THE RELATIONSHIP BETWEEN MACROECONOMIC FACTORS AND THE LEVEL OF NONPERFORMING LOANS IN THE BANKING INDUSTRY IN KENYA

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DECLARATION

This research project is my own original work and has not been presented for a degree in any other university.

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ABSTRACT

Considering that the banking industry is the backbone of the Kenyan economy, and that it is a critical vehicle that links the Kenyan economy to the rest of the world, it is important to understand the relationship between macroeconomic factors and the level of nonperforming loans in the banking industry in Kenya. High levels of nonperforming loans can lead to a banking crisis hence the need to understand how this level of nonperforming loans may be affected by macroeconomic factors such as lending interest rate, interest rate spread, inflation rate and real GDP growth rate. The objective of this study was to find out the relationship between macroeconomic factors and the level of nonperforming loans in the banking industry in Kenya.

A quantitative research design was adopted in the study. The population consisted of forty three commercial banks and one mortgage institution licensed to operate in Kenya as listed by the Central Bank of Kenya. Secondary data for the banking sector as a whole was collected for gross loans, gross nonperforming loans, average lending interest rate and average interest rate spread for a ten year period from 2003 to 2012. Annual data on average inflation rate and real gross domestic product growth rate for the ten year period was also collected. Statistical analysis was then done using SPSS analytical software.

The research findings established that there was a positive relationship between the dependent variable (level of nonperforming loans) and interest rate spread and lending rate as the independent variables with a correlation of 0.65 and 0.501 respectively. The findings also established that there was no relationship between the dependent variable (level of nonperforming loans) and inflation rate and GDP growth rate as the independent variables whose correlation was 0.050 and (0.028) respectively. The researcher also found that the model and individual variables were not significant implying there may be no relationship between the level of nonperforming loans and interest rate spread, lending rate, inflation rate and GDP growth rate. The researcher recommended that the management of commercial banks should be careful when increasing the lending rate and the interest rate spread since the researcher found it to have the greatest impact on the level of nonperforming loans.

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CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The importance of banks in any developed or developing economy cannot be denied. Commercial banks act as financial intermediaries between savers and borrowers in an economy leading to enhanced productivity and investment in the economy. According to Rajaraman and Visishtha (2002) economic growth in any country is not possible without a sound financial sector. Khan and Senhadji, (2001) notes that good performance of these financial institutions is the symbol of prosperity and economic growth in any country or region and poor performance of these institutions not only hamper the economic growth and structure of the particular region but also affects the whole world. The issue of nonperforming loans has gained increasing attention since the immediate consequence of large amount of nonperforming loans in the banking system is bank failure.

1.1.1 Nonperforming Loans

Boudriga et al. (2009) defines a non-performing loan as the money lent to an individual that does not earn income and full payment of principal and interest is no longer anticipated, principal or interest is 90 days or more delinquent, or the maturity date has passed and payment in full has not been made.

Kassim (2002) suggested some causes of non-performing loans as: poor management, lack of sound credit policy, inadequate credit analysis, errors in documentation, undue emphasis on profitability at the expense of loan quality, fraudulent practices, political

instability or economic depression, abnormal competition, policy and regulatory inconsistencies, weak real sector and political and social influence on bank operators.

Non-performing loans have a negative impact on borrowers, the bank and the economy. In the banking industry, lending money is perhaps the most important of all banking activities, for the interest charged on loans is how the banks earn cash flows. A bank lends a certain percentage of the customer deposits at a higher interest rate than it pays on such deposit. Principal repayments and interest rates are agreed at the time of the loan application. Banks' loans department staff are expected to work out the loan best suited to the applicant needs to ensure the beneficiary can afford to pay the loan applied for. Failure of borrowers to repay their loans on time or at all constrains commercial banks ability to lend to other borrowers. With increasing default rates, most commercial banks' loan programs fail to achieve their objectives and lead to huge monetary losses. In this regard, failure to receive loan repayments on time, results to banks experiencing cash flow problems. Delinquent loans have the potential of creating financial instability which may contribute to failure of projects thus affecting a country's economy adversely.

According to Kroszner (2002), nonperforming loans if not managed, they can lead to bank failure hence the need by central banks to be vigilant on this issue. It is the responsibility of commercial banks to assess and vet effectively credit worthiness of loan applicants and the effectiveness of bank lending policies to minimize loan default risk. In this regard, it is imperative that an efficient financial safety-net in debt recovery

mechanism by commercial banks be put in place to reduce nonperforming loans or assess the probability of nonperforming loans occurrence at the loan application stage.

Major events that affected the Kenya financial sector include; liberalization of interest rates in Kenya in July 1991, the banking crises of 1985-1986 and 1990-1998 and global financial crises of 2007-2008. Liberalization of interest rates in Kenya was effected in July 1991 to harmonized interest rates across financial institutions. Before then, the economy operated under controlled interest rates regime. Liberalization therefore allowed banks greater flexibility in varying rates according to loan maturities. When there are no ceilings on lending rates, it is easier for banks to charge a higher risk premium and therefore give loans to more risky projects. This increased the rate of bank insolvency as nonperforming assets increased. As a result, banks in the attempt to defend their profit margins charged high interest rates on performing loans. This leads to high borrowing cost for borrowers which led to increased nonperforming loan levels.

The Central Bank of Kenya thereafter issued prudential guidelines to commercial banks on risk classification of assets, provisioning and limitation on interest recoverable on non-performing loans. This ensures that adequate provision for bad debts has been made and interest on nonperforming loans is not recognized in the bank's published financial statements. The loan risk classifications include; Normal: solvent loans with zero to less than 30 days at risk and given 1 percent provision. Watch: loans with principal or interest due and unpaid for 30 to 90 days and allocated 3 percent provision. Substandard: loans, past due for more than 90 days but less than 180 days given 20 percent provision.

Doubtful: loans past due for more than 180 days and allocated 100 percent provision. Loss: loans considered uncollectible and past due for 360 and above days and given 100 percent provision. The risk classification using days at risk is used to calculate nonperforming loan levels.

1.1.2 Macroeconomic Factors

Macroeconomic factors are those economic factors that affect the whole economy in which a commercial bank operates. Major macroeconomic factors include lending interest rates, interest rate spread, inflation rate and growth in gross domestic product etc.

Lending interest rates is the cost of capital in an economy/reward for investments. Interest can be thought of as "rent of money". Interest rates are fundamental to a 'capitalist society' and are normally expressed as a percentage rate over the period of one year. Ngugi (2001) also defines interest rate as a price of money which reflects market information regarding expected change in the purchasing power of money or future inflation. It measures the price at which borrowers of funds are willing to pay to the owners of capital while at the same time measures the price at which lenders are willing to lend their money to enterprise in exchange for consumption.

The interest rate spread is the difference between the rates banks attach to the lending and the interest they fix to deposits. It is measured as the lending interest rate minus deposit interest rate. Ngugi (2001) also defines interest rate spread (IRS) as market microstructure characteristics of the banking sector and the policy environment. Khawaja

and Din (2007) also defined interest rate spread as the difference between what the bank earns on its assets and what it pays out on its liabilities.

Inflation rate is the general increase in prices of commodities. It measures by how much the value of the currency has been impaired. It is measured using a price index, based on a representative basket of goods and services.

Real Gross domestic product is the measure of the size of an economy adjusted for price changes and inflation. It measures in constant prices the output of final goods and services and incomes within an economy.

