

**EFFECTS OF MORTGAGE FINANCING ON FINANCIAL PERFORMANCE OF
COMMERCIAL BANKS IN KENYA**

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**A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF BUSINESS IN
PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE
DEGREE OF MASTER OF BUSINESS ADMINISTRATION, UNIVERSITY OF
NAIROBI**

2017

DECLARATION

This research project is my original work and has not been submitted for examination in any other university.

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ACKNOWLEDGEMENT

First and foremost, I thank God for giving me the ability and strength and enabling me to complete my project.

I also wish to express my gratitude towards my supervisor Dr. Winnie Nyamute for her invaluable guidance, advice and critique of my research project during this research period.

Finally, I would like to thank my parents for their moral support, guidance and encouragement.

DEDICATION

This project is dedicated to my father, Mr. Ali Abdulrehman and my two close friends Mr. Martin Thuku and Zakaria Thuku for their endless support, guidance and being my source of inspiration during my research period.

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LIST OF ABBREVIATIONS AND ACRONYMS

GDP	Gross Domestic Product
MPT	Modern Portfolio Theory
NSE	Nairobi Securities Exchange
RMP	Relative Market Power hypothesis
ROA	Return on Assets
SCP	Structure-Conduct-Performance
SPSS	Statistical Package for Social Sciences

ABSTRACT

One of the main activities of commercial banks in Kenya is lending and this can be enhanced by the loans that form the largest source of revenue for commercial banks and this affects its financial performance through generation of interest income earnings. However, Central bank of Kenya has put concerted efforts in ensuring the existence of a favorable financial environment for operation of commercial banks in the country which has meant that while some commercial banks are performing well, others have experienced declining fortunes and some have even been placed under receivership. Mortgage financing plays a significant role in poverty reduction in the economy and also provides an opportunity for financial institutions offering it to generate more revenue and grow. However, the adoption of mortgage financing has not been fully adopted by financial institutions leading to the institutions recording far from impressive financial performance levels. The study main objective was to determine the effect of mortgage financing on financial performance of commercial banks in Kenya. The theories that underpinned the study were Mortgage Value theory, Title Theory and Lien Theory of Mortgage, Modern Portfolio Theory and the market power theory. A descriptive research design was used for analysis. All commercial banks in Kenya were used as used as target population. The study used census technique. Secondary data collected using a data collection sheet from the financial reports of the commercial banks as well as CBK annual reports was used in the study. Since the data collected was quantitative, the study used descriptive and inferential analysis methods for analysis. Descriptive analysis entailed the use of means, standard deviation, percentages and trends in the study variables over the period of time. Both correlation and regression analysis were conducted. The findings revealed a positive significant effect of Amount of Mortgage Offered on financial performance. The study findings also indicated that Interest Charged on Mortgage has a positive and significant effect on financial performance of commercial banks. The study concluded that an increase in the Log of Amount of Mortgage Offered as well as other activities that augment the total value of mortgage loans extended by the commercial banks leads to a significant improvement in financial performance of the commercial banks in Kenya. The study also concluded that an increase in the Interest Charged on Mortgage leads to a significant improvement in financial performance of commercial banks in Kenya. The study recommended a need for commercial banks to increase the Amount of Mortgage Offered as well as other activities that augment the total value of mortgage loans extended in order to improve their financial performance. The commercial banks should also improve on the quality of mortgage products offered to enhance higher Mortgage loans uptake thereby improving their financial performance. Commercial banks should adjust their mortgage lending rates positively whenever they increase the Amount of Mortgage Offered which will in turn enhance their profitability leading to an improvement in financial performance. Increases in Interest Charged on Mortgage leads to growth in long-term mortgage loans hence improving financial performance.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

In Old French, mortgage means "death vow." The "death" is of the loan rather than the borrower. And like many other types of loans, mortgages mature have a fixed term at the end of which the loan must have been fully repaid (MC Donald & Thornton, 2008). The Light bulb Press Dictionary (2008) defines a mortgage in terms of long term loan plus interest which slowly builds equity in a property where the interest calculation is normally calculated at fixed or variable rates.

One of the main activities of commercial banks in Kenya is lending and this can be enhanced by the loans which forms their assets base. The argument implies that lending is the largest source of revenue for commercial banks and this affects its financial performance through generation of interest income earnings (Karanja, 2013).

In the Kenyan context, mortgage financing has been on the increase (Government of Kenya, 2015). Some factors such as economic growth, profitability of the mortgages, the cross selling potential and market liberalization. To be precise, the mortgage sector has grown by three times as compared to how the market was a decade ago. The Kenya Bankers Association report (2015) places the growth rate of the mortgage financing at 34% per year.

The need for housing has led to the growth of the real estate financing sector. The availability of mortgages has a favorable impact on quality of housing, infrastructure, and urbanization thus improving living standards (Muri, Frank, Nothaft, 2002). Commercial banks play a critical role in providing financial services to both individual and institutional borrowers. These services drive economic stability and growth.

1.1.1 Mortgage Financing

Mortgages make it possible for individuals who may not have enough cash to purchase an asset like a house upfront. Both the lender and borrower take a risk on these loans - there is no guarantee for the lender that the borrower will pay back the loan in the future and the borrower risks losing the asset after failure to pay (MC Donald & Thornton, 2008).

A mortgage consists of collateral, principal, interest, taxes, and insurance. The house itself acts as collateral. The initial amount of the loan is the principal. Taxes and insurance vary by country and are normally calculated as a percentage of the value of the house. The mortgage rate is the interest charged and can be variable or fixed (Carranza and Estrada, 2012).

There are two types of mortgages that is fixed and adjustable as indicated by YuyingAn (2004). In the context of fixed mortgage, interest rate is assumed by the creditor while for the case of adjustable mortgages, the interest rate is normally lower than that of the fixed mortgages. Fixed mortgages are assumed to be of advantage since the repayments rates monthly remain the same for the loan life (MC Donald & Thornton, 2008).

Globally, the maturity of the mortgage financing market varies markedly between developed and developing countries. Presently, developed countries have developed advanced mortgage finance systems. Funds are directed from those with fund surpluses to those that are in need of them by the aid of mortgage markets. Although recognized as economically and socially important, mortgage finance has remained underdeveloped in developing countries mostly due to a lack of stable inflation and employment (Hahm, 2004).

According to Sabri (2001), the issue of financing in developing economies is a major stumbling block that needs to be subsidized to ensure economic development. He suggests based on his study of Palestine that subsidized housing programs should be offered through public organizations, cooperatives, local businesses and international corporations.

Carranza and Estrada (2012) argue that mortgage financing significantly affects the profitability of commercial banks. The study is anchored on the Mortgage Value Theory which argues that application of mortgage financing should only be considered when a commercial bank aims to maximize profits. The theory links mortgage financing to real profitability. The study also anchors on the lien theory which allows a lender to follow formal foreclosure proceedings to recover their loans when a borrower defaults the loan repayment hence mortgage financing is not termed as a loss but a profit to a lender.

1.1.2 Financial Performance of Commercial Banks in Kenya

Rasiah (2010) argues that the measurement of the commercial bank's profitability can be done by use of ratios captured in their financial reports and the primary reason is that the ratios don't suffer fluctuations in the price changes. When using time series data, Rasiah (2010) argues that the use of ratios like ROA and ROE is the best method.

Pasiouras and Kosmidou (2007) define return on assets (ROA) as the ratio of net income to total assets, and is an indication of the efficiency in the utilization of assets to yield earnings. On the other hand, returns on equity show the ratio of net income to shareholders equity, and it indicates the efficiency of the commercial banks to translate the shareholder's equity to earnings.

The best measure of profitability of commercial banks between returns on assets and returns on equity faces controversy. However, returns on assets have been termed as the best measure due to its ability to withstand distortions related to equity multiplier (Olweny & Shipho, 2011).

1.1.3 Mortgage Financing and Financial Performance of Commercial Banks

According to Ombako (2015), loan portfolio is the most dominant source of income for the commercial banks in Kenya and is sometimes termed as the largest asset for the commercial banks. Loan portfolios of banks usually affect their profitability either positively or negatively depending on the management of the non-performing loans.

Literature on how mortgage financing affect the profitability of commercial banks is mixed. According to Dirnhofer (2012), mortgage loans significantly affect banks performance. The author examines whether mortgage-backed securities affected the performance of banks in the USA during the 2007 financial crisis. This study was important as it contributed to research by examining how the financial crisis impacted the performance of banks that were engaged in mortgage financing. Its primary limitation was the focus on the US market alone. Hence, its results cannot be generalized to developing countries like Kenya.

Nyambura (2010) argues that mortgage financing, however, affect profitability positively. The argument by Nyambura (2010) is that commercial banks can use the mortgage financing products to improve their market penetration where the competition is stiff as well as gain a competitive advantage through the provision of competitive interest rates on mortgages. This can, in turn, affect their performance positively.

Carranza and Estrada (2012), on the other hand, argue that mortgage financing doesn't necessarily lead to an improvement in financial performance of commercial banks. According to them, mortgage financing can affect commercial banks profitability negatively especially when there are scenarios of mortgage loan defaults. A case was the collapse of most financial institutions in Colombia as a result of high mortgage loan defaults.

1.1.4 Commercial Banks in Kenya

There were a total of 40 commercial banks at the end of the year 2016 regulated by CBK as indicated by the Kenya's Bank Supervision Annual Report 2016 (Appendix 2). The same report indicated an increase in the mortgage loan outstanding by 8.1 percent from a value of KSh. 203.3billion to Ksh. 219.9billion and up to 72.8% was attributed to five institutions (Kenya's Bank Supervision Annual Report, 2016).

Although demand for mortgages has increased due to the introduction of the interest capping law in September 2016, the report states that there were 24,085 mortgage loans in the market in December 2016 down from 24,458 in the same period in 2015, a 1.5 percent increase caused by the tighter credit standards by commercial banks. This has meant that while more individuals are seeking mortgage financing, the vetting process is more strict, leading to a reduction in the actual number of mortgages year on year (CBK.2016).

