DETERMINANTS OF LOAN PORTFOLIO QUALITY IN INVESTMENTS GROUPS: A CASE STUDY OF SIDIAN BANK

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DECLARATION AND RECOMMENDATION

Declaration

I declare this research project is my own original work and has not been presented for examination in any university or any other institution for the award of diploma, degree or any other certificate.

Signature…… Date ……

Emily Barongo Nyandoro

CM11/00763/13

Recommendation

This research project has been presented for examination with my recommendation as The University's Supervisor.

Signature…… Date ……

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DEDICATION

This Project is dedicated to my family; my parents Julius Nyandoro and Mary Moraa, my sisters Adolphine and Naomi and my brother Japheth Gichana for their continued support and encouragements throughout my studies.

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ABSTRACT

Providers of micro credit who are mainly micro finance institutions, are faced with the challenge of high default rate on loans advanced, sound credit management techniques are rarely in place, and even if they are, they are largely ignored. For this reason, the study sought to establish the determinants of portfolio quality in investment groups under Sidian bank in Nairobi region. The objectives of the study were to determine the effects of macroeconomic, group leverage, group capitalization and group characteristics on the portfolio quality of investment groups. The study adopted a descriptive survey research design since it establishes the relationship between the dependent and the independent variable. With the target population being all the 56 investment groups in the 9 branches under Sidian bank within Nairobi region. The study employed secondary data, which was obtained from Sidian bank offices in each of the branches within Nairobi region. Data analysis was conducted using descriptive statistics including percentages, frequencies, means and standard deviation. In addition, inferential analysis was carried out using correlation analysis and multiple regression analysis. The study found that macroeconomic variables, group leverage level, group capitalization and group characteristics influences portfolio quality of investment groups financed by Sidian bank in Kenya positively and significantly. The study concluded that group leverage level had the greatest influence on portfolio quality of investment groups financed by Sidian bank in Kenya followed by macroeconomic variables while group capitalization level then group characteristics had the least effect on the portfolio quality of investment groups financed by Sidian bank in Kenya. The study recommends that the study recommends that Sidian bank need to manage their portfolios, by understanding that not only the risk posed by each credit but also how the risks of individual loans and portfolios are interrelated. The study also recommended that, banks should be allowed to invest more in loans and advances as long as such banks have enough reserves to finance such investments and that banks should be allowed to scale up their operations so long as there is adequate capitalization to support their growth. The study further recommends that regulatory authority (CBK) and other stake holders should create an enabling environment that removes all these inefficiencies to the policy concern of high cost of credit.

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LIST OF ABBREVIATION

GOK	Government of Kenya
KNBS	Kenya bureau of statistics
KREP	Kenya Rural Enterprise Programme
KWFT	Kenya Women's Finance Trust
MFIs	Micro finance institutions
MPT	Modern Portfolio Theory
MSE	Micro and small enterprise
NACOSTI	National Commission for Science, Technology and Innovation
NCCK	National Council of Churches of Kenya
NGOs	Non-governmental organizations
PaR	Portfolio at Risk
ROK	Republic of Kenya
SACCO	Savings and credit cooperatives
SPSS	Statistical Package for Social Sciences
UNDP	United Nations Development Programme

CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

Commercial banks have for long been the main lenders in all economies worldwide. This has made access to formal credit by small-scale businesses and particularly among the low-income earners quite difficult. Research show that micro credit plays a major role in development strategies. This is in view of its direct relationship to both poverty alleviation and improvement of the living standards. Both World Bank (2014) and United Nations Development Programme (UNDP) (2011) confirm that access to credit and gender inequalities in developing societies inhibit economic growth and development. Further, societies that discriminate based on gender have lower credit accessibility, greater poverty, slower economic growth, weaker governance, and a lower standard of living.

The emergence of micro credit sector has been mainly driven by Non-governmental organizations (NGOs) that are donor supported. However, initial attempts into micro lending were made by governments through creation of development banks that were meant to allocate credit to certain sectors at subsidised rates. Studies have shown that directed credit has undermined development of sound financial systems in many third world countries mainly because the loans are limited to budgetary allocation and are priced below market rates (Knaup & Wagner, 2012). The presence of moral hazard in many developing countries means that credit rarely reaches desired clients and, in many cases, there is no obligation to repay the loans.

To date commercial banks are still largely absent in the provision of micro credit. This phenomenon may be attributed to credit policies associated with loans provided by the formal sector. Since many businesses in small and micro enterprise sector are largely poor, lack of normal tangible assets that can be pledged as collateral in conventional lending, banks are unwilling to provide credit facilities to them (Love & Ariss, 2014). This is because they are perceived to be highly risky and un-deserving of any credit even though they bank with the banks. Moreover, the costs associated with administering and monitoring credit services are quite high. To bridge this gap, the micro finance institutions have developed specific policies that target and feed loans to the small-scale enterprises (Swamy, 2013). However, research show that the providers of micro credit who are mainly micro finance institutions, are faced with the challenge of high default rate on loans advanced, sound credit management

techniques are rarely in place, and even if they are, they are largely ignored (Berg, Puri & Rocholl, 2014) which adversely affect the quality of portfolio. This study will seek to establish portfolio quality determinants of microcredit investment groups financed by Sidian bank in Nairobi region.

1.1.1 Portfolio Quality Determinants

Micro credit is a financial undertaking, which focuses on improving the standards of living and access to loan facility among low-income earners and needy people in the society. It involves the provision of services and facilities targeting the poor and the low-income earners such as credit, saving, and insurance. Micro credit gives access to services to average earners wishing to access money to improve income-generating activities. Financial services of this nature are offered to those that depend on their small-scale economic activities and businesses who are considered highly risky by the mainstream commercial banks (Love & Ariss, 2014).

In Sidian bank credit facility is provided through a group or on individual basis to assist in start-up businesses or to grow an existing venture (Mwangi & Muturi, 2016). Group loans are based on traditional rotation credit arrangement, which has received large amounts of attention in recent years from the major development agencies and banks. Micro-credit takes care of the under privileged in the society who have no likelihood of accessing financial services from the commercial banking sector. The ultimate goal of micro-finances is to help low-income earners become self-reliant and sufficient through provision of micro-saving, borrowing and insurance cover (Milani, 2014).

Lending regulations, saving patterns and mechanisms as well as interest rates regulations have been prominent as some of the factors considered in advancing micro credit. Véron and Wolff (2016) observed that ability to pay, savings level and character assessment are key factors in determining loan amount. Tausig and Fenwick (2016) found that such factors as gender, nationality or factors of social disadvantage such as physical disability, location and objective of the micro credit institution and mandatory training are some of the factors considered in lending. In addition, Oketch (2015) established that the size of loans to various borrowers depended on the lending technology. Where funds are lent to individuals, appraisal depended on business assessment, collateral, business needs and repayment capacity, type of business and availability of funds. For group-based loans, it depended on age of the group,

appraisal of the project, past repayment records, demand by clients and availability of funds. However, these factors have not been treated in totality.

Credit is granted on faith and the ability of a borrower to make future payments (Liu and Zhu, 2010). According to Basel Committee 2006 Chorafas (2009), a default is considered to have occurred with regard to a particular obligor when either or both of the two following events take place. The bank considers that the obligor is unlikely to pay its credit obligations to the banking group in full, without recourse by the bank to actions such as realizing security and the obligor is past due more than 90 days on any material obligation to the banking group. That is a loan is in default occurs when a borrower fails to meet a principal or interest payment of a loan, unless arrangements are made to pay at a later date than previously agreed upon. The undesirable trend of increasing rates of default proves costly to all parties concerned in the process of borrowing and lending. Non-payment equally affects the lender and the borrower negatively (Poghosyan, 2013). On the one hand, the lender loses the part of the principal loan disbursed and earnings in the form of interest. On the other hand, the borrower faces a bleak future in obtaining credit due to lower credit rating.

A sound credit risk management is built upon a good-quality portfolio of performing assets and therefore the pricing of the loans has to reflect the risk. For this reason, a good selection strategy aims at avoid high loss credit scoring (Beyhaghi & Hawley, 2013). Credit scoring is a credit risk management technique that analyzes the borrower's risk. These credit scores are assigned to each customer to indicate their risk level. A good credit-scoring model has to be highly discriminative with high scores reflecting almost no risk and low scores correspond to very high risk (Pykhtin, 2005). Buttell (2010) noted that the largest source of risk for any financial institution resides in its loan portfolio. Loan portfolio is ideally expected to be the MFls largest asset. It should also be noted that since most MFIs financing is not supported by bankable collateral; the quality of the loan portfolio is absolutely crucial.

1.1.2 Portfolio Quality

Three accounting ratios are used to measure portfolio quality including Portfolio at risk, which measures the portion of the loan portfolio contaminated by arrears as a percentage of the total portfolio where the desired level is less than 10 per cent. Secondly, Repayment rate shows what proportion of the loan instalment is paid compared to the expected instalment amount in a given period. The desired repayment rate according to Essendi (2013) is more than 97%. Finally, Loans written off ratio is also used to measure portfolio quality and it

represents the amount of loans, removed from the accounting books because of a substantial loss where a maximum of 4 per cent is envisaged. The majority of studies that investigate the determinants of problem loans try to answer the question of what explains the credit default at the firm level (Bonfim, 2009) or attempt to analyse the evolution of non-performing loans (NPLs) taken as an aggregated measure of problem loans at the bank level (Louzis, Vouldis & Metaxas, 2012).

