MACROECONOMIC VARIABLES AND NON - PERFORMING LOANS OF COMMERCIAL BANKS IN KENYA

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DECLARATION

Declaration by the student

I declare that this project is my original work and has not been submitted for any other award of a degree in any other university for examination purpose.

Signature ---------- Date ----------

SYLVIA AVILIA ANZAGI

D53/OL/CTY/32812/2016

Declaration by the supervisor

I confirm that the work reported in this project was carried out by the candidate under my supervision and has been submitted with my approval as the university supervisor.

Signature ---------- Date ----------

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DEDICATION

I wish to, in a very special way, dedicate this work to my beloved parents Simon Anzagi and Esther Anzagi and my entire family for their prayers and support during my period of study towards this degree. I especially would also like to dedicate this study to my beloved children Carl Wayne and Shawn Simon for always being a source of inspiration. I love you all and may God forever shower His blessings upon you.

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First, I thank the Almighty God for His favor and Grace to complete these studies. I sincerely appreciate my supervisor, Mr. James Muturi, for his guidance and commitment towards the successful completion of this research.

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ABBREVIATIONS AND ACRONYMS

CBK	Central Bank of Kenya
CBR	Central Bank Rate
CPI	Consumer Price Index
GDP	Gross Domestic Product
NPL	Non-performing Loans

OPERATIONAL DEFINITION OF TERMS

Average Lending Rate	This is the amount charged by lenders for a certain period as a percentage of the amount lent.
Central Bank Rate	This is the lowest interest rates which CBK charges on loans advanced to banks. This rate influences the lending rates of commercial banks.
Consumer Price Index	This is a measure of the aggregate price level in an economy consisting of a bundle of commonly purchased goods and services.
Gross Domestic Product	This is the monetary proxy used for market value of all the final services and goods in a particular period which provides an estimate of the size of an economy and the growth rate.
Inflation rate	This is the extent by which increases in prices are experienced during a time period within a country.
Interest rate	This refers to the price that borrowers are charged for a loan.
Macroeconomic variables	These are indicators that signal the current developments in the economy and the effects of these trends. They include GDP, inflation, unemployment and interest rates.
Nonperforming loans	This term refers to money lent out but whose repayments are not made within the scheduled period that is 3 months (90days).
Unemployment rate	This is the percentage of workers who are not employed within a labor force despite the fact that they are able and willing to work.

ABSTRACT

A steady increase in non-performing loans poses great threat to the asset quality, earnings as well as capital of commercial banks in Kenya, evidenced by the general decline on equity returns at 1.84 percent per annum from 2012-2017. This is mainly because loans are the biggest operational assets and a source of income of most lending institutions, and therefore a volatile environment characterized by rising non-performing loans will not only affect the banking sector, but also have a ripple effect on the overall health of the financial system. Other studies done on this subject employed multiple regression analysis with varying results published, with some based on a single indicator with studies done in different countries. To close this research gap, this research aimed to establish the effect of macroeconomic variables on nonperforming loans of commercial banks in Kenya. Consequently, the specific objectives of this study were to examine the effect of interest rate, inflation, gross domestic product and unemployment on nonperforming loans of commercial banks in Kenya. The theories used to anchor the study are the Life Cycle Consumption Theory, Trade-off Theory, and Financial Theory. The study employed descriptive research design which was based on secondary data on a yearly basis from 2012-2017.The targeted population of the study solidly comprised of the 43 commercial banks in Kenya. Census design was used in the study with data collected through a data collection guide. The data was analyzed using the NPL ratio within the structure of the panel regression model where diagnostic test for normality, multicollinearity, homoscedasticity, linearity tests were carried out before making inferences. The null hypotheses of the study were tested based on 0.05 significance level. The study found that there is significant and negative effect of inflation on nonperforming loans of commercial banks in Kenya with the recommendation that bank managers ought to fully anticipate price level fluctuations in the administration of loans to help in minimizing loan defaults. The study further found that there is a significant positive effect of lending interest rate on the nonperforming loans on commercial banks in Kenya. Therefore, the study recommended that bank managers ensure efficient credit risk management as well as placing interest rates on loans that are in line with the underlying economic conditions of the country. Further, the study established that unemployment rate has insignificant positive effect on the nonperforming loans of commercial banks in Kenya. Lastly, the regression output established that the gross domestic product significantly and negatively affects nonperforming loans of commercial banks in Kenya, with the recommendation that the government should stimulate economic activities in the country to increase employment opportunities as well as to boost our local industries through patronage of locally manufactured goods that will in turn help in ensuring good performance of firms, thereby enhancing their ability to service loans.

CHAPTER ONE
INTRODUCTION

1.1 Background of the study

Globally, for there to be economic progress and sustained growth, financial stability and soundness is considered to be an absolute necessity. However, in the past decade the global bank industry experienced a high rate of bad debts directly linked with NPL's which has in turn led to bank failures globally. For most economies commercial banks are the main financial institutions and therefore proper operations of commercial banks can greatly fast track the rate of economic growth, whereas an inefficient financial system impedes economic growth. An analysis and identification of the problems of the banking system that come as a result of the global crisis are of great importance and should be addressed.

In sub–Saharan Africa, macroeconomic volatility and the vulnerability of undiversified African economies has led to a dramatic increase in nonperforming loans, precipitated by heavy exposure to external shocks. Thus, adverse macroeconomic shocks combined with high cost of capital and lower interest margins are associated with rising scope of nonperforming loans.

In Kenya, many lending institutions are facing the problem of rapid growth of non-performing loan portfolios, mainly caused by the slowdown in economic activity and political uncertainty that has created a tough business setting resulting in a rise in non-performing loans. Thus, a sustained rise in NPL may eventually lead to a system risk and cause a run-on deposits, severely restricting financial intermediation and growth in investment.

Therefore, this study sought to explore specific macroeconomic variables of interest rate, inflation, gross domestic product and unemployment in relation to increase or decrease of nonperforming loans in commercial banks in Kenya.

1.1.1 Macroeconomic variables

Macroeconomic variables are independent external dynamics that impinge on the profitability and performance of banks and are basically beyond the control of the management. These are generally widespread in the economy and affect the behavior, decision making processes and performance structure in the economy. Owing to their nature of business, commercial banks are at a high risk of non-payment from lenders (Washington 2014). Macroeconomic variables are therefore indicators that signal the current developments in the economy that directly affect the quality of bank loans (Thuo 2017). Some of these macroeconomic factors studied include interest rate, inflation, gross domestic product and unemployment.

Interest rate refers to the highest rate of interest that commercial banks charge or simply the debt service fee. As (Ombaba 2013) opines, it is the price a borrower pays to use funds obtained from a lender or financial institution as a premium against borrowed funds. Therefore, a rise in real interest rates leads to the real value of the debt of the borrower also positively moving upwards resulting in more expensive loans. Interest rates are normally measured using the average lending rate of interest charged by commercial banks. In this study the 'Central Bank Rate' was used as the base rate of interest.

Inflation is the general rise in the prices of commodities over a time period which eventually leads to a fall in the value of money. Consequently, a high level of inflation affects the solvency of debt by decreasing the real values of the loan outstanding as rising price levels allows the debtor to pay back with money that is

worth less than it was when they originally borrowed it. This means that, a higher rate of inflation results in a higher cost of doing business which ultimately result in less returns from the business. The rate of inflation was measured by the consumer price index, that is expressed as the change in the current prices of the market basket of goods in a given period compared to the base period.