On average, an interest rate of 13.46 percent was charged in the same period. This was mainly due to interest rate capping which took effect on 14th September 2016. While the interest capping law has helped to reduce the interest rate, the percentages remain some of the highest globally thus Kenya's mortgage market remains relatively small compared to those in developing

markets. According to World Bank's 2016 data on lending rates, developing countries such as US and UK are at less than 4% (CBK, 2016).

The CBK report shows that more homeowners are taking up fixed-rate mortgages after the introduction of interest capping Law in September 2016. In effect, mortgage loans on variable interest rate are at 62.1 percent, compared to 89.3 percent in 2015. Limiting factors to access of mortgages has been listed in the CBK report as low-income levels as well as high incidental costs that come in form of fees related to legal matters as well as valuation. Another key challenge is related to access to long term finance (CBK, 2016).

1.2 Research Problem

The role of mortgage financing in the economy cannot be understated. Mortgage financing plays a significant role in poverty reduction in the economy, but at the same time, it provides an opportunity for financial institutions offering it to generate more revenue and grow. However, the adoption of mortgage financing has not been fully adopted by financial institutions (Central Bank of Kenya, 2011; Onyango, 2010). The effect on performance of banks in Kenya is mixed as argued by both Carranza and Estrada (2012); Nyambura (2010).

As evidenced in the CBK report (2016), interest in mortgage has seen an upward trend, while the average size of mortgage loans has increased. The mortgage market, therefore, remains an important source of income for commercial banks, both large and small. The Central bank of Kenya has put concerted efforts in ensuring the existence of a favorable financial environment for operation of commercial banks in the country. Consequently, while some commercial banks are performing well, others have experienced declining fortunes and some have even been placed under receivership (Ayako, Kungu & Githui, 2015). Some commercial banks have collapsed and

placed under receivership, for instance, the collapse of the Euro Bank in 2004 (Madiavale, 2011) and placement of Imperial bank, Dubai bank and Chase bank under receivership (Central Bank of Kenya report, 2016). Among the reasons for the poor performance of Chase bank was non-performing loans of which mortgage financing is a part.

The study sought to fill contextual knowledge gaps presented by studies conducted in developed economies. For instance, the study by Gerlach and Peng (2005), focused on the relationship between interest rates and mortgage credit of the Hong Kong housing market, while the study by Glenn and Wayne (2007) looked at the profitability of mortgage-oriented banking. These studies have been conducted in developing economies, and hence their findings can't be generalized in Kenya.

The study also sought to fill existing knowledge gap in local research. As an example, the study by Murugu (2003) focused on perceived quality of the mortgage sector in Kenya, while the study by Merab (2012) centered on linking mortgage financing to performance of banks in Kenya. The study by Mang'era (2014) linked mortgage interest rate to performance of the mortgage firms in Kenya. Based on this problem and the knowledge gaps, the study therefore sought to answer the question; what is the effect of mortgage financing on financial performance of commercial banks in Kenya?

1.3 Research Objective

The primary objective of this study was to determine the effect of mortgage financing on financial performance of commercial banks in Kenya.

1.4 Value of the Study

The study findings can be significant to the policymakers in the banking sector. Since the Central Bank of Kenya is a regulator of the banking industry, the outcome can play an important role in establishing the lending rates which can attain a balance between demand and supply of mortgage so as not to comprise either the lender or the loan recipient.

The commercial banks can also benefit from the findings of the study by understanding how mortgage financing can affect their performance. Through the study recommendations, they are expected to be able to make policies that aim to enhance their profitability through adjusting their mortgage financing plans.

The scholars and future researchers are also expected to benefit from the findings of this study. With the mixed results of the effect of mortgage financing on the profitability of commercial banks being experienced by previous scholars, there is a need to conduct more research on the central theme of this study to obtain a clearer picture in the Kenyan context. Through recommendations for further research, this study will guide future studies in the area.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter entails the reviewed literature and the theories that guided the study and the previous empirical studies carried out relevant to the study. Finally, the study will show the summary of the major ideas for the study.

2.2 Theoretical Review

The study was guided by Mortgage Value theory, Title Theory and Lien Theory of Mortgage, Modern Portfolio Theory and the market power theory to establish the theoretical relationship being investigated.

2.2.1 Mortgage Value Theory

Greenblatt (1989) proposed the Mortgage Value Theory which indicates that among the primary objectives of financial institutions is the maximization of profits and the use of mortgage is among the methods used to maximize wealth. According to the theory, there is a need for the financial institutions to give mortgages only when they aim to maximize wealth but otherwise, they should not.

The theory is relevant to this study as it provides a positive effect of mortgage on how banks perform as it argues that application of mortgage financing should only be considered when a commercial bank aims to maximize profits.

2.2.2 Title and Lien Theory of Mortgage

The Title theory argues that the mortgagee is given the title to a property and acts as a custodian until it has been repaid fully by the mortgagor. The commercial banks, in this case, hold the title until the property has been fully paid for by the mortgagee. In short, the mortgagee has alien interest to the property (Buckley and Kalarickal, 2004). The title is held as security and the commercial banks can sell the property in case of loan default.

On the other hand, the Lien theory argues that the mortgagee doesn't hold the title but a lien until they have fully paid for the loan. The mortgagor is allowed by law to sue the mortgagee if they fail to pay the loan. The theory is relevant to this study as it links mortgage financing to the profitability of commercial banks in the sense that, commercial banks are not guaranteed of a loss when giving out a mortgage since they are allowed to sell the property in case of loan default and recover their money.

2.2.3 Modern Portfolio Theory

The theory was proposed by Markowitz (1952) and has widely been applied in investment. The theory argues that those investors, who are risk averse, can construct portfolios which can aide them maximize the expected returns from an investment in relation to a certain market risk. The theory argues that the higher the risk, the more the returns (Kaplan and Schoar, 2005). The theory allows for investment in more than one stock or investment to spread the risk. The argument is not putting all the eggs in one basket by diversification of risks.

The theory supports this study in that commercial banks diversify their portfolio by investing in mortgage loans which are normally termed as profitable in the long run. With mortgage financing, there is security as it is easy to recover the property in case of loan default hence it is

more rewarding. The theory, therefore, justifies why commercial banks engage in mortgage financing as it links to better profits and fewer returns.

2.2.4 The market power Hypothesis

The market power hypothesis, proposed by Mason (1939), has been used to explain the profitability of commercial banks. The hypothesis posits that profitability of commercial banks is linked to the market structure and external determinants and not the internal factors such as operational costs management. Tregenna (2009) presents two approaches within the concept that is Structure-Conduct-Performance and the Relative Market Power hypothesis.

The relative market power hypothesis links profitability of commercial banks to market share and argues that large commercial banks have a way of influencing prices and benefit more than the small commercial banks. Large commercial banks can exercise power and influence prices in the market to their gain (Tregenna, 2009). On the other hand, the Structure-Conduct-Performance hypothesis argue that it's only through market concentration that commercial banks make profits. The theory argues that the commercial banks' ability to lower rates of deposit and high loan interests through monopolistic ways comes as a result of concentration and enhances their profitability.

The theory is applicable to this study as it describes profitability of the commercial banks. It links the dependent variable of the study. According to the theory, the profitability of commercial banks is determined by not only the internal factors such as loans but also by other factors in the environment. It plays a substantial part in explaining the impact of mortgage financing on profitability on commercial banks and it also has control effect of economic growth of profitability of commercial banks as well as the in Kenya.

2.3 Determinants of Financial Performance of Commercial Banks

Various factors affect the performance of commercial banks. The section discusses how factors such as mortgage financing, capital structure, liquidity, and ownership concentration can affect how banks perform.

2.3.1 Mortgage Financing

According to Lipping (2014), financial institutions normally provide mortgage financing as a strategy for varying and spreading the activities associated with risks such as losses by doing away with non-effective loans specifically those without any collateral. The lesser the financial risk, the higher the cost-effectiveness of financial institutions. The advantage of financial institutions that deal with mortgage financing is that they embrace various assortments of mortgage loans thus distributing the risks and thereby rendering it impossible for a case of persons accessing mortgage loans openly.

Given the financial institutions are bigger in terms of figures and proportion, they benefit from the economies of degree. In most cases, big financial institutions are proficient in terms of evaluating credit, creating loans and gathering the loans from persons and in the process minimize the transaction costs associated with loans consequently raising the accessibility of housing loans. Mortgage loans are instrumental in the success of banks as they generate more in terms of profits than any other kind of loans.

2.3.2 Capital structure

According to Amer et al. (2013), financial leverage is very vital for the capital structure as anchors on the cumulative debt utilized by the organization to fund its assets. Therefore, a rise in the profits that are generated from the investments of the dividend owners corresponds with an increase in financial leverage however it leads to a financial distress and the costs associated with agency. However, agency costs are vital in funding judgments resulting from the commercial investment although they are inevitable.

According to Muema (2013) companies often opt to generate funds from preserved income instead of equity or loans. High profits often match up with smaller debt proportions as stated in pecking order theory. A negative association is forecasted amongst debt proportion and liquidity in trade-off theory (Muema, 2013). Firms that are profitable are capable of taking loans due to the possibility of repaying them is higher.

2.3.3 Liquidity

According to Kamau (2009), financial institutions hold big liquidity when the prospect costs of some speculation have a chance to yield greater profits. The opportunities that arise due the risks associated with the liquidity and returns are exhibited by examining a change from bonds over a short period to an extended period. Securities or loans increase the institution's profits as well as raising its solvency risks, and the contrary is right. High liquidity proportion shows how riskier and less beneficial a bank is.

The undesirable impact of an improved liquidity for banks despite the fact that additional assets that are liquid the capacity to generate cash over a short period rises, (Uzhegova, 2010). Moreover, they also decrease the management's capability to entrust honestly to a speculative

policy that safeguards the financiers which eventually lead to a reduction in the company's ability to generate exterior funds in some instances. The sustainability of a bank is determined by its capacity to generate the necessary profitability and financing to gather for its quick commitments. A Higher proportion of this value enables the bank to be more resistant to collapse.