1.1.3 Relationship between Macroeconomic Factors and Nonperforming Loans

The impact of macroeconomic factors on performance of loans has also been observed. High interest rates are known to cause difficulty in effective servicing of a loan by individual and corporate customers leading to increase in nonperforming loans. According to CBK (2013) a high interest rate regime impacts negatively on the quality of loans and advances resulting in increase in non-performing loans.

Fofack (2005) noted that macroeconomic stability and economic growth are associated with a declining level of nonperforming loans; whereas adverse macroeconomic shocks coupled with higher cost of capital and lower interest margins are associated with a rising

scope of nonperforming loans. These results are supported by long-term estimates of nonperforming loans derived from pseudo panel-based prediction models

According Farhan et al (2012) Pakistani bankers perceive that macroeconomic factors such as interest rate, energy crisis, unemployment, inflation, and exchange rate has a significant positive relationship with the non-performing loans of Pakistani banking sector while gross domestic product growth has significant negative relationship with the non-performing loans of Pakistani banking sector.

Vogiazas and Nikolaidou (2011) found that macroeconomic variables, specifically the construction and investment expenditure, the inflation and the unemployment rate, and the country's external debt to gross domestic product and money multiplier jointly with Greek crisis-specific variables influence the credit risk of the Romanian banking system.

1.1.4 Banking Industry in Kenya

The Companies Act, the Banking Act, the Central Bank of Kenya Act and various prudential guidelines issued by the Central Bank of Kenya govern the banking industry in Kenya. The Central Bank of Kenya is responsible for formulating and implementing the monetary policy and fostering the liquidity, solvency and proper functioning of the financial system. The Central Bank of Kenya publishes information on Kenya's commercial banks and nonbanking financial institutions, interest rates, and other guidelines. Banks in Kenya have come together under the Kenya Bankers Association

which serves as a lobby group for banks' interest and addresses issues affecting its members.

According to CBK (2013), the banking sector as at 31st December 2012 consisted of the Central Bank of Kenya, as the regulatory authority, 44 banking institutions (43 commercial banks and 1 mortgage finance company), 5 representative offices of foreign banks, 8 deposit taking microfinance institutions, 2 credit reference bureaus and 112 Forex Bureaus. Out of the 44 banking institutions, 31 locally owned banks comprise 3 with public shareholding and 28 privately owned while 13 are foreign owned. The 8 deposit taking microfinance institutions, 2 credit reference bureaus and 112 forex bureaus are privately owned. The foreign owned financial institutions comprise of 9 locally incorporated foreign banks and 4 branches of foreign incorporated banks.

According to CBK (2013) banking sector was sound and stable and recorded improved performance in 2012.Total net assets increased by 15.3 percent from KShs. 2.02 trillion in December 2011 to KShs. 2.33 trillion in December 2012, with the growth being supported by the increase in loans and advances. Customer deposits grew by 14.8 percent from KShs. 1.49 trillion in December 2011 to KShs. 1.71 trillion in December 2012. Pre-tax profit for the sector increased by 20.6 percent from KShs. 89.5 billion in December 2011 to KShs. 107.9 billion in December 2012.Gross loans grew by 11.7 percent from KShs. 1,191.0 billion in December 2011 to KShs. 1,330.4 billion in December 2012.

However, the ratio of non-performing loans to gross loans increased from 4.4 percent in December 2011 to 4.7 percent in December 2012. The increase in non-performing loans signaled an increase in credit risk which was largely attributable to high interest rates in the first half of 2012.

1.2 Research Problem

Macroeconomic factors such as interest rates, interest rate spread, inflation rates and gross domestic product affect the performance of banks since these factors affect the core business of banks i.e. interest income and interest expense. High inflation rates also affects the purchasing costs of goods leading to high operating costs for commercial banks. Banks may therefore need to increase their lending rates in order to cover their operating costs which in turn impacts negatively on customers. Theoretically, if interest rates, interest rate spread and inflation rate are high, they may affect the servicing of loans by customers leading to high non performing loans. High nonperforming loans if not controlled may lead to bank failure. Customers may also not place their savings with banks because of low disposable income resulting from high inflation leading ultimately to slow economic growth. Such dilemmas in the cyclic effects of macroeconomic factors necessitate the need for many studies into the relationship between macroeconomic factors and levels of nonperforming loans in the banking industry in Kenya.

The banking industry is very critical to the Kenyan economy. The banking industry performs functions such as providing funds for investments, growth and expansion of businesses and government projects through lending, encourage savings both at

wholesale and retail levels, facilitate national, corporate and individual transactions through the instruments and products that they offer both at local and international level; and carry out the payments system of the country. The banking industry is also used by the Central Bank of Kenya to implement both the fiscal and monetary policies of the government. The banking sector is also heavily relied on by the other sectors of the economy and links the Kenyan economy to the rest of the world.

Most studies have investigated the effect of macroeconomic factors on nonperforming loans, in developed countries with few being done in developing countries. The recent studies in developed countries such as Vogiazas & Nikolaidou (2011), Louisz n et al. (2010) and Klein (2013) have focused on the determinants of nonperforming loans in various developed countries. In Kenya, no known study has focused on the relationship between nonperforming loans and macroeconomic factors in the banking industry in the recent past. Waweru and Kalani (2009) conducted a study on causes and remedies of commercial banking crises in Kenya with non performing loans being the main cause of bank crisis. They however did not determine the relationship between macroeconomic factors and the level of nonperforming loans but rather attributed customer failure to disclose vital information during the loan application process as the main customer specific factor leading to non performing loans and lack of an aggressive debt collection policy was perceived as the main bank specific factor, contributing to the non performing debt problem in Kenya.

Since increase in nonperforming loans can lead to problems which can negatively impact the banking industry in particular and the economy in general, there is the need to narrow down and investigate the strength of relationship between macroeconomic factors and the level of nonperforming loans in the banking industry in Kenya. This study therefore sought to answer the questions; 'Is there a relationship between macroeconomic factors and the level of nonperforming loans in the banking industry in Kenya? And if so, what is the nature of the relationship?'

1.3 Objective of the Study

To determine the relationship between macroeconomic factors and the level of nonperforming loans in the banking industry in Kenya.

1.4 Significance of the Study

This study will be of importance to the following groups:

Financial institutions: By highlighting on the relationship between macroeconomic factors and the level of nonperforming loans, banks will get to know how their operations may be affected and hence help them in their management strategies.

Regulators: The regulators of commercial banks i.e. the Central Bank of Kenya (CBK) can use the findings of the study to develop different policies and legislation aimed at combating the negative effects of nonperforming loans as a result of negative macroeconomic factors.

Customers: The findings of the study will help customers in their decisions on whether to borrow from commercial banks or not given the effect of macroeconomic factors on their ability to service their loans.

Academicians: The study will add to the existing literature on the relationship between macroeconomic factors and the level of nonperforming loans. It will also acts as a basis upon which other studies on levels of nonperforming loans and macroeconomic factors are done.

CHAPTER TWO: LITERATURE REVIEW

2.1   Introduction

This chapter summarizes the information from other researchers who have carried out their research in the same field of study. The specific literature researched on relates to the theoretical literature review on nonperforming loans and macroeconomic factors. This chapter also looks at other empirical studies on the subject.

2.2   Theoretical Literature Review

The theories of credit risk highly associate occurrence of nonperforming loans with external and internal factors. Three theories underpinnings have provided insight into how these factors influence nonperforming loans levels. These are the deflation theory, financial theory and the ownership structure theory.