Unemployment rate relates to the total number of people who are not working within the labor force and are keenly looking for work divided by those individuals currently employed in the labor force. Therefore, the increase in the rate of unemployment rate that is directly related to an increase in job losses, often translates negatively to the capacity of a debt to be serviced, inadvertently causing an increase in NPL's. Further, unemployment is a leading indicator of consumer NPLs implying that a rise in unemployment affects households ability to service their debts (Onchomba 2014).

Gross Domestic Product relates to the fiscal values for all goods and services in a country during a definite period of time. The GDP rate is used to determine the size of the economy and is also an indicator of the growth of the country's economy. GDP has a direct effect on personal finance, investments and job growth. This means that, under unfavorable economic conditions, households and business incomes are diminished and borrower's ability to service their loans is reduced as observed by (Dichevska 2017). Conversely, slow economic growth often leads to layoffs and unemployment, affecting the borrower's ability to service debts as they fall due. The GDP is measured by the GDP growth rate per capita, which is the measurement of the total economic output of the country divided by the population. The study used the average lending interest rate, consumer price indices, unemployment rate, and GDP growth rate as measures of the macroeconomic variables of, interest rate, inflation, GDP and unemployment.

1.1.2 Commercial Banks in Kenya

A financial institution that accepts deposits and offers loans for investment with the aim of earning profits through advanced loans and deposits received, is considered a commercial bank. In addition, commercial banks provide a range of services from retail and corporate banking services as well as insurance and investment banking (Mulwa 2015). In Kenya, CBK is the authorized body mandated to regulate, supervise and license financial institutions in the local financial industry. According to information available in the CBK website, Kenya has 44 financial institutions, of which 43 are licensed commercial banks with 1 listed as a mortgage finance firm with 11 banks listed in the NSE. CBK provides published information on commercial banks in Kenya as well those of institutions that are non-banking, prevailing rates of interest as well as any other related guidelines and also publications (Macharia 2013).The Kenya Bankers Association (KBA), which is the umbrella body of the financial institutions that is regulated as well as licensed by CBK, that represents their interests and addresses issues of member banks (Meshack and Nyamute 2016).

1.1.3 Non-performing Loans

This is a loan in which the debtor is not making interest payments nor repaying the principal for a period of 90 days. Similarly, loans are defined as NPL's when they fail to generate revenue for the bank. According to the CBK Financial Stability Report 2017, the asset quality, measured as a proportion of NPL's, deteriorated from 9.3 percent in December 2016 to 11.0 percent in December 2017 indicating increased credit risk in 2017. This follows that, the gross NPL's rose by 23.4 percent from Ksh.214.4 billion in Dec 2016 to Ksh.264.6 billion as at December 2017.

Further, it was reported that NPL's rose by 36.04 percent to Ksh. 147.3 billion in December 2015, with the ratio of NPLs standing at 6.8 percent in December 2015

from 5.4 percent in December 2014. The NPLs increased at 5.3 percent which in 2014 December amounted to Ksh. 107.1 b from that of 2014 June of Ksh. 101.7 billion. The gross loans amounted to Ksh.149.6 billion vis a vie Ksh.127.3 billion in December 2012 positioning the NPLs at 32.3 percent from Ksh. 61.9 billion in the year 2012 to Ksh. 81.9 billion in the year 2013. NPLs ratio increased to 5.2 percent from 4.7 percent. This is an indication that the NPLs rose to 5.2 percent in December 2013 from 4.7 percent in December 2012. This numbers point to an ever increasing NPL level over the years confirming a concerning trend. In conclusion, NPL's are therefore undesirable outputs to lending institutions with undesirable effects to the banks bottom line (Monicah 2013).

Year	Gross Loan Amount	Percentage increase in NPL's
2012	61.9b	4.7
2013	81.9b	5.2
2014	107.1b	5.4
2015	147.3b	6.8
2016	214.4b	9.3
2017	264.6b	11

Table 1.1 Summary of NPL Trend

Banks should therefore seek to decrease the risk of defaults, to the point that payment is viable especially due to lending being the core nature of commercial banks' activities. This study comprised of all the commercial banks in Kenya using census design with the study period from 2012-2017.

1.2 Statement of the Problem

The major source of generating assets and a major source of income for a good number of banking institutions are loans. However, an increasing number of the loans issued result in being non-performing and negatively affect the bottom line

of the lending institutions and as a result impact the economy of the country negatively. Several financial institutions in Kenya are battling with the issue of an escalating non-performing loans portfolio, notwithstanding the measures put in place to manage the situation (Gitonga 2014).

As per the CBK Financial Stability Report 2017 as summarized in Table 1.1, a steady increase is noted in the percentage of NPL vis a vie the amount of nonperforming loans in commercial banks in Kenya in the period between 2012 - 2017.

In addition, the IMF Financial Stability Report on the state of the commercial banks in Kenya, provides information on the asset quality, measured as a proportion of NPL's, has posted a steady progressive increase from 4.591% to 5.044% to 5.455% to 5.989% to 8.694% and 10.084 in the years 2012, 2013, 2014, 2015, 2016 and 2017 respectively. Ideally, this means that, from 2011, NPLs have been on an upward trend (Mugwe 2013) and in effect, these NPLs prevent the growth of the economy and curtail economic efficiency as observed by (Ongore and Kusa, 2013). Moreover, there is sufficient indication that shows that countries in Sub-saharan that experienced the banking crisis, were usually preceded by a high level of non-performing loans (Mugwe 2013).

The few researches that have been previously conducted in the Kenyan background are characterized by conflicting results and therefore a general lack of consensus is evident in these studies. For example, a study by (Monicah 2013) showed that inflation has a positive significance on default rates while in contrast (Mboka 2013) and (Gitonga 2014) indicated that inflation gives a negative and has a major influence on default rates in Kenya. Furthermore, (Chege 2014) concluded that the rate of interest has an inverse and major association with NPLs while

(Ngungu 2020) indicated that the rate of interest possess an inverse and insignificant outcome on the level of NPLs in commercial banks in Kenya.

On the other hand, (Kamunge 2013) and (Onchomba 2014) found that the interest rate to has a positive effect and noteworthy consequence on the NPLs', while (Akahege 2011) found interest rate as having positive and insignificant result with regards to NPLs of commercial banks in Kenya. A review of previous literature points to a disparity between the various conclusions of the various variables and therefore this study aims at bridging this gap.

The study was based on the panel regression model and investigated the effect of these macroeconomic variables of interest rate, inflation, GDP growth rate and unemployment on non-performing loans on the 43 commercial banks in Kenya.

1.3 Objectives of the study

1.3.1 General Objectives

The objective was to establish the effect of macroeconomic variables on non-performing loans of commercial banks in Kenya.

1.3.2 Specific Objectives

The research sought:

i. To determine the effect of inflation on NPLs of commercial banks in Kenya.
ii. To determine the effect of interest rate on NPLs of commercial banks in Kenya.
iii. To determine the effect of unemployment on NPLs of commercial banks in Kenya.
iv. To determine the effect of gross domestic product on NPLs of commercial banks in Kenya.

1.4 Research Hypothesis

The study considered the following hypotheses:

Ho1: Inflation does not have a significant effect on non-performing loans of commercial banks in Kenya

Ho2: Interest rate does not have a significant effect on non-performing loans of commercial banks in Kenya

Ho3: Unemployment rate does not have a significant effect on non-performing loans of commercial banks in Kenya

Ho4: Gross Domestic Product growth rate does not have a significant effect on non-performing loans of commercial banks in Kenya.

1.5 Significance of this Study

This research informs policy makers as it provides recommendations on the formulation of policies in relation to the effects of inflation, interest rates, unemployment and GDP on NPL's of commercial banks in Kenya.

