from other nations but have been adjusted to suit the Kenyan economic environment. Through this research study, these policies will be evaluated and possible recommendations will be made to improve the commercial banks performance and economy in general

Investors benefit also from this research for it showcases the importance borrowing through the financial institutions which contribute to the overall economic growth, which later results to improved profitability in the commercial banks

The researchers and academia in this area, as the study will serve as background material for further research and it will also highlight on the current trends in the effects of interest rate variation on commercial banks financial performance. This will contribute new knowledge of interest rate variation on financial performance.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section examines the theoretical framework on which the interest rate is founded, literature on financial performance, interest rate variation and financial performance. A review of empirical studies is also provided alongside a conceptual framework linking the elements of interest rate variation and financial performance

2.2 Theoretical Framework

Several theories offer insights into the rationale underlying the interest rates. The main theory of the rate of interest is the classical one and the others theories include loanable funs theory and Keynes Liquidity Preference Theory, which are discussed below;

2.2.1 Classical Theory of Interest

It was developed by Kimberly (1776), in which the theory states that the interest rates is a major factor influencing the level of investments and the willingness of the investors to save as well as ensuring an equilibrium is being sustained between savings and level of investment. Many scholars in finance and economics were the frontier of the classical theory for instance Marshall, Cassel and Flux. They elaborated that the classical theory of interest should assume the investment level as the demand and the savings as the supply and the interest rate as the price of the resources being invested.

When the level of investment is equal to the level of savings, the interest rates becomes relatively fixed. The interest rates vary depending on the varying financial market. An equilibrium is achieved when the investment and savings are equal (Maynard, 2014).This theory is essential to the research study for it shows how the balance between the interest rate and the saving affects the interest rate, it also elaborates on the essence of the investment levels to the interest rate variations.

2.2.2 Keynes Liquidity Preference Theory

It was developed by Keynes (1936), it states that rate of interest as the reward of an institution after giving out its liquidity for a certain period of time. According to Keynes (1936), the demand for resources and the money supply are the determinants on the interest rates. He continues by arguing that if the investment level and savings level are equal disputing the neoclassical theory in which the idea was based on the equilibrating savings and investment. Keynes theory is majorly a liquidity preference theory that sees a theory designed to fill the gaps between income and savings. That is the theory is designed in a way that it provides the understanding of change in income that equalizes savings and investment and making the interest rate constant (Hawtrey, 2015)

This theory is essential in the research study for it is able to identify other factors that could influence the finance performance of the financial institutions other than the interest rate which is made constant. It provides other alternatives to improve financial performance other the changing he interest rate in order to be profitable

2.2.3 Loanable Funds Theory

Created by Robertson and Ohlin (1930) in whom the theory recognizes the supply and demand of funds that are loanable as the determinant of the level of the interest rate. The theory presents a more practical approach to the interest rate curb as compared to other theory discussed earlier. In this theory, it recognizes the investment hoarding and dissaving as the main factors that affects the loanable funds. There is need to compare the expected returns to the rate of investment before making the investment decisions. The demand for loanable funds and the rate to which the investors are willing to have an inverse relationship.

According to Robertson and Ohlin (1930), hoarding affects the demand of loanable funds for it determines whether the investors will have access to the liquidity requirements, he finally recognized dissaving as the main factor that reduces savings which end up reduces the interest rate because this happens when people tend to spend more funds beyond their income (Kumar, 2015). This theory is essential in the research study for it provides a comprehensive relationship between the behaviour of the investors to the loanable funds which eventually affects the interest rate

2.3 Determinants of Commercial Bank Financial Performance

There are a few aspects which affects the commercial bank financial performance which comprises of the external and internal factors. The internal factors are those factors that the entails the internal state of the commercial banks that the bank has a control of them for instance capitalization of the bank, size of the bank while the external factors involves

those factors that the commercial bank do not have control over them for instance the interest rate, inflation, GDP growth rate and legal frameworks

2.3.1 Size of Commercial Banks

Being the factors that the commercial banks have a control over them, it is one of the highly controversial and debated amongst researchers for instance the size of the commercial bank, in which different researchers have hold different view, but they can be broadly be categorized into three classes which are: the size has an effect that's positive on financial performance, the commercial bank size lacks an impact on the financial performance and that the bank size has an impact that is negative on the financial performance (Nassreddine, Sessi & Anis, 2013). For it is assumed that if the commercial bank is big enough it will enjoy the economies of scale that will lead to reduction of costs, increase capital at the lowest possible cost (Bikker & Hu, 2002).