2.3.4 Ownership Concentration

Zhuang (2001) argues that shareholding concentration affects performance positively. The extent of ownership concentration in a company establishes the manner in which power is shared amongst the managers and the dividend owners. Dispersing of ownership weakens the control of shareholding due to bad monitoring of dividend owners, (Zhuang, 2001).

The concentration of ownership enables the evaluation of the extent to which one's right to cast is intense. According to Dennis and McConnell (2002), the identity of the dividend owner is determined by the nature of the biggest dividend owner. The rights to cast for the biggest dividend owner and the privileges of the chief dividend owner as well as the computation of the privileges to cast for the subsequent and third biggest dividend owner determines it. Also, the proportion of departure for the major dividend owner is demonstrated by the term concentration from a different perception.

2.4 Empirical Review

A study by Fang, Gu, Xiong and Zhou, (2016) established how mortgage affects the performance of banks in China. The study adopted correlation analysis, and the findings revealed that macroeconomic conditions of China affected the mortgage market. On the other hand, mortgage financing affects the performance of the commercial banks significantly.

In Spain, Rubio (2011) focused on establishing how proportion fix and mortgages affected shocks circulations in the Spanish economy. Overall, the study also examined the welfare effect of this scenario by using the New Keynesian stochastic equilibrium model. The results of the study revealed that extremely variable mortgages lead to the interest rate shocks affecting the economy negatively.

Wolfgang and Opfer (2003), on the other hand, established a link between macroeconomic factors and to return of mortgages in German real estate industry. The study applied to time series data collected from the year 1974 to the year 2000. The study findings revealed that there exists a greater sensitivity on the commercial banks caused by high variations in the interest rates in the long run. A study by Gerlach and Peng (2005) focused on establishing how interest rates affect mortgage credit of the Hong Kong housing market. They specifically noted that property prices in Hong Kong experienced incredibly huge swings. The findings of the study showed that increases in interest rates leads to an increase in mortgage loans.

A study by Glenn and Wayne (2007) tried to find out how Community Reinvestment Act affects profits. The primary data that was collected was analyzed through inferential analysis s involving correlations and regressions. The findings of the study revealed that those lenders that focused on offering mortgages for lower-income areas or neighborhoods were more profitable than those that targeted rich suburbs. In Kenya, a study was conducted by Murugu (2003) to establish the perceived quality of the mortgage sector using primary data. Both descriptive and correlation analysis was used in the study. The findings revealed that the quality of mortgage products offered by commercial banks in Kenya was of high quality.

In another local study, Mwangi (2013) found out how mortgage financing affected banks performance in Kenya. The main focus of the study was on all the commercial banks. Using secondary data and logit model for analysis, the study established that mortgage financing affects profitability of commercial banks positively. The study however also considered other determinants of profitability. Merab (2012) intended to establish the association between mortgage financing and performance of banks in Kenya and revealed that an increase in mortgage financing improves performance significantly.

Mang'era (2014) on the other hand focused on linking mortgage financing rate to financial performance of mortgage firms using secondary data collected through a secondary data collection template. The use of descriptive and inferential methods was used for analysis. The results indicated a strong positive association between bank size and earnings. On the other hand, liquidity, interest rates, expenses management and credit risk indicated no significant effect on ROA.

Another study that was conducted by Okang'a, (2015) to find out how mortgage financing interest rates affect the growth of mortgage financing using a causal study design for research. The 30 listed commercial banks that offered mortgage financing between years 2008 to 2012 were taken as the study sample. Secondary data on profitability as well as mortgage lending for the period 2008-2012 was collected and applied in the study. Multiple regression models were used to analyze data by the use of SPSS Version 20. Mortgage financing was found to affect performance positively.

2.5 Summary of the Literature Review

A study by Murugu (2003) on the perceived quality of the mortgage sector in Kenya revealed that the quality of mortgage products offered by commercial banks in Kenya was of high quality. Another study by Merab (2012) revealed that mortgage financing and financial performance of the commercial banks is positively and significantly correlated. Further, a local study by Mang'era (2014) indicated a strong positive association between bank size and profitability of commercial banks offering mortgage in Kenya. On the other hand, liquidity, interest rates, expenses management and credit risk indicated no significant effect on ROA.

A study by Gerlach and Peng (2005) focused on Hong Kong housing market and found a positive and significant relationship while the study by Glenn and Wayne (2007) revealed a positive relationship mortgage loans and performance. The reviewed studies internationally presented contextual knowledge gaps which the study sought to fill. The conditions of operations of the economy of the developed economies can't allow generalization of the findings to the Kenyan case hence there was a need for this study to be conducted.

2.6 Conceptual Framework

The conceptual framework as shown in Figure 2.1 presents a figurative representation of the relationship between the study variables. The figure also presents the inclusion of other factors such as economic growth and inflation which are the control variables.

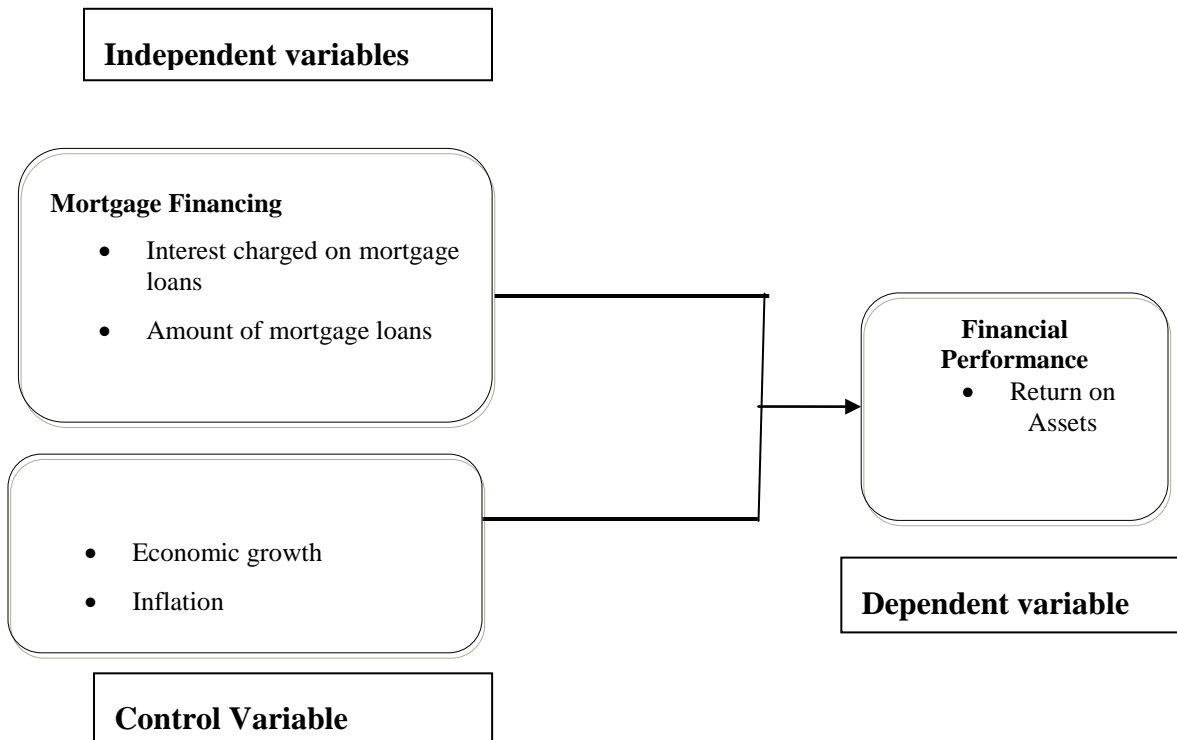


Figure 2.1 Conceptual Framework

Source: Author, 2017

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter has presented the methodology used to achieve the objectives of the study. The chapter has presented the research design, the target population of the study, the method of sampling adopted and the method as well as the instrument used to collect data. There is also presentation of the method used to analyze data.

3.2 Research Design

The study employed a descriptive research design. It was appropriate for this study because it plays a role in answering the “what” and “which” questions that are similar to this study’s. The design provides an analysis of description of a state of affairs as it is. The study questions can well be answered if the research design is applied (Mugenda, 2008).

3.3 Population and Sample

The study target population was 27 commercial banks in Kenya offering mortgage financing. The study carried a census on all the 27 commercial banks in Kenya hence ruling out sampling.

3.4 Data Collection

Secondary data collected using a data collection sheet presented in Appendix I was used. The financial reports from commercial banks and Central bank of Kenya were the source of secondary data. Data on mortgages was obtained from the commercial banks while data on economic growth was obtained from the central bank of Kenya. Data was collected for a period spanning 10 years from the year 2007 to the year 2016 so as to cover a wider time scope.

3.6 Data Analysis

Since the data collected was quantitative, the study used descriptive and inferential analysis methods to analyze. Descriptive analysis entailed the use of means, standard deviation, percentages and trends in the study variables over the period of time. The strength of the relationship between the study variables was established through correlation analysis. A multivariate regression model was also used in the study where interest charged on mortgage loans and amount of mortgage loans offered was regressed against return on assets as a dependent variable.

In addition, to test the control effect of economic growth and inflation, the study ran another regression model that contained all the four variables against financial performance and tested the significance of economic growth and inflation rate as well as observed the change in R-square between the two regression models.

3.6.1 Measurement of Variables

The study used two independent variables that is interest charged on mortgage loans and amount of mortgage loans and two control variables which are economic growth and inflation and performance was the dependent variable.