However, little attention has been paid to the question of what explains that a loan has a given quality or status that lies between the two extreme statuses of safe and defaulted loan. Exploring the latter question is of great importance since it may allow microfinance banks as well as regulatory and supervisory authorities to undertake the appropriate actions and policies to mitigate deterioration of the quality of banks' loan portfolios. Beck, Jakubik and Piloiu (2013) showed that failing institutions have higher proportions of non-performing loans prior to failure and that asset quality displays a statistically significant predictor of insolvency. Wan and Zhang (2015) observed that in group borrowing, if one group member defaults, the other group members make up for the re-payment amount. This delay may affect the portfolio qualify of MFIs.

1.1.3 Sidian Bank

In the early days, the main organisations providing credit to the informal sector were church based organisations like the National Council of Churches of Kenya (NCCK) and other smaller church-based NGOs. By 1980's other specialised organisations began operating including Kenya Rural Enterprise Programme (KREP), now (Sidian bank) and Kenya Women's Finance Trust (KWFT). By the 1990's, interest and knowledge about the microfinance industry had grown substantially and the approach to the industry began to become more focused and sustainability oriented. The most prominent institutions that emerged were KREP, KWFT, Pride Africa, NCCK and increasingly other institutions like Faulu and Care Kenya. Most of institutions are involved in microfinance as a part of their general social welfare activities (Kithinji, 2016). The focus of these institutions has gradually changed from emphasis on the very poor to the micro-entrepreneurs as the demands by donors on these institutions to become financially sustainable have increased. All of these institutions continue to be reliant on donor funds with the exception of Sidian bank, which has been licensed as a bank (Mureithi, 2016).

Sidian Bank was established in 1984 then as K-Rep as a project that supported the development of Small and Micro Enterprises through NGO managed programs. In 1987, the project was incorporated as local NGO. It changed its original strategy of supporting NGOs with grants and technical assistance to that of advancing loans to the NGOs in 1989. In the same year, it established a micro-credit lending program and established this as the core business and growth area. It also expanded its activities to include research & product development, as well as changing its Technical Assistance (TA) activities to a for-a-fee capacity building service (Ochieng, 2016). In 1999, it established K-Rep Bank and two other entities; K-Rep Development Agency to carry on its research and development work and K-Rep Advisory Services to serve as its consulting wing. Headquartered in Nairobi, with assets of Ksh 13.2 billion as at March 31, 2014, it is now a full-service commercial bank providing an array of financial services to individuals, small businesses, middle-market companies, and major corporations. The bank operates 38 branches in all major towns across Kenya. The bank rebranded in 2016 and changed its name to Sidian Bank.

1.2 Statement of the problem

Many small enterprises and low-income earners always find it difficult to access financing in the mainstream commercial banks. This is partially attributed to the stringent measures taken by commercial banks to shield themselves from non-performing loans (ROK, 2016). Some of the criteria used by commercial banks in assessing borrowers are savings level, steady cash flow, and availability of assets to use as collateral as well as economic factors such as interest rates and central bank base rate. In addition, commercial banks assess the risk profile of the borrower (Essendi, 2013). Due to the stringent measures, many investment groups find it difficult to borrow from commercial banks and turn to microfinance institutions such as Sidian Bank for credit facilities.

Several studies have been carried out attempting to explain the determinants of portfolio quality. Internationally, Knaup and Wagner (2012), Kar and Swain (2014) Makri, Tsagkanos and Bellas (2014) and Bougatef and Bougatef (2016) sought to establish determinants of loan portfolio quality. Locally, Githinji (2010) evaluated operating efficiency and loan portfolio quality, Ochola (2013) sought to establish determinants of business collaterals and loan portfolio quality while Nyora (2015) studied the relationship between portfolio holding and financial performance. Based on the reviewed literature, this study notes that, none of the studies reviewed has established the effect institutional micro-credit determinants have on

portfolio quality of investment groups financed by Sidian bank in Nairobi region. This study therefore sought to fill this gap by answering the question; what is the determinants of portfolio quality in investment groups under Sidian bank in Nairobi region?

1.3 Objectives of the study

1.3.1 General Objective

The general objective of the study was to establish portfolio quality determinants in investment groups under Sidian bank in Nairobi region.

1.3.2 Specific Objectives

The study also sought to achieve the following specific objectives;

i. To determine the effect of macroeconomic variables on portfolio quality in investment groups under Sidian bank in Nairobi region
ii. To establish the effect of group leverage level on portfolio quality in investment groups under Sidian bank in Nairobi region
iii. To determine the effect of group capitalization on portfolio quality in investment groups under Sidian bank in Nairobi region
iv. To establish the effect of group characteristics on portfolio quality in investment groups under Sidian bank in Nairobi region

1.4 Research Hypothesis

This study had the following hypotheses;

i. Macroeconomic variables have no significant effect on portfolio quality of investment groups under Sidian bank in Nairobi region
ii. Group leverage level has no significant effect on portfolio quality of investment groups under Sidian bank in Nairobi region
iii. Group capitalization has no significant effect on portfolio quality of investment groups under Sidian bank in Nairobi region
iv. Group characteristics has no significant effect on portfolio quality of investment groups under Sidian bank in Nairobi region

1.5 Significance of the Study

The findings of this study would be invaluable to a number of stakeholders in the banking sector. First, the study's findings would be significantly important to the management of

Sidian bank. The findings of this study would assist portfolio managers to develop sound credit risk policies that would help them come up with efficient tools of measuring, controlling and evaluating investment groups' loan applications in an attempt to improve the quality of their portfolio. The findings of the study would also help managers of other banking and microfinance institutions to understand the various determinants of portfolio quality in investment groups they finance. The managers would use the findings of this study to evaluate their customers based on these variables to improve the quality of their portfolio. In addition, the study results would be important to practitioners and consultants in the area of portfolio and risk management in general. In particular, this study would highlight the effect of macroeconomic variables, group leverage level, group capitalization and group characteristics on portfolio quality. The practitioners would therefore use the findings of this study to advice their clients accordingly.

The findings of study would also be important to the Kenyan government through the relevant ministries, organs and departments. The findings of this study would assist the executive and legislature in formulating policies that would aid the growth of the banking and microfinance industry. Finally, the study findings would also significantly contribute to the pool of existing knowledge regarding the concept of micro credit and its effect on portfolio quality. Scholars and other researchers would find the outcomes of this study relevant as reference material to advance in their research.

1.6 Scope of the Study

This study sought to establish the determinants of portfolio quality in investment groups under Sidian bank in Nairobi region. This study specifically evaluated the effect of macroeconomic variables, group leverage level, group capitalization and group characteristics on portfolio quality for a period of five years from 2012 to 2016. The researcher carried out a census of all investment groups financed by Sidian bank in Nairobi region.

1.7 Limitation of the Study

The researcher is likely to encounter various limitations that may hinder the success of the study. The main limitation of this study was accessed to the sought information. The study sought relatively sensitive information touching on performance of the various investment groups based on their portfolio quality. For this reason, many of the organizations may be unwilling to allow the researcher to use data for the information. The researcher emphasized

the need to provide accurate information and the benefits that the study brought to the institutions. In addition, the researcher convinced the respondents that the data collected was used for academic purpose only.

The study utilized secondary data. The study was therefore encountered in accurate and incoherent data. This is because some investment groups may not have updated information. For the purpose of this study, the researcher sought an introduction letter from the university as well as a research permit from National Commission for Science, Technology and Innovation (NACOSTI) was produced.

1.8 Key Definition of Terms

Group Capitalization: This is the sum of a corporation's stock, long-term debt and retained earnings. Capitalization also refers to the number of outstanding shares multiplied by share price. Capitalization rate equals annual net operating income over cost or value.

Group Characteristics: These are distinguishing feature or attribute of a group. They include size, savings level, and savings pattern and income level of members among others.

Group Leverage Level: This is the proportion of debt in the capital structure. The term leverage is used synonymously with gearing level in economics and finance.

Group: A formal/ informal cooperative society comprising of five or more members with an aim of saving and investing

Loan portfolios: These are loans that have been made or bought and are being held for repayment. It comprises of the outstanding principal balance of all loans, including current, delinquent, and restructured loans, but not loans that have been written off.

Macroeconomic Variables: These are indicators of the overall state of a country's economy. These variables look at the economy from the widest perspective and studies general trends in order to assess the relative health of an economy.

Micro Credit: This is provision of small loans to borrowers who lack collateral, steady employment, or a verifiable credit history.

Microfinance Institutions: A category of financial institutions targeting individuals and small businesses who lack access to conventional banking and related services.

Nonperforming Loan: This is a loan that is in default for 90 days.

Portfolio Quality Analysis (PQA): This is analysis of the most important trends and issues regarding the total loan portfolio. The analysis seeks to identify events that affect loan portfolio performance along with their causes and consequences, allowing the recommendation of appropriate action plans.

