

**THE EFFECT OF MACROECONOMIC VARIABLES ON THE LEVEL OF
NON-PERFORMING LOANS IN SACCOs IN KENYA**

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**A RESEARCH PROJECT PRESENTED IN PARTIAL FULFILLMENT OF THE
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DECLARATION

I declare that this is my original work and to the best of my knowledge, it has not been presented to any other College, Institution or University for academic award.

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D61/8051/2017

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Signature

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Date

This project has been submitted for examination with my approval as university supervisor.

Supervisor: Mr. James M. Nganga

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Signature

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Date

DEDICATION

This research project is dedicated to my beloved husband Mr. James Maina and my parents Mrs.Saida Mohammed and Mr. Joseph Wangalwa for their continued encouragement and moral support. I would also like to devote my work to my friends and colleagues for their moral support in pursuit of an education. God bless you all

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LIST OF ABBREVIATIONS AND ACRONYM

ANOVA	Analysis of Variance
CBK	Central Bank of Kenya
GDP	Gross Domestic Product
NPL	Non-Performing Loans
SACCO	Savings And Credit Co-Operative
US	United States

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ABSTRACT

The goal of study was to determine the impact of macro-economic components on levels of NPLs in SACCO sector in Kenya. Moral hazard theory together with the asymmetric information theory informed the study. This research work used a descriptive design that gave the examiner the ability to designate the various variables being evaluated. Aggregate data was acquired for the entire SACCO sector. Information on unemployment, income per capita and was retrieved from KNBS while the interest rates over the period of interest were retrieved from the Sacco Societies Regulatory Authority. Exchange rate data were gathered from reports by the Central bank of Kenya. SPSS version 20 was employed in the analysis of data and the results were presented using percentages, frequencies, and tables. A multiple regression model assisted in describing the effect of macroeconomic variables on levels of NPLs in the SACCO sector in Kenya. The researcher revealed that an increase in interest rate while holding all the other factors constant would result in a decrease in non-performing loans of SACCOs. Further, it was noted that unemployment rate had significance and positive effect on non-performing loan of SACCOs. Findings from regression model also uncovered that that Exchange Rate had a positive significant influence on non-performing loans of SACCOs hence a unit increase in Exchange Rate while holding all the other factors constant would result into an increase on non-performing loans of SACCOs. A unit increase on Income Per Capita while holding all other factors constant would cause an increase in non-performing loan of SACCOs. The study recommend that management in SACCOs should consider employment status of their customers as high rate of employment would result to high rate of salary which empowers customer to honor their obligation to pay back their loan hence reduces occurrence of nonperforming Loan as, without salary, loans could not be paid and therefore when unemployment rate is high, NPLs increase. The study recommends the government to ensure a stable economy and institute policies to ensure that the economy is growing to reduce non-performing loans of SACCOs. This study furnishes SACCOs with critical information that can empower credit managers to conduct risk assessment more effectively and with prudence. It is also meant to spur delight in further research on risk management. This study furnishes SACCOs with critical information that can empower credit managers to conduct risk assessment more effectively and with prudence. It is also meant to spur interest in further research on risk management.

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

SACCOs take part in financial intermediary for their members, leading to enhanced productivity and investment in the economy. Members participate by actively saving and borrowing funds. The core activity of these organizations is lending. Loans are the single most common cause of the probability of default. Other sources will exist through other activities of the Saccos. If loans are not well managed, they can easily cause failure. Saccos are hence required to operate within well-defined credit granting criteria. According to Al-Jarrah (2012), the main reason that credit risk occurs in Saccos is because of defaulted loan facilities. These are loans that have exceeded 90 days and have not been serviced. NPLs are very difficult to manage especially if the proper credit granting criteria were not adhered to. This simply means that if loans are granted to customers with disregard to the credit policy, then there would be high levels of NPLs. Implying Saccos will have difficult times recovering the loans. Most debts are bad debts that are written off leading to banks making huge losses, and this would lead to a banking crisis (Rodriguez-Moreno & Pena, 2013).

The research study was founded upon theories of moral hazard and asymmetric information. The theory posits that in response to moral hazard inducements, banks raise their loan portfolio risk, which causes an increase in NPLs in the future (Klein, 2013). The asymmetric information theory holds that it's difficult to isolate/filter borrowers as well as defaulters.

This theory states that some agents may possess information that is unavailable to other agents who may be in the same trade. The theory therefore exposes the borrower's information. The NPLs are likely to cause problems in the Saccos, which include low liquidity and profitability, reduced competitiveness, slower growth and an increase in the number of arising disputes amongst stakeholders. NPLs are therefore becoming a key point of concern hindering the sustainability of the SACCO movement in the country. They are a major source of misery for Saccos with huge NPLs on their balance sheet as the societies' operations are adversely affected. They are rendered weak as they lack the capacity to finance their operations, service their debts and give credit to the rest of their members. In this regard, this study intended to establish how macroeconomic factors affect the incidence of NPLs in the SACCO movement in Kenya.

1.1.1 Macroeconomic Variables

Romer (2012), reveal macroeconomics is centered on behavior of an economy in totality nationally, either regionally or internationally. Macroeconomic factors are referred to as variables. These variables include economic output, interest rates, unemployment, inflation, exchange rate, income per capita, the government financial and budget balances as well as those of international trade and productivity. Aguiar and Broner (2013) argued that problems affecting emerging markets are massive variations in macroeconomic fundamentals and asset prices. According to Brains and Rich (2011), macro-economic variables are affect stakeholders in the country's economy both at the national and at the county level.

Pal and Mittal (2011), advance that key macro-economic variables affecting investment markets are inflation, exchange rates, fiscal deficits, interest rates, current account, and economic growth.

Interest rates represent the price or premium paid by the borrower for using such funds (Ombaba, 2013). The level of interest rates determines the actual cost of debt. Interest rates may rise or fall depending on the performance of the economy or as a result of the decision-making outcomes by lenders and administrative authorities. Therefore, an upsurge in interest rates increases debt cost while the converse is also true. Consequently, a rise on the interest rates may cause subsequent rise in number of NPLs following a growing burden of debt on the borrower (Curak, & Pepur, 2012).

Unemployment refers to the situation when individuals with the requisite qualifications or abilities are unable to find any work that they can do to earn a living. The unemployment rate is the best indicator of how deeply rooted this problem is in a particular country and is also an indicator of the country's economic health. According to a study on macroeconomic indicators on NPLs in Albania's banking sector from 2007 to 2017 by Turan (2016), NPLs were found to correlate negatively with the unemployment rate and with remittance from members. When the economy faces turbulent times, such as recession, the unemployment rate is bound to rise. Consequently, the number of NPLs is bound to rise as members are left with little disposable income to make remittances for loan repayment.

1.1.2 Non-Performing Loans

These refer to loan provisions that have fallen past due date and remains unpaid for 90 days or more. Overdrafts are considered part of the credit facilities offered. They are considered past due if the advice is given on the due date is breached. Hennie (2016), corroborates this argument by defining bad loans as loans that are no longer income generating. Kassim (2012) suggested that NPLs are cause by factors such as inadequate credit analysis, mismanagement, poor credit policy, abnormal competition, poor economic performance, political instability, fraud and external influence on lenders by players within the political sphere.