For those who established there is no impact of the size of the commercial bank to the financial performance assumes a lack of statistical relation amid the commercial bank performance and size (Panizza & Yanez, 2007). Those who established existence of a negative impact amid the commercial bank size and financial performance assumes the large the size of the bank there is lack of manageability which leads to inefficiency in the operations of the commercial banks hence low financial performance (Stiroh & Rumble, 2006)

2.3.2 Credit Risk

This is also one of the factors that affects the financial performance of commercial banks which requires control and management by ensuring that the credit rating of all the clients

in the commercial bank is calculated and considered before the loan is given to the clients, and the management of how the approved loans will be disbursed to the customers. Due to the efficient management of the loans, the non-performing loans will reduce substantially and this will reduce the losses experienced in the commercial bank thus improving the financial performance of the commercial bank (Nassreddine, Sessi & Anis, 2013)

2.3.3 Inflation

Inflation is also one the external aspects that influences the performance in the financial division of the commercial banks as it is dependent on the operating expenses, in the event of high inflation rate, there is an impact that's negative and when the inflation rate is low there is an impact that's positive on commercial banks financial performance of the (Revell, 1979),

2.3.4 GDP Growth

This is also among the aspects that influences on the economy environment thus have an influence on the commercial banks financial performance, in which the investors will find it suitable to borrow the loans from the commercial banks to investment in a conducive environment thus leading to higher demand of credit and this leads to increase the financial performance of the commercial banks (Cecchetti, 2008)

2.4 Empirical Literature

Various research studies both local and global have given the rationale on the rate of interest impact on the financial performance of the financial institutions for instance the

commercial banks. Wensheng, Lai, Leung and Shu (2003), studied on the effect of the risk premium on the Hong Kong dollar, in which they investigated on the performance of the financial institutions of the Hong Kong dollar to the US dollar interest rate. The aim of the research was to discover the impacts of the financial performance of the two currencies imposing on the assets quality and net interest rate margin. Using the data from 1993 to 2001, the researchers were able to conclude that interest rate variation has an influence in the financial state of financial institutions in which it recognized on the spread of the interest rate and worsened the assets quality. The study proved the theory that was previously discussed earlier in this chapter.

Phim (2001) studied on the impact of varying rates of interest on the overall commercial banks performance. The research study collected data on the 70 US commercial banks, in comparison of the assets owned by different commercial banks to the interest rate as per the regulation. By the use of statistical analysis, the research concluded that the profitability of the commercial banks was responsive to the interest rates as per the regulation. It was also established that the change of the interest rate was associated with response to the total revenue and total cost. Although some of the recent studies have disputed these findings of Phim (2001) based on the time in which the research study was conducted. However, the research determined existence of a relation amid interest rate and the commercial banks financial performance.

In another similar research study by Nassreddine, Sessi and Anis (2013), studied on the factors that determines commercial banks financial performance and not necessary the interest rates. The study established some of the external and internal features that affect the financial performance like commercial banks size, capital of the commercialization,

liquidity and credit control. By the use of data from different previous research they were able to use cognitive mapping technique to determine the impact of each determinant, all the same, the interest rate was a consistent factor that was evident determinants of the financial performance

Waseern and Sattar (2014), studied on the impact of variation of rate of interest on the profit generated the study focused on the four commercial banks in Pakistan between the period 2008 to 2012. The research used Pearson correlation technique, where the interest rate was related to the profitability of the individual commercial bank. The study concluded that the profitability is dependent on the interest rate. This study was closely related to the Kenyan financial market especially due to the overcharged interest rates on the borrowers compared to depositors.

Apir (2015), studied on the effect of rate of interest risk on commercial banks performance in Nigeria. The research concentrated on the rate of interest and overall performance relationship. The research used descriptive analysis from the selected Nigerian commercial banks. The research concluded interest rate volatility affects the overall commercial banks financial performance. However, it was also established that management of the commercial banks as per the regulation also played a bigger part on their financial performance. The research also revealed that the existence of the uniformity of interest rates will result to stiff competition among the commercial bank.

Nduati (2012) studied on the impact of spread of rate of interest on commercial banks financial performance, the study recognizes the spread as the variance between the customers' deposit rate and the borrower lending rate. The study established spread of

interest rate was influenced by the financial institutions. Low spread was seen to provide stiff foundations for financial institutions seeking competitive edge. Using the data collected from CBK, the analysis of the data show cased the interest rate spread as a most important factor in determining the commercial bank financial performance