Portfolio Quality: This is the status of a loan portfolio. The term is used interchangeably with loan at risk or non-performing loans.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter provides review of literature in aid of achieving the study objectives. This chapter therefore consists of the theoretical framework that support the variables under investigation for the study, review of empirical literature on variables, summary of the empirical review and knowledge gap and finally a conceptual framework.

2.2 Theoretical Framework

2.2.1 The Modern Portfolio Theory

Modern Portfolio Theory (MPT) is attributed to Harry Markowitz, which was published in his paper 'Portfolio Selection' in the Journal of Finance, 1952. The theory proposes a hypothesis on the basis of which, expected return on a portfolio for a given amount of portfolio risk is maximized or the risk on a given level of expected return is minimized. According to Pfaff (2012), the theory shows how rational investors diversify in order to optimize their portfolios. Francis and Kim (2013) noted that this can be by choosing quantities of various securities cautiously taking into consideration the way in which the prices of each security changes in comparison to that of every other security in the portfolio, rather than choosing securities individually. The portfolio theory uses mathematical models to construct an ideal portfolio for an investor that gives maximum return depending on his risk appetite by taking into consideration the relationship between risk and return (Mangram, 2013). According to the theory as noted by Pfaff (2012), each security has its own risks, which is higher than that of a portfolio containing diverse securities. Simply put, the theory emphasizes on the importance of diversification to reduce risk.

While the portfolio theory was formalized in the 50s there is evidence that the constructs of portfolio construction existed long before this period. For example, in developing his theories of the money, Keynes (1936) had already conceived of portfolio selection theory in which uncertainty played an important role (Cochrane, 2014). However, for many economists during this early period, financial markets were still regarded as mere casinos rather than markets properly speaking. In their view, asset prices were determined largely by expectations and counter-expectations of capital gains and thus they were held up by their own bootstraps as it were. Additionally, Statman (2010) noted that, in their pioneering work on futures markets, Keynes (1936) and Hicks (1962, 1982) argued that the price of a futures

contract for delivery of a commodity will be generally below the expected spot price of that commodity (normal backwardation). This is largely because hedgers would shift their price risk onto speculators in return for a risk premium. Moreover, Kaldor (1939) analysed the question of whether speculation was successful in stabilizing prices and, in so doing, expanded Keynes's theory of liquidity preference considerably.

While there are numerous methods and theories designed to aid with the asset allocation decision, Modern Portfolio Theory (MPT) remains to be the most popular (Buttell, 2010). The theory condenses the often-complex realm of investor goals and objectives into quantitative expected risk and return statistics. With volatility and return along with correlations between various asset classes, MPT states that investors can construct portfolios that are designed to meet the goals of investors. Resnik (2010) observed that Markowitz (1968) presented variance as a meaningful measure of risk, and created a method of calculating the overall portfolio risk while taking into account the imperfect correlation of price movements between assets. When combining multiple assets that are less than perfectly correlated, the combined variance of the portfolio reduces. More so, he developed the model as a mathematical formulation of the concept for diversification, with the aim of selecting a combination of assets that collectively give lower risk than any individual asset would have produced.

Additionally, the Markowitz approach is a method to calculate mean-variance efficient portfolios (Mangram, 2013). Hence, the Markowitz approach is based on mean-variance analysis, where the variance of the overall rate of return is taken as a risk measure and the expected value measures profitability. The theory produces a portfolio with the minimum variance given an expected return. The return from portfolio investment is expressed as the mean of expected returns of component assets while risk is expressed as variance of the asset returns. The MPT assumes for investor rationality and markets efficiency as investors seek to minimize risk while maximizing on their returns (Francis & Kim, 2013).

In developing the Theory, Markowitz made the following assumptions: Each asset has a set of probable outcomes, which can be thought of as a probability distribution, Investors aim to maximize their single period utility of wealth and Investors are risk averse meaning that they exhibit a diminishing marginal utility of wealth. Additionally, it is assumed that investors estimate risk based on the variability of returns and that the investors always base their investment decisions on the expected return and variance of asset or assets on consideration.

For a given level of expected return, investors prefer lower to higher level of risk and similarly, for a given level of risk, the investors would always prefer a higher to lower level of the expected return (Saunders & Cornet, 2014).

Tobin (1958) added to the Portfolio Theory by introducing the Efficient Frontier. According to the theory, every possible combination of securities can be plotted on a graph comprising of the standard deviation of the securities and their expected returns on its two axes (Beyhaghi & Hawley, 2013). The collection of all such portfolios on the risk-return space defines an area, which is bordered by an upward sloping line. This line is termed as the efficient frontier. The collection of Portfolios which fall on the efficient frontier are the efficient or optimum portfolios that have the lowest amount of risk for a given amount of return or alternately the highest level of return for a given level of risk. The Efficient Market Hypothesis (Tsiang, 2014) is the basis of all financial models. He defined market a place where large numbers of rational and risk averse investors trade actively to maximize profits and minimize risks on the basis of the same information which is freely available to all the investors at the same time.

According to Tobin (1958), different attitudes towards risk would only result in different combinations of money and that unique portfolio of risky assets. In case of microfinance banks, stakeholders like depositors, investors and other creditors all use the quality of the bank loan portfolio as the primary indicator of creditworthiness. If there are doubts about the quality of the portfolio, it will be hard to mobilize or retain deposits or to qualify for a funding facility with a bank (Francis & Kim, 2013). This is a very important linkage between credit risks, liquidity risk and portfolio quality. Commercial banks therefore have to combine portfolio of risky and risk-free assets in a well-balanced manner. Risk free assets can comprise treasury bonds and treasury bills while risky assets may range from advancing long-term loans to blue chips companies to an overdraft facility extended to an individual or start up business. To cost loan products banks have to assess the inherent risk of lending to their clients. Estimation of the risk premium is done by obtaining information about the client for example through analysis of audited accounts or credit history of the loan applicant (Lin & Tsendsuren, 2012).

Financial portfolios use Modern Portfolio Theory (MPT), which deals with problems of risk and return, to make investment allocation decisions. According to Swamy (2013), the bearing of MPT on business decision-making among microfinance institutions has been substantial

such that the quality of portfolio is now routinely assessed for risk as well as return through the MPT for optimal decision making. The Modern Portfolio Theory links the expected rate of return of portfolio to the expected risk showing the importance of diversification in the minimization of portfolio risk hence its importance for consideration as it provides a mathematical linkage between the determinants of portfolio quality in investment groups.

2.2.2 Information Asymmetry Theory

Information asymmetry (Armstrong, Core, Taylor and Verrecchia, 2011) refers to a situation where one party has more or better information than the other. Asymmetric information (Suri and Adnan, 2016) is more prevalent in financial markets such as borrowing and lending where the borrower has much better information about his financial state than the lender. This creates an imbalance of power in transactions, which can sometimes cause the transactions to go awry, or market failure in the worst case. Akerlof (1970) first presented this theory in the easy The Market for Lemons.

Finance theory postulates that information asymmetry can constrain all types of external financing by either limiting availability or increasing costs. Consequently, information asymmetry should affect the acquisition and use of microfinance bank loans since microcredit loan is a primary source of firm liquidity. However, Bhattacharya, Desai and Venkataraman (2013) concluded that it is difficult to distinguish good from bad borrowers, which may result into adverse selection and moral hazards problems. The information asymmetry theory explains that in the market, the party that possesses more information on a specific item to be transacted is in a position to negotiate optimal terms for the transaction than the other party (Dutta & Folta, 2015). The party that knows less about the same specific item to be transacted is therefore in a position of making either right or wrong decision concerning the transaction. Adverse selection and moral hazards have led to significant accumulation of non-performing loans in banks (Bhattacharya, Desai and Venkataraman, 2013).

Banks and other microfinance institutions normally use measures of operating cash flow to evaluate debt service and repayment capacity of the borrowers. Additional risk comes with uncertainty in firm level performance and greater variability in investment opportunities. Information asymmetry thus influences a lender’s willingness to lend. Existing empirical literature indicates that information asymmetry has an adverse effect on bank lending and portfolio quality (Hardin and Hill, 2010). Pagaon and Jappelli (1993) in their earlier work showed that information sharing reduces adverse selection by improving banks information

on credit applicants. Other (Faulkender & Petersen, 2006) argue that the use of micro credit loans mitigates capital market frictions through increased monitoring and reduced information asymmetry.

Firms facing greater information asymmetry are more likely to be constrained in the public capital markets and may have less ability to reduce or payoff their lines of credit drawn as expected. Since information asymmetry problems increase the monitoring costs and risks for lenders, less transparent firms are less likely to obtain micro- credit as an alternative source of finance (Brennan, Kirwan& Redmond, 2016). In an attempt to reduce the effect of information asymmetry, firms charge higher interest rates to caution themselves against defaulting borrowers. In this case, a large portion of related monitoring costs is transferred to borrowers in the form of higher interest rates and data collection costs, which may lead some borrowers to reduce their use of credit. Moreover, if monitoring is imperfect and the lenders cannot eliminate information asymmetry, bank credit may be rationed for opaque firms. On an indirect basis, information asymmetry may also influence line of credit availability and use since some sources of repayment are based on access to public capital markets (Hill, Kelly & Hardin, 2010).