The research, in addition, provides useful information to be used in the financial sector players to better appreciate the association between macroeconomic variables and NPLs of commercial banks in their operating environments to be able to anticipate fluctuations of the macroeconomic variables, for instance price level in administration of loans to help minimize loan defaults.

The study also lays a foundation for further research by academicians and researchers on the relationship and effects on macroeconomic variables on NPLs of commercial banks in Kenya as such contributing to existing body of knowledge to the financial sector players.

1.6 Scope of the Study

This study focused on macroeconomic variables (inflation, interest rate, unemployment and GDP growth rate) and NPL's on the 43 commercial banks in Kenya.

This study employed annual panel series data for the period between 2012- 2017.

1.7 Limitations of the Study

Secondary data was utilized, therefore, the concern for originality of data emanates. The internet is characterized by data from various sources. The researcher used data from the CBK which is the custodian of bank data to obtain the study data.

Yearly data was used in this study, but not all data on the study variables was in that form. In addressing this, the researcher converted all non-yearly data to annual form by calculating the averages.

1.8 Organization of the study

This project is outlined based on these: Chapter one presents the objectives, background, research objectives, research importance as well as the scope. Chapter two comprises of the review of literature which looked at the theoretical review and empirical researches. This also provided the conceptual framework of the study. Research methods and procedures are covered in chapter three, which includes the study design, sampling, target population and empirical model of the study as well as operationalization and measure of variables.

Chapter four provided the data analysis, its interpretation and presentation. Lastly, the summary conclusion, policy recommendations and suggestions for additional studies are contained in Chapter five.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

The chapter comprises of the literature review of researches. It provides the theoretical review, empirical review, summary of the literature reviewed, research gaps as well as the conceptual framework of the study.

2.2 Theoretical Reviews

This section provides the review of theories of which were be used to support the study.

2.2.1The Life Cycle Consumption Theory

The Life Cycle Consumption Theory, as advanced by Franco Modigliani in 1957, states that people choose their current expenditures optimally, taking into account their spending needs and future incomes over the remainder of their lifetimes. Thus, borrowing during times of reduced low income and saving during times of increased income. This theory deduces that people plan their expenditure over their expected lifetimes considering their future expected income. Therefore, an individual's household level of consumption largely depends on their current income including the long term expected earnings. But in times of economic recession, businesses revert to cost cutting measures such as layoffs culminating to workers losing their jobs and subsequently experience difficulty in paying off their debts. This may lead to default on loan repayments as those laid off from work have no financial capacity to honor their loan payment obligation as it falls due. The model of life cycle consumption implies that borrowers with low incomes have higher rates of default due to increased risk of facing unemployment and being unable to settle their obligation. Therefore, probability of default depends on

current income and the unemployment rate, which is linked to the uncertainty regarding future income and the lending rate (Dichevska 2017). Consequently, there will be an increase in the number nonperforming loans during times of high unemployment.

2.2.2 Deflation Theory

Deflation refers to the general decline in the price levels. The deflation theory, as Fisher (1933), proposes that when the debt bubble bursts, what happens is that debt liquidation follows leading to deposit currency contraction while loans are repaid. This shrinkage of deposits leads to a decline in the price levels and consequently a greater decrease in the net worth of businesses. This therefore, causes bankruptcies, losses, reduced productivity and labor employment. Contemporary debt-deflation process includes, debt repayment difficulties, dwindling asset prices, a general reluctance to lend during financial crises as well as the effect on the commercial banking. Therefore, the combination of rising debt and falling prices leads to an elevated value of debt causing financial distress. This rising interest rates in turn cause repayment challenges which result in falling asset prices that result in difficulties in repaying debt. Debt deflation theory supports this research because it views that cost of a loan is directly affected by interest rate and inflation.

2.2.3 Trade-off Theory

The Trade-off theory advanced by Myers (1984) posited that the capital structure of a company is based on a tradeoff between tax savings and distress costs of debts. This means that a company choses how much debt finance and how much equity finance to use by balancing the costs and benefits. The trade-off theory provides the assertion that borrowing benefits exists within a capital structure up to

a level when the ideal capital structure is attained. Then the tax burden related with financing and maintaining public capital declines, the returns to private industry declines which in turn slows down growth. Lenders, as a matter of policy, ensure any loan attracts an interest rate that recompenses the lenders for unexpected cases of loss in case of defaulters.

A borrowing constraint is then generated by lenders' unwillingness to lend an amount that would trigger immediate default. When the borrowing constraint is not binding, the trade-off theory of debt holds: optimal debt equates the marginal interest tax shield and the marginal expected cost of default. Contrary to conventional interpretation, but consistent with empirical findings, increases in current or future profitability reduce the optimal leverage ratio when the trade-off theory holds (Abel 2017). Therefore, the level of lending interest rate that is levied on loans could adversely affect the repayment of the loan especially when external factors come into play.

2.2.4 Financial Theory

The Financial theory as advocated by (Minsky 1974), suggests that, during times of economic growth, when the level of cash flow increases over and above the desirable amount needed to settle amount owed. This leads to speculation, that eventually leads to debts exceeding what borrowers are able to offset from their incoming cash flows, resulting to a crisis in the financial sector. Consequently, lenders restrict the amount of credit available, more so to entities that can afford the loans repayments causing the economy size to contract. The financial theory states that a hedge borrower will take a regular loan then pay the principal as well as the interest, whereas, the speculative borrower will have a loan known as a watch loan whereby the principal loan and interest is due but remains unpaid for up to 90 days whereas the Ponzi borrower will have an inferior loan that means that the repayments fail to cover the principal and interest amounts. This means

that, the main source is of settlement is insufficient and cannot service the loan causing it to be due for more than 90 days. Therefore, the substandard and watch loans are considered as NPLs, thus, the importance of the above theory in the current research as these directly affects the GDP of the economy as the economy is impacted.

2.3 The Empirical Review

This section presents a review of the empirical studies related to macroeconomic variables and non-performing loans.

2.3.1 Macroeconomic variables and the non-performing loans

Macroeconomic variables are external determinants that are related to the economic financial and institutional environment which affect the banks performance and there has been an upward trajectory in the amount of credit advanced by banks. In the Kenyan context, this can be seen for instance, in the expansion of the cab business with an influx of vehicles obtained through bank credit facilities. As (Erdinç and Abazi, 2014) opines, this quick credit growth may result to a compromised selection process, and may result in lower levels of credit quality increasing the level risk during these periods, hence negatively affecting the level of NPL's. Generally, NPL's represent an intrinsic risk and is also understood as a sign of future losses in the banking system (Vouldis and Lousiz, 2016). In essence, if NPL's are kept and constantly rolled over, incomes are tied down in non-profit making sectors thus preventing growth in economy and limiting its efficiency (Andovski (2015).

2.3.2 Inflation and Non-performing loans

Inflation is the continual rise in the overall prices level for services and goods in the country's economy through a time period mainly owing to the decreasing value of base currency. Generally, higher inflation rates tend to decrease the return on assets rates as well as cause an increase in the debt burden and consequently leading to increased number of NPL's. More so, an increased level of inflation is also precipitated by low levels of domestic production, a shrinking economy and consequently, an increase of NPL's.

For instance, (Fofack 2005) in the study of nonperforming loans in sub-Saharan Africa using the causality and pseudo panel models, found that the effects of inflation lead to elevated levels of poor loans in many of the SSA nations under the regime of flexible exchange rate. This study also indicated that inflation is the main reason for the fast deterioration of the equity of commercial banks resulting to an elevated credit risks in the financial sectors of these African countries. This study was done in several countries using two analysis models. This study was done in Kenya focusing on the 43 commercial banks using panel data analysis.