These NPLs adversely affect lending institutions as well as the economy at large. Regarding lending institutions such as banks, they risk incurring heavy financial loss when borrowers default on their loans. Under normal circumstances, banks generate a significant portion of their earnings from interest that accrues on loaned funds. When a customer makes a loan application, they are made aware of the prevailing interest rate for the facility they intend to take. When the loan is due, they make periodic installments which are inclusive of the principal amount plus interest that has accrued over time. Banks are required to perform background checks on prospective borrowers to determine whether they are creditworthy (Santacreu, 2016). Credit scores are good indicators that are commonly used for this process. Funds are then availed in good faith with the expectation that the borrower will make repayments without fail. When borrowers default on their loan facilities, banks stand to incur huge losses as well as facing the risk of low liquidity.

This adversely affects their ability to finance their operations as well as giving loans to other customers. When this problem persists, the country's economy is hardly hit due to low circulation of money.

1.1.3 Macroeconomic Variables and the level of NPLs

This relationship can be explained on the basis that the systemic risks resulting from exposures to macroeconomic risk factors across banks determine the quality of the loan portfolio (Ahmad & Bashir, 2013). The prevailing macroeconomic situation inevitably impacts borrower's financial position and their capacity to service debt. Thus, economic upheavals associated with a high capital cost and low interest have been established as a major cause of NPLs (Anjom & Karim, 2016). Credit expansion and decelerating share of the NPL ratio have yielded better results in banking sectors in a favorable macroeconomic environment (Yam, 2016). İslamoğlu (2015) explored the influence of the various components on combined NPL ratio for banks operating in Borsa Istanbul and established that changes in NPL ratio can be demonstrated using interest rate of commercial loan and public debt stock/GDP ratios.

When unemployment is high, there is a possibility for the number of NPLs to increase especially if individuals that have taken loan facilities lose their jobs. Without a salary or any other reliable source of income, it becomes increasingly difficult for borrowers to honor their loan obligations. A study by Cmok (2016) revealed that the number of NPLs was relatively high before the economic crisis, mainly due to the growing leverage of customers had become a crucial driving force in consumer spending in the Latin

American region. With the economic recession, the number rose even higher due to the aftershocks of high unemployment. The study also revealed that lenders charging high interest rates faced a higher default rate as their loans proved to be quite expensive, increasing the burden on the borrowers. This can be corroborated by another study by Sinkey and Greenwalt (2015) that revealed that US banks charging high interest rates experienced higher default rates. Rajan and Dhal (2015) also led to the same conclusion during their study which adopted a panel regression analysis.

1.1.4 The SACCO Sector in Kenya

According to The Ministry of Co-operative Development (2011), out of a total of 12,000 registered cooperative movements in Kenya, 5000 of them were SACCOs. They operated back office operations and had managed to mobilize over Ksh 170 billion, where Ksh 120 billion amounted to disbursed loans. 200 of them had ventured into front office service activities. According to The Ministry of Cooperative Development (2010), Saccos were first registered in the county with the aim of mobilizing members' savings. In 1969, they were given the greenlight to mobilize savings as well as give loans to their members. (Njoroge, 2015).

SACCOs have had a rapid growth and the Kenyan government has provided support to them and their members. The main objective of the movement in the country is to spur economic growth. Critical focus is on strengthening the movement through value addition, increasing access to markets, improving corporate governance and marketing efficiency.

The loans given to their members are far affordable compared to those given by the banks. They also have flexible repayment plans which allow their members considerable time during the repayment period (Waweru, 2014). The sector controls huge resources and savings owing to its rapid growth. As a result, the government of Kenya committed itself to establish sector-specific legislation and implementation of international standards on finance performance to supervise SACCOs (Nyambere, 2013). The primary functions of a SACCO society are mobilizing savings and giving loans, and by 2016, these organizations had close to Ksh 213 billion in savings, while loans disbursed amounted to Kshs 221 billion. Some of these societies provided training to members while others had invested funds in various financial instruments in the country such as stocks and bonds (Cheruiyot, 2017).

1.2 Research Problem

The primary root of profit for SACCOs is the interest got from loans disbursed to members. With this, the success for a SACCO society mainly relies on the ability of its credit management systems. The 2016 Central Bank Annual Supervision Report showed a rise in the default rate, which is a significant credit risk. This had adversely affected their ability to make profits, spelling a gloomy future if the fortunes did not change in the near future. The sector registered a loss of \$7.32 million in 2017, up from a loss of \$3.77 million in the previous year (CBK, 2018). These losses were majorly as a result of defaulted loans in the SACCOs. This trend is an indicator of turbulent times facing the SACCO sector in the country, which a threat to their productivity and sustainability.

This is a step backwards, as SACCOs were established to increase access to the rural communities that were unbanked, as well as improving financial inclusivity in the country. A scrutiny of studies on the outcome of macroeconomic factors on NPLs has been empirically inconclusive. Studies have produced mixed outcomes regarding this relationship. Mileris (2014), studied this relationship in banks in the EU. The study confirmed that a country's economic strength is a critical factor in reducing the rate of NPLs in commercial banks. Ndegwa (2014), looked at the result of mobile money on the growth in the rate of NPLs for Kenyan banks. The results were that GDP growth had a contrary relationship with NPLs. Otiso (2015), did a study on relationship in the factors of macroeconomic and NPLs in mortgage firms in Kenya. His study confirmed the existence of positive impact linking unemployment and high interest rates together with increased rate of NPLs in the mortgage sector in the country.

Similarly, Maşcu and Pescu (2016) conducted a time-series analysis on this relationship in Romania. From their study, it emerged that real interest rates had a direct impact on the NPL ratio. From previous studies, very little has been done to establish this relationship in the SACCO sector. Therefore, this survey tried to address this gap by finding satisfactory answers for this question: What was the repercussion of macroeconomic components on NPLs of SACCOs in Kenya?

1.3 Research Objective

Key goal of this research was to ascertain impact of macro-economic variables on levels of NPLs in the SACCO sector.

1.4 Value of the Study

This research investigation furnishes SACCOs with critical information that can empower credit managers to conduct risk assessment more effectively and with prudence. It is also meant to spur interest in further examination on risk management. The recommendations is significant to the SACCOs supervisory department of the CBK. The Central Bank is better placed to formulate policies that favour the reduction of credit risk in banking institutions in Kenya. This research shed light on how interest rates affect debtors. This helps the relevant institutions when setting their borrowing and lending rates. This enhances performance during times of recession and economic boom. This research also contributes significantly to the current body of literature on impression that macroeconomic components have on non-performing loans. It is meant to stimulate interest on more research work hence supplement existing body of work in corporate finance.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Here, discussion of already reviewed literature that relates to macroeconomic variables on the level of NPLs is discussed. The section provides theoretical framework for this research study that gives a discussion of theories and general literature review.

2.2 Theoretical Framework

This chapter examines theoretical perspectives informing the study about the factors of macroeconomic variables on levels of NPLs. This research was informed by the theory of moral hazard and asymmetric information theory.