2.2.3 The Agency Theory

Agency theory was first conceived by Ross (1973) and Mitnick (1973), who independently developed economic theory of agency and the institutional theory of agency respectively. However, the economic perspective has become more prevalent. It is also noted that the basic concepts underlying these approaches are similar. Indeed, the approaches can be seen as complementary in their uses of similar concepts under different assumptions (Hillier, Grinblatt & Titman, 2011). An agency relationship arises where one party known as the principal gives legal authority to another party known as the agent to act on the principal's behalf in dealing with third parties. The theory suggests a divergence in interests between the principle and the agent develops into an agency conflict. In a firm, the dominant agency relationship is between the owners of the firm and the management. This theory therefore seeks to explain the relationship that exists between the management of the organization and the shareholders (Miller & Sardais, 2011).

According to the theory, the management is usually considered as an agent who has been contracted by the stockholders to work towards enhancing the stockholder value through good financial performance (Bosse & Phillips, 2016). The management is therefore expected

to act in the best interests of the owners and enhance the financial performance of the organization. However, the theory suggests that the managers who are agents may be involved in activities that are aimed at serving personal interest at the expense of the owners of the organization. Stockholders employ a number of strategies to ensure the management acts in the interest on the organization. The theory suggests that management can be rewarded financially in order to motivate them to work for the interests of the company (Hillier, Grinblatt & Titman, 2011). The owners can also issue threats such as hostile takeover to force management to perform the required duties.

The theory also posits that owners can constrain management's ability to maximize personal utility by establishing contracts that minimizes the divergence in interests in exchange for a level of salary and benefits to management that is greater than what owner-managers would grant themselves if they were in control of the firm (Shi, Connelly & Hoskisson, 2016). Agency costs arise from additional salary and benefits allowed by the contract. Jensen and Meckling (1976) introduced the aspect of agency costs. These costs arise because in the absence of any restrictions, a firm's management would be tempted to take actions that would benefit stockholders at the expense of bondholders (Bosse & Phillips, 2016). Due to this, bondholders impose restrictions in the operations of a firm by way of covenants, which hamper the corporation's legitimate operation. Furthermore, the bondholders are forced to monitor the firm to ensure that the covenants are upheld. The monitoring costs are passed to stockholders in terms of higher cost of debt (Ncube, 2009). Covenants lead to loss in efficiency of operation of the firm. The cost efficiency and the monitoring costs are important types of agency costs which increase the cost of debt and reduces the value of equity thus reducing the advantages of debt.

Erhard and Jensen (2014) posit that a firm should consider the agency costs of debt vis a vis the benefits of debt to determine the optimum debt. Optimum debt according to them is the point at which marginal agency costs of debt is equal to marginal benefits of debt. They identified the agency costs of debt as consisting of the agency theory of capital structure. Consistent with agency theory postulates, microfinance institutions with higher leverage or lower equity are associated with lower portfolio quality. In terms of bank size, smaller banks are more efficient whereas medium size and larger banks are cost efficient (Ndungu & Njeru, 2014).

2.2.4 Financial Intermediation Theory

Financial intermediation involves surplus units depositing funds with financial institutions who then lend to deficit units. In earlier studies of financial intermediation, such as Gurley and Shaw's (1960), the main activity of intermediaries was the transformation of securities issued by firms (shares and bonds) into securities demanded by investors (deposits). Financial intermediaries are valuable because they provide services of divisibility and risk transformation, which borrowers cannot obtain on their own under identical conditions due to transaction costs.

It is important to distinguish between banks as financial intermediaries accepting deposits and advancing loans directly to borrowers and non-bank financial intermediaries who lend via the purchase of securities (Iwedi & Igbanibo, 2015). The latter category includes insurance companies, pension funds and investment trusts who purchase securities, thus providing capital indirectly rather than making loans. These types of intermediaries do not meet the four criteria shown above. This study is devoted to banks only. The most significant contribution of intermediaries is that they provide a steady flow of funds from surplus to deficit units (Mathews and Thompson, 2008)

Banks, savings and credit cooperatives (SACCO) and microfinance institutions have always been the most important financial intermediaries in virtually all economies. This results from their role as providers of liquidity insurance and monitoring services and as producers of information (Poghosyan, 2013). By issuing demand deposits, banks can improve on a competitive market because these deposits allow for better risk sharing among households that face idiosyncratic shocks to their consumption needs over time (Phelan, 2017). The importance of banks in this framework arises from an information asymmetry; the shock that affects a household's consumption needs is not publicly observable.

Financial intermediaries are also valuable as providers of monitoring services because they act as delegated monitors to investors and thus avoid the duplication of monitoring costs. As for liquidity insurance, the key to the existence of banks in this step is also an information problem (Ziegler, 2013). Firms are assumed to have more information about their investment projects than investors do. Investors can learn this information but only after incurring monitoring cost. They may choose, however, to delegate monitoring to a bank, through which they all provide funding to the firm. By acting as delegated monitors of investors, banks save on monitoring costs and make funding available to firms at a lower cost than direct lending

(Marcelin & Mathur, 2014). The provision of liquidity insurance explains the liability side of the bank's balance sheet while provision of monitoring services explains the asset side of the balance sheet (Hermes & Lensink, 2013).

2.3 Macroeconomic Variables

Microcredit can create considerable opportunities for people to utilize lumps of money so that they can improve incomes and reduce vulnerability. But not all micro credit produces favourable results, especially for poor people working in low-return activities in saturated markets that are poorly developed and where environmental and economic shocks are common (Kantor, 2009). Portfolio quality of financial institutions may also be influenced by several factors, which are beyond the control of the firm. External factors influencing portfolio quality may include interest rate, inflation rate, exchange rate and economic growth.

2.3.1 Interest Rate

From both theoretical and empirical perspective, interest rates affect economic growth, which in turn affects total taxes, collected in a country as observer by Udoka and Anyingang (2015). Additionally, Ng'etich and Wangari (2011) observed that high interest rates have the negative effect of increasing the cost of borrowing and consequently limiting the level of aggregate investment and consumption and the overall portfolio quality in an institution. Interest rate levels are influenced by markets forces, supply and demand factors, inflation and default risk (Jiang, Nelson & Vytlacil, 2014). Government's policy also plays an important role. While national approaches to interest rate management differ from one country to another and over time, no country permits its interest rates to be determined solely by market forces. Even when interest rates are not actually determined by government, it is common for government agencies to act as market participants in attempts to achieve desired levels.

The impact of government is always more powerful on short-term rates. However, the close linkages between various financial markets mean that changes in short term rates generated by the authority's money market interventions are felt along the wider market system. Even at the short end of the interest spectrum, government influence cannot amount to full control. The money markets cannot be divorced from the fundamental demand and supply and exceptional factors determining interest rates. Kyule and Ngugi (2014) concluded that interest rates are influenced by inflationary conditions, open market factors including foreign interest rates and the expected depreciation of local currency, monetary conditions and output levels. They concluded that both inflationary conditions and monetary checks influence interest rates

in a positive and significant way. According to Jiménez, Lopez and Saurina (2013) fluctuating interest rates cause disequilibrium in the market. The situation is mainly explained by the availability of deposit resources, the alternative investment channels for banks and the ease of portfolio adjustment at the end of the period.

Although achieving competitiveness does not imply nonexistence of an interest rate spread, Almarzoqi & Ben Naceur (2015) noted that the size of the spread is much higher in a non-competitive market, which also calls for strengthening the regulatory and legal framework to enhance the stability of the market. Caprio (2006) opined that a weak legal system, where the courts are not oriented toward prompt enforcement of contracts and property rights are ill defined, increases credit riskiness and MFIs have no incentive to charge lower rates. Financial institutions that charge high interest rate would comparatively face a higher default rate or non-performing loans. Yüksel (2017) depict that a high interest rate charged by banks is associated with loan defaults. Rajan and Dhal (2013) who used a panel regression analysis indicates that financial factors like cost of credit have significant impact on portfolio quality. Finally, Waweru and Kalani (2009) on the commercial banks in Kenya using statistical analysis indicates that high interest rate charged by the banks is one of the internal factors that leads to incidence non-performing loans.

The interest rate affects also the amount of bad debt in the case of floating interest rate. This implies that the effect of interest rates should be positive, and therefore, there is an increase in the debt caused by the increase in payments of interest rates and hence the rise of non-performing loans (Bofondi and Ropele, 2011). Fofack (2005) argues that economic growth and the real interest rate are important determinants of bad loans in the sub-Saharan African countries. He attributes the relationship between macroeconomic factors and doubtful accounts to the undiversified environment of some economies and their high exposure to external shocks.

2.3.2 Inflation Rate

Literature supports that there is a direct relationship between inflation rate and loan portfolio quality such that if the rate of inflation will increase total loan defaults will increase (Lucotte, 2010). Rasheed and Jabeen (2016) observed that inflation ties up money that could be used to pay for loans by individuals and firms. Inflation disturbs the distribution of income and wealth by creating unemployment and lowering economic growth making it difficult for borrowers to arrange for loan repayment. It creates uncertainty and raises costs of production.