2.2.1 Deflation Theory

The deflation theory was pioneered by Irving Fisher in 1933.The theory suggests that when the debt bubble bursts the following sequence of events occurs; debt liquidation leading to distress selling and contraction of deposit currency, as bank loans are paid off. This contraction of deposits cause a fall in the level of prices, which leads to greater fall in the net worth of business, hence precipitating bankruptcies which leads to the concerns of running at a loss to make a reduction in output, in trade and in employment of labor. These cycles cause complicated disturbances in the rates of interest and a fall in the money value.

This theory shows that the level of prices or money value are affected as a result of interest rates and inflation. A reduction in output and trade leading to nonperforming loans shows that low gross domestic product has an impact on the level of nonperforming loans

2.2.2 Financial Theory

This theory was started by Minsky in 1974.It is also known as financial instability hypothesis. It attempted to provide an understanding and explanation of the characteristics of financial crisis. The theory suggests that, in prosperous times, when corporate cash flow rises beyond what is needed to pay off debt, a speculative euphoria develops, and soon thereafter debts exceed what borrowers can pay off from their incoming revenues, which in turn produces a financial crisis. As a result of such speculative borrowing bubbles, banks and lenders tighten credit availability, even to companies that can afford loans and the economy subsequently contracts. The theory identifies three types of borrowers that contribute to the accumulation of insolvent debt: The "hedge borrower" can make debt payments (covering interest and principal) from current cash flows from investments. For the "speculative borrower", the cash flow from investments can service the debt, i.e., cover the interest due, but the borrower must regularly roll over, or re-borrow, the principal. The "Ponzi borrower" borrows based on the belief that the appreciation of the value of the asset will be sufficient to refinance the debt but cannot make sufficient payments on interest or principal with the cash flow from investments; only the appreciating asset value can keep the Ponzi borrower afloat.

According to the financial theory, in Kenya, a hedge borrower would have a normal loan and is paying back both the principal and interest; the speculative borrower would have a watch loan; meaning loans' principal or interest is due and unpaid for 30 to 90 or have been refinanced, or rolled-over into a new loan; and the Ponzi borrower would have a substandard loan, meaning the payments do not cover the interest amount and the principal is actually increasing. The primary sources of repayment are not sufficient to service the loan. The loan is past due for more than 90 days but less than 180 days. This theory is therefore applicable to this study.

2.2.3 Ownership Structure Theory

The ownership structure theory was pioneered by Jensen in 1976. The theory explains why highly regulated industries such as public utilities or banks have higher debt-equity ratios for equivalent levels of risk than the average non-regulated firm. The theory argues that, "ownership structure" rather than "capital structure" is the crucial variables to be determined, not just the relative amounts of debt and equity but also the fraction of the equity held by the manager.

Relating to this study, the Kenya banking industry is composed of various categories of banks based on different ownership structure with different percentage in shareholdings. The nonperforming loan levels of all the Kenyan banks regardless of the ownership structure will be used in this study.

2.3 Macroeconomic Factors

Macroeconomic factors are factors that affect the whole economy in which commercial banks operate. The main macroeconomic factors include lending interest rates, interest rate spread, inflation rate, and growth in gross domestic product. It is important to understand macroeconomic factors in an economy to aid in effective monitoring and review of credit risk measured by nonperforming loans. The performance of an economy is evaluated by measuring the magnitude of its growth and the quality of its growth.

2.3.1 Lending Interest Rates

Lending interest rates is the cost of capital in an economy/reward for investments. Interest can be thought of as "rent of money". Interest rates are fundamental to a 'capitalist society' and are normally expressed as a percentage rate over the period of one year. Ngugi (2001) also defines interest rate as a price of money which reflects market information regarding expected change in the purchasing power of money or future inflation. It measures the price at which borrowers of funds are willing to pay to the owners of capital while at the same time measures the price at which lenders are willing to lend their money to enterprise in exchange for consumption. Lending rates/ interest rates are one of the primary economic determinant of non-performing loans/bad loans.

According to Nkusu (2011), there is an empirical evidence of positive correlation between the interest rate and non-performing loans. An increase in interest rate weakens loan payment capacity of the borrower therefore non-performing loans and bad loans are positively correlated with the interest rates. As far as interest rate policy is concerned it

plays very important role in non performing loan growth rate in a country/economy, Espinoza and Prasad (2010) examined the macroeconomic determinants of non-performing loans in the GCC banking system according to them high interest rates increases loan defaults but they did not find statistically significant relationship. Bloem and Gorter (2001) studied causes and treatment of nonperforming loans and according to them frequent changes in the interest rate policy causes an increase in the bad loans. Asari, et al. (2011) also found significant relationship between loan defaults and interest rates. They further found that an increase in loan defaults also causes asset corrosion of banks and subsequently capital erosion. According to Dash and Kabra (2010) the banks with aggressive lending policies charging high interest rates from the borrowers incur greater non-performing loans. Ngetich and Wanjau (2011) also found interest rate as a primary factor boosting non-performing loans.

2.3.2 Interest Rate Spread

The interest rate spread is the difference between the rates banks attach to the lending and the interest they fix to deposits. Ngugi (2001) also defines interest rate spread (IRS) as market microstructure characteristics of the banking sector and the policy environment. Risk-averse banks operate with a smaller spread than risk-neutral banks since risk aversion raises the bank's optimal interest rate and reduces the amount of credit supplied. Khawaja and Din (2007) also defined interest rate spread as the difference between what the bank earns on its assets and what it pays out on its liabilities. They further stated that an increase in interest rate spread implies that either the depositor or borrower or both stand to lose since it discourages savings and investments, on one hand, and raises

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concerns about the effectiveness of the bank-lending channels of monetary policy; on the other hand. Khawaja and Din (2007) further observed that in developing economies, the lack of alternate avenues of financial intermediation aggravates the adverse effect of increase in interest rate spread. The change in deposit and lending rate influences the cost of capital which in turn affects the level of consumption and investments in the economy

Financial institutions facilitate mobilization of savings, diversification and pooling of risks and allocation of resources. Ngugi (2001) noted that since the receipts for deposits and loans are not synchronized, intermediaries like banks incur certain costs. They charge a price for the intermediation services offered under uncertainty, and set the interest rate levels for deposits and loans. Rhyne (2002) notes that the difference between the gross costs of borrowing and the net return on lending defines the intermediary costs which include information costs, transaction costs(administration and default costs) and operational costs.

Ngetich and Wanjau (2011) concluded that interest rate spread affect performing assets in banks as it increases the cost of loans charged on the borrowers and regulations on interest rates have far reaching effects on assets non-performance, for such regulations determine the interest rate spread in banks and also help mitigate moral hazards incidental to nonperforming loans

2.3.3 Inflation Rate

Inflation rate is the general increase in prices of commodities. It measures by how much the value of the currency has been impaired. It is measured using a price index, based on a representative basket of goods and services. Anytime the economy grows so fast it pushes all prices significantly and for a protracted time above the actual utility value of goods and services. Inflation is particularly bad for the economy because it affects everybody and all segments of the economy, distorting prices and undermining the clear relationship that must exist between value and price, the very basis of market exchange.

Types of inflation include demand pull inflation, cost push inflation, market power inflation, wage price spiral inflation, expectation inflation and full employment inflation

Demand-pull inflation occurs whenever there is a sudden and significant jump in consumer demand which stays way ahead of supply.

Cost-push inflation: a major shift in the cost of production which are passed onto consumers in the form of increased prices.

Market power inflation, or profit-push inflation, is a special form of cost-push inflation which is the result of monopolies' unchallenged ability to set prices above price equilibrium prices and to force consumers to absorb those prices.

Wage-price spiral inflation is caused when a sudden sharp increase in consumer prices leads, through unionist activity, to increased wages, which in turn leads to a second and third rounds of still higher prices, and wages.