2.2.1 Moral Hazard theory

It was formulated by Keeton and Morris (1987) and later advanced by Mirrlees (1999). The theory argues that in terms of capital, small banks respond to moral jeopardy inducements by raising risk on loan portfolio risk that could bring more NPLs in the future (Klein, 2013). Banks that have low capitalization can raise their earnings after increasing risk of the loan portfolio through advancing loans to borrowers not meeting quality threshold. This leads to future growth of NPLs. This practice by banks can be qualified as moral hazard since banks understand that their enterprises are properly capitalized and still decide to increase the loan portfolio riskiness. Therefore, reduced financial capital may end up in the growth in NPLs in future (Ahmad & Bashir, 2013).

Under this theory, a financial institution with considerably less capital reacts to moral-hazard inducements by raising their credit portfolio risk, which leads to high NPLs on average. Hence, under the theory of moral hazard, low bank's financial capital Granger-causes high NPLs (Rajha, 2016). The theory also supports the notion that low-capitalization by banks increases NPLs. Therefore, an inadequately capitalized bank suffers from a greater number of NPLs. This moral hazard inducement of bank management leads unwarranted risk-taking and soaring in the amount of nonperforming loans. According to the moral hazard hypothesis, nonperforming loans increase when the capitalization of the bank is decreasing (Quadt & Nguyen, 2016).

2.2.2 Asymmetric Information Theory

It originated from Stiglitz and Weiss and it holds that it is hard to isolate/filter good and defaulters. This theory states that some agents may possess information that is unavailable to other agents who may be in the same trade. The theory therefore exposes the borrower's information. Information asymmetry exists when one agent possesses more information than another. It may also occur if the other party is not in possession of the information in question. In the case of SACCOs, information asymmetry may exist when the lonee has knowledge about their financial position that the lender lacks. Kipyego (2013) notes that it is quite a hassle to identify bad borrowers. In this regard, lenders rely on information such as borrowing history and credit score in an effort to evaluate their creditworthiness. However, this information may does not provide 100% guarantee that the lender nits default (Kassim, 2012).

This theory is perfectly matched to the study as the standard of information provided by SACCO members when taking loans guides the decision made. If the information is accurate, the element of risk decreases significantly, while inaccurate information is connected to greater level of risk. The lower the risk, the lower the possibility of defaulting on loan amounts advanced to members (Ahmad, & Bashir, 2013).

2.3 Factors influencing the Level of NPLs

The stability of SACCO societies in the country significantly depends on number of NPLs. It is thus critical for these organizations to pinpoint the key elements which may lead to non-repayment of loans. Macroeconomic factors form a major determinant of extent of NPLs. The variables discussed in this study on macro-economic include: unemployment exchange rate, income per capita and interest rates.

2.3.1 Unemployment

The number of people actively engaged in income generating activities can be used to measure a country's economic health. The employment rate is computed by taking the number of unemployed citizens and dividing it by the total population in the labor force. (Cmok, 2016). Unemployment is a critical indicator as it determines the proportion of the citizenry that contributes in building the nation. When unemployment is high, the economy receives a hit and performed below the optimum capacity. However, the level of consumption for basic goods remains unchanged despite the decline in productivity (Mileris, 2014).

Idle labour does not translate to reduced consumption. When such a situation persists for a long time, it may be followed by political and social upheaval as the citizens pressure the authorities to find ways to create employment opportunities.

Ahmad and Bashir (2013) noted that when the unemployment rate increases, the capacity of households to make loan repayments is adversely affected due to a decline in the level of disposable incomes. This comes about as individuals that may have previously taken loans find themselves with no salary or a reliable source of income. Further, as more individuals find themselves with no reliable income, the demand for loans may also subside, spelling doom for cooperative societies due to a fall in demand for their interest-bearing assets (Rajha, 2016). The situation would be different if the unemployment rate is low. In such a situation, the economy experiences higher growth, full production capacity, and a growth in wages, consequently improving the standards of living. SACCOs would thrive in such an environment as individuals can save more, as well as borrow for investment purposes (Klein, 2013).

2.4.2 Exchange Rate

According to Schereiner and Natarajan (2016), variations in the rate of exchange affect the proceeds in the financial statements of international enterprises in the world leading to changes in the import prices of goods. This traditional approach believes that fluctuations in the rate of exchange results to variations in income for borrowers who have secured loans for doing business. The customary method postulates rate of exchange should lead price of a stock.

Shifts in exchange rates could potentially impact on the competitiveness of a firm and consequently its financial performance (Liu & Shrestha, 2008). The currency value is now an important factor influencing the prices of equity and profitability of business. The importance of currency value has been due to the high rise in movements of capital and world trade (Kim, 2013). Exchange rate changes influence the competitive of international companies as it affects the prices of exports and imports. For this reason, the value of a currency affects the company's value because it affects the flow of cash in the future. For economic theory, variations in exchange rates affect the profitability and investment of a company and its impact is seen in the financial performance of that particular company. Consequently, movements in a firm's operations influence loan performance.

2.3.3 Income Per Capita

This parameter is a measure of the average amount earned by each individual within a country. It is normally evaluates the liquidity position as well as the living standards of the average citizen. To compute per capita income, the national income is divided by the national population. Growth rate improves household's salaries, wages increases which cyclically improves the quality of loans portfolios in banks. Conversely, when economic growth rate declines; household cash-flows are reduced and therefore households priorities their expenditures on consumptions rather than on meeting their debt obligations. Therefore, favourable economic environment relates with better capacity of honoring debt.

Income Per capita represents the average GDP per citizen, without considering the effect of other economic factors the rate of inflation. According to Daferighe & Aje (20179), the Income Per Capita grows over time due to tow reasons; the increase in production and an increase in the currency price of most products. A study by Inekwe (2013) revealed that credit/loans provided by commercial banks in Nigeria had a notable impact on the country's per capita income. If the volume of credit is high, corresponding per capita income will also be high. However, this study did not take into consideration the impact of inflation, which has a significant effect.

According to Fofack (2005), a non-positive relationship exists linking the growth in GDP and NPLs. The reason is whereas the GDP grows, incomes are also likely to grow, thus leading to a raise in the capacity of households to make loan repayments (Khemraj and Pasha, 2009). However, when GDP declines, households receive lower incomes and are more likely to default on their loans.

2.3.4 Interest Rate

This is a noteworthy element that alters performance of the economy. A high interest rate signifies a rigid monetary policy. It is expensive for companies to borrow loans when interest rates are high. Apart from the fact that it would be costly for companies to invest, it would also be costly for companies and individuals to make payments of mortgages and loans. Therefore, demands tend to go down when interest rates are high and increase when interest rates are low in the economy (Lipsey & Chrystal, 2010). According to Dornbusch and Fischer (2010), there is a direct increase in interest rates in the stock

market when monetary authorities increase the interest rate as it becomes more expensive for financial institutions to borrow money from the central bank. The rise in interest rates by monetary authorities, lower the demand for fund as it becomes costly for people and companies to repay loans and mortgages, particularly with high rate of interest. The increase in interest rates results in a decrease in discretionary money and as a result, the revenues of companies are affected negatively. However, the impact on firms because of increased interest rate is double. The firms that borrowed money from financial institutions will have to pay high interest rates on loans with high interest rates (Romer 2012).