Profitability of investment is lowered making it less attractive as a result. This will in turn lowers tax collection since the government will lose the revenue that would have been generated if the investment were profitable. Inflation hurts people on fixed incomes, since their purchasing power will fall. Ngotho and Kerongo (2014) reported that when inflation rises there is a negative effect on revenue collection. In their observation, they indicated that when inflation falls, revenue collection increases. The inflation rise which affects the cost of living and that of doing business leading to tax evasion. Finally, they support the view that inflation will affect growth through reducing the efficiency of resources' allocation. He develops a model to elaborate that inflation will change return on money and capital and then alter the choice by firms and consumers.

High inflation increases the volatility of business profits because of its unpredictability, and because it normally entails a high degree of variability in the rates of increase of price of the particular goods and services which make up the overall price index (Makri, Tsagkanos & Bellas, 2014). The probability that firms will make losses rise; as does the probability that they will earn windfall profits. Further, according to Ghosh (2015), macroeconomic instability which is mostly manifested by high inflation rate also makes loan appraisal more difficult for the bank, because the viability of potential borrowers depends upon unpredictable development in the overall rate of inflation, its individual components, exchange rates and interest rates. Moreover, asset prices are also likely to be highly volatile under such conditions. The future real value of loan security is also very uncertain (Wan & Zhang, 2015). Mortgage lending do poorly both when product and asset price prudential policy, inflation accelerates unexpectedly and when inflation decelerates unexpectedly, unemployment increases, and/or aggregate output and income decline unexpectedly.

2.3.3 Exchange Rate

Economists have long known that poorly managed exchange rates can be disastrous for economic growth (Easterly, 2005). A high real exchange rate (undervaluation of the currency) stimulates economic growth. This is true particularly for the developing countries of which Kenya is among them. Exchange rates play a vital role in a country's level of trade. A higher exchange rate can be expected to lower the country's balance of trade while a lower exchange rate would increase it. As affirmed by Clark and Ghosh (2004), foreign exchange affects international trade and capital flows.

According to Shingjergji (2013), the relationship between foreign exchange rate and Non-Performing Loans (NPL) ratio is positive. This is because borrowers always exposed to foreign exchange rate and it could increase the NPL ratio. Moinescu (2012) also proved that NPL is significantly adjusting to economic development while exchange rate changes exercise positive effects on it. Besides that, Khemraj and Pasha (2009) also found that in the Guyanese banking sector, the real effective exchange rate has a positive effect on NPLs by referring to Jimenez and Saurina (2005) model. In addition, there is positive relation between the ratio of total loans and total assets. As noted by Heiden, Klein and Zwergel (2013) exchange rate depreciation is correlated with lower quality of bank assets, especially in countries with widespread currency mismatches. Further, exchange rate brings negative impact to banks' asset quality.

Real effective exchange rate is one of the main causes of the NPLs and it is statistically significant during sustainable economic downturns (Fofack, 2005). Furthermore, Heiden, Klein and Zwergel (2013) suggested that exchange rate depreciation (against the euro) contribute to higher NPLs. It is supported by De Bock and Demyanets (2012), they found that economic activity turns slow when NPLs increases, while exchange rate tends to depreciate. Based on Beck, Jakubik and Piloiu (2013) finding, the exchange rate is considered as possible determinants of NPLs. In particular, exchange rate depreciation increases the NPLs in countries with a higher degree of lending in foreign currencies to non-hedged borrowers. Besides that, a solution using the simple pair-wise regressions, it suggests NPLs has had a significant impact on the nominal effective exchange rate. The real exchange rate is positively connected with the NPLs according to which a country's international competition is an important determinant of the credit risk. (Shingjergji and Shingjergji, 2013) On the contrary, Beck, et, al. (2013) mentioned that exchange rate has no significant impact on NPLs in Latvia, as they managed to maintain its currency board during the crisis.

However, exchange rate helps in the regulation of exports and imports of goods and services (Klein. 2013) which in turn affects economic growth. According to the traditional school of thought, the uncertainty of returns would result in the risk averse and risk neutral producers reallocating resources from the high risk foreign markets to the lower risk domestic markets effectively lowering international trade (Oyovwi, 2012). Exchange rate fluctuations had negative long run effects on horticultural exports; Kiptui (2008) obtained results indicating

that exchange rate volatility had a negative long and short run relationship with Kenya's tea and horticulture exports.

2.3.4 Unemployment rate

Unemployment rate is simply defined as the percentage of entire labour force that is unemployed but keenly looking for a job and willing to contribute (Bernstein, 2014). As unemployment rate increases, many people may want to give a try on starting their own business. However, not all loans given out guarantee a 100% payback, especially during economic recessions. Punyara tabandhu (1999) added that a country might face worse situation if the unemployment rate continues to escalate, eventually NPL multiplies and zero economic intensification. For instance, Japan, in the year 2000, faced the worst economy ever. Their NPL amount was unimaginable and partly was due to the unemployment rate (Kroft & Notowidigdo, 2016).

There is evidence proving that problem loans are strongly affected by unemployment (Joseph, Edson, Manuere, Clifford & Michael, 2012). When the borrowers, regardless of individuals or businesses are unemployed, they have less capability to cope with debt payment. Thus, unemployment and NPLs are relatively sensitive to each other, especially in business sector. As business is not doing well, firm might sack their employees to reduce their operating costs, hence causing unemployment rate to be increased (Louzis et al., 2011). Increasing unemployment rate will become one of the indicators where NPL is happening.

In addition, Vatansever and Hepsen (2013) opined that there is positive relationship between unemployment rate and NPL ratio. NPL ratio rises together when the unemployment rate increases (Jakubik, 2007). Iuga and Lazea (2012) sought to determine the impact of NPLs in Romania banking system, Vogiazas and Nikolaidou (2011) used the univariate regression, given that unemployment is one of the variables which influences. The results indicated there is a clear-cut relationship where NPL ratio increases due to growth of unemployment rate.

Louzis, *et., al.* (2011) found that unemployment rate is one of the macroeconomic factors that affect the level of NPLs. It indirectly affects NPLs in the form of performance and quality of management as well as system (Badar and Javid, 2013). The bank management should monitor their problem loans closely, otherwise too high of default rate may lead to bank bankruptcy as well as economy downturn. Thus, unemployment is one of the strongest factors affecting NPLs. Hence, among investment groups financed by Sidian banks if the

proportion of unemployed members increase, the quality of their portfolio is expected to increase.

2.4 Group Leverage Level

To manage their portfolios, bankers and other microfinance institutions must understand not only the risk posed by each credit but also how the risks of individual loans and portfolios are interrelated. These interrelationships can multiply risk beyond what it would be if the risks were not related. Until recently, few banks used modern portfolio management concepts to control credit risk. Now, many banks view the loan portfolio in its segments and as a whole and consider the relationships among portfolio segments as well as among loans. These practices provide management with a more complete picture of the bank's credit risk profile and with more tools to analyse and control the risk (Aaker,2009). Ward and Price (2006) defined financial leverage as the proportion of capital which is financed by debt as opposed to equity. Therefore, the higher the leverage, the higher the amount of debt in the capital structure of a firm. Financial leverage comes in various forms and has different maturity and priority structures. When a firm decides to borrows, it must decide not only on the amount but also on the type of debt finance, on the maturity and on the priority of the debt (Saunders & Cornett, 2014). Companies have to decide on whether debt should be in the form of leases, convertible loans, loan capital, bank loans and overdraft, notes and bills; should be short or long-term and whether debt should be secured, unsecured or subordinated.

2.4.1 Debt to equity ratio

Literature suggests that different measurement techniques have been used to calculate the leverage level of a firm. Jensen and Meckling (1992) used debt to equity ratio to measure the debt policy. Byrd (2010) sought to determine the relationship between the debt and free cash flow took the value of each firms' long-term obligations. Fatma & Abdelwahed (2010) used debt ratio to measure firm level of debt to measure the interaction between debt policies and free cash flow. Zhang (2009) studied the effect of debt in reducing the free cash flow and formulated leverage as a firm's net debt issuance minus the net equity issuance.

Abor (2005) investigated the relationship between debt-equity ratio and firm's profitability. In the study, the level of the firm in investment and its degree of market power was observed. The facts and figures of various industries of 1995-96 were taken into study. It was observed through the study that the financial structure plays a key role in a firm's profitability. A firm's profitability depends on debt-to-equity ratio. The debt -to-equity ratio varies from firm to

firm. It is the selection of debt- to- equity ratio which makes successful financial strategy for this purpose some firms choose a high rate equity ratio and the others depend on lower rate equity ratio. It was observed from the study of various industries that debt-to-equity ratio has a negative impact on a firm's profitability.

Debt/Equity ratio is a debt ratio used to measure a company's financial leverage, calculated by dividing a company's total liabilities by its stockholders' equity. The D/E ratio indicates how much debt a company is using to finance its assets relative to the amount of value represented in shareholders' equity. Debt to equity ratio is measured as follows

Debt to equity ratio = Fixed Charge Capital/ Equity

A high debt/equity ratio generally means that a company has been aggressive in financing its growth with debt. Aggressive leveraging practices are often associated with high levels of risk. This may result in volatile earnings because of the additional interest expense.