Table 3.1 Measurement of Study Variables

Variable	Type	Measurement
Interest charged on mortgage loans	Independent Variable	Annual percentage rate
Amount of mortgage loans offered	Independent Variable	Natural log of the amount of mortgage loans
Inflation rate	Control Variable	Annual inflation rate
Economic growth	Control Variable	Annual percentage economic growth
Financial performance	Dependent Variable	Return on Asset

3.6.2 Regression Model

The study regressed the independent variable which is mortgage financing measured by interest charged on mortgage loans and natural logarithm of amount of mortgage loans offered against financial performance measured as returns on assets in the first regression model indicated below. Because of the presence of more than one predictor variable, a multivariate regression analysis was suitable. The model is as indicated:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \epsilon$$

Whereby;

Y is Financial Performance of measured by ROA

X₁ – Interest Charged on Mortgage Loans

X₂ – Natural Logarithm of the amount of Mortgage Loans offered

ϵ – Is the error term

β – Predictor variables coefficients

To test for the control effect of economic growth and inflation rate, the study ran a second multivariate regression model to establish the change in R-square as well as the significance of economic growth on profitability of commercial banks.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where;

Y – Financial Performance of commercial banks measured as Return on Asset

X_1 – Interest Charged on Mortgage Loans

X_2 – Natural Logarithm of the amount of Mortgage Loans offered

X_3 – Inflation rate

X_4 – Economic Growth

ϵ – Is the error term

β – Predictor variables coefficients

3.6.3 Diagnostic Tests

The study conducted diagnostic tests to ensure the assumptions of classical linear regression were not violated. Multicollinearity test was conducted ensured that the predictor variables were not correlated. The test was conducted using a variance inflation factor method. A VIF value greater than 10 indicates presence of Multicollinearity. The study also conducted an

autocorrelation test to ensure that the error terms were not highly correlated with time since the data was collected over a 10 year period. Durbin Watson test was used to test for autocorrelation. In case of presence of autocorrelation, robust standard errors can be used to control for the problem.

3.6.3 Test of Significance

The study verified whether the effect of mortgage financing on profitability was significant by using a level of significance of 5% (95% confidence level). A beta coefficient with a significance level less than 0.05 was considered significant. The study used F test to establish the model significance. If the F statistic is significant at 5% level of significance, then the model is considered significant. The study also used t-statistic to establish the significance of the study variables. This enabled ranking of the variables from the most significant to the least significant.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results after analysis of the secondary data was done. Presentation of the data has been done using tables and figures. The last section has presented interpretation of the findings where comparison has been made with the findings of other studies.

4.2 Trend Analysis

The trends were established to show how the variables were changing over time so as to establish whether they were stationary or not. The trends for all the variables were established.

4.2.1 Trend Analysis of Financial Performance

The results revealed that the commercial banks in Kenya experienced unsteady fluctuations in financial performance as provided by fluctuating values of ROA for the study period. There was a steady increase in the trends on performance of finance of the commercial banks in Kenya for the period 2007-2008 and further to 3.75 in the year 2009 that also recorded the highest level of financial performance for the study period of 10 years. Financial performance of the commercial banks declined from 3.570 in 2009 to a low of 3.155 in the year 2011 before recording a significantly impressive improvement to 3.713 in the year 2012. However, the trends revealed that performance of finance by commercial banks in Kenya has been declining unsteadily for the last four years recording a value of 2.727 in the year 2016 which is also the lowest value of financial performance for the study period (2007-2016). Accordingly, the decreasing values of ROA for the period 2012-2016 indicate declining profitability leading to the poor financial performance of the commercial banks. The findings are as shown in Figure 4.1.

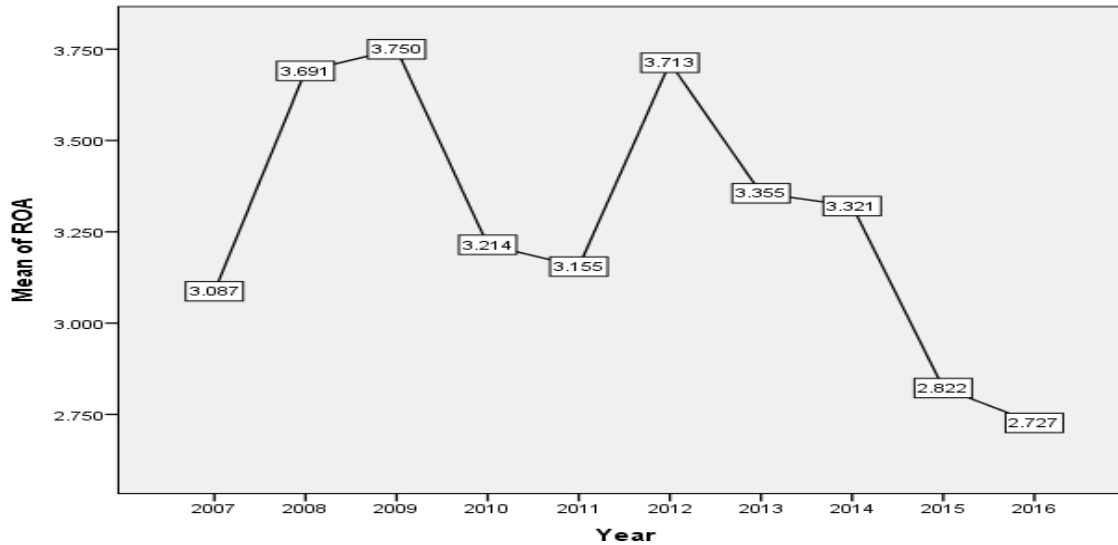


Figure 4.1 Trend Analysis for Financial Performance of Commercial Banks

4.2.2 Trend Analysis of Amount of Mortgage Loans Offered

The trend results as shown in Figure 4.2 reveal that the total amount of mortgage loans offered by the commercial banks in Kenya has increased unsteadily for the period 2007-2016 with an initial value of KShs. 1.551 billion increasing to KShs. 7.745 billion in the year 2016. This implies that the total amount of mortgage loans offered in Kenya has been steadily growing for the last 10 years.

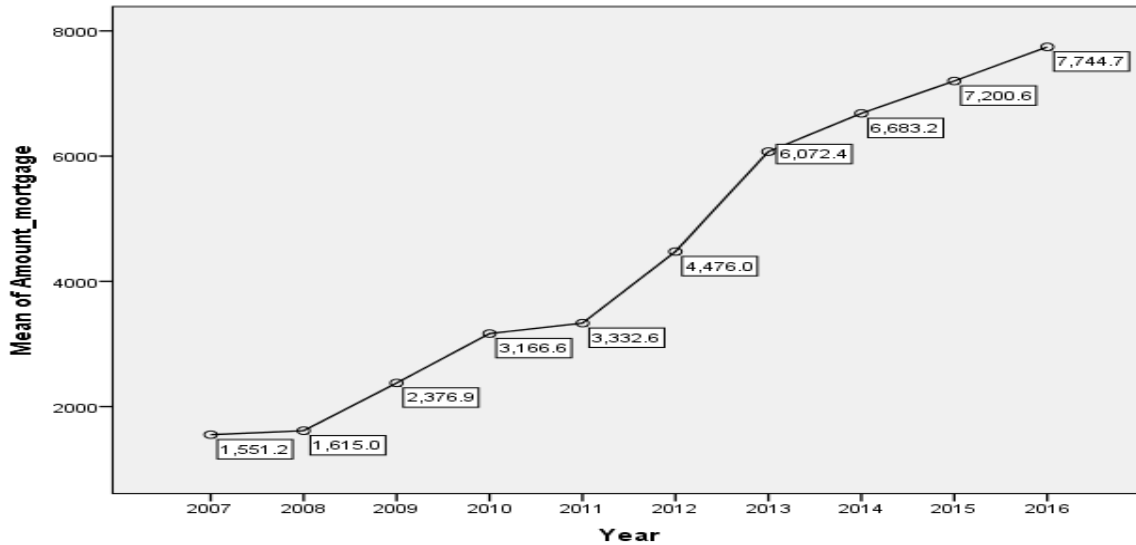


Figure 4.2 Trend Analysis for Amount of Mortgage Loans Offered

4.2.3 Trend Analysis of Interest Charged on Mortgage Loans

The results of the trends of Interest Charged on Mortgage Loans offered by the commercial banks revealed unsteady fluctuations in Interest Charged on Mortgage Loans for the period 2007-2016. The Interest Charged on Mortgage Loans increased steadily from 16.29 in the year 2007 to 18.69 in the year 2010. The trends however revealed steady decline in the Interest Charged on Mortgage Loans offered by the commercial banks to 16.10 in the following year before steadily increasing to 18.296 in the year 2013. The trends further revealed a steady decline in the value of Interest Charged on Mortgage Loans to 14.5 in the year 2015 before recovering slightly to 15.29 in the last one year. The last quarter of the study duration has therefore recorded an overall unsteady decline in the Interest Charged on Mortgage Loans offered by the commercial banks as shown in Figure 4.3.

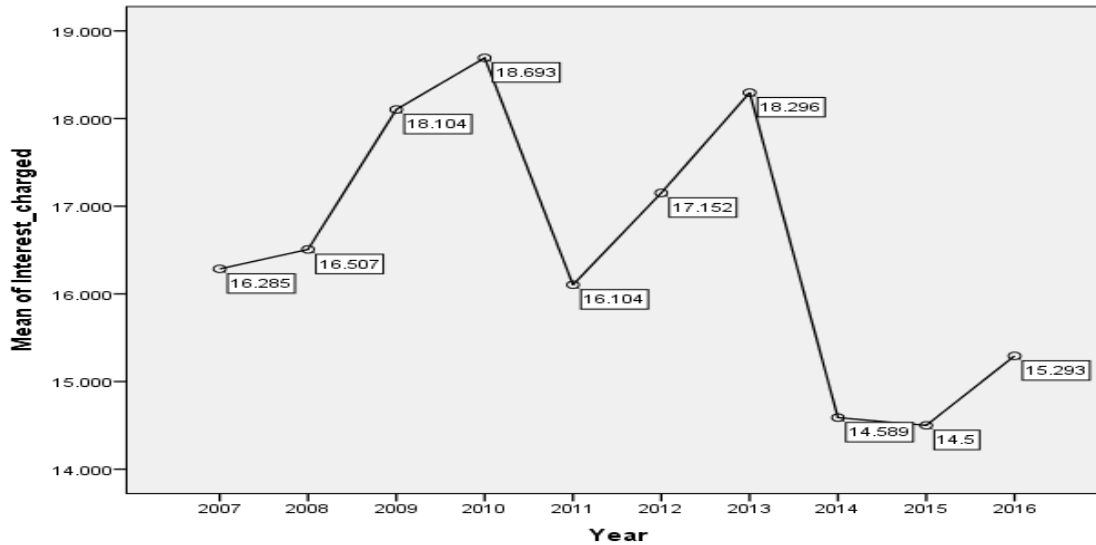


Figure 4.3 Trend Analysis for Interest Charged on Mortgage Loans

4.2.4 Trend Analysis of Inflation Rate

Further, the results of the trends of Inflation rate revealed a non-uniform fluctuation in inflation rate for the study period. The inflation rate in Kenya stood at 9.759 in the year 2007 but increased steadily to 26.24 in the following year indicating a steady rise in the consumer price index for the consumer goods. The inflation rate however declined steadily to a value of 3.961 in the year 2010 which is also the lowest value of inflation rate registered in the country for the entire study period. The inflation rate in Kenya has relatively remained low for the last 5 years with an unsteady decline to 6.298 in the year 2016. This implies that the inflation rate in the country has fluctuated unsteadily for the last ten years reflecting fluctuating economic environment. The findings are presented in Figure 4.4.