Expectation inflation is caused by an inflationary psychosis, a crippling fear of inflation that so dominates the public it forces consumers and producers into taking actions that actually trigger inflation as a self-fulfilling prophesy.

Full-employment inflation is caused when demand continues to be strong when the economy is already at full employment and all available resources, including labor, is already engaged. Supplying that demand will add to cost and prices because; producers are forced to use inferior resources and less competent labor, producers are forced to tap into expensive overtime work, over-utilization of factory plants results in a higher rate of machine depreciation, productivity of overstretched workers declines, producers are forced to increase wages to retain efficient labor

According to Fofack (2005) there is an empirical evidence of positive relationship between the inflation in the economy and non-performing loans. According to the Farhan (2012) inflation affects loan payment capacity of borrowers positively or negatively, higher inflation can enhance the loan payment capacity of borrower by reducing the real value of outstanding debt; moreover increased inflation can also weaken the loan payment capacity of the borrowers by reducing the real income when salaries/wages are sticky, moreover by highlighting the role of inflation in the presence of variable interest rate. Nkusu(2011) further explains that in this scenario inflation reduces the debt servicing capacity of the loan holders as lenders adjust the lending interest rates to adjust their real return. Therefore the relationship between inflation and non-performing loans can be positive or negative depending on the economy of operations.

2.3.4 Gross Domestic Product

Real Gross domestic product is the measure of the size of an economy adjusted for price changes and inflation. It measures in constant prices the output of final goods and services and incomes within an economy.

According to Fofack (2005) there is a significant empirical evidence of negative association between growth in gross domestic product and non-performing loans. According to Khemraj and Pasha (2009) the explanation of this negative relationship is that growth in the gross domestic product usually increases the income which ultimately enhances the loan payment capacity of the borrower which in turn contributes to lower bad loan and vice versa

2.4 Empirical Literature Review

Farhan et al (2012) carried out correlation and regression analysis to analyze the impact of selected independent variables (Interest Rate, Energy Crisis, Unemployment, Inflation, GDP Growth, and Exchange Rate) on the non-performing loans of Pakistani banking sector. Top 10 Pakistani banks were selected as a sample. According to the results Pakistani bankers perceive that interest rate, energy crisis, unemployment, inflation, and exchange rate has a significant positive relationship with the non-performing loans of Pakistani banking sector while gross domestic product   growth has significant negative relationship with the non-performing loans of Pakistani banking sector.

Khemraj and Pasha (2005) ascertained the determinants of non-performing loans in the Guyanese banking sector using a panel dataset. They found that gross domestic product growth is inversely related to non-performing loans, suggesting that an improvement in the real economy translates into lower non-performing loans. They also find that banks which charge relatively higher interest rates and lend excessively are likely to incur higher levels of non-performing loans.

Louzis et al. (2011) used dynamic panel data methods to examine the determinants of non performing loans in the Greek banking sector, separately for each loan category (consumer loans, business loans and mortgages). The results showed that, for all loan categories, non performing loans in the Greek banking system was explained mainly by macroeconomic variables (gross domestic product, unemployment, interest rates, public debt) and management quality. Differences in the quantitative impact of macroeconomic factors among loan categories were evident, with non-performing mortgages being the least responsive to changes in the macroeconomic conditions.

Somoye (2010) investigated at the macroeconomic level, the correlation between non-performing loans and a subset of economic variables: per capita gross domestic product, inflation, interest rates, changes in the real exchange rate, interest rate spread and broad money supply (M2). Non-performing Loans were adjusted for specific provisions (non-performing loans as a proportion of loans loss provisions) to provide the basis for cross-country comparisons. Most of the variables were found to be positively correlated with non performing loans.

Klein (2013) investigated the non-performing loans in Central, Eastern and South-Eastern Europe (CESEE) in the period of 1998–2011. He found that the level of nonperforming loans can be attributed to both macroeconomic conditions and banks' specific factors, though the latter set of factors was found to have a relatively low explanatory power. The examination of the feedback effects broadly confirmed the strong macro-financial linkages in the region. While nonperforming loans were found to respond to macroeconomic conditions, such as gross domestic product growth, unemployment, and inflation, the analysis also indicates that there are strong feedback effects from the banking system to the real economy, thus suggesting that the high nonperforming loans that many Central, Eastern and South- Eastern Europe (CESEE) countries currently face adversely affect the pace economic recovery.

Fofack (2005) investigated the leading causes of nonperforming loans during the economic and banking crises that affected a large number of countries in Sub-Saharan Africa in the 1990s. Empirical analysis showed a dramatic increase in these loans and extremely high credit risk, with significant differences between the CFA and non-CFA countries, and substantially higher financial costs for the latter sub-panel of countries. The results also highlighted a strong causality between these loans and, economic growth, real exchange rate appreciation, the real interest rate, net interest margins and interbank loans, consistent with the causality and econometric analysis, which reveal the significance of macro and microeconomic factors. Simulated results showed that macroeconomic stability and economic growth are associated with a declining level of nonperforming loans; whereas adverse macroeconomic shocks coupled with higher cost

of capital and lower interest margins are associated with a rising scope of nonperforming loans. These results were supported by long-term estimates of nonperforming loans derived from pseudo panel-based prediction models.

Syed (2006) investigated the relationship between non-performing loans, macroeconomic factors, and financial factors in context of private commercial banks in Bangladesh. The empirical analysis evaluated how banks' non-performing loans are influenced by three major sets of economic and financial factors, i.e., terms of credit, bank size induced risk preferences and macroeconomic shocks. The findings supported the hypotheses that bank size and horizon of loan maturity has negative influence on non-performing loan. The other variables considered i.e. macroeconomic shocks do not have any significant influence on non-performing loan.

Kalirai and Scheicher (2002) found lending rate, production of industry, stock market return and business confidence index are the factors which determine the level of loan quality in Australia while conducting a research taking data from 1990-2001.

Bofondi and Ropele (2011) found that non-performing loans are positively associated with the unemployment rates, lending rates and negatively associated with the growth domestic product rate; they conducted their study in Italy by taking the quarterly data over the period of 1990-2010.

2.5 Conclusions

Low levels of nonperforming loans are critical to the well being of the banking industry in particular and the economy in general. Many studies in developed countries have studied the determinants of nonperforming loans and the relationship between non performing loans and macroeconomic factors. Few studies have however been done in Kenya in the recent past necessitating the need for more studies in this area.

The theories on nonperforming loans just explain how nonperforming loans come about without explaining any relationship with macroeconomic factors. There is therefore need to bridge the gap and determine the relationship between macroeconomic factors and nonperforming loans in a way that can be easily understood.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1   Introduction

The overall purpose of this study was to ascertain the relationship between macroeconomic factors and the level of nonperforming loans in the banking industry in Kenya. This chapter presents the research methodology used for this study. It discusses the research design, and why it was preferred over other research designs. It also provides information on the population of the study, the data collection method and data collection instruments. It also shows how the data collected was analyzed and interpreted in order to answer the research questions.

3.2   Research Design

A quantitative research design was applied in this study since the data collected was in the form of numbers. The data collected was the aggregate values of gross loans, gross nonperforming loans, average interest rate spread, average lending interest rates, average inflation rates and average growth rates in gross domestic product. Specifically a regression design was used since it is able to not only provide the relationship between two or more variables (whether positive or negative) but also provide information on the strength of the relationship.

3.3 Population

The population of the study consisted of all the 43 commercial banks and one mortgage company licensed to operate in Kenya by the Central Bank of Kenya. (See Appendix 1 for List of Licensed Commercial Banks and other financial institutions in Kenya.)