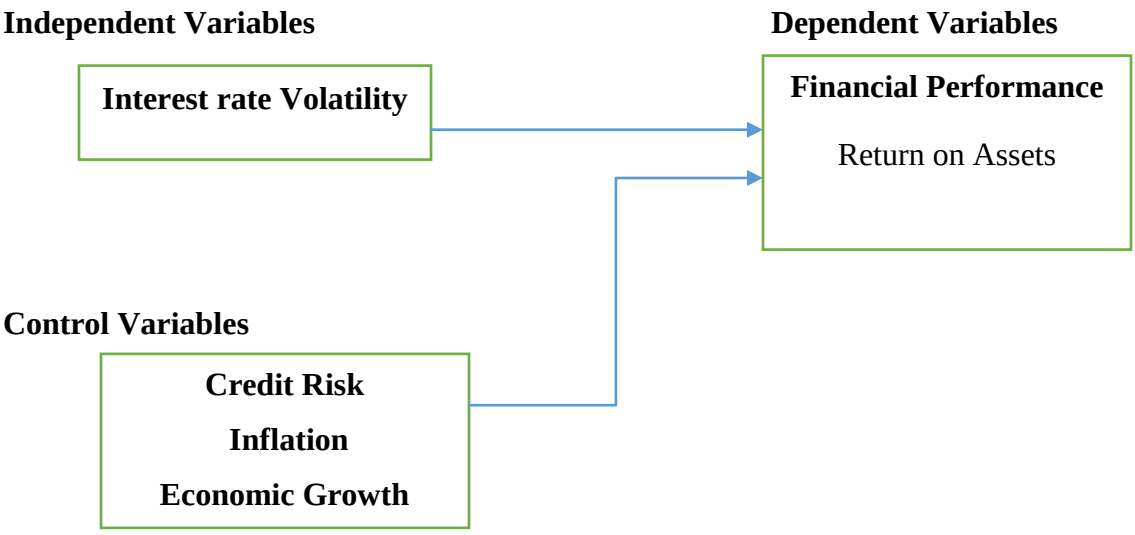
ECB (2010) studied on Return on Equity (ROE), was recognized as a weak display of a banks' financial performance, others like net of interest margin were seen to be necessary indicators of the financial performance of the commercial bank, since all these factors are determined by the interest rate margin, which only goes to show the importance of this research study

King (2015) studied on the rates of interest effects to the overall financial bank performance. In which the aim was to learn how the rate of interest affects financial performance. By use of descriptive survey, the findings concluded that there is higher interest rate on the loans than on the interest they pay on deposits. Net interest income is the resultant dissimilarity amid the two and the source of higher profits. The research which was conducted in the USA, an average amount of $80 million dollars was recorded in terms of quarterly net interest income. The study identified that the lending services are the main income sources of the financial institutions. hence, the financial institutions will experience high financial performance if the interest rate given to lenders is higher than that paid on deposits'

2.5 Conceptual Framework

This is a tool that indicates the relation amid the independent and dependent variable (Kombo and Tromp, 2009). Thus it provides the understanding of the subsequent findings

by showing the relationship between variable. According to April (2015) the inflation rate has a negative correlation relation with the commercial banks financial performance, Westeern et al (2014), established that the economic growth has a direct influence in the financial performance of the commercial for it will increase the investment levels as it was also recognized by Phim (2001), the accessibility level of the credit facilities has a relationship that is direct to the return on assets of the commercial banks. The conceptual framework in this study show how the volatility of the interest rates through the control variables such as inflation rate, economic growth and credit risk has an effect in the commercial banks financial performance especially on the return on equity and assets.



Source: Researcher (2017)

Figure 2.1: Conceptual Framework

2.6 Summary of Literature Review

This section began by introducing the theoretical context which entails the Loanable fund theory which showed how customers' demands and the supply of loanable funds

determines the interest rates which was seen as opposite of the classical theory where savings and investment determines the interest rate and Keynes theory showcased the demand and supply of resources of money as the determinant of interest rate. However, the theories were not comprehensive on the level of savings and investment, but we can recognize all the theories based on the interest rate.

From the review of the global and local previous studies, it was evident that interest rate greatly affected the financial performance of the commercial bank, despite the numerous studies on the impacts of rate of interest on financial performance, for the studies have studied on different variables that affects the interest rates. Thus, it is evident that no studies had been to the best knowledge of the researcher on the impacts of rate of interest on the financial performance especially after reducing the interest rate by the Central Bank of Kenya to a uniform ceiling of the interest rate and considering the internal and external factors that affects interest rates. Thus, the need to fill the gap that this study tends to fill.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section presents the methodology used in seeking answers to the study question. It addresses the design adopted in research, the study population, data collection method and analysis

3.2 Research Design

The research employed a descriptive survey. A descriptive survey involves observation and description of the subject of a study without manipulation of any kind (Kothari, 2004). This design is suitable for the research as it facilitated the gathering of substantive information regarding interest rates variation over the years.

3.3 Population

Grove and Burns (2003) define population as every elements that's eligible for addition in a research. Study population was average performance of all the 42 commercial banks operating in Kenya, hence a census was carried out because of its relatively low population size (Appendix I)

3.4 Data Collection

The research collected the necessary data to address the research question by use of secondary data, in which the income statements from the period between 2007 and 2016 was considered as the main data source which was extracted from CBK offices and

website as during this period there has been a turbulence of the economy and reforms in the commercial banks in Kenya. All the data to be considered met the requirement of accuracy and completeness before analyzing the data and it was on a quarterly basis.