Similarly, (Nkusu 2011), in the study done on nonperforming loans and macro financial vulnerabilities in advanced economies from a sample of 26 advanced countries using panel regression and panel vector autoregressive model, contended that inflation can affect the borrowers' loan repayment capacity positively or negatively. Therefore, higher inflation can increase loan repayment capacity of borrower by reducing the real value of the outstanding debt; moreover increased inflation can also weaken the loan repayment capacity of borrowers by reducing the real income when salaries are sticky. In addition, according to (Farhan et al 2012), the relationship between inflation and non performing loans can be positive or negative depending on the economy of operation. This two studies were inconclusive on the effect of inflation on nonperforming loans and used a sample from advanced countries using two methods of analysis. This

current study was done in Kenya using a single analysis method of the panel model.

Further, (Ali S 2012), in his study on the impact of macroeconomic variables (GDP, inflation rate, exchange rate and base interest rate) done from the period between 2005-2012, on nonperforming loans in Albanian Banking system, using simple regression model where he studied inflation as one of the variables, opined that inflation rate is negatively related with NPL. This results are similar to those of (Ekanayake 2015) who also found a negative relationship between inflation and NPL's, in his study on determinants of nonperforming loans in Sri Lanka. Finally, (Curak, Pepur & Poposki 2013), studied 69 banks of 10 countries of southeastern Europe from 2003 to 2010, using the generalized method of moments estimator for dynamic panel model and the research discovered that lower economic growth, higher inflation and higher interest rate are associated with higher non-performing loans. This study focused on the macroeconomic variables (interest rate, inflation, gross domestic product and unemployment) using the panel regression model, covering the 43 commercial banks in Kenya from 2012-2017.

2.3.3 Interest Rate and Non-performing Loans

Interest rate is the cost of capital for an investment and is usually stated as annualized percentages and it takes a central and important role in NPL growth rate. (Louzis, Vouldis and Metaxas 2012) examined bank specifics and macroeconomic factors of NPL's in Greece and analyzed each type of loan separately, that is, business, consumer, mortgage loan type, based on dynamic panel methods. It was observed that NPLs are explained by macro as well as management quality factors. The authors upheld that the quantifiable effect of each factor on NPL is not the same. The current study used the panel regression model and was centered on the 43 commercial banks in Kenya.

Similarly, Fiqiri (2015) in the study on analysis of factors that influence nonperforming loans which used regression analysis and based on Albanian and Italian Banks, found that there was a negative impact on NPL's where there is an increase on interest rate this is due to more expensive loans, that in return have less payment capabilities. Moreover, (Farhan 2012) carried out regression correlation and analysis to examine the influence of particular variables which are independent (GDP growth, energy crisis, rate of interest, employment and exchange rates as well as inflation) on the rate of non-performing loans of the banks in Pakistan This study established that the interest rates, energy crisis, lack of employment, inflation rate and the rate of exchange has a strong connection with non-performing loans, while GDP strongly and inversely associates with NPLs.

Further, (Atem M 2017) in his study on factors affecting nonperforming loans: a case study of KCB Bank, in Kenya found that there is positive relationship between interest rate and NPL's. Therefore, an important indicator of financial risk of banks is credit risk, which a lot of researchers connect directly with the level of nonperforming loans.

Panel regression model was used in this study to assess the effect interest rates on NPL's in the 43 commercial banks in Kenya.

Conversely, Ngungu W.N (2020) in the study to establish the relationship between interest rate and NPL, discovered that there is no significant relationship between interest rate and NPLS in commercial banks in Kenya. This study was based on only one variable.

Generally, stability in the macroeconomic environment and economic growth are related to a falling level NPL's while unstable macroeconomic environment with elevated costs of capital where lower interest margins are linked to increasing levels of NPL's. These studies were done in other countries and employed

different set of macroeconomic variables in their study. This study was centered on the 43 commercial banking institutions in Kenya.

2.3.4 Unemployment and Non-performing Loans

An increase in unemployment rate results in a negative result on cash flow of households thus increasing the debt burden. Therefore this affects the household's capacity to repay their debts within the specified time, leading to increase in NPL's. (Dichevska 2015), indicate that the rate of unemployment may well provide evidence on the effect on macroeconomic conditions on households and firms. According to Makri, Tsagkanos and Bellas (2014), which studied the causes of NPL's in the Eurozone, using a dynamic panel regression analysis on seventeen (17) Eurozone countries for the time 2000 to 2008, concluded that there is a positive relationships between NPL and several macroeconomic variables (unemployment, public debt and GDP growth). Similarly, Mileris (2014) observed that, in EU commercial banks, outcome indicated a close relationship of NPL's to macroeconomic changes. The researcher also upheld that a decline in exports, GDP, employee compensation, household expenditures, rate of employment, bankrupted firms and government expenditure, generally raised the level of NPL's in Lithuanian Banks. Nkusu (2011) and Espinoza and Prasad (2010) all concluded that the higher the NPL's, there exists a tendency to reduce the credit to GDP ratio and GDP growth while growing the rate of unemployment. Conversely, Ekanayake (2015) in the study done in Sri Lanka with a sample of nine banks from 1999-2012 found that unemployment rate of a country has a positive but insignificant effect on NPL's.

In conclusion, high unemployment levels are linked to high nonperforming loans because it affects the borrowers' ability to honor repayment of loans as demonstrated by Klein (2013), Ozili (2018). These studies were done in other

countries with differing economic background. This study was conducted in Kenya covering the 43 commercial banks using the panel data model.

2.3.5 GDP Rate and Non-performing Loans

GDP measures the value of economic activity within a country, whereas GDP growth rate measures how fast the economy is growing. According to Klein (2013), in the study of NPL's in CESEE analyzed using panel data from 1998-2011 covering the ten largest banks in each of the sixteen countries concluded that GDP growth at a higher level is signaled by an increase in income, that is to say that, the ability of debtors to honor loan obligations improves. Specifically, the study implies that an escalation in NPLs is significantly influenced by GDP, unemployment, price levels and inflation in the future, which validates the idea that in the absence of a stable and sound banking sector, vibrant and sustainable growth cannot be achieved. This study was done across sixteen countries focusing on the ten largest country in each, This study was done in Kenya focusing on all the 43 commercial banks.

Further, (Beck 2015), in the study of key determinants of nonperforming loans new evidence from a global sample, using panel data estimates across seventy five countries on the macroeconomic variables of real GDP growth, share prices, exchange rate and lending interest rate, argued that even when the after effects of the recession is controlled, the effect of GDP on NPL reaches high level in majority of countries observed with results confirming that NPLs are negatively affected by GDP growth. During periods of high GDP the primary sector firms prefer leverage, that is, as the economy grows the firms move towards debt. The results shows that when there's a positive increase to GDP growth, availability of credit leads to the decline of NPL while increased inflation leads to increase in NPL's. This means that, a contracted GDP growth translates to an increase in

NPL's. This study notably used a census technique and is done in Kenya with the 43 commercial banks as the sample

The general understanding follows that, an increase in real GDP growth frequently result in higher income that increases the ability of borrowers to have their debt serviced while a tight GDP growth translates to an increase in NPL as the income decreases. GDP growth rate is regularly associated with NPL's as they decrease in good economic times and are elevated in periods of depression as observed by Beck et al (2015), Ozili (2015) Skarica (2014). Similarly Roy, Dye and Bhowmilk (2014) found that the growth of GDP has an inverse effect on the NPL ratio. In addition, Fiqiri et al (2015) suggested that the rise in GDP level influences negatively on bad debt level. NPL level is reduced when GDP increases, because economic growth shows an improvement in business performance. This performance improves the payment capabilities. This study was an analysis of two countries Albania and Italy. These studies were done in other countries with different methodology. This study was done in Kenya comprising the 43 commercial banks using the panel data model.