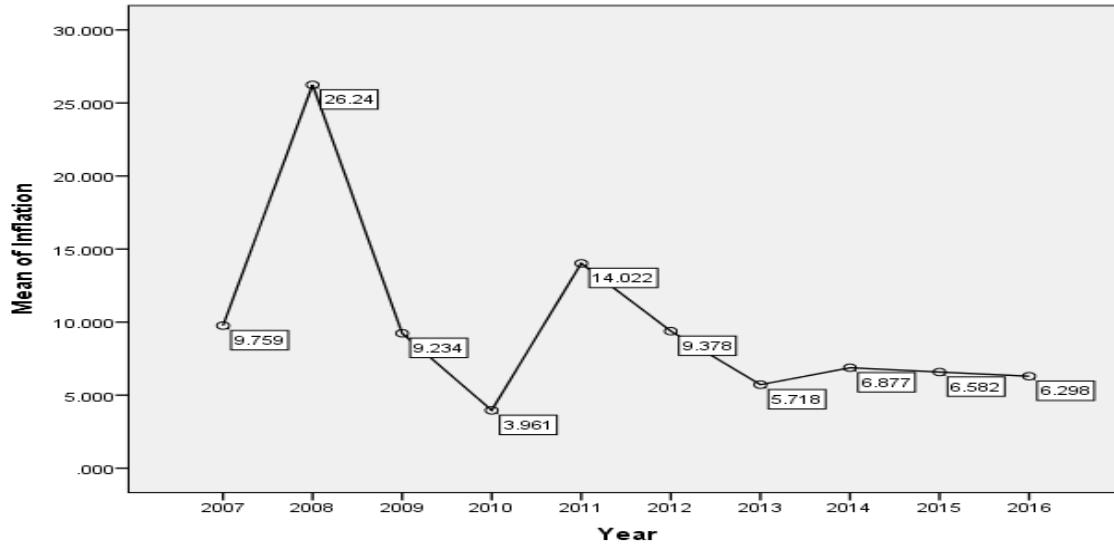


Figure 4.4 Trend Analysis for Inflation Rate

4.2.5 Trend Analysis of Economic Growth

The results for the trends of economic growth as measured by Gross Domestic Product for the last ten years revealed an unsteady variation with an initial value of 6.851 in the year 2007 declining steadily to 0.232 in the year 2008, after which the level of economic growth recovered significantly to 8.402 in the year 2010. The trends of economic growth further revealed steady decline from 8.402 to 4.563 in the year 2012 before steadily increasing to 5.829 in the year 2016. The findings are as shown in Figure 4.5.

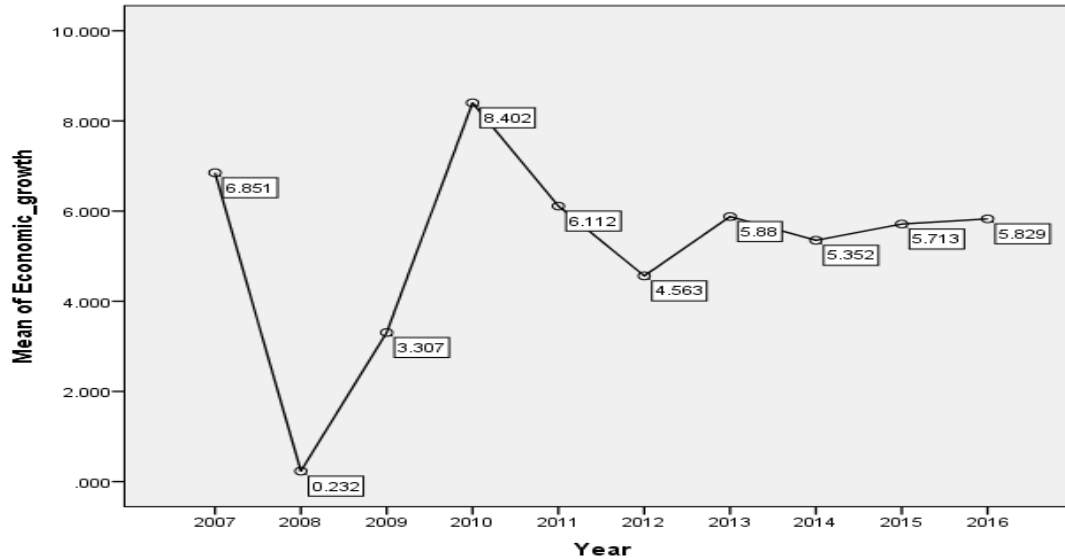


Figure 4.5 Trend Analysis for Economic Growth

4.3 Diagnostic Tests

Autocorrelation and Multicollinearity tests were conducted to ensure that the data fit the assumptions of classical linear regression model. Variance inflation factor was used for multicollinearity while Durbin Watson was used for autocorrelation.

4.3.1 Multicollinearity Test

The existence of Multicollinearity occurs when the independent variables are highly correlated, that is when the correlation value is above 0.8. Unauthentic standard errors and false prediction proves presence of Multicollinearity. Table 4.1 results shows that there was no multicollinearity problem since the values of VIF were less than ten which is the threshold.

Table 4.1 Variance Inflation Factor Test of Multicollinearity

Predictor Variables	Tolerance	VIF
Log of amount of mortgage Loans offered	0.916	1.092
Interest charged on Mortgage Loans	0.938	1.066
Inflation rate	0.338	2.957
Economic Growth	0.344	2.904

4.3.2 Test of Autocorrelation

Autocorrelation is a situation where the error term is correlated over time. Since the data used in the study was collected over time, this test was conducted using Durbin Watson (DW) test. The results presented in the table below revealed the presence of positive autocorrelation and hence the study adopted robust standard errors in order to correct the problem.

Table 4.2 Durbin Watson Test of Autocorrelation

Test	Statistic
DW	0.604

4.4 Correlation Analysis

A Pearson Correlation analysis was used to establish the association between the variables. The findings as presented in Table 4.3 revealed a positive and significant correlation between Log of Amount of Mortgage Offered and performance ($r = 0.166$, $\text{Sig} = 0.007$). This implies that higher amounts of Mortgage loans lead to a significant improvement in performance.

The findings also showed a positive and insignificant correlation between Interest Charged on Mortgage and financial performance ($r = 0.095$, $Sig = 0.121$) implying that higher Interest Charged on Mortgage will translate to an insignificant improvement in performance. Furthermore, there was a negative and insignificant effect of inflation rate on return on asset ($r = -0.069$, $Sig = 0.257$). This implies that high inflation rate in the country leads to an insignificant decline in returns on assets. The findings also showed that high values of economic growth affects ROA positively but not significantly ($r = 0.097$, $Sig = 0.114$).

Table 4.3 Correlation Results

Correlations		Log of Amount of Mortgage Offered	Interest Charged on Mortgage	Inflation rate	Economic growth	Financial Performance
Log of Amount of Mortgage Offered	Pearson Correlation	1				
Interest Charged on Mortgage	Pearson Correlation	-.237**	1			
Inflation rate	Pearson Correlation	-.137*	-0.037	1		
Economic growth	Pearson Correlation	0.063	0.032	-.805**	1	
Financial Performance	Pearson Correlation	.166**	0.095	-0.069	0.097	1
	Sig. (2-tailed)	0.007	0.121	0.257	0.114	
** Significance at 1% level of significance						
* Significance at 5% level of significance						

4.5 Regression Analysis

The change in the dependent variable attributed to the change in each of the predictor variables was established using an OLS regression. A similar model was also used to establish the control effect of inflation and economic growth.

4.5.1 Effect of Mortgage Financing on Financial Performance

Table 4.4 regression analysis results reveals that the coefficient of determination (R squared) was 0.047 which implies that only 4.7% of the changes in financial performance of commercial banks is explained by mortgage financing while 95.3% of the variation in financial performance of commercial banks is explained by other factors other than Mortgage Financing.

Table 4.4: Coefficient of Determination

R	R Square	Adjusted R Square	Std. Error of the Estimate
.218	0.047	0.04	2.13307
Predictors: (Constant), Interest Charged on Mortgage, Log of Amount of Mortgage Offered			

The study findings also revealed that the overall model was significant. The F statistic for the model of 6.563 was significant (Sig = 0.02), hence an indication that the model connecting mortgage financing to performance was significant.

To verify the findings, the study also used the F-distribution table to obtain the F-critical value ($F_{0.05(2,266)}$) calculated at $\alpha = 5\%$, using denominator degrees of freedom of 266 and numerator degrees of freedom of 2 and compared against the F-calculated value of 6.563. The rule of the thumb provides that if F-calculated is $>$ the F-critical, then the model is significant. The F-critical

value from the F-distribution table was 3.030, which is less than 6.563 hence it confirms the previous findings that the model connecting mortgage financing to financial performance of commercial banks was significant. The results of overall model significance are presented in Table 4.5.