3.4 Data collection

The study used secondary data sources to gather information relevant in reaching at its research objective. The secondary data on gross loans and nonperforming loans for the banking industry was collected from the Central Bank of Kenya's annual bank supervision reports. Data on macroeconomic indicators was collected from economic survey reports of the Kenya National Bureau of Statistics (KNBS).

Data on the amount of gross loans, amount of gross nonperforming loans, average interest rate spread, average lending interest rates, average inflation rates and average growth rates in gross domestic product was collected for a 10 year period from 2003 to 2012. The period 2003 to 2012 was selected since it was the most current period that would provide data leading to relevant information for decision making by concerned persons.

3.5 Data analysis

The study used a regression model to establish the strength of the relationship between non-performing loans and macroeconomic factors during the period of study.

The regression equation was in the form $Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4$

Where; Y = level of Nonperforming Loans as measured using Gross Nonperforming Loans/Gross Loans

X_1 = the average interest rate spread

X_2 = average lending interest rate

X_3 = average inflation rate

X_4 = the gross domestic product growth rate

b_1 and b_2 and b_3 are coefficients while a is the constant term.

The regression equation was solved using SPSS statistical software. Correlation analysis was also used to test the relationship between macroeconomic factors and the level of nonperforming loans. The researcher further tested the significance of each variable and that of the overall model.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1   Introduction

This chapter presents the analysis and findings of the study as set out in the research methodology. The results are presented investigating the relationship between macroeconomic variables and the level of no performing loans in the banking industry in Kenya. Secondary data was obtained from the Central Bank of Kenya's annual bank supervision reports and the Kenya National Bureau of Statistic's economic surveys reports.

4.2   Multiple Regressions

4.2.1 Correlation and the Coefficient of Determination

Table 4.1 Correlation and Coefficient of Determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Interest Rate Spread	0.501	0.251	0.157	10.351
Lending Rate	0.653	0.426	0.354	9.060
Inflation Rate	0.053	0.003	0.122	11.940
GDP growth rate	(0.028)	0.001	0.124	11.952

Source: Researchers, 2013

Table 4.1 above represents the correlation (R) and coefficient of determination between the level of nonperforming loans as the dependent variable and independent variables (Interest rate spread, Lending Rate, Inflation rate and GDP growth rate).

The findings indicated that there was a positive relationship between the dependent variable (level of nonperforming loans) and interest rate spread and lending rate as the independent variables. The lending rate had a higher relationship with the level of nonperforming loans with a correlation of 0.653 than the interest rate spread which had a correlation of 0.501.

The findings indicate that there was no relationship between the dependent variable (level of nonperforming loan) and inflation rate and GDP growth rate as the independent variable. The correlation between the dependent variable (level of nonperforming loans) and inflation rate and GDP growth rate as independent variables was 0.0503 and (0.028) respectively.

Of all the four predictors (interest rate spread, lending rate, inflation rate and GDP growth rate) to level of nonperforming loans, the lending rate had the highest coefficient of determination of 0.426 while interest rate spread, inflation rate and GDP growth rate had coefficients of determinations of 0.251, 0.003 and 0.001 respectively. The coefficient of determination explains the extent to which changes in the dependent variable (level of nonperforming loans) can be explained by changes in the independent variable(interest rate spread, lending rate, inflation rate and GDP growth rate.

4.2.2 Coefficient of Determination (R^2)

Table 4.2 Coefficient of Determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.699	0.489	0.079	10.816

Source: Researchers, 2013

The coefficient of determination explains the extent to which changes in the dependent variable can be explained by changes in the independent variable or the percentage of variation in the dependent variable (level of nonperforming loan) that can be explained by all the four independent variables (Interest rate spread, lending rate, inflation rate and GDP growth rate).The correlation and coefficient of determination of the dependent variable when all the independent variables are combined was also be measured and tested is as shown in table 4.2 above. From the findings, 48.9 % of the variation in the level of nonperforming loans is attributed to a combination of four independent factors (interest rate spread, lending rate, inflation rate and GDP growth rate) investigated in this study. A further 51.1% of the variations in the level of nonperforming loans are attributed to other factors not investigated in this study.

4.2.3 Multiple Regression Analysis

Table 4.3 Multiple Regression Analysis

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
Model	B	Std. Error	Beta		
(Constant)	47.574	42.208	0	1.127	0.311
IRS	4.854	7.420	0.544	0.654	0.542
LR	5.368	3.734	1.162	1.438	0.210
Inflation	0.005	0.657	0.003	0.008	0.994
GDP	-0.515	2.563	-0.078	-0.201	0.849

Source: Researchers, 2013

Dependent variable: Level of nonperforming loans

The researcher conducted a multiple regression analysis so as to determine the relationship between the level of nonperforming loans and the four variables (interest rate spread, lending rate, inflation rate and GDP growth rate) investigated in this study.

The regression equation ($Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4$) was;

$Y = 47.574. + 4.854X_1 + 5.368X_2 + 0.005 X_3 - 0.515X_4$

Where; Y = level of Nonperforming Loans as measured using Gross Nonperforming Loans/Gross Loans

X_1 = the average interest rate spread

X_2 = average lending interest rate

X_3 = average inflation rate

X_4 = the gross domestic product growth rate

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According to the regression equations established, taking all factors (interest rate spread, lending rate, inflation rate and GDP growth rate) constant at zero, the level of nonperforming loans as a result of these independent factors will be 47.574. The data findings also shows that taking all other factors constant, a unit increase in interest rate spread will lead to a 4.854 increase in the level of nonperforming loans. A unit increase in lending rate will lead to a 5.368 increase in the level of nonperforming loans. A unit increase in inflation rate will lead to a 0.005 increase in the level of nonperforming loans. A unit increase in GDP growth rate will lead to a 0.515 decrease in the level of nonperforming loans. This therefore implies that interest rate spread, lending rate and inflation rate have a positive relationship with the level of nonperforming loans while GDP growth rate has a negative relationship with the level of nonperforming loans.

The t-tests were used to test the significance of individual variables. The t-test indicates that the level of nonperforming loans that do not depend on interest rate spread, lending rate, inflation rate and GDP growth rate is not significant at $p > 0.05$. The test of significance indicates that the coefficient of 4.854 in the case of interest rate spread, coefficient of 5.368 in the case of lending rate, coefficient of 0.005 in the case of inflation rate and coefficient of -0.515 in the case of GDP growth rate are not significant at $p > 0.05$ and are due to chance. This means that there is no association between the level of nonperforming loans, interest rate spread, lending rate, inflation rate and GDP growth rate profits. Ordinarily, commercial banks should focus on other factors other than the interest rate spread, lending rate, inflation rate and GDP growth rate if their objective is to predict the level of nonperforming loans.

The F-Test generated by ANOVA was used to test for overall significance of the model. The findings in Table 4.4 show that the $F_{4,5}$ statistic of 1.194 was not significant with a P-value > 0.05. The model therefore did not establish a relationship between the level of nonperforming loans, interest rate spread, lending rate, inflation rate and GDP growth rate.

Table 4.4 Analysis of Variance(ANOVA)

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	558.698	4	139.674	1.194	.416[a]
	Residual	584.985	5	116.997		
	Total	1143.683	9			

a. Predictors: (Constant), GDP, LR, Inflation, IRS   b. Dependent Variable: NPLR

Source: Researchers, 2013

4.3   Correlation Matrix

The findings in the table below show the correlation between all the variables (level of nonperforming loans, interest rate spread, lending rate, inflation rate and GDP growth rate). The findings showed that correlation between the lending rate and the interest rate spread was the highest at 0.915. This is attributed to the derivation of the interest rate spread which is calculated as the lending rate minus the deposit rate.