3.5 Diagnostic Tests

Diagnostic tests were done to establish and validate the most appropriate research model design for the study. This study carried out a test on multicollinearity, normality, homogeneity of variance test and test of independence of observations (serial correlation). The study employed the Durbin Watson statistic to tests for serial correlation or autocorrelation while the variance inflation factors and tolerance levels were used to test for multicollinearity. Finally, normality was tested using skewness, kurtosis and the Shapiro Wilk tests while homogeneity of variance was assessed through a residual plot respectively.

3.6 Data Analysis

This is a procedure that involves understanding and explaining the data that are to be collected with the help of the analysis tools so that it fully makes sense to make a reliable conclusion of the study. The data extracted from the secondary source was analyzed using the SPSS.

3.6.1 Analytical Model

The connection amid interest rates and commercial banks financial performance and shows how the interest rate has an effect to the financial performance. The analysis of variance (ANOVA) model was done to compare the relation amid the independent and

dependent variable. The importance of the model was tested using t-test and f-test. The adopted analytical model was follows;

$$Y=\beta_0+\beta_1X_{1+}\beta_2X_{2+}\beta_3X_{3+}\beta_4X_4$$

Where;

Y= Financial Performance of Commercial Banks measured by Return on Assets (ROA) on a quarterly basis

X_1=Interest Rates Volatility measured by the standard deviation of the weighted average lending rate of the commercial banks

X_2= Credit risk measured as the ratio of non-performing loans to total loans on quarterly terms for the commercial banks

X_3= Inflation measured by the consumer price index (CPI) on a quarterly basis

X_4= Natural log of real GDP growth rate on a quarterly basis

β_0=Constant

β_1, β_2, β_3,β_4=Coefficient of the regression model

3.6.2 Statistical Test of Significance

Correlation analysis was employed to establish the existing connection amid the dependent and independent variables. The Spearman's Correlation Coefficient (Rsp) was used to establish the strength of the connections between the variables, and the relationships' linearity. The Spearman's Correlation Coefficient uses correlation coefficient (*r*) which is a measure of degree to which two variables are related and can range from 0 to +1 of positively correlated and 0 to -1 if negatively correlated.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND INTERPRETATION

4.1 Introduction

This sector contains the descriptive results, correlation and the regression results. The section finally presents an interpretation of the findings.

4.2 Response Rate

The research used quarterly secondary data, which covered a time of 10 years from the year 2007 and 2016. The study obtained complete data for the considered period.

4.3 Diagnostic Tests

4.3.1 Test for Normality

Table 4.1 Normality Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Interest rates	.135	40	.063	.934	40	.021
Credit risk	.188	40	.010	.856	40	.032
Inflation	.126	40	.113	.951	40	.084
GDP	.120	40	.152	.945	40	.051

a. Lilliefors Significance Correction

Source: Research Findings

The Kolmogorov-Smirnov and Shapiro-Wilk results on table 4.1 indicates that the data is distributed normally as all the p values are greater than 0.05 respectively. This is an indication that the assumption of normality is upheld.

4.3.2 Homogeneity Test

A residual plot was used to assess to homogeneity of variance. The results were as follows