Table 4.5: Overall Model Significance

	Sum of Squares	df	Mean Square	F	Sig.
Regression	59.721	2	29.861	6.563	.002
Residual	1201.196	264	4.55		
Total	1260.918	266			
Dependent Variable: Financial Performance of commercial banks					
Predictors: (Constant), Interest Charged on Mortgage, Log of Amount of Mortgage Offered					

The study findings indicated that the association between Log of Amount of Mortgage Offered and financial performance of commercial banks was positive and significant (Beta = 0.236, Sig = 0.001). This implies that one unit increase in the Log of Amount of Mortgage Offered leads to a 0.236 units increase in returns on assets.

The study findings also indicated that Interest Charged on Mortgage positively affect returns on assets significantly (Beta = 0.107, Sig = 0.02). This implies that one unit increase in the Interest Charged on Mortgage leads to a 0.107 units growth in returns on assets.

Table 4.6: Regression Model Coefficients

Predictors	B	Std. Error	t	Sig.
(Constant)	0.165	1.019	0.162	0.871
Log of Amount of Mortgage Offered	0.236	0.073	3.237	0.001
Interest Charged on Mortgage	0.107	0.046	2.349	0.020
Dependent Variable: Financial Performance of commercial banks (ROA)				

The overall regression equation was hence:

$$\text{ROA} = 0.165 + 0.236 \text{ Amount of Mortgage Offered} + 0.107 \text{ Interest Charged on Mortgage}$$

4.5.2 Control Effect of Inflation rate and Economic growth

Table 4.7 regression analysis results shows only 6.1% of the variation in performance is explained by mortgage financing as well as by the control effect of inflation rate and economic growth while 93.9% of the variation in performance is explained by other factors other than mortgage financing and the control effect of inflation rate and economic growth. This shows an insignificant variation in the coefficient of determination (R squared) from 0.047 to 0.061 implying that inflation rate and economic growth do not significantly affect performance.

Table 4.7: Coefficient of Determination

R	R Square	Adjusted R Square	Std. Error of the Estimate
.247	0.061	0.047	2.125539
Predictors: (Constant), Economic growth, Interest Charged on Mortgage, Amount of Mortgage Offered, Inflation			
Dependent Variable: Financial Performance of the commercial banks			

The study results also showed that the model was significant. The F statistics was 4.273 at (Sig = 0.02), hence an indication that the model linking mortgage financing and control factors of inflation rate and economic growth to performance was significant.

To verify the findings, the study also used the F-distribution table to obtain the F-critical value ($F_{0.05(4,266)}$) calculated at $\alpha = 5\%$, using denominator degrees of freedom of 266 and numerator degrees of freedom of 4 and compared against the F-calculated value of 6.563. The F-critical

value from the F-distribution table was 2.406, which is less than 4.273 hence it confirms the significance of the model. The results are presented in Table 4.8.

Table 4.8: Overall Model Significance

	Sum of Squares	df	Mean Square	F	Sig.
Regression	77.224	4	19.306	4.273	.002
Residual	1183.693	262	4.518		
Total	1260.918	266			
Dependent Variable: Financial performance of the commercial banks					
Predictors: (Constant), Economic growth, Interest Charged on Mortgage, Amount of Mortgage Offered, Inflation					

The findings of the study showed that an increase in inflation rate does not significantly increase performance (Beta = -0.01, Sig = 0.789). The findings also showed that economic Growth positively but insignificantly effect performance (Beta = 0.099, Sig = 0.352). This shows that an improvement in the growth of the economy doesn't necessarily lead to a significant improvement in ROA. The results are as shown in Table 4.9.

Table 4.9: Regression Model Coefficients

Predictors	B	Std. Error	t	Sig.
(Constant)	0.077	1.399	0.055	0.956
Amount of Mortgage Offered	0.250	0.074	3.382	0.001
Interest Charged on Mortgage	0.112	0.046	2.461	0.015
Inflation Rate	-0.010	0.037	-0.267	0.789
Economic Growth	0.099	0.106	0.932	0.352
Dependent Variable: ROA				

The overall regression equation linking mortgage financing as well as the control effect of inflation rate and economic growth on financial performance of the commercial banks is thus:

Financial Performance of Commercial banks = 0.077 + 0.25Amount of Mortgage Offered + 0.112 Interest Charged on Mortgage offered

4.6 Interpretation of the Findings

The trend analysis results revealed that the commercial banks in Kenya experienced unsteady fluctuations in financial performance as provided by fluctuating values of ROA for the study period. The trends also revealed that financial performance of the commercial banks in Kenya has been declining unsteadily for the last four years. Accordingly, the decreasing values of ROA for the last four years indicate declining profitability leading to poor financial performance of the commercial banks. Further, the trend results revealed that the total amount of mortgage loans offered by the commercial banks in Kenya has increased unsteadily for the last ten years implying that the total amount of mortgage loans presented by the commercial banks in Kenya has been steadily growing for the last 10 years. The results of the trends of Interest Charged on Mortgage Loans offered by the commercial banks revealed unsteady fluctuations in Interest Charged on Mortgage Loans for the period covered by the study. Interest Charged on Mortgage Loans increased steadily for the first quarter of the study period before steadily declining for the next four years of the study duration before finally recovering in the last quarter of the study duration.

The findings of the study showed positive and significant effect of amount of mortgage offered which implies that an increase in the amount of mortgage offered lead to a significant improvement in their returns on assets. The results are consistent with the findings of Merab (2012).

The results also showed a positive but insignificant relationship between Interest Charged on Mortgage and financial performance of commercial banks in Kenya implying that an increase in Interest Charged on Mortgage will translate to an insignificant improvement in financial performance of the commercial banks. The results are consistent with the findings of Wolfgang and Opfer (2003). Further, the results indicated a negative but insignificant effect of inflation rate implying that an increase in inflation rate in the country will lead to an insignificant decline in financial performance of the commercial banks. The results are consistent with the findings of Mang'era (2014).

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of Findings

The first chapter of this study presented a brief overview of the study variables and discussed the research problem and presented the objective of the study. The research problem indicated that despite the fact that Mortgage financing plays a significant role in poverty reduction in the economy and also provides an opportunity for financial institutions offering it to generate more revenue and grow, the adoption of mortgage financing has not been fully adopted by financial institutions. Interest in mortgage has seen an upward trend, while the average size of mortgage loans has increased that has given the commercial banks a requisite impetus to improve upon their financial performance especially given the fact that some commercial banks have experienced declining fortunes and some have even been placed under receivership.

Chapter two gave a brief review of theories that informed the study. The theories adopted by the study include Mortgage Value theory, Title Theory and Lien Theory of Mortgage, Modern Portfolio Theory and the market power theory. Similar studies were also reviewed and knowledge gaps established. Chapter three indicated the research methodology adopted to achieve the objectives of the study.

Chapter four showed the findings and discussions of the study. The findings were also collaborated with the findings of other studies on mortgage financing. The trend analysis results revealed that the commercial banks in Kenya experienced unsteady fluctuations in financial performance as provided by fluctuating values of ROA for the study period. Moreover, the trend results revealed that the total amount of mortgage loans offered by the commercial banks in

Kenya has increased unsteadily for the last ten years implying that the total amount of mortgage loans offered by the commercial banks in Kenya has been steadily growing for the last 10 years. The results of the trends of Interest Charged on Mortgage Loans offered by the commercial banks revealed unsteady fluctuations in Interest Charged on Mortgage Loans for the period covered by the study.

The study findings indicated that Log of Amount of Mortgage Offered has a positive and significant effect on financial performance of commercial banks (Beta = 0.236, Sig = 0.001). This implies that one unit increase in the Log of Amount of Mortgage Offered leads to a 0.236 units growth in financial performance of the commercial banks in Kenya. The study findings also indicated that Interest Charged on Mortgage has a positive and significant effect on financial performance of commercial banks (Beta = 0.107, Sig = 0.02). This implies that one unit increase in the Interest Charged on Mortgage leads to a 0.107 units increase in financial performance of commercial banks in Kenya

The study results lastly indicated that the association between Inflation Rate and financial performance of commercial banks was negative and insignificant (Beta = -0.01, Sig = 0.789). This shows that a unit increase in inflation rate leads to insignificant decrease in financial performance of the commercial banks in Kenya. The study findings also indicated that Economic Growth has a positive but insignificant control effect on financial performance of commercial banks (Beta = 0.099, Sig = 0.352). This indicates that an upsurge in Economic Growth does not significantly improve financial performance of the commercial banks in Kenya.

5.2 Conclusions

The conclusions of the study were drawn from the results and findings of the study. The study concluded that an increase in the Log of Amount of Mortgage Offered as well as other activities that augment the total value of mortgage loans extended by the commercial banks leads to a significant improvement in financial performance of the commercial banks in Kenya. The study also concluded that an increase in the Interest Charged on Mortgage leads to a significant improvement in financial performance of commercial banks in Kenya.

Further, the study concludes that an increase in inflation rate does not significantly improve financial performance of the commercial banks in Kenya. Similarly, the study concluded that an increase in Economic Growth does not significantly improve financial performance of the commercial banks in Kenya.

5.3 Recommendations

The study recommends that commercial banks in Kenya should target to increase the Amount of Mortgage Offered as well as other activities that augment the total value of mortgage loans extended in order to improve their financial performance. The commercial banks should also improve on the quality of mortgage products offered to enhance higher Mortgage loans uptake thereby improving their financial performance.

The study also recommends that commercial banks should adjust their mortgage lending rates positively whenever they increase the Amount of Mortgage Offered which will in turn enhance their profitability leading to an improvement in financial performance. Increases in Interest Charged on Mortgage leads to growth in long-term mortgage loans hence improving financial performance of the commercial banks.