Table 4.5 Correlation Matrix

	NPLR	IRS	LR	Inflation	GDP
NPLR	1.000	0.501	0.653	0.053	(0.028)
IRS		1.000	0.915	(0.049)	(0.242)
LR			1.000	(0.035)	(0.158)
Inflation				1.000	(0.468)
GDP					1.000

Source: Researchers, 2013

4.4   Trend Analysis

This section presents the trend of the independent and dependent variables in the banking industry in Kenya from 2003 to 2012. The following figure shows the trend of the non-performing loan ratio, average interest rate spread, average lending rate, average inflation rate and average GDP growth rate for ten years. The nonperforming loan ratio decreased from a high of about 35% in 2003 to a low of about 5% in 2012.The average interest rate spread remained relatively the same at 10% and 11% in 2003 and 2012 respectively. The average lending rate increased from a low of 13% to high of 18% in 2012.The average inflation rate increased from a low of 9.8% in 2003 to a high 26% in 2008 due to post mainly due to post election violence before coming down to a low of 3% in 2012. The GDP growth rate increased from a in low of 2.7% in 2003 to a high of 7% in 2007 before declining to a low of 1.7% in 2008 mainly due to effects of post-election violence. The GDP growth rate subsequently rose to 4.7% in 2012.

Figure 4.1 Trend analysis of dependent and independent variables
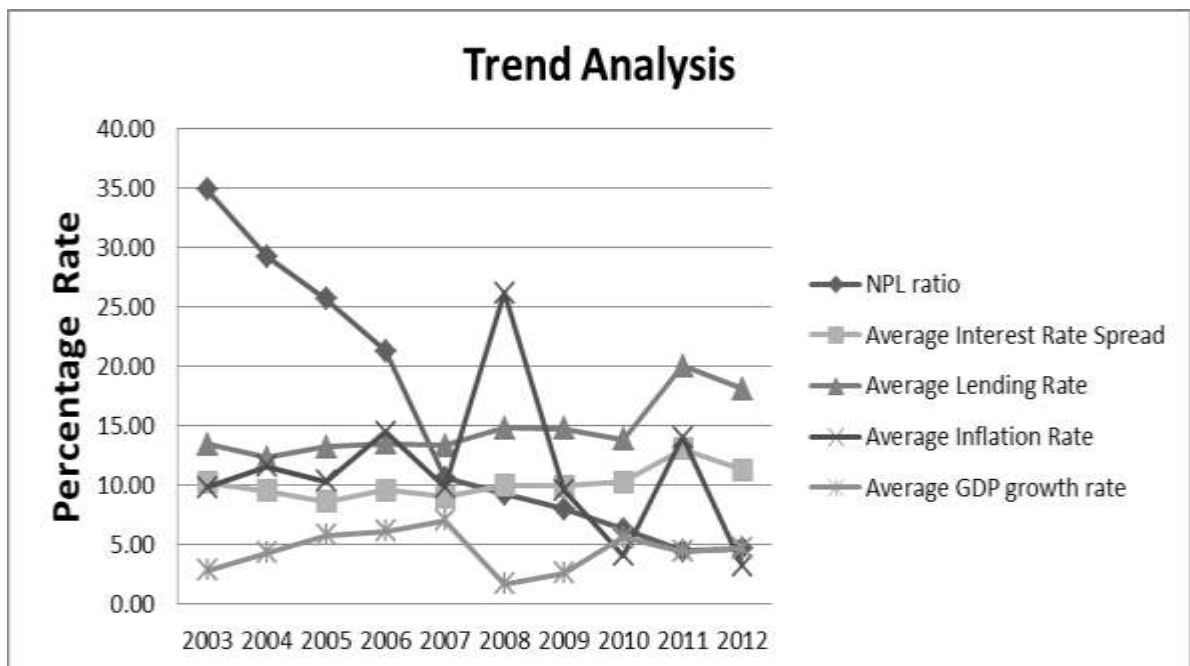
4.5 Discussions of Findings

The findings established that there was a positive relationship between the dependent variable (level of nonperforming loans) and interest rate spread and lending rate as the independent variables. The lending rate had a higher relationship with the level of nonperforming with a correlation of 0.653 than the interest rate spread which had a correlation of 0.501.The findings also established that there was no relationship between the dependent variable (level of nonperforming loan) and inflation rate and GDP growth rate as the independent variables whose correlation was 0.0503 and (0.028) respectively.

The findings also shows that taking all other factors constant, a unit increase in interest rate spread will lead to a 4.854 increase in the level of nonperforming loans. A unit increase in lending rate will lead to a 5.368 increase in the level of nonperforming loans. A unit increase in inflation rate will lead to a 0.005 increase in the level of nonperforming loans. A unit increase in GDP growth rate will lead to a 0.515 decrease in the level of nonperforming loans. This therefore implies that interest rate spread, lending rate and inflation rate have a positive relationship with the level of nonperforming loans while GDP growth rate has a negative relationship with the level of nonperforming loans.

The findings also indicated that 48.9 % of the variation in the level of nonperforming loans is attributed to a combination of four independent factors (interest rate spread, lending rate, inflation rate and GDP growth rate) investigated in this study. A further 51.1% of the variations in the level of nonperforming loans are attributed to other factors not investigated in this study.

The t-tests were used to test the significance of individual variables. The t-test indicates that the level of nonperforming loans that do not depend on interest rate spread, lending rate, inflation rate and GDP growth rate is not significant at $p > 0.05$. The test of significance indicates that the coefficient of 4.854 in the case of interest rate spread, coefficient of 5.368 in the case of lending rate, coefficient of 0.005 in the case of inflation rate and coefficient of -0.515 in the case of GDP growth rate are not significant at $p > 0.05$ and are due to chance. This means that there is no association between the level of nonperforming loans, interest rate spread, lending rate, inflation rate and GDP growth rate profits. Ordinarily, commercial banks should focus on other factors other than the interest rate spread, lending rate, inflation rate and GDP growth rate if their objective is to predict the level of nonperforming loans.

The F-Test generated by ANOVA was used to test for overall significance of the model. The findings in Table 4.4 show that the $F_{4,5}$ statistic of 1.194 was not significant with a P-value > 0.05. The model therefore did not establish a relationship between the level nonperforming loans, interest rate spread, lending rate, inflation rate and GDP growth rate.

The findings showed that correlation between the lending rate and the interest rate spread was the highest at 0.915. This was attributed to the derivation of the interest rate spread which is calculated as the lending rate minus the deposit rate.

The nonperforming loan ratio decreased from a high of about 35% in 2003 to a low of about 5% in 2012.The average interest rate spread remained relatively the same at 10% and 11% in 2003 and 2012 respectively. The average lending rate increased from a low of 13% to high of 18% in 2012.The average inflation rate increased from a low of 9.8% in 2003 to a high 26% in 2008 due to post mainly due to post election violence before coming down to a low of 3% in 2012. The GDP growth rate increased from a in low of 2.7% in 2003 to a high of 7% in 2007 before declining to a low of 1.7% in 2008 mainly due to effects of post-election violence. The GDP growth rate subsequently rose to 4.7% in 2012.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary and conclusions of the study. It also discusses the limitations faced by the researcher in conducting the study and gives policy recommendations and suggestions for further studies

5.2 Summary

The objective of the study was to establish the relationship between macroeconomic variables and the level of nonperforming loans in the banking industry in Kenya. Non-performing loans are dangerous not only for the Kenyan economy but also for the world economy as we saw the negative effects of the global financial crisis created by these loans in other parts of the world especially in the United States of America. There is therefore the need for this generation to identify the factors responsible for non-performing loans since researchers believe that once we identify these factors then we can make policies to prevent any future happenings of these loans.