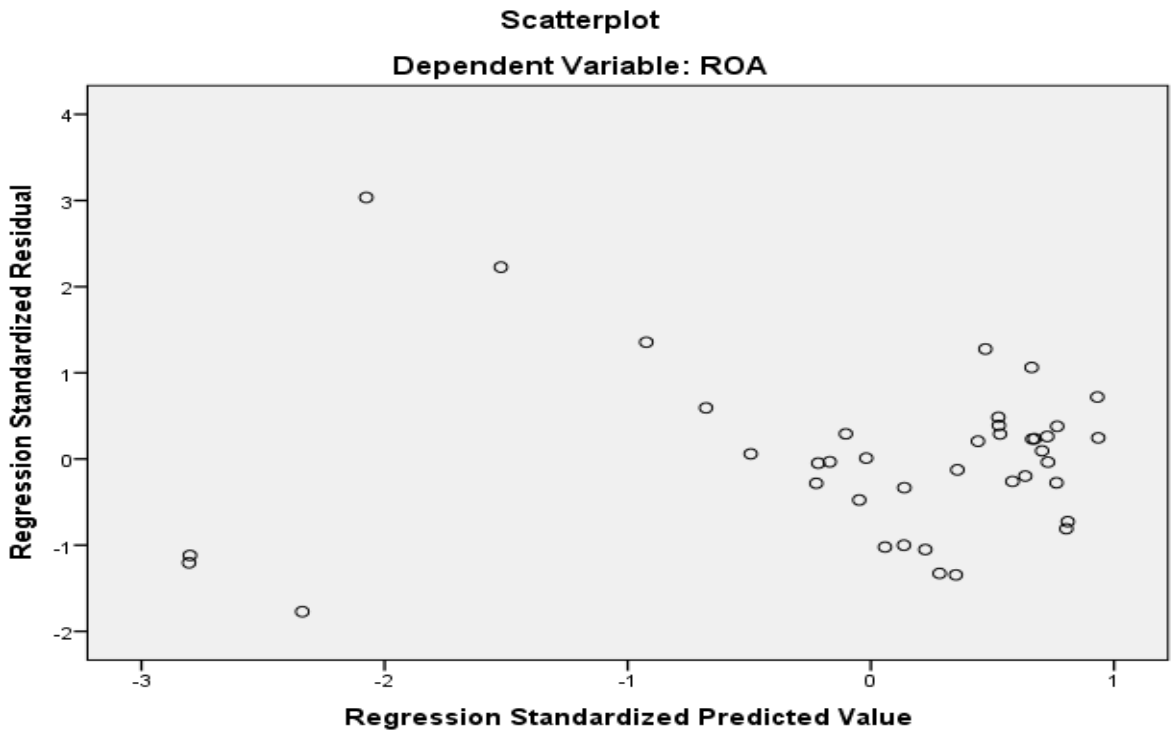


Figure 4.1 Residual Plot

The residual plot results indicate that the data points do not converge on a specific point hence an indication that the assumption of homogeneity of variances is upheld and there is no heteroskedasticity.

4.3.3 Multicollinearity Test

Multicollinearity was assessed using the variance inflation factors. The results were as follows.

Table 4.2 Multicollinearity Test

	Tolerance	**VIF**
Interest rates	.471	2.125
Credit risk	.577	1.734
Inflation	.817	1.224
Ln GDP	.747	1.339

Source: Research findings

The collinearity statistics on table 4.2 indicate that the there is no multicollinearity between the dependent variable since all the variance inflation factors (VIF) are more than 1 and less than 10 respectively.

4.4 Descriptive Statistics

Descriptive statistics comprises of the mean, standard deviation, maximum, minimum values, number of observations, skewness and kurtosis. Table 4.3 shows the descriptive results.

Table 4.3 Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Dev	Skewness	Kurtosis
ROA	40	.015	.035	.02830	.004844	-1.311	1.289
Interest rates	40	3.587	4.510	3.96535	.255684	.633	-.462
Credit risk	40	.010	.091	.05570	.019464	-.098	-.095
Inflation	40	78.460	175.180	125.470	29.0350	.007	-1.210
Ln_GDP	40	13.359	13.906	13.6096	.160201	.261	-1.057

Source: Research findings

The finding on table 4.3 indicates that the average ROA of the commercial banks for the considered study period was 0.02830 with a minimum and maximum ROA of 0.015 and 0.035 respectively. The results further show that the average interest rate volatility is 3.96535 with a minimum and maximum volatility of 3.587and 4.510 while the average credit risk is 0.05570 with the minim and maximum values being 0.010 and 0.091 respectively. The findings further show that the average inflation over the study period is 125.47 with minimum and maximum inflation being 78.460 and 175.180 whereas the average GDP in terms of natural log is 13.6096 with the minimum and maximum GDP being 13.359 and 13.906 respectively. The kurtosis and skewness values range between the recommended ranges of -1 and +1 thus an indication the data is normally distributed.

4.5 Correlation Analysis

Correlation was used to determine the strength of the connection among the variables. Table 4.4 shows the correlations

Table 4.4 Correlations

	ROA	Interest rates	Credit risk	Inflation	Ln GDP
ROA	1				
Interest rates	.461**	1			
Credit risk	.536**	.251	1		
Inflation	.534**	.598**	.515**	1	
Ln GDP	.601**	.632**	.546**	.594**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Research findings

The findings on table 4.4 show that the correlation between ROA and interests rates volatility is weak and positive. The table further indicates that the correlations between credit risk, inflation, real GDP and ROA is strong and positive.

4.6 Regression Analysis

The regression model contains the model summary, the results of ANOVA and the regression coefficient results

4.6.1 Model Summary

This depicts the R, R square, adjusted R square, Standard error of estimate and the Durbin Watson statistic. Table 4.5 indicates the findings

Table 4.5 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.862[a]	.743	.713	.108990	1.570

a. Predictors: (Constant), Ln GDP, Credit risk, Interest rates, Inflation

b. Dependent Variable: ROA

Source: Research findings

The results on table 4.5 indicates that coefficient of determination (R square) is 0.743 which indicates that 74.3% of the variation in the dependent variable is accounted for by the independent variables. The Durbin Watson value of 1.570, which lies within the range of 1.25 and 2.5 hence an indication that there is no autocorrelation.