5.4 Limitations of Study

Despite the fact that rigorous efforts were made to ensure that the results of the study are admissibly accurate, it is worth acknowledging the fact that no study can feasibly be free of limitations. The accuracy of the secondary data used in the study was not easy to verify, however, it was obtained from CBK reports which is verifiable.

5.5 Areas for Further Study

Future studies consider using both secondary and primary data by including qualitative analysis in the research methodology. This would help to bring out a clear picture of the financial performance. Furthermore, a panel data approach can be used to conduct a study on mortgage financing across various countries for comparison purposes. That would help in enriching the topic across the world and be able to compare the findings and approaches used by different commercial banks in different countries across the world. Some of the methods applied by commercial banks in developed countries may be applicable to the commercial banks in the developing countries and therefore relevant for examination.

The findings also indicate that mortgage financing accounts for up to 4.7% of the changes in Financial Performance of commercial banks implying that other factors also affect financial performance of the commercial banks and account for the remaining 95.3% of the variations in financial performance. Consequently, there is necessity to carry out a study that incorporates more factors into the regression model besides mortgage financing in order to establish the overall effect of the other factors on financial performance of commercial banks.

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Appendix I: Data

Year	Bank	ROA	Log Mortgage	Interest Charged	Inflation	Economic Growth
2007	1	3.1	8.74	14.9	9.759	6.851
2008	1	5.10	6.29	15	26.24	0.232
2009	1	5.16	8.90	17.3	9.234	3.307
2010	1	5.17	9.55	15.9	3.961	8.402
2011	1	4.98	9.80	17	14.022	6.112
2012	1	5.65	10.36	17.5	9.378	4.563
2013	1	5.50	10.43	16.3	5.718	5.88
2014	1	5.93	10.63	13.5	6.877	5.352
2015	1	5.01	10.77	13.1	6.582	5.713
2016	1	5.64	10.90	13.2	6.298	5.829
2007	2	4.30	6.13	16	9.759	6.851
2008	2	7.44	6.29	17.9	26.24	0.232
2009	2	7.41	7.34	19	9.234	3.307
2010	2	6.95	8.13	24	3.961	8.402
2011	2	6.84	8.13	16	14.022	6.112
2012	2	8.33	8.21	17.9	9.378	4.563
2013	2	7.70	8.57	19	5.718	5.88
2014	2	7.26	8.76	14.1	6.877	5.352
2015	2	6.56	8.96	14.1	6.582	5.713
2016	2	6.00	9.09	14.1	6.298	5.829
2007	3	3.00	6.63	16.3	9.759	6.851
2008	3	3.29	5.28	16.8	26.24	0.232
2009	3	3.49	7.15	17.5	9.234	3.307
2010	3	3.61	7.68	23.9	3.961	8.402
2011	3	3.68	7.68	16.3	14.022	6.112
2012	3	4.34	8.80	16.8	9.378	4.563
2013	3	4.70	8.68	17.5	5.718	5.88
2014	3	4.43	8.65	13.9	6.877	5.352
2015	3	4.14	9.81	13.9	6.582	5.713
2016	3	5.15	9.69	13.6	6.298	5.829
2007	4	4.20	7.67	20.1	9.759	6.851
2008	4	7.90	7.89	19.3	26.24	0.232
2009	4	7.47	8.06	18.5	9.234	3.307
2010	4	6.24	8.38	13	3.961	8.402
2011	4	7.18	8.38	20.1	14.022	6.112
2012	4	6.51	8.38	19.3	9.378	4.563

Year	Bank	ROA	Log Mortgage	Interest Charged	Inflation	Economic Growth
2013	4	5.80	8.44	18.5	5.718	5.88
2014	4	5.44	8.50	13.8	6.877	5.352
2015	4	5.01	8.79	13.7	6.582	5.713
2016	4	4.02	8.93	13.8	6.298	5.829
2007	5	5.30	.	14.4	9.759	6.851
2008	5	6.10	7.10	14.3	26.24	0.232
2009	5	5.98	8.29	18.5	9.234	3.307
2010	5	5.37	8.96	13.4	3.961	8.402
2011	5	5.03	8.96	14.4	14.022	6.112
2012	5	6.66	9.18	14.3	9.378	4.563
2013	5	6.00	9.76	18.5	5.718	5.88
2014	5	6.42	10.04	13.1	6.877	5.352
2015	5	3.83	9.76	13.1	6.582	5.713
2016	5	5.10	10.04	13.5	6.298	5.829
2007	6	2.80	4.52	15.5	9.759	6.851
2008	6	5.44	5.07	15.2	26.24	0.232
2009	6	5.24	5.43	18.5	9.234	3.307
2010	6	4.90	5.70	21.6	3.961	8.402
2011	6	4.18	5.70	15.2	14.022	6.112
2012	6	5.32	6.05	15.5	9.378	4.563
2013	6	4.90	6.32	18.3	5.718	5.88
2014	6	4.47	6.52	13.9	6.877	5.352
2015	6	3.69	6.32	14.4	6.582	5.713
2016	6	3.64	6.52	14.1	6.298	5.829
2007	7	3.50	7.22	16.5	9.759	6.851
2008	7	3.99	7.50	17.5	26.24	0.232
2009	7	3.88	7.72	19.6	9.234	3.307
2010	7	4.24	7.93	15.2	3.961	8.402
2011	7	3.58	7.93	16.7	14.022	6.112
2012	7	3.09	8.07	17.5	9.378	4.563
2013	7	3.60	8.42	19.6	5.718	5.88
2014	7	2.57	8.52	13.4	6.877	5.352
2015	7	3.14	8.42	13.6	6.582	5.713
2016	7	3.60	8.52	13.1	6.298	5.829
2007	8	3.40	8.45	14	9.759	6.851
2008	8	3.58	8.69	15.5	26.24	0.232
2009	8	3.62	8.89	17.8	9.234	3.307
2010	8	1.96	9.08	14	3.961	8.402

Year	Bank	ROA	Log Mortgage	Interest Charged	Inflation	Economic Growth
2011	8	4.86	9.08	14	14.022	6.112
2012	8	4.57	9.16	15.5	9.378	4.563
2013	8	4.10	9.60	17.8	5.718	5.88
2014	8	4.31	9.61	13.6	6.877	5.352
2015	8	3.56	9.60	13.6	6.582	5.713
2016	8	3.37	9.61	13.3	6.298	5.829
2007	9	.	7.03	17.6	9.759	6.851
2008	9	5.09	6.50	21.1	26.24	0.232
2009	9	4.99	5.32	20.7	9.234	3.307
2010	9	4.95	5.51	20.7	3.961	8.402
2011	9	4.60	5.51	18.9	14.022	6.112
2012	9	4.57	6.57	17.9	9.378	4.563
2013	9	4.44	7.95	17.6	5.718	5.88
2014	9	4.41	7.74	14.9	6.877	5.352
2015	9	3.99	7.95	14.1	6.582	5.713
2016	9	3.66	7.74	14	6.298	5.829
2007	10	4.30	6.08	16.8	9.759	6.851
2008	10	5.29	6.71	7.8	26.24	0.232
2009	10	5.32	7.10	20.8	9.234	3.307
2010	10	4.80	7.34	14.5	3.961	8.402
2011	10	5.80	7.34	16.8	14.022	6.112
2012	10	5.69	7.74	17.8	9.378	4.563
2013	10	5.50	8.15	20.8	5.718	5.88
2014	10	5.64	8.16	13.9	6.877	5.352
2015	10	5.66	8.15	13.7	6.582	5.713
2016	10	5.27	8.16	16.4	6.298	5.829
2007	11	3.10	8.09	15	9.759	6.851
2008	11	4.20	8.25	15.5	26.24	0.232
2009	11	5.31	8.19	16.9	9.234	3.307
2010	11	4.49	8.04	16	3.961	8.402
2011	11	3.56	8.04	15	14.022	6.112
2012	11	2.78	8.32	15.4	9.378	4.563
2013	11	1.90	7.75	16.9	5.718	5.88
2014	11	1.90	7.75	13	6.877	5.352
2015	11	-1.34	7.75	14	6.582	5.713
2016	11	0.14	7.75	13.9	6.298	5.829
2007	12	3.30	5.08	15.5	9.759	6.851
2008	12	5.78	5.47	16.3	26.24	0.232

Year	Bank	ROA	Log Mortgage	Interest Charged	Inflation	Economic Growth
2009	12	5.54	5.75	17.6	9.234	3.307
2010	12	5.65	6.07	21.2	3.961	8.402
2011	12	4.57	6.07	15.5	14.022	6.112
2012	12	4.64	6.07	16.3	9.378	4.563
2013	12	4.80	6.50	17.6	5.718	5.88
2014	12	4.35	6.75	13.8	6.877	5.352
2015	12	3.65	6.50	13.9	6.582	5.713
2016	12	4.67	6.75	13.9	6.298	5.829
2007	13	2.90	7.06	14.2	9.759	6.851
2008	13	3.81	6.57	16.9	26.24	0.232
2009	13	3.70		15.5	9.234	3.307
2010	13	2.48	5.80	24.5	3.961	8.402
2011	13	2.01	5.80	14.2	14.022	6.112
2012	13	5.67	7.08	16.9	9.378	4.563
2013	13	4.00	8.13	15.5	5.718	5.88
2014	13	4.24	8.11	13.4	6.877	5.352
2015	13	3.55	8.13	14	6.582	5.713
2016	13	0.91	8.11	14.1	6.298	5.829
2007	14	1.10	9.15	14.3	9.759	6.851
2008	14	1.90	9.58	15.1	26.24	0.232
2009	14	2.57	9.88	15.2	9.234	3.307
2010	14	1.91	10.16	15.2	3.961	8.402
2011	14	3.10	10.16	14.3	14.022	6.112
2012	14	2.60	10.32	15.1	9.378	4.563
2013	14	2.60	10.77	15.3	5.718	5.88
2014	14	2.12	10.85	12.5	6.877	5.352
2015	14	2.52	10.77	12.4	6.582	5.713
2016	14	2.12	10.85	12.2	6.298	5.829
2007	15	2.20	5.20	14	9.759	6.851
2008	15	2.60	5.34	15.4	26.24	0.232
2009	15	2.80	5.47	19.8	9.234	3.307
2010	15	2.37	5.57	19.9	3.961	8.402
2011	15	3.07	5.57	14	14.022	6.112
2012	15	4.11	5.86	15.4	9.378	4.563
2013	15	3.80	6.02	19.4	5.718	5.88
2014	15	4.18	5.77	13.9	6.877	5.352
2015	15	3.99	6.02	13.9	6.582	5.713
2016	15	3.57	5.94	13.5	6.298	5.829