2.4.2 Equity Multiplier

Companies finance their operations with equity or debt, so a high equity multiplier indicates that a larger portion of asset financing is attributed to debt. The equity multiplier is a ratio used to analyse a company's debt and equity financing strategy. A higher ratio means that more assets were funding by debt than by equity. In other words, investors funded fewer assets than by creditors (Almazari, (2012). When a firm's assets are primarily funded by debt, the firm is considered highly levered and riskier for investors and creditors. This also means that current investors actually own less of the company assets than current creditors. Lower multiplier ratios are always considered more conservative and more favourable than higher ratios because companies with lower ratios are less dependent on debt financing and don't have high debt servicing costs. The multiplier ratio is also used in the DuPont analysis to illustrate how leverage affects a firm's return on equity. Higher multiplier ratios tend to deliver higher returns on equity according to the DuPont analysis.

The equity multiplier is a variation of the debt ratio, and its definition of debt financing includes all liabilities. The equity multiplier is calculated by dividing a company's total asset value by total net equity, and it measures financial leverage. The equity multiplier is an important indicator of the financial health of a company

Equity Multiplier = Total Assets / Total Stockholders' Equity (capital contributed)

2.4.3 Gearing ratio

A gearing ratio is a financial ratio that compares owner's equity to borrowed funds. Investors sometimes use it to assess how well a company may survive an economic downturn. The ratio compares owner's equity to borrowed funds. Investors sometimes use it to assess how well a company may survive an economic downturn. Scholars (Hillier, Grinblatt and Titman, 2011; Miller and Sardais, 2011 and Dutta and Folta, 2015) have shown that the level of debt in the capital structure exposes the borrower to higher financial risk which in turn increases the required rate of return by providers of capital. Consequently, this affects the value of the firm. For this reason, lenders are concerned that a high level of debt by firms will dilute the value and safety of their credit. Thus, according to Tsiang (2014), the proportion of debt in the capital structure of a firm or sector may induce credit rationing. Moreover, the use of debt can increase the monitoring of managers by debt holders like banks, which will put pressure on the managers of the firm to run the business profitable.

Gearing focuses on the capital structure of the business, meaning the proportion of finance that is provided by debt relative to the finance provided by equity (or shareholders). The gearing ratio is also concerned with liquidity. However, it focuses on the long-term financial stability of a business (Dutta & Folta, 2015). In theory, the higher the level of borrowing (gearing) the higher are the risks to a business, since the payment of interest and repayment of debts are not "optional" in the same way as dividends. However, gearing can be a financially sound part of a business's capital structure particularly if the business has strong, predictable cash flows (Hillier, Grinblatt and Titman, 2011).

Gearing ratio is calculated as

Gearing Ratio = Total Debt (Outstanding loans) / Total capital employed (Debt + Equity)

The borrowing practices of private equity companies provide clear examples of the upside and downside of high gearing ratios. Private equity companies often use partially borrowed funds to finance their corporate acquisitions. A portion of the money to buy (or takeover) another company comes from the private equity firm itself (Dutta & Folta, 2015). The rest of the money typically comes from debt the private equity firm takes out against the assets of the company being acquired. Inevitably, the gearing ratio rises in the process. The advantage of this rise in the debt to equity ratio of the acquired company is the private equity firm's increased profit when the company is resold or once again becomes a public company. If a

private equity company finances a corporate acquisition with its own funds and later sells the company for a 30 percent profit, it's received a 30 percent return on its investment. If, on the other hand, it finances the acquisition by splitting the acquisition funds equally between its own capital and the borrowed capital of the acquired company, selling the company for 30 percent more than the price of acquisition provides a 60 percent profit on investment. This is a powerful incentive to raise the gearing ratio.

2.4.4 Interest Coverage Ratio

Long-term leaders recognize the risk that debt imposes on a firm, and they can respond by adjusting interest rates as leverage increases or refuse to lend to firms that due too highly leveraged or impose restrictions to prevent further issue of debt beyond point (Suri & Adnan 2016). Miller and Sardais (2011) concluded that high leverage reduces the amount of free cash flow available for use by managers and hence reduces agency costs between owner and managers. They noted that the use of debt impacts on agency cost in several ways. First, use of debt reduces the free cash flow available to managers because interest payments to debt holders decrease cash flow available for investments. Secondly, decrease in free cash flow helps in curtailing the over-investment problem, which results from managers channelling funds to negative NPV projects (D'Mello and Miranda, 2010). Finally, using debt enables institutions such as banks to monitor managers of firms so that they have to run profitable businesses in order to meet maturing obligations.

The interest coverage ratio measures how many times over a company could pay its outstanding debts using its earnings. This can be thought of as a margin of safety for the company's creditors should the company run into financial difficulty down the road (Miller & Sardais 2011). The ratio is used to determine how easily a company can pay their interest expenses on outstanding debt. The ability to service its debt obligations is a key factor in determining a company's solvency and is an important statistic for shareholders and prospective investors. Investors want to be sure that a company they are considering investing in can pay its bills, including its interest expense (Kar & Swain 2014). They do not want the company's growth derailed by these types of financial issues. Creditors are concerned with the company's ability to make their interest payments as well. If they are struggling to make the interest payments on their current debt obligations, it does not make any sense for a prospective credit to extend them additional credit (Suri & Adnan 2016).

The interest coverage ratio at a point in time can help tell analysts a bit about the company's ability to service its debt, but analysing the interest coverage ratio over time will provide a clearer picture of whether or not their debt is becoming a burden on the company's financial position (D'Mello and Miranda, 2010). A declining interest coverage ratio is something for investors to be wary of, as it indicates that a company may be unable to pay its debts in the future. However, it is difficult to accurately predict a company's long-term financial health with any ratio or metric (Suri & Adnan 2016). Moreover, the desirability of any particular level of this ratio is in the eye of the beholder to an extent. Some banks or potential bond buyers may be comfortable with a less desirable ratio in exchange for charging the company a higher interest rate on their debt.

The ratio is calculated by dividing a company's earnings before interest and taxes (EBIT) by the company's interest expenses for the same period.

Interest coverage ratio = EBIT / Interest expenses

2.5 Group Capitalization

Capitalization of financial institutions may be viewed in two perspectives to either refer to the book value of capital, which is the sum total of the company's debt and equity. On the other hand, capitalization may be viewed as the market value of capital and which depends on the price of the company's stock (Malkiel, 2014). It is determined by multiplying the price of the company's shares by the number of shares outstanding in the market.

2.5.1 Market capitalization

As noted earlier, market capitalization is the market value of capital (Malkiel, 2014) and basically depends on the price of the company's stock in an open market. An investment group may be overcapitalized, undercapitalized or medium capitalized. Overcapitalization refers to a situation where earnings are not enough to cover the cost of capital such as interest, or dividends payments to shareholders. Companied which have just adequate capitalization are referred to as mid-caps. Interest on debt is a deductible expense for tax purposes. This provides investment groups with an incentive to finance their operations with debt rather than equity, especially in high tax countries (Gallagher, Gardner, Schmidt & Walter, 2014). However, to prevent the negative consequences of debt finance for tax collection to the state, many countries have instituted thin capitalization rules that restrict the deductibility of interest above a certain debt level. In addition, increased use of debt increases

financial risk, which exposes the group to financial distress and bankruptcy (Beck, Jakubik & Piloiu, 2013). This means increased use of debt becomes counteractive. Since the shares of the group may not be trading publicly, the theoretical value per share will be used as a proxy for market price per share.

Market capitalization (MC) = N x P; where, N is the number of shares outstanding, and P is the theoretical value per share.

Companies can be ranked according to their market capitalizations, and the general format is to rank them as large-cap, mid-cap and small-cap companies. There are basic criteria for putting companies in these categories, but there may be some differences depending on the market in which the company trades and is being ranked. These large companies have usually been around for a long time, and they are major players in well-established industries. Investing in large-cap companies does not necessarily bring in huge returns in a short period, but over the long run, these companies generally reward investors with a consistent increase in share value and dividend payments.

Mid-cap companies are established companies that operate in an industry expected to experience rapid growth. Mid-cap companies are in the process of expanding. They carry inherently higher risk than large-cap companies do because they are not as established, but they are attractive for their growth potential. On the other hand, small-cap companies are small companies that could be young in age and/or they could serve niche markets and new industries. These companies are considered higher risk investments due to their age, the markets they serve, and their size. Smaller companies with fewer resources are more sensitive to economic slowdowns.

Based on international prudential regulation, capital ratio is considered as an important tool for assessing capital adequacy and should capture the general safety and soundness of financial institutions. Consequently, highly capitalized microfinance banks might reduce their funding costs, which affect positively their portfolio quality. In addition, highly capitalized microfinance banks usually have a reduced need to external funds, which has again a positive effect on their portfolio quality. However, considering the conventional risk-return hypothesis, microfinance banks with lower capital ratios may have higher portfolio quality in comparison to better-capitalized financial institutions. Resnik (2010) reported a positive and

significant relationship between capital adequacy and portfolio quality. He concluded that the higher the capital ratio is, the more the bank's portfolio quality is.