4.6.2 ANOVA

The ANOVA produces the F statistics, which tests the significance of the model. The results are shown by table 4.6

Table 4.6 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.200	4	.300	25.258	.000[b]
	Residual	.416	35	.012		
	Total	1.616	39			

a. Dependent Variable: ROA

b. Predictors: (Constant), Ln_GDP, Credit risk, Interest rates, Inflation

Source: Research findings

The results of ANOVA on table 4.6 indicates that the F statistics value of 25.258 is significant as indicated by the P value of 0.000<0.05. The results indicate that the regression model is significant and a good predictor of the relationship between the dependent and independent variables.

4.6.3 Regression Coefficients

The regression coefficient results indicate the individual significance of the variables. Table 4.7 shows the results

Table 4.7 Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-25.148	3.198		-7.864	.000
	Interest rates	-.136	.099	-.171	-1.367	.180
	Credit risk	.015	.051	.032	.283	.779
	Inflation	-.043	.007	-6.102	-6.384	.000
	Ln GDP	5.727	.863	6.760	6.635	.000

Source: Research findings

The following regression equation was generated

$$Y = -25.148 - 0.136X_1 + 0.015X_2 - 0.043X_3 + 5.727X_4 + \varepsilon$$

The regression results show that the relation amid financial performance of commercial banks and interest rates volatility is negative and not significant whereas that between financial performance commercial banks in Kenya and credit risk is positive and insignificant. In addition, the results indicate that the relation amid commercial banks

financial performance and inflation is negative and noteworthy while the relation amid real GDP and commercial banks financial performance in Kenya is positive and significant.

4.7 Interpretation of the Findings

The research findings established existence of a negative and insignificant relation amid interest rates volatility and commercial banks financial performance. This therefore means a lack of a noteworthy relation amid rate of interest volatility and financial performance. Wensheng, Lai, Leung and Shu (2003) however conclude that interest rate variation has an influence in the financial state of financial institutions in which it recognized on the spread of the interest rate and worsened the assets quality. Waseern and Sattar (2014) concluded that the profitability is dependent on the interest rate.

The research findings discovered existence of a positive and insignificant connection amid credit risk and commercial banks financial performance. This therefore means lack of important connection amid credit risk and commercial banks financial performance in Kenya. Nassreddine, Sessi and Anis (2013) due to the efficient management of the loans, the non-performing loans will reduce substantially and this will reduce the losses experienced in the commercial bank thus improving the financial performance of the commercial bank.

The research findings established a negative and noteworthy relation amid inflation and commercial banks financial performance. This therefore means a noteworthy connections exists amid financial performance and inflation of Kenyan commercial banks in. According to Cecchetti (2008) GDP growth rate is also one of the factor that influences

on the economy environment thus have an impact on the financial performance of the commercial banks.

The study established a positive and noteworthy relation existed amid the real GDP and commercial banks financial performance. This therefore means an important connection amid Real GDP and Kenyan commercial banks financial performance exists. Revell (1979) posits that in the event of high inflation rate, there is a negative effect and when the inflation rate is low there is a positive impact on the financial performance of the commercial banks.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section summarizes the research results, conclusions and research recommendations. The research finally indicates the limitations and areas, which may require additional research.

5.2 Summary of the Findings

The aim of this research was to explore the impacts of interest rate volatility on the Kenyan commercial banks financial performance. The main theory of the interest rate is the classical theory and the others theories include loanable funs theory and Keynes Liquidity Preference Theory. The independent variable of the study was interest rate volatility while the dependent variable was financial performance whereas credit risk, inflation and economic growth were incorporated as the control variables. The study employed a descriptive survey and the study population was the 42 Kenyan commercial banks, hence a census was carried out because of its relatively low population size.

The finding established that the average ROA of the commercial banks for the considered study period was 0.02830 and that the average interest rate volatility was 3.96535 while the average credit risk was 0.05570 respectively. The findings revealed that the average inflation over the study period was 125.47 whereas the average GDP in terms of natural log was 13.6096 and that the kurtosis and skewness values range between the recommended ranges of -1 and +1 thus an indication the data is normally distributed.

The correlation results established that the correlation between ROA and interests rates volatility was weak and positive while the correlations between credit risk, inflation, real GDP and ROA were strong and positive. The results established that 74.3% of the variation in the dependent variable was accounted for by the independent variables. The results of ANOVA established that the F statistics value of 25.258 was significant as hence the regression model was significant and a good predictor of the relationship between the dependent and independent variables.

The regression results revealed that the relationship between interest rates volatility and financial performance of commercial banks was negative and insignificant whereas the relationship between credit risk and commercial banks in Kenya financial performance was positive and insignificant. The results also established that the relationship between inflation and financial performance of the commercial banks was negative and significant while the relationship between real GDP and financial performance of the Kenyan commercial banks was positive and significant.