Year	Bank	ROA	Log Mortgage	Interest Charged	Inflation	Economic Growth
2007	16	2.00	6.99	13.8	9.759	6.851
2008	16	2.51	6.45	18	26.24	0.232
2009	16	2.27	5.19	20.5	9.234	3.307
2010	16	1.81	5.61	22	3.961	8.402
2011	16	1.43	6.18	13.8	14.022	6.112
2012	16	2.18	7.10	18	9.378	4.563
2013	16	2.00	7.39	20.5	5.718	5.88
2014	16	0.33	8.04	13.7	6.877	5.352
2015	16	-2.07	7.39	13.9	6.582	5.713
2016	16	-0.03	8.04	13.9	6.298	5.829
2007	17	4.50	4.09	16.9	9.759	6.851
2008	17	3.23	4.60	17.1	26.24	0.232
2009	17	3.33	3.03	17.3	9.234	3.307
2010	17	5.04	4.60	23.4	3.961	8.402
2011	17	1.43	4.60	16.6	14.022	6.112
2012	17	3.69	4.62	17.1	9.378	4.563
2013	17	4.10	5.25	17.3	5.718	5.88
2014	17	3.74	5.93	14	6.877	5.352
2015	17	3.49	5.25	14	6.582	5.713
2016	17	4.57	5.93	14	6.298	5.829
2007	18	1.16	7.72	18.9	9.759	6.851
2008	18	0.58	7.44	18.2	26.24	0.232
2009	18	1.62	7.02	17.3	9.234	3.307
2010	18	0.70	7.73	22.7	3.961	8.402
2011	18	0.45	7.72	18.5	14.022	6.112
2012	18	-0.78	7.04	18.3	9.378	4.563
2013	18	-3.30	7.00	17.3	5.718	5.88
2014	18	-1.09	6.83	13.7	6.877	5.352
2015	18	0.18	7.00	13.8	6.582	5.713
2016	18	-6.13	6.83	15.1	6.298	5.829
2007	19	0.49	6.37	13.1	9.759	6.851
2008	19	0.99	6.44	13.7	26.24	0.232
2009	19	1.20	6.50	14.1	9.234	3.307
2010	19	1.49	6.38	14.2	3.961	8.402
2011	19	2.76	6.54	14.2	14.022	6.112
2012	19	1.61	6.97	14.3	9.378	4.563
2013	19	2.91	6.64	15.8	5.718	5.88
2014	19	2.70	6.86	15.8	6.877	5.352

Year	Bank	ROA	Log Mortgage	Interest Charged	Inflation	Economic Growth
2015	19	2.78	6.64	16.2	6.582	5.713
2016	19	2.80	6.86	16.3	6.298	5.829
2007	20	2.87	7.29	16.5	9.759	6.851
2008	20	3.07	7.28	16.5	26.24	0.232
2009	20	2.90	7.28	16.7	9.234	3.307
2010	20	2.90	7.12	16.8	3.961	8.402
2011	20	2.95	7.20	17.5	14.022	6.112
2012	20	3.11	7.32	22	9.378	4.563
2013	20	3.15	7.61	22.7	5.718	5.88
2014	20	4.12	6.83	23	6.877	5.352
2015	20	4.42	7.61	23.1	6.582	5.713
2016	20	4.67	6.83	23.4	6.298	5.829
2007	21	3.38	4.55	13.6	9.759	6.851
2008	21	3.55	4.54	13.9	26.24	0.232
2009	21	3.60	4.52	13.9	9.234	3.307
2010	21	3.68	4.18	16	3.961	8.402
2011	21	4.30	4.19	16	14.022	6.112
2012	21	4.31	5.38	17.3	9.378	4.563
2013	21	3.48	1.59	17.3	5.718	5.88
2014	21	4.37	4.84	17.6	6.877	5.352
2015	21	2.33	1.59	17.6	6.582	5.713
2016	21	5.00	4.84	21.7	6.298	5.829
2007	22	3.10	7.54	15.4	9.759	6.851
2008	22	2.01	7.61	16.2	26.24	0.232
2009	22	1.87	7.67	21.9	9.234	3.307
2010	22	2.22	7.73	24	3.961	8.402
2011	22	1.37	7.73	15.4	14.022	6.112
2012	22	2.45	7.87	16.8	9.378	4.563
2013	22	1.80	7.92	18.8	5.718	5.88
2014	22	1.88	8.02	13.6	6.877	5.352
2015	22	1.05	7.92	13.7	6.582	5.713
2016	22	0.58	8.02	13.8	6.298	5.829
2007	23	6.20	5.32	18.9	9.759	6.851
2008	23	2.01	5.35	18.8	26.24	0.232
2009	23	2.79	5.37	16.4	9.234	3.307
2010	23	2.82	5.39	16.4	3.961	8.402
2011	23	0.70	5.41	15.4	14.022	6.112
2012	23	2.52	5.43	17.4	9.378	4.563

Year	Bank	ROA	Log Mortgage	Interest Charged	Inflation	Economic Growth
2013	23	2.80	5.44	18.8	5.718	5.88
2014	23	3.13	5.51	13.2	6.877	5.352
2015	23	3.03	5.48	13.3	6.582	5.713
2016	23	3.70	5.51	21.93	6.298	5.829
2007	24	-0.53	4.19	21.9	9.759	6.851
2008	24	0.87	4.96	21.8	26.24	0.232
2009	24	1.37	7.76	21.8	9.234	3.307
2010	24	-4.85	4.19	20	3.961	8.402
2011	24	-1.79	4.19	21.9	14.022	6.112
2012	24	3.23	5.38	21.8	9.378	4.563
2013	24	1.30	8.41	21.8	5.718	5.88
2014	24	0.73	8.14	19.3	6.877	5.352
2015	24	0.22	8.41	15.3	6.582	5.713
2016	24	-3.12	8.14	15.1	6.298	5.829
2007	25	0.50	6.74	14.6	9.759	6.851
2008	25	4.16	7.72	15.6	26.24	0.232
2009	25	3.31	8.21	23.4	9.234	3.307
2010	25	2.46	7.92	25	3.961	8.402
2011	25	1.61	7.94	14.4	14.022	6.112
2012	25	-0.72	8.26	16.5	9.378	4.563
2013	25	-0.80	7.95	20.5	5.718	5.88
2014	25	-1.82	6.45	13	6.877	5.352
2015	25	0.35	7.95	13.1	6.582	5.713
2016	25	-1.99	6.45	13.9	6.298	5.829
2007	26	8.80	2.85	23.7	9.759	6.851
2008	26	4.01	2.86	18.9	26.24	0.232
2009	26	3.83	2.87	18.9	9.234	3.307
2010	26	2.32	3.03	17.8	3.961	8.402
2011	26	1.72	3.04	17.8	14.022	6.112
2012	26	2.86	2.83	17.2	9.378	4.563
2013	26	2.50	1.78	17.2	5.718	5.88
2014	26	1.60	3.34	14.9	6.877	5.352
2015	26	1.07	1.78	14.6	6.582	5.713
2016	26	0.36	3.34	13.1	6.298	5.829
2007	27	1.30	5.59	17.3	9.759	6.851
2008	27	1.16	5.62	17.4	26.24	0.232
2009	27	0.68	5.65	13.4	9.234	3.307

Year	Bank	ROA	Log Mortgage	Interest Charged	Inflation	Economic Growth
2010	27	1.12	5.69	13.4	3.961	8.402
2011	27	1.20	5.71	14.9	14.022	6.112
2012	27	1.30	5.74	17.3	9.378	4.563
2013	27	1.32	5.74	17.4	5.718	5.88
2014	27	2.30	5.88	17.4	6.877	5.352
2015	27	2.39	5.75	17.4	6.582	5.713
2016	27	6.35	5.88	24	6.298	5.829

Appendix II: List Commercial Banks in Kenya

NAME OF THE BANK	YEAR LICENSED
1. ABC Bank (Kenya)	1984
2. Bank of Africa	1980
3. Bank of Baroda	1953
4. Bank of India	1953
5. Barclays Bank Kenya	1953
6. CfCStanbic Holdings	1955
7. Citibank	1974
8. Commercial Bank of Africa	1967
9. Consolidated Bank of Kenya	1989
10. Cooperative Bank of Kenya	1965
11. Credit Bank	1986
12. Development Bank of Kenya	1973
13. Diamond Trust Bank	1946
14. Ecobank Kenya	2005
15. Equatorial Commercial Bank	1995
16. Equity Bank	2004
17. Family Bank	1984
18. Fidelity Commercial Bank Limited	1992
19. First Community Bank	2008
20. Giro Commercial Bank	1992
21. Guaranty Trust Bank Kenya	1986
22. Guardian Bank	1992
23. Gulf African Bank	2007
24. Habib Bank	1978
25. Habib Bank AG Zurich	1956
26. Housing Finance Company of Kenya	2010
27. I&M Bank	1974
28. Jamii Bora Bank	1984
29. Kenya Commercial Bank	1896
30. K-Rep Bank	1999
31. Middle East Bank Kenya	1980
32. National Bank of Kenya	1968
33. NIC Bank	1959
34. Oriental Commercial Bank	1991
35. Paramount Universal Bank	1993
36. Prime Bank (Kenya)	1992
37. Standard Chartered Kenya	1910
38. Trans National Bank Kenya	1985

NAME OF THE BANK	YEAR LICENSED
39. United Bank for Africa	2009
40. Victoria Commercial Bank	1987