2.4 Summary of the Literature Review and Research Gaps

No.	Researcher	Focus of Study	Research Findings	Gaps to be filled	Focus on current Study
1.	Louizis (2012)	Bank specific and	NPL's in Greece are	Study done in Greece	Study done in Kenya

No.	Researcher	Focus of Study	Research Findings	Gaps to be filled	Focus on current Study
		macroeconomic factors and NPL's in Greece	impacted by macroeconomic environment	Dynamic panel model used	Panel regression model
2.	Makri (2014)	Unemployment rate and NPL's in Eurozone	Strong correlation between NPL's and macroeconomic variables	Study done in Eurozone Dynamic panel regression	Study done in Kenya Panel regression model
3.	Farhan (2012)	Inflation rate and NPL's in Pakistan	Significant relationship between interest rates, unemployment ,inflation and NPL	Study done in Pakistan Regression Correlation Analysis	Study one in Kenya Panel regression model
4.	Nkusu (2011)	Macroeconomic variables and NPL's in advanced economies	Significant relationship between macroeconomic variables and NPL's	Study done in advanced economies in more than one country	Study done in Kenya Panel regression

No.	Researcher	Focus of Study	Research Findings	Gaps to be filled	Focus on current Study
				Panel vector autoregressive model	model
5.	Klein (2013)	Macroeconomic variables and bank specific factors and NPL's in CEE	Positive relationship between unemployment, inflation and NPL's	Study done in Europe Focused on both bank specific and macroeconomic variables Panel VAR methodology	Study done in Kenya Focused on macroeconomic variables Panel regression model
6.	Curak (2013)	Nonperforming loans in South eastern Europe	Lower economic growth, higher inflation and higher interest rate result to higher non-performing loans.	Study done in South eastern Europe Dynamic panel model	Study done in Kenya Panel regression model
8.	Dichevska (2015)	Impact of NPL's on households	Strong relationship between decrease capacity of	Study done in Macedonia Based on capacity of	Study done in Kenya Includes other variables as

No.	Researcher	Focus of Study	Research Findings	Gaps to be filled	Focus on current Study
			households to pay loans and NPL's	households to repay loans	interest rate, GDP and inflation
7.	Mileris (2014)	Macroeconomic factors and NPL's in EU countries	Strong relationship between macroeconomic variables an NPL's	Study done in EU Regression Tree model	Study done in Kenya Panel regression model
8.	Espinoza (2010)	NPL's and macroeconomic factors	Strong correlation of worsening NPL and decrease in economic growth and interest rates	Study done in Arab states in the Gulf VAR model	Study done in Kenya Panel Regression Model
9.	Pastory (2020)	Unemployment and NPL's	Strong relationship between unemployment and default ratios	Study done in Spain	Study done in Kenya
10.	Fofak 2005	Nonperforming loans in sub-Saharan africa	Significant relationship between NPL's	Study done in SubSaharan Africa	Study done in Kenya

No.	Researcher	Focus of Study	Research Findings	Gaps to be filled	Focus on current Study
			and inflation	Causality & pseudo panel models	Panel data analysis
11.	Beck 2015	Determinants of nonperforming loans	Significant effect of GDP and interest rate on NPL	Study done in 75 countries Dynamic panel data analysis	Study done in Kenya Panel data analysis
12.	Ngungu 2020	Relationship between interest rates and nonperforming loans	No significant relationship between interest rate and NPL's	Interest rate is the only variable used	Interest rate, inflation, GDP and unemployment studied
13.	Ekanayake 2015	Determinants of NPL's in commercial banks	NPL's vary negatively with GDP and inflation	Study done in Sri Lanka	Study done in Kenya
14.	Fiqiri 2015	Factors influencing NPL's	Significant relationship between NPLs and GDP and interest rate	Study done in Albania Econometric Model	Study done in Kenya Panel data analysis
15.	Onchomba (2014)	Macroeconomic variables and NPL's in mortgage firms	Strong and positive correlation between	Study focused on Mortgage firms	Study done on all commercial banks in Kenya

No.	Researcher	Focus of Study	Research Findings	Gaps to be filled	Focus on current Study
		in Kenya	unemployment, interest rate and NPL'S		

2.5 Conceptual Framework

The conceptual framework of the study shows the suggested relationship of the study variables. Macroeconomic variables: interest rate, inflation rate, unemployment rate and GDP are the independent variables and NPLs are the dependent variable

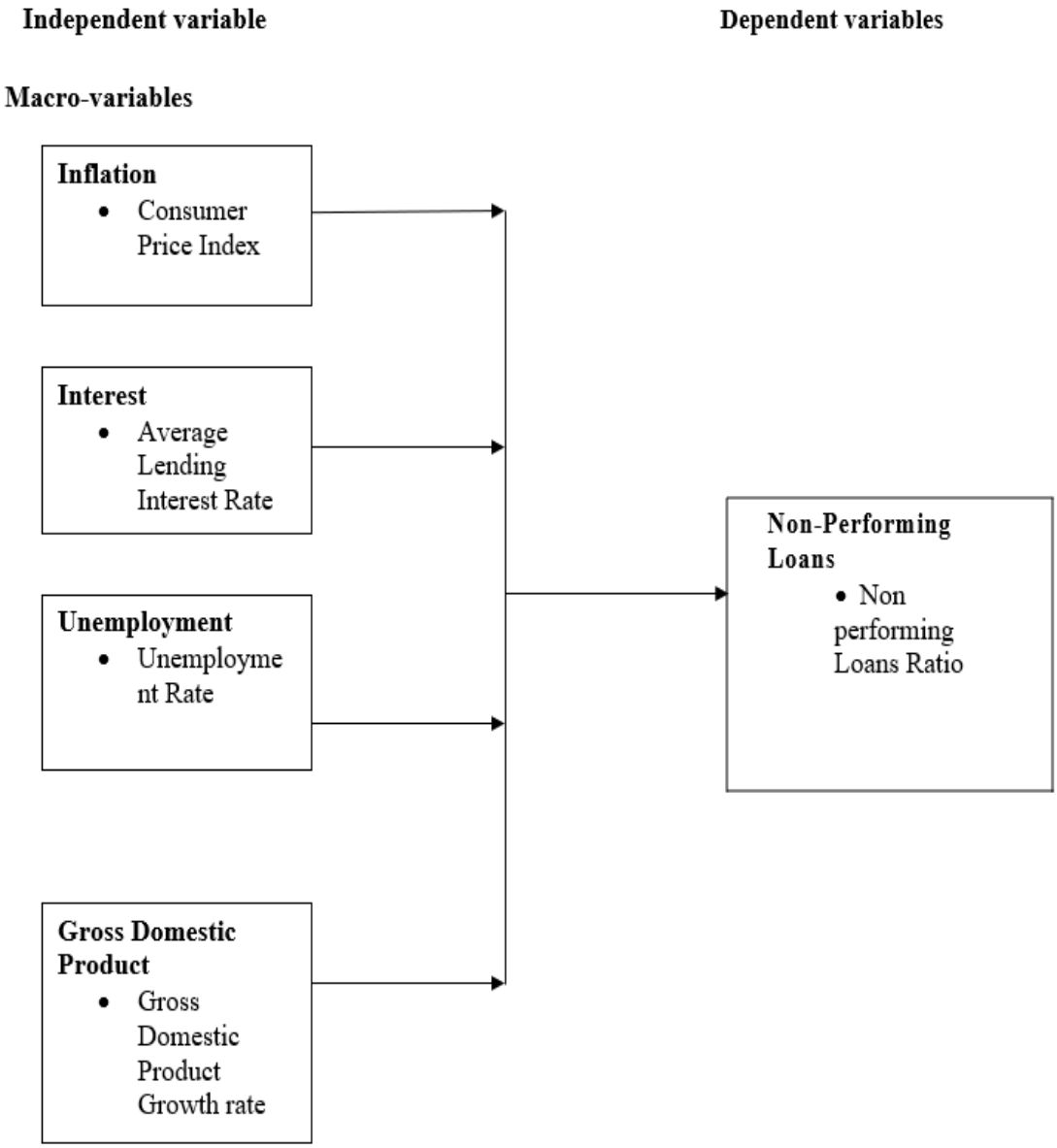

Figure 2.1 The Conceptual framework

Source: Researcher 2019

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

The chapter consists of the method employed therein. Details on the design of the research, empirical model, target population, operationalization, measurement of variables, data collection and data analysis of the study are documented.