5.3 Conclusions

The findings established that there was a positive relationship between the dependent variable (level of nonperforming loans) and interest rate spread and lending rate as the independent variables. The lending rate had a higher relationship with the level of

nonperforming with a correlation of 0.653 than the interest rate spread which had a correlation of 0.501.The findings also established that there was no relationship between the dependent variable (level of nonperforming loan) and inflation rate and GDP growth rate as the independent variables whose correlation was 0.0503 and (0.028) respectively.

The findings also shows that taking all other factors constant, a unit increase in interest rate spread will lead to a 4.854 increase in the level of nonperforming loans. A unit increase in lending rate will lead to a 5.368 increase in the level of nonperforming loans. A unit increase in inflation rate will lead to a 0.005 increase in the level of nonperforming loans. A unit increase in GDP growth rate will lead to a 0.515 decrease in the level of nonperforming loans. This therefore implies that interest rate spread, lending rate and inflation rate have a positive relationship with the level of nonperforming loans while GDP growth rate has a negative relationship with the level of nonperforming loans.

The findings also indicated that 48.9 % of the variation in the level of nonperforming loans is attributed to a combination of four independent factors (interest rate spread, lending rate, inflation rate and GDP growth rate) investigated in this study. A further 51.1% of the variations in the level of nonperforming loans are attributed to other factors not investigated in this study.

The t-tests were used to test the significance of individual variables. The t-test indicates that the level of nonperforming loans that do not depend on interest rate spread, lending rate, inflation rate and GDP growth rate is not   significant at p >0.05. The test of

significance indicates that the coefficient of 4.854 in the case of interest rate spread, coefficient of 5.368 in the case of lending rate, coefficient of 0.005 in the case of inflation rate and coefficient of -0.515 in the case of GDP growth rate are not significant at $p > 0.05$ and are due to chance. This means that there is no association between the level of nonperforming loans, interest rate spread, lending rate, inflation rate and GDP growth rate profits. Ordinarily, commercial banks should focus on other factors other than the interest rate spread, lending rate, inflation rate and GDP growth rate if their objective is to predict the level of nonperforming loans.

The F-Test generated by ANOVA was used to test for overall significance of the model. The findings in Table 4.4 show that the $F_{4,5}$ statistic of 1.194 was not significant with a P-value > 0.05. The model therefore did not establish a relationship between the level nonperforming loans, interest rate spread, lending rate, inflation rate and GDP growth rate.

The findings showed that correlation between the lending rate and the interest rate spread was the highest at 0.915. This was attributed to the derivation of the interest rate spread which is calculated as the lending rate minus the deposit rate.

The nonperforming loan ratio decreased from a high of about 35% in 2003 to a low of about 5% in 2012.The average interest rate spread remained relatively the same at 10% and 11% in 2003 and 2012 respectively. The average lending rate increased from a low of 13% to high of 18% in 2012.The average inflation rate increased from a low of 9.8% in

2003 to a high 26% in 2008 due to post mainly due to post election violence before coming down to a low of 3% in 2012. The GDP growth rate increased from a in low of 2.7% in 2003 to a high of 7% in 2007 before declining to a low of 1.7% in 2008 mainly due to effects of post-election violence. The GDP growth rate subsequently rose to 4.7% in 2012.

5.4   Limitations of the Study

Time limitations for the researcher limited the scope of the study. Others areas such as relationship between the level of nonperforming loans and macroeconomic factors in other sectors such as the micro finance sector and cooperatives sector would have been examined.

Reluctance of commercial banks in providing secondary data for individual banks for the ten year period leading to the researcher using data for the entire banking sector from the regulators' bank supervision reports.

The model covered four macroeconomic variables i.e. interest rate spread, lending rate inflation rate and GDP growth rate. Conclusions could have been different if the other macroeconomic variables were studied such as employment rate, exchange rate etc.

The model tested the relationship of the macroeconomic variables and the level of nonperforming loans over a ten year period. Conclusions could have been different if the study had covered a longer period like 20years.

Cost limitations were also faced by the researcher in trying to get secondary data from different individual banks resulting in the researcher using the data for the entire banking sector from the regulators' bank supervision reports.

5.5   Recommendations

Recommendations for this study relate to policy recommendations and suggestions for further studies.

5.5.1 Policy Recommendations

The researcher recommends that management of commercial banks should be careful when increasing the lending rate and the interest rate spread since the researcher found these two variables to have the greatest impact on the level of nonperforming loans. A unit increase in lending rate will lead to a 5.368 increase in the level of nonperforming loans. A unit increase in interest rate spread will lead to a 4.854 increase in the level of nonperforming loans.

The researcher also recommends that policy makers should work in increasing the GDP growth rate in an economy since the researcher found no relationship or negative relationship between the GDP growth rate and the level of nonperforming loans. Increase in GDP growth rate increases disposable income to customers hence enhancing their ability to service their loans.

Management and policy makers should put more resources in determining other factors influencing the level of nonperforming loans other than the four independent variables

since findings indicated that only 48.9 % of the variation in the level of nonperforming loans is attributed to a combination of four independent factors (interest rate spread, lending rate, inflation rate and GDP growth rate) investigated in this study. A further 51.1% of the variations in the level of nonperforming loans are attributed to other factors not investigated in this study.

Regulators and management of commercial banks should budget for research costs to enhance research in the banking industry by sponsoring such studies on the level of nonperforming loans.

5.5.2 Recommendations for Further studies

Further studies can be done on other financial institutions such as micro finance institutions and SACCOs to determine the relationship between macroeconomic factors and the level of nonperforming loans.

Further research can also be done to investigate whether the reported relationship of macroeconomic factors and nonperforming loans in the Kenyan banking industry is valid for individual banks.

Further studies can be done to cover more than the four macroeconomic variables covered i.e. interest rate spread, lending rate inflation rate and GDP growth rate. Other macroeconomic variables such as employment rate ,exchange rate, public debt etc. can be included in the study.

Further studies can be done to test the relationship of the macroeconomic variables and the level of nonperforming loans over a longer period like 20 years.

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APPENDICES

APPENDIX 1   **LIST OF LICENSED COMMERCIAL BANKS AND OTHER FINANCIAL INSTITUTIONS IN KENYA**

COMMERCIAL BANKS

1. African Banking Corporation Ltd.
2. Bank of Africa Kenya Ltd.
3. Bank of Baroda (K) Ltd.
4. Bank of India.
5. Barclays Bank of Kenya Ltd.
6. CFC Stanbic Bank Ltd.
7. Charterhouse Bank Ltd –Under Statutory Management
8. Chase Bank (K) Ltd.
9. Citibank N.A Kenya
10. City Finance Bank Ltd.
11. Commercial Bank of Africa Ltd.
12. Consolidated Bank of Kenya Ltd.
13. Co-operative Bank of Kenya Ltd.
14. Credit Bank Ltd.
15. Development Bank of Kenya Ltd.
16. Diamond Trust Bank (K) Ltd.
17. Dubai Bank Kenya Ltd.
18. Ecobank Kenya Ltd
19. Equatorial Commercial Bank Ltd.
20. Equity Bank Ltd.
21. Family Bank Ltd.
22. Fidelity Commercial Bank Ltd.
23. Fina Bank Ltd.
24. First community Bank Limited.
25. Giro Commercial Bank Ltd.
26. Guardian Bank Ltd.
27. Gulf African Bank Limited.
28. Habib Bank A.G Zurich.
29. Habib Bank Ltd.
30. Imperial Bank Ltd.
31. Investment & Mortgages Bank Ltd.
32. Jamii Bora Bank Limited
33. Kenya Commercial Bank Ltd.