According to Martinez-Moya (2013), transformations in interest rates affect the anticipated cash flows in future and the rate of discount for valuing the cash flows, and consequently the value of a company. The alterations in interest rate affect significantly the value of non-financial firms in three ways. First, a high interest rate results in greater expenses for a company in debts and negative impact on the cash flows of a company in the future. Due to these negatives impacts, changes in interest rates lead to the reductions in dividends. Furthermore, high interest rates affect negatively the investment behaviors of a company (Fantazzinni, 2009). Second, variations in rates of interest influence the market value of the liabilities together with financial assets of a non-financial corporation. Third, transformations in interest rates influence the costs of investments.

2.3.5 Specific Factors Affecting Saccos

First, inflation affects the performance of Sacco societies due to the volatility that it causes on their profits. Inflation changes from time to time, thus making it difficult to predict the amount of profit that these organizations stand to make. Inflation significantly affects the price for products and services. With macroeconomic instability that results from changes in the rate of inflation, other lenders such as banks also have a difficult time making loan appraisals as it becomes increasingly difficult to evaluate the creditworthiness of potential borrowers.

Another critical factor is the foreign exchange rate. This affects the prices for foreign goods as well as external demand exports (Ncube & Ndou, 2011). The variations are measurable in real terms and in nominal terms, though majority of previous researches focus on nominal exchange rates. The currency value is now an important factor influencing the cost of equity as well as the profitability of business enterprises. The importance of the currency value is as a result of high capital movements and increased international trade (Kim, 2013). Exchange rate changes influence the competitive of international companies as it affects the prices of exports and imports. Haiss and Salmegi (2015) in their study state that GDP growth is a key indicator of a well performing economy. The Sacco industry in general is considered to be pro-cyclical, just like the economy as a whole, so it is expected that as the performance of Sacco is affected so does that of the overall economy. The last few years have seen the economy go under a depression. Less money has been flowing towards the economy due to the direct effect it has had on disposable income.

2.4 Empirical Literature Review

A survey by Patra and Padhi (2016), explored various bank-specific macroeconomic elements that bring about growth on assets for different groups of commercial banks in India. The research applied the descriptive design for research and correlation analysis in the methodology and revealed that the macroeconomic determinants' influence on nonperforming assets do not cut across banks as the banking practices and regulations varies based on the banking group. The study nevertheless examined the macro-economic and bank-specific elements of NPLs. This current work will focus on influence of unemployment, inflation, exchange rate, income per capita on NPLs in the SACCO sector in Kenya.

Onchomba (2016) conducted an assessment to establish the connection between macroeconomic elements and mortgage firms' NPLs. The main aim of the research work was establishing ways in which selected macro-economic elements influence NPLs in mortgage Kenyan firms. This project adopted a descriptive design making use of secondary data which were gathered quarterly from 2007 to 2016. Analysis of data was performed using descriptive and inferential statistics, which comprised of correlation and pooled regression analysis. The study work found that GDP growth, high unemployment, high real interest rate, loan losses reserve ratio, significantly increased NPLs but the context was specific to mortgage institutions. The current study focuses on how the above microeconomic variables influence NPLs in the SACCO sector in Kenya.

Murungi (2014) assessed how macroeconomic variables affect financial/business performance of Kenyan insurance firms. The research study assumed descriptive correlation research design and the sample population comprised 46 Insurance firms, taking annual secondary data from 2009 to 2013. This study showed that interest rate, gross domestic product, expense ratio and claims were significant, but the inflation rate, currency rates, money supply and firm size were statistically insignificant. The study concluded that GDP, interest rate, claims ratio and expense ratio were the major macroeconomic determinants of insurance firms' financial performance. The current study also adopted the descriptive design to analyze the relevant microeconomic factors.

Yam (2016) did a study to assess the connection between macroeconomic bank-specific factors that are linked with NPLS and the performance and sustainability of banks in Indonesia. This study adopted descriptive data analysis and the data covered the period from 2004 to 2013. This study centred on the influence of interest rates, GDP, unemployment rate, inflation and currency exchange rates while the bank-specific variables included capital strength, total value of assets and liquidity growth. The conclusion was that all these factors had a major impact on the level of NPLs and on sustainability of commercial banks.

A study by Ofori-Abebrese, Pickson and Opare (2016) evaluated the macroeconomic elements which affect the loans performance of commercial banks in Ghana, taking Home Finance Company Bank as their case study. The data used for the study was from between 2008 up to 2015 at Home Finance Company. The study revealed that there was evidence of a long-term connection between inflation and treasury bills to the loan

performance in the bank. Zhang and Daly (2015) also conducted a similar study on banking institutions in China. The study used secondary data from 124 banks, taking data from the period between years 2004 to 2010. As a proxy for the banks' profits, the study used the return on assets. Data was analyzed through regression analysis and it was established that banking institutions that well-capitalized and with lower credit-risk recorded huge profits. However, banks with high credit risk recorded lower profits. It was also established that growth in the profitability of banks corresponded with the growth in the economy.

Polat (2018) was involved in a similar study on banking institutions in Turkey and Saudi Arabia. The data used was for the period between 2000 and 2006 and the beta regression was used for data analysis. For the case of Turkey, it was established that market capitalization and inflation were the most critical macroeconomic components that were positively connected to the prevalence of NPLs. In Saudi Arabia, various important macroeconomic elements such as GDP, inflation, supply of money, debt and market capitalization were shown to have a positive relation with NPL while unemployment and transparency variables were seen to have a non-positive relationship with NPL. This current research found a gap in the time period, variables used and the study context. Therefore, the study focused on unemployment, inflation, exchange rate, income per capita and NPLs in the SACCO sector in Kenya which the study failed to include. This study will use SPSS in data analysis and will apply analysis of variance and correlation in the data analysis.

Chege and Bichanga (2016) assessed the effects of macroeconomic variables on non-performing loans and on the performance of Kenyan commercial banks. It was a descriptive study conducted on 44 commercial banks. The data was gathered for a 5-year period between 2011 and 2015. Through multiple regression it was established that non-performing loans influenced financial performance in these institutions. Other significant factors included bank size, operating costs and capitalization.

Atem (2017) assessed macroeconomic factors affecting NPLs, taking the Kenya Commercial Bank in Nairobi region as the case study. The study assumed a quantitative research design. The data provided by the Central Bank of Kenya and from the bank's reports. This study utilized data gathered data collected from 2000 to 2015 and data analysis was conducted through multiple regression. From the results of the research, interest rate was identified as the most significant macroeconomic factor influencing NPLs. Control variables included bank size, age and gender. The current study identified a gap in the timeframe, variables used and the context of the study.

2.5 Summary of Empirical Review

Various research studies about macroeconomic variables influencing NPLs have been done locally but previous studies, generating mixed outcomes regarding this relationship. GDP growth rate, rising rate of unemployment, high interest rates, and loan losses reserve ratio have significantly influenced NPLs but the context was mostly focused on mortgage institutions. Similar studies have indicated that interest rate, GDP, claims ratio and expense ratio were the major macroeconomic determinants of insurance firms' financial

performance. Studies found that the banks also grow along with growth in the economy; greater economic amalgamation increases bank.