3.2 Research Design

The study applied descriptive research design. This descriptive study focuses on ascertaining the how, what and where of a phenomenon (Cooper & Schindler, 2008). This design allows the researcher to attribute outcome to a larger population. Therefore, descriptive research design is appropriate for this particular study so as to help establish the effect of macroeconomic variables on NPLs of the 43 commercial banks in Kenya.

3.3 Target Population

This is the populace used to make conclusions in the study. A population is referred to as the total collection of objects or elements that are of interest to a researcher which will be used for making inferences (Cooper & Schindler 2009). The 43 commercial banks licensed to operate by the CBK were the target population of this study.

3.4 Sampling Design

This study used census design. A census is a complete count of every unit in a population and is useful if the entire population is very small or it is reasonable to

include the entire population. This study focused on the 43 commercial banks in Kenya.

3.5 Empirical Model

This study made use of panel data model, therefore the analysis of the study was based on a panel regression model. The regression equation is as follows:

$$Yt = \beta 0+\beta 1x1t+\beta 2x2t+\beta 3x3t+\beta 4x4t$$

Where:

Yt - level of gross non-performing loans

X1t - inflation rates

X2t - interest rates

X3t - unemployment rate

X4t - real GDP growth rate

β1 – β4 Regression coefficients measuring sensitivity of a variable Y to fluctuations in variable X.

3.6 Operationalization and measurement of the variables

The dependent variables of this study comprise of non-performing loans. The independent variables of the study comprise of inflation, interest rates, GDP growth rate and unemployment.

The study variables were then operationalized and measured as shown in the Table 3.1

Table 3.1 Operationalization and Measurement of the Variables

VARIABLE	TYPE	OPERATIONALIZATION	MEASUREMENT
Non-performing Loans	Dependent variables	NPL Ratio	NPL as a percentage of total loan portfolio
Inflation	Independent variables	Inflation Rate	Consumer Price Index
Interest	Independent variables	Interest Rate	Average Lending Interest Rate
Unemployment	Independent variables	Unemployment Rate	Unemployment rate
Gross Domestic Product	Independent Variable	GDP per capita growth rate	GDP growth rate Per capita

Source: Researcher 2019

3.7 Data Collection Procedure

This current study utilized secondary data, which was sourced from the websites of the 43 commercial banks, CBK and KNBS. Data was collected with the use of a

data collection guide. The data collected covered a five-year period from 2012 - 2017.

3.8 Data Analysis and Presentation

Data analysis is the evaluation and transformation data to a suitable form by examining each component of data to derive useful information for decision making. The data was analyzed using the NPL ratio within the structure of the panel regression model. Descriptive analysis was employed using statistics generated such as percentages, mean, scores and proportions. This was used to determine the basic feature of the study data. Panel regression analysis was done as the inferential analysis of the research. From the inferential statistics the null hypothesis was then tested which was then rejected or not rejected at 5% level of significance that is, 95% confidence level.

3.9 Diagnostic Tests

Diagnostic tests for normality, multicollinearity, stationarity test for fixed and random effect was carried out before making inferences.

3.9.1 Multicollinearity Test

To test if the level of multicollinearity is well tolerated, the variance inflation factor was used. In line with (Green 2008), a pair of variables with a correlation of 0.8 or -0.8 (that is, r2 of 64% or more), is having high levels of correlation which implies severe multicollinearity exists. In this study, the case of severe multicollinearity did not exist.

3.9.2 Normality Test

Normal distribution of variables was tested using the Shapiro Wilk test. The null hypothesis for the test states that, the data is distributed normally if the p-values are above 0.05 the null hypotheses is not rejected and therefore the data can be used. The normality test is used to determine whether sample data has been drawn from a normally distributed population. In this study, in the case of non-normal distribution, it was ignored and non-parametric tests used.

3.9.3 Stationarity Test

The test for stationarity which is largely a time series test is carried out in a panel data set due to the time series aspect of it. The test for stationarity was undertaken using Breitung unit-root test. The null hypothesis for the test states that the panels contain unit-root. Conversely, the alternative hypothesis states that the panels are stationary. In the case of non-stationary, the affected variables were differenced and subsequently used.

3.9.4 Test for Fixed and Random Effect

This test for fixed effect and random effect was done so as to select the best model for estimation. The test for fixed effect and random effect was based on a Hausman test. The null hypothesis states that random effect is favored. Conversely, the alternative hypothesis favors the fixed effect model. A p-value below a threshold of 0.05 means rejecting the null hypothesis and vice versa.

3.10 Ethical Considerations

Research ethics were upheld as stipulated within the Kenyatta University policy and the laws of Kenya. This includes avoidance of fabrication, plagiarism and falsification.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION

4.1 Introduction

This chapter comprises of the descriptive statistics, diagnostic test results, panel regression

analysis and hypothesis testing. It provides details as to the interaction between the variables.

4.2 Descriptive statistics

The descriptive statistics help in exhibiting the basic features of the data used in the study. This was carried out and the results shown in Table 4.1

Table 4.1 Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
NPL	200	4779.18	5889.96	11.00	34182.00
Inflation	200	6.84	2.56	2.70	10.00
Interest Rate	200	9.70	1.13	8.50	11.50
Unemployment	200	9.59	0.17	9.29	9.79
GDP	200	5.56	0.38	4.90	5.90

Source: Study Data 2020

Table 4.1 documents the descriptive statistics of this study. All the study variables had a total observation of 200 each, implying that the data set was balanced. The mean and standard deviations of nonperforming loans and unemployment rates indicate that the two variables fluctuated largely across the study period. Gross domestic product relatively fluctuated within the study period as revealed by a mean and the standard deviation of 5.56 and 0.38 respectively.

4.3 Diagnostic Tests

4.3.1 Multicollinearity Test

The test for multicollinearity was conducted to ascertain whether the predictor variables are linearly and highly correlated. The test was carried out using the correlation matrix as depicted in Table 4.2.

Table 4.2 Correlation Matrix

	Inflation	**Interest Rate**	**Unemployment**	**GDP**
Inflation	1.0000			
Interest Rate	0.3597	1.0000		
Unemployment	0.4861	-0.0489	1.0000	
GDP	0.5633	-0.1744	0.7564	1.0000

Source: Study Data 2020

In line with (Green, 2008), a pair of variable with a correlation of 0.8 or -0.8 (that is, r2 of 64% or more), is having high levels of correlation which implies severe multicollinearity exists. Notably, as indicated in Table 4.2, none of the study independent variables are having a correlation (r) of above 0.8 (64%), therefore, the problem of severe multicollinearity does not exist.

4.3.2 Normality Test

The test for normality was carried out to ascertain the distribution of the study data. Normality Test was conducted using Shapiro-Wilk Test as shown in Table 4.3.