5.3 Conclusions

The study findings established that there is a negative and insignificant relationship between interest rates volatility and financial performance of commercial banks. The study based on this finding therefore concludes there is no significant relationship between interest rate volatility and financial performance of commercial banks in Kenya. The study findings established that there is a positive and insignificant relation amid credit risk and commercial banks financial performance. The study based on this finding

concludes an existence of a noteworthy relation between credit risk and Kenyan commercial banks financial performance.

The research findings established a negative and noteworthy connection existence between inflation and financial performance of commercial banks. The study based on this finding therefore concludes existence of a significant connection amid inflation and commercial banks financial performance in Kenya. The research findings established existence of a significant and positive relation amid the real GDP and financial performance of commercial banks. The study based on this finding determines existence of a significant connection between economic growth and commercial banks financial performance in Kenya.

5.4 Recommendations for Policy and Practice

It was concluded there lacked a noteworthy relation amid rate of interest volatility and commercial banks financial performance in Kenya. The study however recommends that the Kenyan commercial banks management should ensure that they set up interest rate risk management strategies to ensure that they mitigate the effects of interest rates fluctuations.

The research concludes a lack of noteworthy relation amid credit risk and Kenyan performance of commercial financial banks. The research however recommends that commercial banks in Kenya should ensure they have effective strategies of managing credit risk to mitigate the effects of credit risks among commercial banks.

The research came up with existence of a significant connection amid inflation and commercial banks financial performance in Kenya. The research therefore recommends

that the central bank of Kenya should ensure they effectively set up strategies to counter inflation through effective monetary policies.

Finally, the research found a significant relationship between economic growth and commercial banks financial performance in Kenya existed. The research therefore recommends that the government should come up with strategies that would foster economic growth to improve the performance of the banking sector.

5.5 Limitations of the Study

The variables of this research were interest rates volatility, credit risk, inflation measured using CPI, economic growth measured using the real GDP and financial performance measured using return on assets. The findings are therefore based on those variables and the specific measured adopted to measure those variables.

The study considered quarterly data for the period of 10 years from 2007 although to 2016. The findings and conclusions are based on the considered research period and not prior period since the level of NPLs, Inflation and GDP keep on changing year in and year out. Finally, the study used secondary data which is historical in nature and may not reflect the current situation and the non qualitative aspects.

5.6 Suggestion for Further Research

This research was based on commercial banks however; interest rates volatility affects financial institutions like microfinance banks, saving and credit cooperative societies and credit only micro finances, which charge interest rates on advanced amount. This study therefore recommends a research on the impacts of interest fluctuations on other Kenyan

financial forms. The research also recommends a research on the impacts of interest rates volatility on nonperforming loan among Kenyan financial institutions.

REFERENCES

Akpomiemie, G. (2012*). Impact on the Profitability of Commercial Banks,* Johannesburg, South Africa*:* University of the Witwatersrand.

Albertazzi, U., & Gambacorta, L. (2006). *Bank Profitability and Taxation*. Bancad, Italy: University of Bologna.

Apir, J. (2015). *The Effect of Interest Rate Volatility on the Performance of Banks in Nigeria*. Benue State University

B.I.S. (2004). *Principles for the Management and Supervision of Interest Rate Risk, Risk Measurement, Monitoring, and Control Functions*. CH-4002 Basel, Switzerland.

Bikker, J. (2010). Measuring Performance of Banks*:* Netherlands: Utrecht University School of Economics.

Bosworth, P. (2014). Interest Rates and Economic Growth: Are They Related*? Chestnut Hill, Boston*: Center for Retirement Research at Boston College

Carroll, J. & McCann, J. (2015*).* Understanding SME Interest Rate Variations across Europe. *Europe*

Casu, B., Girardone, C., & Molyneux, P. (2006*).* Introduction to Banking. *U.K*: University of Cambridge

Cecchetti, G. (2006). Money, Banking and Financial Markets. *Newyork*: Stern Schoolof Business

Cheng, K., Kwan, Y. & Lui, T. (1999). Risk Premium, Currency Board, And Attacks*On the Hong Kong Dollar. Hong Kong*: University of Science and Technology.

Crowley, J. (2007). Interest Rate Spreads in English-Speaking Africa. U.K: *International Monetary Fund, Money & Capital markets department*

Cytton (2015). Kenya Listed Commercial Banks. *Kenya*: Cytton Investments.