The current study tries to fill in the gap by combining unemployment, exchange rate income per capita and interest rates in relation to NPLs. The study focuses on measuring these loans by dividing total NPL by the total outstanding loans in the Sacco portfolio. Further, the study employed descriptive research design to explain most important and relevant variables. The level of significance for these variables are assessed using the ANOVA test, which is an element that has been missing in other studies. The existing body of literature mainly covers commercial banks and this is the gap that this study seeks to fill-up. The scope of the study was limited to Kenya and SPSS data analysis was used alongside correlation and the analysis of variance (ANOVA).

2.6 Conceptual Framework

The conceptual framework demonstrates correlation between variables; dependent and independent variables. Independent variables include: unemployment exchange rate, income per capita and interest rates while the dependent variable was the nonperforming loans.

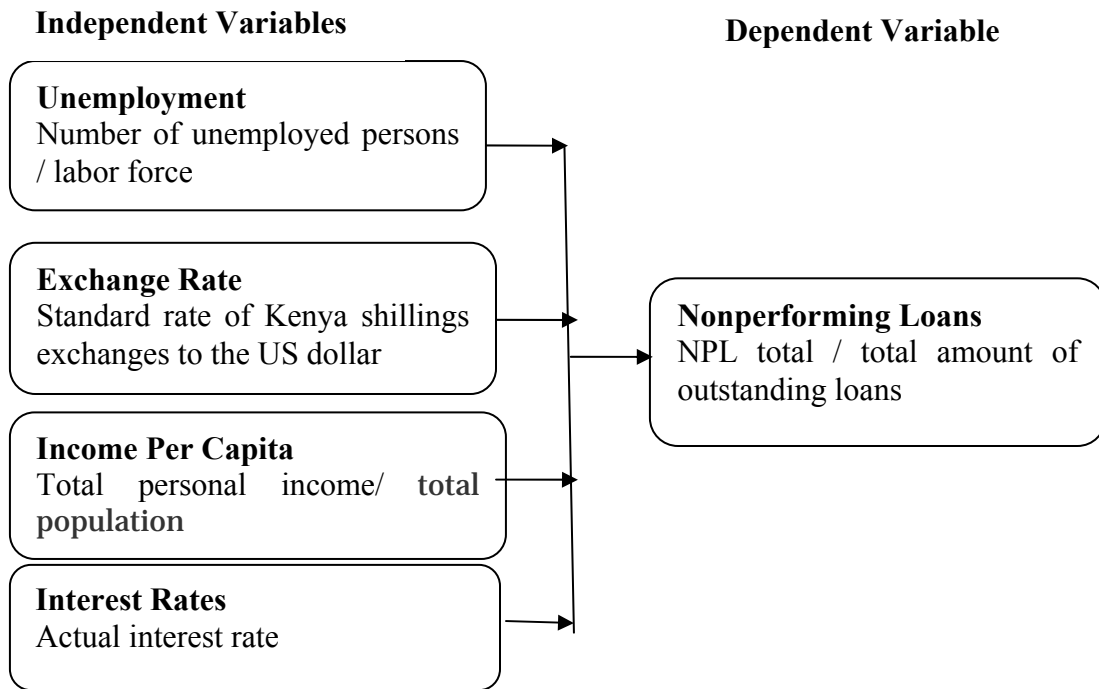


Figure 2.1: Conceptual Framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The section explains intended research methodology. It explains choice of research design, selected population used in study, techniques for collection of data, sample design, and the method used for analysis.

3.2 Research Design

A research design ensures that information gained in collection of data is adequate in responding to the question(s) satisfactorily (Creswell & Clark, 2007). Kothari (2014), argued that a good research design yields high volume of information and offer a chance to consider different features of a problem.

The study employed a descriptive research design which gave the researcher an ability to designate the various variables being evaluated. This research was about impact of macroeconomic variables on the level of non-performing loans in the SACCO sector in Kenya. A descriptive design was well suited to the study as it can sufficiently describe the characteristics of a large population.

3.3 Data Collection

Aggregate data were acquired for the entire SACCO sector. Information on unemployment and income per capita was acquired from Kenya national bureau of statistics and exchange rate was retrieved from CBK while the interest rates over the period of interest was retrieved from the Sacco Societies Regulatory Authority.

The main study used longitudinal data for the years 2009-2018. Data collected was on a quarterly basis.

3.4 Diagnostic Tests

The study applied the regression diagnostic test to evaluate the assumptions made. This test plays a pertinent role in assuming whether any assumptions of the regression have been violated in any way. Any such violation of the assumptions may lead to inadequacy of the model in use. The diagnostic tests include multicollinearity, normality and the heterosasticity tests.

3.4.1 Multicollinearity

Multicollinearity exists when the independent variables present in a regression model have a moderate or high correlation. The impact of multicollinearity is the skewing the results obtained in a multiple regression model. The severity of multicollinearity can be determined by the variance inflation factor which measures the extent of variance. Without any form of multicollinearity, the value of the variance inflation factor is 1. A value of 1-5 shows moderate collinearity while a value of 5-10 indicates severe multicollinearity. High multicollinearity becomes problematic for data analysis.

3.4.2 Heteroscedasticity

This implies that variation of an error term is different for each observation. When using multiple regression analysis, the basic assumption that the error term for all observations is the same. When the residuals violate this assumption, it is an indication that they were unbiased.

The research study applied the Breusch-Pagan test to test the null hypothesis. A p-value that is smaller than the level of significance (0.05) means that the assumption of the equality of variance has been violated.

3.4.3 Normality Test

This test is critical in assessing if the random error between the dependent and the independent variable in the selected regression model has a normal distribution. The violation of the normality rule affects the computation of the values that are significant when using a small sample size. This research study will use the Shapiro-Wilk and Kolmogorov Smirnov normality test. The level of significance is set at 0.05. If the value obtained from the model is lower than the level of significance, this is an indication of a normal distribution while the converse is also true.

3.5 Data Analysis

Data analysis was done using SPSS version 20 and the results shown using percentages, frequencies and tables. Since the research utilized quantitative data, descriptive statistics was employed to explain variables like the mean, frequency, mean and standard deviation.

3.5.1 Analytical Model

A multiple regression model was applied to describe the impact of macroeconomic variables on the level of non-performing loans in the SACCO sector in Kenya. It followed the model as illustrated below:

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

Y= NPLs (Measured by NPL total / total amount of outstanding loans in the Sacco sector portfolio.)

β_0 =Constant

X₁= Interest Rates (Actual interest rate)

X₂= Unemployment (Number of unemployed persons / labor force)

X₃= Exchange Rate (Standard rate of Kenya shillings exchanges to the US dollar)

X₄= Income Per Capita (Total personal income/ total population)

β_1 - β_4 represent the regression coefficients or the variation introduced in Y by the independent variable

ϵ represents the error term that accounts for all other elements that influence NPLs but is not seen in the model.