Table 4.3 Normality Test Results

Variable	Obs	W	V	z	Prob>z
NPL	200	0.74656	37.81	8.358	0.0000
Inflation	200	0.96769	4.82	3.619	0.0002
Interest rate	200	0.99497	0.751	-0.66	0.7454
Unemployment	200	0.94683	7.933	4.765	0.0000
GDP	200	0.88731	16.811	6.493	0.0000

Source: Study Data 2020

Table 4.3 documents the results for normality test which was done using Shapiro-Wilk Test. The null hypothesis for this test is that the data set has normal distribution. These results indicate that apart from interest rate, the remaining variables are characterized by non normal distribution. A situation of non normal distribution of data set is mostly ignored or non parametric tests applied, depending on the circumstances. In line with the central limit theorem, a sample size of 30 and above is assumed to be characterized by a normal distribution regardless of the seeming or underlying distribution found (Verbeek, 2012). As such the non normal distribution of variables is ignored in this study.

4.3.3 Stationarity Test

The test for stationarity which is largely a time series test is carried out in a panel data set due to the time series aspect of it. The test for stationarity was undertaken using Breitung unit-root test as shown in Table 4.4.

Table 4.4 Stationarity Test Results

Variable	Test statistic	P-value
NPL	8.5291	0.0000
Inflation	-5.0205	0.0000
Interest rates	-4.3818	0.0000
Unemployment	-3.2901	0.0005
GDP	4.6559	0.0000

Source: Study Data 2020

Table 4.4 provides the results of the stationarity test. The null hypothesis for the test states that the panels contain unit-root. Conversely, the alternative hypothesis states that the panels are stationary. NPL has a p-value of 0.0000, inflation had 0.0000 as p-value, interest rate had a p-value of 0.0000, unemployment has a p-value of 0.0005 and GDP has a p-value of 0.0000. From these results, all the study variables had p-values below the threshold 0.05. The hull hypothesis was therefore rejected at 0.05 significance level. The study therefore concluded that that the variables used in the study are stationary.

4.3.4 Test for the Fixed Effect and Random Effect

This test for the fixed effect and random effect, was done so as to select the best model for estimation. The test for fixed effect and random effect was based on a Hausman test and the results presented in Table 4.5.

Table 4.5 Hausman Test

	Coefficients (b) Fixed	(B) Random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
Inflation	-279.0806	-277.8213	-1.259343	10.19669
Interestrate	866.5594	860.162	6.397434	20.15178
Unemployment	1302.349	1450.118	-147.7688	217.7237
GDP	-8632.569	-8939.413	306.8438	434.597

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 0.50
Prob>chi2 = 0.9733

Source: Study Data 2020

The Table 4.5, presents the outcome of the hausman test. The null hypothesis states that the preferred model is the random effect. Conversely, the alternative hypothesis favors the fixed effect model. A p-value below the threshold of 0.05 means rejecting the null hypothesis and vice versa. The study therefore failed to reject the null hypothesis as the p-value obtained was 0.9733, therefore the random effect model was employed.

4.4 Panel Regression Analysis

The inferential analysis of the study was based on panel regression analysis. Given that the research utilized panel data, panel regression analysis became the most appropriate method to be applied. The regression results are therefore presented in Table 4.6.

Table 4.6 Panel Regression Results

```
Random-effects GLS regression                   Number of obs     =       200
Group variable: BANK                            Number of groups  =        40

R-sq:                                           Obs per group:
     within  = 0.3133                                         min =         5
     between = 0.0356                                         avg =       5.0
     overall = 0.1082                                         max =         5

                                                Wald chi2(4)      =     72.29
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =    0.0000
```

NPL	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Inflation	-277.8213	123.9033	-2.24	0.025	-520.6673	-34.97533
Interestrate	860.162	237.5731	3.62	0.000	394.5272	1325.797
Unemployment	1450.118	1031.795	1.41	0.160	-572.1627	3472.398
GDP	-8939.413	2593.139	-3.45	0.001	-14021.87	-3856.954
_cons	76081.06	21912.92	3.47	0.001	33132.52	119029.6
sigma_u	4798.5257					
sigma_e	3056.1898					
rho	.71141771	(fraction of variance due to u_i)				

Source: Study Data (2020)

Table 4.6 presents the outcome of panel regression analysis. The regression model was found to have an R square of 0.3133 and 0.0000 as p-value which implies that macroeconomic factors are key predictors of NPLs of commercial banks in Kenya. The macroeconomic variables collectively explain 31.33 percent of the movements of variations in NPLs of commercial banks in Kenya.

A unit of increase in inflation leads to a 277.82 unit decrease in nonperforming loans of commercial banks in Kenya. Furthermore, a unit increase in interest rate brings about a resultant increase of 860.16 in the performing loans of commercial banks in Kenya. Similarly, a unit increase in unemployment rate leads to a 1450.12 unit increase in NPLs of commercial banks in Kenya. Additionally, a unit increase in GDP brings about a corresponding decrease in banks' NPLs in Kenya. The

findings reveal that inflation and GDP negatively affect banks' NPLs while on the other hand, interest rate and unemployment positively affect NPLs.

4.5 Hypotheses Testing and Discussion of the Findings

Hypotheses tests and subsequent discussion of outcome are contained herein in view of the specific objectives.

4.5.1 Inflation and Non Performing Loans of Commercial Banks in Kenya

The first objective of this study was to examine the effect of inflation on non performing loans of commercial banks in Kenya.

The first hypothesis tested therefore was:

H01: Inflation has no significant effect on Non Performing Loans of Commercial Banks in Kenya.

Panel regression analysis was utilized in testing the hypothesis on the effect of inflation on NPLs. The hypothesis test was based on a criterion ($p<0.05$) null hypothesis is rejected and ($p>0.05$) null hypothesis is not rejected. The output of the regression analysis as shown in Table 4.6 indicates p-value of $0.025<0.05$, which implies the rejection of the null hypothesis at 0.05 significance level. The outcome of the regression analysis therefore reveals that inflation has a significant effect on NPLs for Kenya.

The significant negative effect of inflation on NPLs for Kenya can be attributed to the notion that inflation in periods of rising price levels, the real purchasing power of money is reduced thereby enabling the repayment ability of borrowers. Notably, creditors loose while debtors gain in periods of inflationary trends. This then improves the loan repayment ability of borrowers by decreasing the real value of unsettled debt. The study findings on the effect on inflation on NPLs in Kenya

collaborate those of previous studies. (Ali S. 2012) found similar linkages where the inflation rate negatively related with the NPL ratio in the Albanian Banking system. Similarly, Fofak (2005) and Nkusu (2011) indicated that inflation has significant effect on non performing loans. Farhan et al. (2012) reported that inflation rate has a strong connection with NPLs of banks in Pakistan.

4.5.2 Interest Rate and Non Performing Loans of Commercial Banks in Kenya

The second objective of this study was to examine the effect of interest rate on non performing loans of commercial banks in Kenya.

The second hypothesis of the study tested was:

H02: Interest rate has no significant effect on Non Performing Loans of Commercial Banks in Kenya.

The study applied panel regression technique to test the hypothesis on the effect of interest rate on NPLs of commercial banks in Kenya. The hypothesis test was based on a criterion ($p<0.05$) null hypothesis is rejected and ($p>0.05$) null hypothesis is not rejected. The output of the regression analysis as shown in Table 4.6 indicates p-value of $0.000<0.05$, which indicates significance and as such the study rejected the null hypothesis at 0.05 significance level. The outcome of the regression analysis therefore reveals that interest rate has a significant positive effect on NPL's in Kenya.