E.C.B. (2010). Beyond ROE-How to Measure Bank Performance. *Euro System*. Europe

Estrella, A., & Mishkin, F. S. (2001*).* Is There a Role for Monetary Aggregates for the Conduct of Monetary Policy? *1050 Massachusetts Ave, Cambridge*

Gardner, M., Mills, D. & Cooperman, E. (2005). *Managing Financial Institutions*, 5th Edition. Denver: McGraw-Hill Higher Education,

Genay, H. (2014). What is the Impact of a Low Interest Rate Environment on Bank Profitability? *Chicago: Chicago Fed Letter.*

King, R. (2015). Why is Interest Income Important to Banks? Scotland: *University of Edinburgh, School of Mathematics.*

Malik, F., Khan, S., Khan, M., & Khan, F. (2014). Interest Rate and Its Effect On Bank's Profitability. *Pakistan: University of Mardan.*

Matu, M. (2006). Applicability of Financial Crisis Predictive Model to Bank Failure in Kenya. Nairobi, Kenya. *Unpublished MBA Project*. University of Nairobi

Nassreddine, G., & Sessi, F. (2013). Determinants of Banks Performance. *Tunisia*:Gabes University.

Nduati, P. (2013). The Effect of Interest Rate Spread on Financial Performance of Commercial Banks in Kenya. Nairobi. *Unpublished MBA Project*. University of Nairobi.

Ngugi, R. W. (2004). *An Empirical Analysis of Interest Rate Spread in Kenya.* Kenya: African Economic Research Consortium.

Ngugi, R. (2001). Banking Sector Interest Rate Spread in Kenya. Nairobi, Kenya: *Kenya Institute for Public Policy Research and Analysis.*

Njuguna, N., & Ngugi, R. W., (2000). Banking Sector Interest Rate Spread In KenyaMacroeconomic and Econometric Modeling. Kenya: *Kenya Institute for Public Policy Research and Analysis (KIPPRA).*

Nyakundi, D., & Jagongo, A. (2017). Effects of Lowering Central Bank Rate On Bank's Prime Rate. Kenya: *International Journal of Humanities and Social Sciences*, (3)20, 207-214.

Okoye, V., & Onyekachi, E. R. (2013). Effect of Bank Lending Rate on the Performance of Nigerian Deposit Money Banks. *Nigeria*

Peng, W., Lai, K., Leung, F., & Shu, C. (2002). The Impact of Interest Rate Shocks on the Performance of the Banking Sector. Hong Kong*: Hong Kong Research Department*.

Robinson, K. (2005). Interesting Times for Banks since Basle Financial Industry Studies. Dallas: *Federal Reserve Bank of Dallas.*

Sashoo. (2012). Development of Banking in Kenya. Kenya: *Kenyaplex.Com*

Sattar, A., & Waseem, K., (2014). The Impact of Interest Rate Changes on the profitability of Four Major Commercial Banks in Pakistan. Pakistan: The Islamia University of Bahawalpur.

Were, M., & Wambua, J. (2013). Assessing the Determinants of Interest Rate Spread of Commercial Banks in Kenya. Kenya: Kenya Bankers Association

APPENDICES

Appendix I: List of Commercial Banks in Kenya

1. ABC Bank
2. Bank of Africa
3. Bank of Baroda
4. Bank of India
5. Barclays Bank of Kenya
6. Chase Bank (In receivership)
7. Commercial Bank of Africa
8. Cooperative Bank of Kenya
9. Consolidated Bank
10. Citi Bank
11. Credit Bank
12. Development Bank of Kenya
13. Diamond Trust Bank
14. Ecobank
15. Equity Bank
16. Family Bank
17. Fidelity Commercial Bank Ltd
18. First community Bank
19. Giro Bank
20. Guaranty Trust Bank of Kenya

21. Guardian Bank

22. Gulf African Bank

23. Habib Bank AG Zurich

24. Habib Bank

25. Housing Finance Company of Kenya

26. I&M Bank

27. Imperial Bank Kenya (In Receivership)

28. Jamii Bora Bank

29. Kenya Commercial Bank

30. Middle East Bank Kenya

31. National Bank Of Kenya

32. NIC Bank

33. Oriental Commercial Bank

34. Paramount Universal Bank

35. Prime Bank (Kenya)

36. Sidian Bank

37. Spire Bank

38. Standard chartered Kenya

39. Stanbic Bank

40. Transnational Bank Kenya

41. United Bank of Africa

42. Victoria Commercial Bank

Appendix II: Data Collection Form

Bank……..

Year	Quarter	Net income	Total assets	Interest rates	NPL	Total Loans	CPI	GDP
2016	Q4							
	Q3							
	Q2							
	Q1							
2015	Q4							
	Q3							
	Q2							
	Q1							
2014	Q4							
	Q3							
	Q2							
	Q1							
2013	Q4							
	Q3							
	Q2							
	Q1							
2012	Q4							
	Q3							
	Q2							
	Q1							
2011	Q4							
	Q3							
	Q2							
	Q1							
2010	Q4							
	Q3							
	Q2							
	Q1							
2009	Q4							
	Q3							
	Q2							
	Q1							
2008	Q4							
	Q3							
	Q2							

	Q1							
2007	Q4							
	Q3							
	Q2							
	Q1							