3.5.2 Test of Significance

This study employed the One-way ANOVA to establish the presence of noteworthy variations between variables under the study. The significance test significance was performed at 95% confidence level.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND DISCUSSION

4.1 Introduction

The segment explores presentation and interpretation of study outcomes. The aim of the study was establishing influence of macro-economic variables on the level of NPLs in Sacco's sector in Kenya and it focused on the year 2019 to 2018. The data was then analyzed in line with the objectives of the search and the findings shown as per the different objectives.

4.2 Diagnostic Tests

Diagnostic tests were performed on statistical assumptions made in the study i.e. test on assumption on regression and statistic used. These include test of normality, multicollinearity and Heteroskedasticity test.

4.2.1 Normality Text

Shapiro-Wilk test was used to test normality, it has ability to expose departure from normality due to Skewness or kurtosis or both. Its statistic extend from zero to one and its p values less than 0.05 shows the data is normal (Rizal and Wah, 2011).

Table 4.1: Tests of Normality						
	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unemployment	.437	39	.000	.496	39	.005
Exchange Rate	.389	39	.000	.328	39	.001
Income Per Capita	.214	39	.004	.202	39	.006
Interest Rates	.183	39	.001	.156	39	.004
Non-Performing Loans	.245	39	.002	.222	39	.007

Source: Researcher 2019

From Table 4.1, all variables (Unemployment, Exchange Rate, Income Per Capita, Interest Rates and NPLs) had p-value of less than 0.05. Therefore the data used in the study was normally distributed.

4.2.2 Multicollinearity Test

Multicollinearity is determined through examining the Variance Inflation Factor (VIF) and levels of tolerance. Small tolerance point out that the linear relations between the variables is almost perfect and should not be added to the regression analysis. A low tolerance of 0.1 should be subjected to further investigation. VIF is a measure of the impact of collinearity among the variables indicated in the regression analysis. The VIF should always be greater than 1. No formal value of VIF has been determined to establish whether multicollinearity exists. However, values greater than 1 are considered to indicate the existence of multicollinearity. Table 4.2 shows the study outcomes

Table 4.2: Collinearity Statistics

Variables	Tolerance	VIF
Unemployment	.793	1.475
Exchange Rate	.648	1.846
Income Per Capita	.974	2.033
Interest Rates	.713	2.234
Non-Performing Loans	.847	1.408

Source: Researcher 2019

4.2.3 Heteroskedasticity Test

Heteroskedasticity test inspected the assumptions of homoscedasticity in residuals. As per the assumption, residuals in the model ought to have constant variances. If they are not constant, the situation is described as heteroskedastic.

Table 4.3 Heteroskedasticity Test

F-statistic	9.845394	Prob. F(4,39)	.002
Obs*R-squared	0.836571	Prob. Chi-Square(4)	.000
Scaled explained SS	15.47657	Prob. Chi-Square(4)	.004
Prob(F-statistic)	0.000000		

Source: Researcher 2019

Table 4.3 shows a P-value of less than 5% , therefore this data was homoscedasticity, hence no significant evidence of heteroscedasticity.

4.3 Descriptive Statistics

Descriptive analysis was done to determine the range, standard deviation, and mean of both independent and dependent variables. The averages and standard deviations were done for the ten years that is 2009 to 2018, table 4.4. Shows the findings of descriptive statistics.

Table 4.4: Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Std deviation
Interest Rates	40	13.06	19.66	15.813	2.005293
Unemployment Rate	40	9.1	9.7	9.5	0.188562
Exchange Rate	40	0.7837	1.038	0.93744	0.084427
Income Per Capita	40	9.8	18.4	13.53	2.86436
Non-Performing Loans	40	3.263	9.371	5.8483	2.096682

Source: KNBS Statistics

Table 4.4 depicts non-performing loans of an average 5.8483 with the minimum as 3.263 and the maximum as 9.371. The average on interest rate for the ten years was found to stand at 15.813, with the highest year average (2012) having an interest rate of 19.70. The average unemployment rate in ten years was established to be 9.5 with the highest been 9.7 and lowest average was 9.1. Further the descriptive statistics established that the exchange Rate within the ten years of study ranged between 78.37% and 103.80% with an average mean of 93.74% while the Income Per Capita was establishment to range between 9.8 and 18.4 with 13.53 been the average.

Figure 4.2 depicts an increasing trend for the non-performing loans from 2012 after a great decrease from year 2009 to 2012. However, the interest rate shows a decreasing trend from 2012. This could be caused by capping of interest rates which was imposed by Central Bank in 2016. Unemployment rate was found to fluctuate up and down in the considered period with a very small standard deviation of 0.188562.

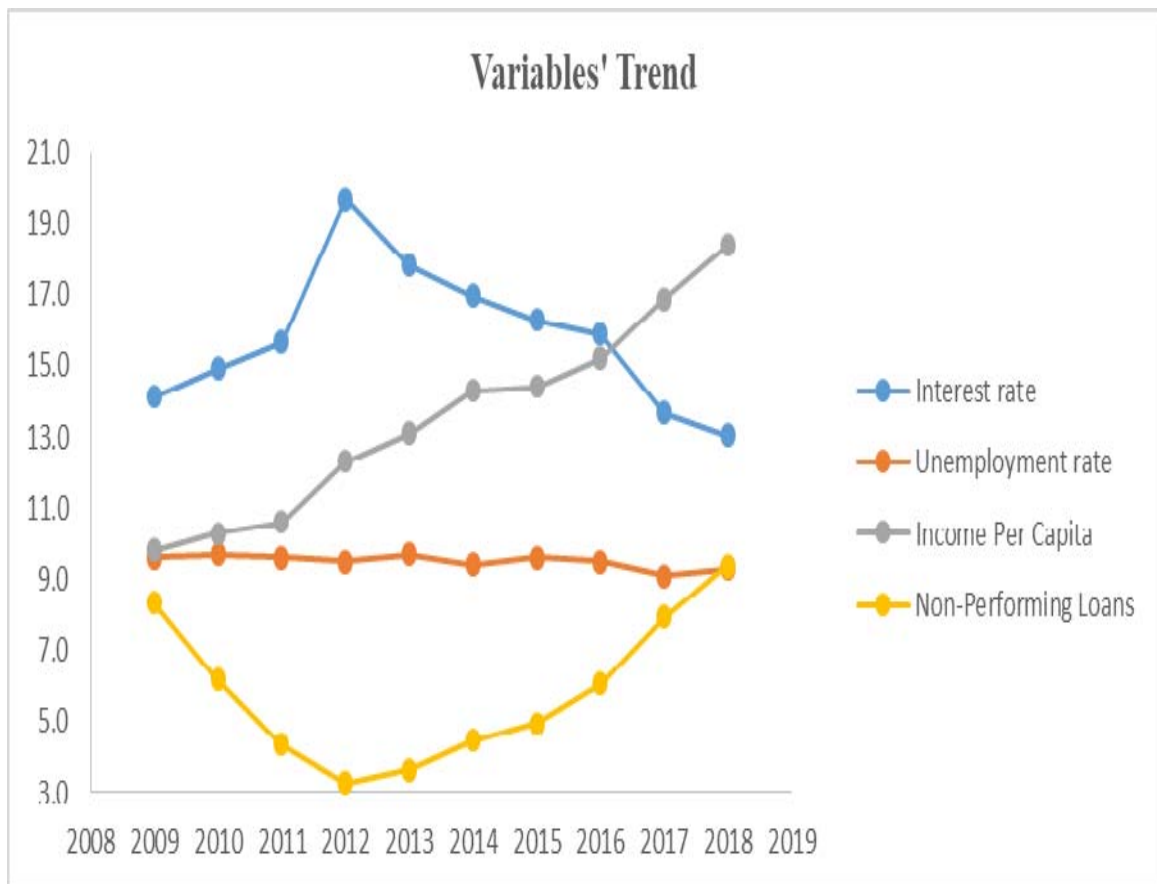


Figure 4.2 Macroeconomic Variable

Source: CBK

Further, an increasing trend was noted for the Income Per Capita from year 2009 to 2018 while exchange rate indicated up and down fluctuation within the ten years with 2018 having the highest exchange rate.