The significant positive effect of interest rate on nonperforming loans of commercial banks in Kenya can be attributed to the notion that increasing levels of interest rates reduces the ability of loan repayment by borrowers thereby resulting in higher nonperforming loans levels. Borrowers often take up loans for investments purposes, as such higher interest rates consumes larger portion of profits for borrowers thereby hindering the expansion and in some cases continuation of businesses.

The study findings are in agreement with those of previous studies. Louzis et al. (2012) found significant effect on interest rate on nonperforming loans of banks in Greece. Nkusu (2011) reported positive correlation between the interest rate and NPL's. Farhan et al (2012) reported that interest rate has a strong connection with non-performing loans Similarly, Djiogap and Ngomsi, (2012), Beck et al., (2015), Kashif et al. (2016), Amador et al., (2013), Fiqiri et al (2015) also found significant interest rates effect on NPLs.

4.5.3 Unemployment and Non Performing Loans of Commercial Banks in Kenya

The third objective of this study was to establish the effect of unemployment rate on nonperforming loans of commercial banks in Kenya.

The third hypothesis tested therefore was:

H03: Unemployment rate has no significant effect on Non Performing Loans of Commercial Banks in Kenya.

Panel regression analysis was utilized in testing the hypothesis on the effect of inflation on NPLs for Kenya. The hypothesis test was based on a criterion ($p<0.05$) null hypothesis is rejected and ($p>0.05$) null hypothesis is not rejected. The output of the regression analysis as shown in Table 4.6 indicates p-value of $0.160>0.05$, which implies non significance and as such, the study failed to reject the null hypothesis at 0.05 significance level. The findings from the regression analysis therefore indicates that unemployment rate has an insignificant effect on nonperforming loans of commercial banks in Kenya.

The insignificant negative effect of unemployment on NPLs for Kenya can be linked to the notion that increases in unemployment reduces the ability of borrowers to repay loans. A borrower who is unemployed has lower chances of loan repayment. Additionally, a sacked employee has lower ability to continue servicing existing loans. However, the insignificant effect can therefore be in

indication that unemployment rate was not rapidly on the increase within the study time period. This results are consistent with those of Ekanayake (2015). An increase in unemployment rate results in a negative result on cash flow of households thus decreasing the debt burden. Therefore this affects the household's capacity to repay their debts within the specified time, leading to increase in NPL's. The study findings on the effect of unemployment rate is in collaboration with previous empirical literature. Blanco and Gimeno (2012) further reported negative linkages between unemployment rate and nonperforming loans.

4.5.4 Gross Domestic Product and Non Performing Loans of Commercial Banks in Kenya

The fourth objective of this study was to examine the effect of gross domestic product on nonperforming loans of commercial banks in Kenya.

The fourth hypothesis of the study tested was:

H04: Gross Domestic Product has no significant effect on NonPerforming Loans of Commercial Banks in Kenya.

The study applied panel regression technique to test the hypothesis on the effect of GDP on NPLs for Kenya. The hypothesis test was based on a criterion ($p<0.05$) null hypothesis is rejected and ($p>0.05$) null hypothesis is not rejected. The output of the regression analysis as shown in Table 4.6 indicates p-value of $0.001<0.05$, which indicates significance and as such the study rejected the null hypothesis at 0.05 significance level. The results from the regression analysis therefore reveal that gross domestic product has a significant effect on nonperforming loans of commercial banks in Kenya.

The significant and negative effect of gross domestic product on NPL can be due to the fact that increases in GDP implies the rise in economic activities which in turn enhances the ability of the borrowers to service loans. According to (Klein 2013), increases in GDP growth contributes to the decrease of NPL. The study

findings are in agreement with various empirical literature. Fiqiri et al 2015 reported that NPL level is reduced when GDP increases and therefore the rise in GDP level influences negatively on bad debt level. . Furthermore, (Beck 2015) indicated the NPLs is reduced by increasing GDP. The study established that GDP has inverse effect on NPLs. (Klein 2013) also found negative linkages between gross domestic product and nonperforming loans

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

Chapter five provides the conclusions, summary as well as the recommendations of the study which are documented in view of established findings and research objectives.

5.2 Summary of the Study

Loans are the principal operating assets as well as a major source of income for a good number of banking institutions. However, an increasing number of the loans issued result to being non-performing and negatively affecting the bottom line of the lending institutions. The study was anchored on Financial Theory, Trade off Theory, Life Cycle Consumption Theory and Deflation Theory.

The study sought to assess the effect on macroeconomic variables on NPLs for Kenya. On the effect on inflation on NPLs, it was established that inflation has a significant negative effect on nonperforming loans of commercial banks in Kenya. Rising price levels deplete the real purchasing power of money and subsequently increases profits of business and as such enabling the timely repayment of loans. Regarding the effect on interest rate on NPLs, it was established that interest rate has a significant positive effect on nonperforming loans of commercial banks in Kenya.

With respect to unemployment rate, the study established an insignificant positive effect on nonperforming loans of commercial banks in Kenya. Existing borrowers find it more difficult to service existing loans when sacked by employees, thus the reason for negative effect. Lastly, on GDP effect on NPLs, this study found that the gross domestic product has a significant negative effect on NPLs of commercial banks.

5.3 Conclusion

Based on the study findings, various conclusions were arrived at. The study established significant negative effect of inflation on nonperforming loans of commercial banks in Kenya. This study, therefore, concluded rising price level significantly improve loan repayment ability of borrowers, thereby reducing the levels of nonperforming loans.

Furthermore, the study established a significant positive effect of lending interest rate on NPLs for Kenya. The study therefore, concluded that interest rate is key in influencing the levels of NPLs of commercial banks in Kenya. Lowering of interest rates allows timely repayment by borrowers and conversely, increasing interest rates hinder the ability of customers to repay loans timely. This in turn leads to higher levels of nonperforming loans.

Additionally, the study established that unemployment rate has insignificant positive effect on NPLs for Kenya. This study in turn concluded that unemployment rate is not a key predictor of nonperforming loans of commercial banks. Commercial banks largely grant loans to employees, therefore, the unemployed hardly get bank loans. Therefore increases or decreases in unemployment rate does not significantly affect the nonperforming loans.

Lastly, the study established that gross domestic product significantly and negatively affects NPL of commercial banks in Kenya. This study therefore concluded that gross domestic product is a key determinant of nonperforming loans. Increases in gross domestic product implies increases in productivity and economic activities and in turn increases business profits. Thereby, leading to high repayment ability of borrowers and subsequently, decreased levels of nonperforming loans of commercial banks.

5.4 Policy Recommendations

Various policy recommendations were deduced from the findings of the study. The study concluded that inflation is a key NPLs determinant in Kenya. The study therefore recommends that bank managers in commercial banks in Kenya, should fully anticipate price level fluctuations in the administration of loans. This will in turn further help in minimizing loan defaults.

The study concluded that interest rate significantly affects Kenya commercial banks' NPLs levels. Bank managers are advised to ensure efficient credit risk management. Interest rates on loans should be placed in line with the underlying economic condition of the country.

Lastly, the study concluded that gross domestic product significantly affects the nonperforming loans of commercial banks in Kenya. The government should stimulate economic activities in the country. Government should also boost the local industries through patronage of locally manufactured goods as this in turn will help in ensuring good performance of firms, thereby enhancing their ability to service loans.

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APPENDICES

Appendix I: Data Collection Guide

Bank	Year	Inflation rate	Interest rate	GDP growth rate	Unemployment rate	Outstanding NPL	Outstanding Total Loans
1-43	2012						
1-43	2013						
1-43	2014						
1-43	2015						
1-43	2016						
1-43	2017						