34. K-Rep Bank Ltd.
35. Middle East Bank (K) Ltd.
36. National Bank of Kenya Ltd.
37. Oriental Commercial Bank Ltd.
38. Paramount Universal Bank Ltd.
39. Prime Bank Ltd.
40. Southern Credit Banking Corporation Ltd.
41. Standard Chartered Bank (K) Ltd.
42. Trans-National Bank Ltd.
43. Victoria Commercial Bank Ltd

OTHER FINANCIAL INSTITUTIONS

Housing Finance Ltd

Source: Central Bank of Kenya available at www.centralbank.go.ke

APPENDIX 2 LIST OF ABBREVIATIONS

ANOVA	Analysis Of Variance
CBK-	Central Bank of Kenya
CESEE	Central, Eastern and South- Eastern Europe
GDP -	Growth Domestic Product
IRS-	Interest Rate Spread
LR-	Lending Rate
MBA -	Masters of Business Administration
NPLR-	Nonperforming Loan Ratio
SACCOs	Savings and Credit Cooperative Societies

APPENDIX 3   REGRESSION RESULTS FOR ALL VARIABLES COMBINED

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	GDP, LR, Inflation, IRS[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: NPLR

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.699[a]	.489	.079	10.817

a. Predictors: (Constant), GDP, LR, Inflation, IRS

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	558.698	4	139.674	1.194	.416[a]
	Residual	584.985	5	116.997		
	Total	1143.683	9			

a. Predictors: (Constant), GDP, LR, Inflation, IRS

b. Dependent Variable: NPLR

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	47.574	42.208		1.127	.311
	IRS	4.854	7.420	.544	.654	.542
	LR	5.368	3.734	1.162	1.438	.210
	Inflation	.005	.657	.003	.008	.994
	GDP	-.515	2.563	-.078	-.201	.849

IV

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	GDP, LR, Inflation, IRS[a]	.	Enter

a.   Dependent Variable: NPLR

APPENDIX 4 REGRESSION RESULTS FOR EACH VARIABLE

i)Interest Rate Spread

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	IRS[a]		. Enter

a. All requested variables entered.

b. Dependent Variable: NPLR

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.501[a]	.251	.157	10.351

a. Predictors: (Constant), IRS

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	286.530	1	286.530	2.674	.141[a]
	Residual	857.153	8	107.144		
	Total	1143.683	9			

a. Predictors: (Constant), IRS

b. Dependent Variable: NPLR

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	60.715	27.882		2.178	.061
	IRS	-4.465	2.730	-.501	-1.635	.141

a. Dependent Variable: NPLR

ii)Lending Rate

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	LR[a]		. Enter

a. All requested variables entered.

b. Dependent Variable: NPLR

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.653[a]	.426	.354	9.060

a. Predictors: (Constant), LR

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	486.994	1	486.994	5.933	.041[a]
	Residual	656.689	8	82.086		
	Total	1143.683	9			

a. Predictors: (Constant), LR

b. Dependent Variable: NPLR

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	59.839	18.454		3.243	.012
	LR	-3.013	1.237	-.653	-2.436	.041

a. Dependent Variable: NPLR

ii)Inflation Rate

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Inflation[a]		. Enter

a. All requested variables entered.

b. Dependent Variable: NPLR

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.053[a]	.003	-.122	11.940

a. Predictors: (Constant), Inflation

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.233	1	3.233	.023	.884[a]
	Residual	1140.450	8	142.556		
	Total	1143.683	9			

a. Predictors: (Constant), Inflation

b. Dependent Variable: NPLR

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	14.370	8.009		1.794	.111
	Inflation	.094	.625	.053	.151	.884

a. Dependent Variable: NPLR

iv)GDP growth Rate

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	GDP[a]		. Enter

a. All requested variables entered.

b. Dependent Variable: NPLR

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.028[a]	.001	-.124	11.952

a. Predictors: (Constant), GDP

VIII

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.870	1	.870	.006	.940[a]
	Residual	1142.813	8	142.852		
	Total	1143.683	9			

a. Predictors: (Constant), GDP

b. Dependent Variable: NPLR

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	16.255	11.178		1.454	.184
	GDP	-.182	2.338	-.028	-.078	.940

a. Dependent Variable: NPLR

APPENDIX 5 CORRELATIONS RESULTS

[DataSet1] C:\Users\Everlyne\Documents\project 2013\project analysis.sav

Correlations

		NPLR	IRS	LR	Inflation	GDP
NPLR	Pearson Correlation	1	.501	.653*	.053	-.028
	Sig. (2-tailed)		.141	.041	.884	.940
	N	10	10	10	10	10
IRS	Pearson Correlation	.501	1	.915**	-.049	-.242
	Sig. (2-tailed)	.141		.000	.892	.500
	N	10	10	10	10	10
LR	Pearson Correlation	.653*	.915**	1	-.035	-.158
	Sig. (2-tailed)	.041	.000		.923	.663
	N	10	10	10	10	10
Inflation	Pearson Correlation	.053	-.049	-.035	1	-.468
	Sig. (2-tailed)	.884	.892	.923		.173
	N	10	10	10	10	10
GDP	Pearson Correlation	-.028	-.242	-.158	-.468	1
	Sig. (2-tailed)	.940	.500	.663	.173	
	N	10	10	10	10	10

*. Correlation is significant at the 0.05 level (2-tailed).

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

APPENDIX 6: Aggregate Gross Loans, Non-Performing Loans for All Commercial Banks , Average Interest Rate Spread ,Average Lending Rate, Average Infflation Rate, and Average GDP growth rate Data from 2003 to 2012

YEAR	GROSS LOANS AND ADVANCES IN MILLION	GROSS NPL AND ADVANCES IN MILLION	NPL RATIO %	AVERAGE INTEREST RATE SPREAD %	AVERAGE LENDING INTEREST RATE %	AVERAGE INFLATION RATE%	AVERAGE GDP GROWTH RATE%
2003	315,321.00	109,898.00	34.85	10.2	13.47	9.80	2.80
2004	382,290.00	111,889.00	29.27	9.5	12.30	11.60	4.30
2005	415,300.00	106,500.00	25.64	8.6	13.20	10.30	5.80
2006	473,100.00	100,700.00	21.29	9.6	13.50	14.50	6.10
2007	533,796.00	56,775.00	10.64	8.99	13.32	9.80	7.00
2008	670,372.00	61,869.00	9.23	9.96	14.80	26.20	1.70
2009	757,760.00	60,741.00	8.02	9.92	14.76	9.60	2.6
2010	914,910.00	57,637.00	6.30	10.28	13.87	4.10	5.60
2011	1,190,985.00	52,958.00	4.45	13.06	20.04	14.00	4.40
2012	1,330,365.00	61,917.00	4.65	11.3	18.10	3.20	4.70
Maximum	1,330,365.00	111,889.00	34.85	13.06	20.04	26.20	7.00
Minimum	315,321.00	52,958.00	4.45	8.60	12.30	3.20	1.70

Source ;Central bank of Kenya for data on gross loansand advances,gross nonperforming loans, average interest rate spread and av erage lending rate

Source ;Kenya National Bureau of Statistics for data on inflation and real GDP growth rate