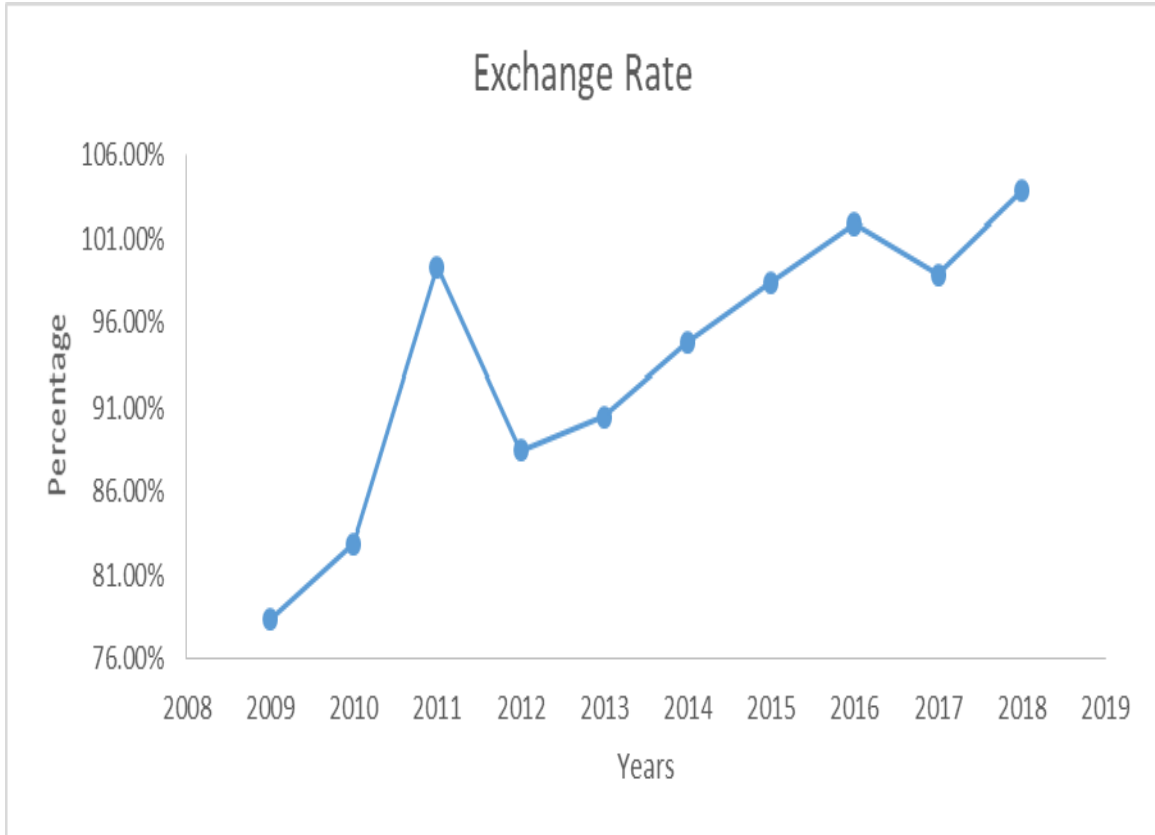


Figure 4.3 Exchange Rate

Source: CBK

4.4 Regression Analysis

The research adopted a multiple linear regression analysis to explain the impact of macroeconomic variables on the level of NPLs in the SACCO sector in Kenya. Results are outlined on the Table 4.5, 4.6, and 4.7. The summary of the model was shown in Table 4.5.

Table 4.5 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.834311	0.696075	0.661341	1.384548

Coefficient of determination was employed in investigating the fit of the model and study revealed that the model had an adjusted average coefficient of determination (R^2) of 0.661. This showed that 66.1% of the variations of NPLs SACCOs in Kenya were defined by the independent variables focused on this study that is; Interest Rate, rate of unemployment, Income Per Capita and Exchange Rate . This study moreover examined the significance of the model using the ANOVA technique. The study results were as shown in Table 4.6.

Table 4.6 ANOVA Results

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	166.83	4	41.709	20.04002	.000 ^b
Residual	72.845	35	2.081		
Total	239.68	39			

As shown in the ANOVA statistics, the regression model was found to be valid at ($F = 20.04$, $P < 0.05$). This implied that the independent variables were good predictors of Non-performing loans. Also, the study used the coefficient table to determine the study model between the independent and dependent variables. The study results are as shown in Table 4.7.

Table 4.7 Coefficients

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	4.757	0.901		5.279	.000
Interest Rates	-0.523	0.201	-0.493	-2.601	.010
Unemployment Rate	0.492	0.136	0.415	3.617	.000
Exchange Rate	0.356	0.099	0.302	3.595	.000
Income Per Capita	-0.302	0.104	-0.247	-2.903	.006

The generated SPSS output is presented in the Table 4.11 above, thus the equation is as shown below:

$$Y = 4.757 - 0.523X_1 + 0.492X_2 + 0.356X_3 - 0.302X_4$$

Regression findings revealed that unit increase in interest rate whence holding all the other elements constant would bring about a decrease of non-performing loan of SACCOs by a factor of -0.523. Regression results also revealed that rate of unemployment had significant and positive effect on non-performing loan of SACCOs indicated by $\beta_1 = 0.492$, $p = 0.000$. This means is that a unit decrease in unemployment rate would bring about a decrease on non-performing loan of SACCOs by $\beta_1 = 0.492$. Exchange Rate was shown to have a positive significance impact on non-performing loan of SACCOs as indicated by $\beta_1 = -0.356$, $p = 0.000$ hence an increase in Exchange Rate whence holding all the other elements constant would result to an increase on non-performing loan of SACCOs. Income Per Capita was found to have a positive

significance impact on non-performing loan of SACCOs in Kenya. Hence a unit increase on Income Per Capita while holding all other components constant would bring about an increase on the NPLs of SACCOs. This findings was in line with Atem (2017) who showed that interest rate was the most significant macroeconomic factor influencing NPLs.