2.6 Group Characteristics

Research has attempted to explain loan repayment behaviour by individual factors related to the borrower characteristics, whereas some others explain the payment by the institutional determinants. That is factors related to institutional characteristics of MFI. Other categories of factors can explain PAR such as nature of contract, nature of activity, social ties between group members and cultural factors. Giné and Karlan (2014) focused on the effects of program design, community and group characteristics on the repayment performance of groups. The results show that socially cohesive groups pool risks by diversifying the members' asset portfolio so that their repayment performance is improved even in communities with high-risk exposure.

2.6.1 Savings level

Microfinance institutions lending to investment groups rely on the level of savings by the group as a whole as well as individual member savings. Giné and Karlan (2014) notes that mandatory and voluntary savings schemes have been used effectively where savings play a significant role in gaining access to credit. Resnik (2010) identifies savings as a means of determining who to give credit and how much, whereby a borrower is required to accumulate savings both prior to and after borrowing. The borrower may also be required to pledge such savings as collateral. This excludes the potential borrowers and contradicts logic of micro lending in that the borrowers may not have funds to save. Group savings are acceptable collateral among microfinance institutions. Collateral in this sense refer to the security against the loan, in terms of non-encumbered assets or savings. Businesses and investment groups may not have adequate collateral thus the microfinance banks may not have any security for loans (CBK. 2002). Furthermore, some collateral is difficult to dispose of to recover the loans and in some industries and situations there are lots of indifference's that make it almost impossible to dispose of the collateral.

Among investment groups, failure of one member to repay is usually used to block access to new credit for all group members, increasing repayment performance due to social pressure. Byrd (2010) also noted that instead of blocking all the group members, access to future larger loans is be made dependent on punctual and full payment of small initial loans. This approach is practiced in Burkina Faso whereby a careful analysis of the economic opportunities

available in the villages where credit is provided is carried out. Use of credit is discussed with borrowers and includes a variety of firm or non- firm investments. The scheme is flexible allowing reallocation of funds to activities that had not been previously planned. Finally, Roslan and Karim (2009) found that repayment performance is significantly affected by borrower's characteristics, lenders characteristics and loan characteristics. Repayment problems can be in form of loan delinquency and default.

According to Nduba (2010), customer characteristics include, character, capacity, condition, collateral contribution and finally, common sense. Character refers to maturity, honesty and trustworthiness, integrity, discipline, reliability and dependability of a customer. Character is no doubt the most important quality of any client. A person of good character will pay his debt whether it is secured or not. Such a person will disclose all the facts of his deal because his intentions are to seek guidance and help from the organization. When in problems, such borrowers will adhere to the credit manager's request for alternative arrangements to pay his debt instead of hiding from the bank (Phelan, 2017). Group capacity refers to a group's ability to service debt fully.

2.6.2 Group size

Group size has a major influence in determination of the level of credit available to the group. This is due to the fact that large groups may have more assets and thus can access external finance cheaply due to their asset base and thus the ability to influence the rate of interest to their advantage. Large firms can also survive during crisis than small firms due to accumulated reserves (Ooghe & Prijcker, 2008). Armstrong, *et. al.* (2011) concluded that delay in reimbursement may result from certain characteristics related to the borrower: age, gender, educational level and matrimonial status. Other features are related to the requested loan: the amount requested the number of repayments, the number of loans, and the difference of the loan amount with the previous, the method of individual granting and the type of credit. Finally, the experience of the credit agent plays a key role in detecting doubtful customers.

2.6.3 Nature of activity

Profit oriented MFIs may be motivated to enter markets where the penetration of the existing socially motivated MFIs is high (McIntosh and Wydick, 2005). Profit maximizing MFIs select their clients from the already-trained and screened set of clients of the socially motivated MFIs, which adversely influences socially motivated MFIs' outreach performance.

Loan repayment problems coupled with increased competition and information asymmetry may also lead to a decline in portfolio quality (Buttell, 2010) and expose the MFI clients to the risk of over-indebtedness and debt-traps leading to increased sociological and psychological constraints (Bhattacharya, et. al., 2013). The environment in which the institution is operating has also been ranked as a major factor determining the accessibility to microcredit. Institutional condition here refers to the overall environment including commercial, socioeconomic, technological and political environment, which directly influence the nature of activity for the group.

2.6.4 Level of income

Maurer (2014) observed that causes of default especially in the agricultural sector are mainly inadequate income, crop failure, high instalment of repayment, lack of understanding of terms, liquidity problem, excessive debt taking, Ineffective storage/marketing, improper selection of borrowers, political pressure and interference, lack of co-operation from the government, lack of proper Supervision. Al Azzam & Mimouni (2012) suggested that social ties that are founded on friendship, neighbourhood, and on good communication seem to lower the number of days of late repayment. Therefore, social ties between group members improve group repayment performance.

There are two arguments on how much credit the borrowers should be given. One school of thought argues that the investors know best what they want to invest in and thus they should be given what they apply for (Resnik, 2010). The author further argues that some credit schemes assume that the poor people themselves know best how to better themselves and thus, credit should be targeted to particular activities. The other argument contends that credit should be made available according to repayment capability based on current performance. Some of the factors of determining the size and target for credit include savings, ability to pay and evaluation of business ability.

A client's capacity can be determined by retrieving his resources of income and netting off the commitments. In the case of a company, an analysis of the Audited Accounts for the past three years could reveal the surplus available to service the loan. Occasionally, credit managers come across clients who will tell them that they are good borrowers because this is their first loan. Unfortunately, one cannot say so because these clients are inexperienced. They are virgins in loan management and repayment (Poghosyan, 2013).

2.7 Portfolio Quality

Non-Performing Loans (NPLs) are also called Non-Performing Assets (NPAs). A Nonperforming Loan/ Asset is a credit facility in respect of which the interest and or principal amount has remained past due for a specific period of time. Many financial institutions attempting to manage their portfolio quality are concerned with credit risk. Credit risk mitigation is the application of different strategies by lenders, banks and other business offering credit to control loss from default and promote credit demand. As discussed by Bandyopadhyay (2007) the practice includes risk-based pricing, cost adjustment to the credit strength of the borrower; credit tightening and information management through technical assistance. Other techniques to minimize credit risk include; advisory services and literacy, diversification or increasing portfolio- mix of borrowers as well as purchasing credit insurance.

Non– performing loans can be treated as undesirable outputs or costs to a loaning bank, which decrease the bank's performance (Chang, 1999). The problem of non-performing loans can put serious adverse effects on the economy; the government has implemented various policy measures for management of non-performing loans and securing confidence in the financial system. Quality of assets in lending technologies is normally measured by the quantum of non-performing loans and has been found a direct and interlinked relationship between both (Guy 2011). Michael et al. (2006) emphasized that NPL in loan portfolio affect operational efficiency which in turn affects profitability, liquidity and solvency position of banks. Batra (2003) noted that in addition to the influence on profitability, liquidity and competitive functioning, NPL also affect the psychology of bankers in respect of their disposition of funds towards credit delivery and credit expansion.

2.7.1 Portfolio at Risk

Portfolio at Risk (PaR) is calculated by dividing the outstanding balance of all loans with arrears over 30 days, by the outstanding gross portfolio as of a certain date. Since the ratio is often used to measure loans affected by arrears of more than 60, 90, 120 and 180 days, the number of days must be clearly stated (for example PaR30).

Portfolio at Risk = (Outstanding Balance on Arrears over 30 days / Total Outstanding Gross Portfolio (Total loan)

The ratio is the most widely accepted measure of portfolio quality. It shows the portion of the portfolio that is "contaminated" by arrears and therefore at risk of not being repaid. The older the delinquency, the less likely that the loan will be repaid. Generally speaking, any portfolio at risk (PaR30) exceeding 10% should be cause for concern, because unlike commercial loans, most micro credits are not backed by bankable collateral (Belaid, 2014). The portfolio at risk measure is free from much of the subjective interpretations that plague other portfolio quality indicators, such as repayment rate. Furthermore, portfolio at risk is a more conservative measure of the institutional risk than repayment rate or arrears because both the numerator and the denominator include the outstanding balance, it measures the complete risk and not only the immediate threat.

2.7.2 Provision Expense Ratio

The Provision Expense Ratio is calculated by dividing the loan loss provisioning expense for the period (not to be confused with the loan loss reserve in the balance sheet) by the period's average gross portfolio. The ratio gives an indication of the expense incurred by the institution to anticipate future loan losses. One should expect this expense to increase in step with overall portfolio growth.

Provision Expense Ratio = Loan Loss Provisioning Expenses / Average Gross Portfolio

Microfinance institutions need stricter provisioning practices than banks or finance companies because their loans are less collateralized (Belaid, 2014). Regulated MFIs may therefore be in compliance with the law and yet be under-provisioned. In some cases, there may also exist incentives to over-provision, particularly among NGOs, in order to hide profits that could undermine access to donor subsidies.

2.7.3 Risk Coverage Ratio

This ratio measures what percent of the portfolio at risk is covered by actual loan loss reserves. It gives an indication of how prepared an institution is for a worst-case scenario. Refinanced loans are added to the denominator because a non-performing loan can be converted into a performing loan by the simple device of allowing the borrower to extend the payment period or by refinancing it. For microfinance institutions, loan loss reserves usually range between 80% and 120% of portfolio at risk (D'Mello & Miranda, 2010).