4.5 Discussion of the Findings

The regression results indicated that macroeconomic components (Interest Rate, Unemployment Rate, Exchange Rate and Income Per Capita) had notable impact on the NPLs of SACCOs. The finding correlate to Patra and Padhi (2016) who concluded that GDP growth, high unemployment, high real interest rate, loan losses reserve ratio, significantly increased non-performing loans. The four independent variables examined showed a substantial 66.1% of Non-performing loans as represented by Adjusted R squared (0.661). Other factors and random disparities not examined in this study were found to contribute a measly 33.9% of the Non-performing loans in SACCOs. Descriptive statistics indicated an increasing trend for the non-performing loans from 2012 after a great decrease from year 2009 to 2012. However, the interest rate shown a decreasing trend from 2012. Unemployment rate was found to fluctuate up and down in the considered period with a very small standard deviation of 0.188562. Further, an increasing trend was noted for the Income Per Capita from year 2009 to 2018 while exchange rate indicated up and down fluctuation within the ten years with 2018 having the highest exchange rate.

Researcher revealed that a unit increase in interest rate while holding all the other elements constant would cause a decrease on non-performing loan of SACCOs. Therefore, a crucial relationship existed between interest rate and NPLs of SACCOs. This was in line with Dornbusch and Fischer (2010) who noted that the rise in interest rates by monetary authorities, lower the demand for fund as it becomes costly for people and companies to repay loans and mortgages, particularly with high rate of interest. The increase in interest rates results in a decrease in discretionary money and as a result, the revenues of companies was affected negatively. However, the impact on firms because of increased interest rate is double.

Ahmad and Bashir (2013) noted that when the unemployment rate increases, the capacity of households to make loan repayments is adversely affected due to a decline in the level of disposable incomes. This comes about as individuals that may have previously taken loans find themselves with no salary or a reliable source of income. Similarly, this study noted that unemployment rate had significance and positive influence on non-performing loan of SACCOs. The implication was that a unit decrease in unemployment rate would lead to a decrease on non-performing loan of SACCOs. Also an increase in rate of unemployment would lead to an increase on the rate of non-performing loan of SACCOs. Findings from regression model also revealed that Exchange Rate had a positive significance influence on non-performing loan of SACCOs hence a unit increase in Exchange Rate while holding all the other factors constant would cause to an increase on non-performing loan of SACCOs. This finding concurs to Schereiner and Natarajan (2016) that variations in the rate of exchange affect the proceeds in the financial

statements of international enterprises in the world leading to changes in the import prices of goods. Shifts in exchange rates could potentially impact on the competitiveness of a firm and consequently its financial performance (Liu & Shrestha, 2008).

The study by Inekwe (2013) had revealed that credit/loans provided by commercial banks in Nigeria had a notable impact on the country's per capita income. If the volume of credit is high, corresponding per capita income would also be high. Income Per Capita grows over time due to two reasons; the increase in production and an increase in the currency price of most goods. In this study it was revealed that Income Per Capita had a positive significance effect on non-performing loan of SACCOs in Kenya. Hence a unit increase on Income Per Capita while holding all the other factors constant would lead to an increase on the non-performing loan of SACCOs.

CHAPTER FIVE

SUMMARY OF FINDINGS CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section showed that summary of findings, conclusions made by the study and recommendation made by the researcher concerning the effects of macro-economic variables on the level of performing loans in the savings and credit cooperative sector. These concur with main objective of the study.

5.2 Summary of findings

This segment shows the main findings that were considered in the study. Descriptive statistics indicated an increasing trend for non-performing loans from 2012 after a great decrease from the year 2009 to 2012. However, the interest rate showed a decreasing trend from 2012. The unemployment rate was found to fluctuate up and down in the considered period with a very small standard deviation. Further, an increasing trend was noted for the Income Per Capita from year 2009 to 2018 while exchange rate indicated up and down fluctuation within the ten years with 2018 having the highest exchange rate.

From the findings it was evident that an increase in interest rate holding the other factors constant would result in a decrease in the NPL for SACCOs. Therefore, there was found to be a noteworthy association that existed that linked interest rate and non-performing loans of SACCOs. Further, it was noted that unemployment rate had significance positively affected SACCOs' non-performing loans. The implication was that a unit decrease in unemployment rate would lead to a decrease on non-performing loan of

SACCOs. On the other hand an increase in unemployment rate would lead to an increase on the rate of non-performing loan of SACCOs. Results from regression model also revealed that Exchange Rate had a positive significance influence on the non-performing loan of SACCOs hence a unit increase in Exchange Rate while holding all the other factors constant would bring about an increase on non-performing loan of SACCOs. In this study it was revealed that Income Per Capita had a positive significance influence on non-performing loan of SACCOs in Kenya. Hence a unit increase on Income Per Capita while holding all the other factors constant would lead to an increase on the non-performing loan of SACCOs.

5.3 Conclusions

The study reviewed the impact of macro-economic variables on the level of NPLs in the SACCO sector in Kenya. In view of the findings, it was concluded that macroeconomic variables such as Unemployment Rate, Interest Rate, Exchange Rate and Income Per Capita had notable effect on the SACCOs' non-performing loans. Interest Rate and income per capita had a non-positive impact on non-performing loans of SACCOs while rate of unemployment and Exchange Rate had a favourable influence on on-performing loans of SACCOs.

Researcher concluded that a unit increase in interest rate while holding all the other elements constant lead to a decrease on NPLs of SACCOs hence proof of a relationship existed between interest rate and NPLs of SACCOs. Unemployment rate had significance and positive influence on non-performing loan of SACCOs.

That meant that a unit decrease in unemployment rate results into a decrease on non-performing loan of SACCOs and an increase in rate of unemployment would lead to an increase in the rate of non-performing loan of SACCOs. Research also concluded that Exchange Rate had a favourable significance influence on NPLs of SACCOs hence a unit increase in Exchange Rate while holding all the other elements constant would result to an increase on non-performing loan of SACCOs. Income Per Capita has a positive significance influence on non-performing loan of SACCOs in Kenya. Hence a unit increase on Income Per Capita while holding all the other research elements constant would increase on the non-performing loan of SACCOs

5.4 Recommendations for Study

The finding revealed a non-positive association with interest rate and NPLs. Therefore Central Bank of Kenya ought to come up with an effective policy on interest rates to ensure that their rise and fall does not adversely impact the Kenyan economy.

The study recommend that management in SACCOs should consider employment status of their customers as high rate of employment would results to high rate of salary which empowers customer to honor their obligation to honor their loan and reduces occurrence of nonperforming loan even without salary, loans could not be paid and therefore when unemployment rate is high, NPLs increase.

Further, exchange rate had positive influence on NPLs. Therefore, the monetary committee department of central bank of Kenya need to maintain a stable foreign currency exchange if the activities at SACCOs are to be promoted.

Income per capita was seen to affect positively the NPLs. Hence, this study recommends that government should ensure a stable economy and institute policies to ensure that the economy is growing to reduce non-performing loans of SACCOs.

5.5 Suggestions for Further Study

The study utilized regression model in analyzing effect of macroeconomic variables on NPLs. Additional research can be undertaken using a different model like the granger causality to test the effect of macroeconomic variables on NPLs.

This study centered in examining the connection of macroeconomic variables on NPLs in SACCOs in Kenya. A further study could be done to determining connectivity of macroeconomic variables on non-performing loans in other different financial institution such as micro-finance and commercial banks.

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