Coverage Ratio = Loan Loss Reserves / (Outstanding Balance on Arrears over 30 days + Refinanced Loans)

While a higher risk coverage should generally be preferred, there are cases that justify lower levels of coverage. For instance, where collateral-backed lending makes up the majority of the portfolio, a ratio well below 100% is common. For formalized institutions, regulators, and particularly the tax code, usually set minimum limits on provisions (Beck, Jakubik & Piloiu, 2013). For institutions with very high coverage (>200%), these seemingly high reserves may be a prudent measure to hedge future downturns in the economy or pre-empt poor performance of the portfolio.

2.7.4 Write-Off Ratio

This indicator simply represents the loans that the institution has removed from its books because of a substantial doubt that they will be recovered. Loan losses or write-offs occur when it is determined that loans are unrecoverable. Because loan loss reserves already provided for possible losses, loan losses are written off against loan loss reserves and are also removed from the outstanding portfolio.

Write-Off Ratio = Value of Loans Written-Off / Average Gross Portfolio

The writing off a loan affects the gross loan portfolio and loan loss reserves equally. Thus, unless provision reserves are inadequate, the transaction will not affect total assets, net loan portfolio, expenses or net income. Write-offs have no bearing whatsoever on collection efforts or on the client's obligation to repay (Dietrich & Wanzenried, 2011). Some institutions will take aggressive write-offs to attempt to sanitize their portfolios. They will then show a low portfolio at risk, and only the write-off ratio will allow an analyst to detect that this improvement is more apparent than real. Other MFIs, resist writing off their seriously delinquent loans because, the collection efforts continue (Belaid, 2014).

Quality of assets in lending technologies is normally measured by the quantum of non-performing loans which are treated as undesirable outputs. Any portfolio at risk (PaR30) exceeding 10% should be cause for concern, because unlike commercial loans, most micro credits are not backed by bankable collateral (Belaid, 2014). Risk coverage ratio is a measure of NPL however a non-performing loan can be easily converted to a performing loan through restructures and banks always have loan loss reserves to mitigate the gap. Write off ratios also affect the loan reserves on equal measures and therefore considering PAR is the most

conservative measure of an institutional risk, this is what will consider as our variable in measuring the portfolio quality.

2.8 Empirical Studies

This study has reviewed extant empirical literature on the study variables. The specific variables covered are; macroeconomic variables, group leverage level, group capitalization and group characteristics and their relationship with portfolio quality.

2.8.1 Macroeconomic Variables and Portfolio Quality

Siddigui and Shah (2012) carried out a study on the impact of interest rates volatility on Nonperforming loans in Pakistan. The main objective of the study was to determine the impact of interest rates volatility on Nonperforming loans in Pakistan. The Research covered the periods between 1996 and 2012.The researchers used weighted average lending interest rates as published quarterly by the state bank of Pakistan. The study focused on 21 commercial banks and the weighted average NPLs was obtained from the financial statements. The study concluded that rising NPLs in Pakistan are significantly but not solely affected by the volatility in the cost of borrowing. This study only concentrated on the impact of interest rates volatility on Nonperforming loans ignoring other macroeconomic variables and microeconomic variables. Secondly, the study was conducted in Pakistan while the current study will be conducted in Kenya.

Louzis, Vouldis and Metaxas (2012), explored the macroeconomic and bank-specific determinants of non-performing loans in Greece Banks. The study sought to examine the determinants of non-performing loans among the Greek banks.This paper used dynamic panel data methods to examine the determinants of non-performing loans (NPLs) in the Greek banking sector, separately for each loan category (consumer loans, business loans and mortgages). The results show that, for all loan categories, NPLs in the Greek banking system can be explained mainly by macroeconomic variables (GDP, unemployment, interest rates, public debt) and management quality. Differences in the quantitative impact of macroeconomic factors among loan categories are evident, with non-performing mortgages being the least responsive to changes in the macroeconomic conditions. This study though relevant to the current study was too broad in focusing on macroeconomic and microeconomic determinants of non-performing loans. Additionally, the study focused on consumer loans, business loans and mortgages loans while the current study will only concentrate on business microcredit.

Ibeleme, Godwin and Odionye (2013) sought to establish the determinants of loan size and repayment performance (portfolio quality) of small oil producers in Nigeria. The study was designed to investigate the loan size and repayment performance of smallholder oil palm producers and processors in Nigeria using Abia State as a case study. Ninety respondents, comprising 54 producers and 36 processors, were randomly selected and interviewed. Ordinary Least Square technique was used in analysing the data and drawing conclusions. The analysis of data revealed that loan size by oil palm processors was significantly determined by processing experience, gross annual income and interest rate. For the farmer-borrowers, the major determinants of loan size were educational level and interest rate all of which fell in line with a priori expectations as indicated by the signs of the coefficients of relevant variables. On loan repayment rate and credit worthiness rating, results of data analysis showed that loan-asset ratio and distance between home and source of loan were significant determinants of loan repayment rate. This study dwelt on loan size and repayment performance of small oil producers. Therefore, the study ignored other determinants of portfolio quality such as macroeconomic variables, leverage level, capitalization level, group characteristics and government policies. Further, this study was carried out among small oil producers in Nigeria while the current study will be conducted among investment groups in Kenya.

Locally, Mboka (2013) studied the effects of macroeconomic variables on nonperforming loans of commercial banks in Kenya. The study thus sought to establish the effects of macro-economic variables on non-performing loans in commercial banks of Kenya. Taking a descriptive design, the study was based on a population of fifteen banks out of the existing forty-four commercial banks for the period of ten years 2003-2012. Systematic random sampling was used to select the required samples from the population, where secondary data was used as obtained from CBK database as all banks are expected to file their annual financial results with CBK. Descriptive statistics generated such as percentages, mean scores and proportions were presented in tables and figures. The study found a strong correlation between inflation and gross domestic product and current account deficit. GDP also correlated strongly with inflation and Money supply. CAD correlated strongly with inflation only while Money supply correlated strongly with GDP. This study only considered macroeconomic variables and how they influence nonperforming loans. The current study will consider other independent variables such as leverage level, capitalization level, group characteristics and government policies.

Orenge (2013) sought to establish the relationship between macroeconomic factors and the level of nonperforming loans in the banking industry in Kenya. 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. The research findings established that there was a positive relationship between the level of nonperforming loans and interest rate spread and lending rate as the independent variables respectively. The findings also established that there was no relationship between the level of nonperforming loans and inflation rate and GDP growth rate. This study was conducted among commercial banks and a mortgage institution in Kenya while the current study will be conducted among investment groups financed by Sidian bank, which is a microfinance bank.

Munguti (2014) studied the determinants of micro credit performance in micro finances in Kenya. The objective of this study was to establish factors that determine micro credit performance in Kenya. The researcher surveyed loan accounts at Small and Micro Enterprises programme- Deposit Taking Microfinance (SMEP- DTM) at Machakos branch in Machakos County. This study focused on all types of loans by the micro finance for the period running from 1ST July 2009 to 30 June 2012. The researcher used stratified sampling to get a sample size of 180 borrowers. The data was gathered using questionnaires and analyzed using Logit model in the Statistical Package for Social Sciences (SPSS). The study established that the determinants of micro credit performance include the age of the borrower, gender and level of education. Though this study is closely related to current study, it only considered age of the borrower, gender and level of education ignoring other determinants such as macroeconomic determinants, leverage level, capitalization level, borrower characteristics and government policies.

Wanjiru (2016) sought to establish the relationship between select macroeconomic variables and loan default rate in Kenya. The study therefore examined the relationship between select macroeconomic variables and the loan default rate among commercial banks in Kenya. The

macroeconomic variables studied were inflation rate, lending interest rate, exchange rate of the US dollar to the Kenya Shilling and public debt as a percentage of the Gross Domestic Product (GDP). Secondary data extracted from the Central Bank of Kenya (CBK) monthly reviews for the period 2006-2013 was analysed using Stata V14.1. A descriptive research design was adopted and summary statistics presented in tables. The study used an Ordinary Least Squares (OLS) model with Newey-West standard errors to estimate the model parameters. The study established that public debt has a positive relationship with the loan default rate. On the other hand, inflation, lending interest rate and the exchange rate are negatively correlated with the loan default rate. This study focused on macroeconomic variables ignoring other institutional factors. The study concentrated on commercial banks while the current study will be conducted on investment groups.

Maonga (2016) studied the determinants of loan pricing of commercial banks in Kenya. This study therefore aimed at investigating the determinants of loan pricing on commercial banks in Kenya for 2011 – 2015 period using quantitative survey design. Secondary data was collected from the audited financial reports of sampled commercial banks for the period between 2011 and 2015. The key finding of the study was that good performance in the bank specific characteristics mainly the levels of capitalization, deposits mobilization and increased bank reserves significantly contribute in lowering the cost of loans. Moreover, the macroeconomic environment within which the commercial banks operate is core in influencing the price of the loan. A rise in the cost of living as measured by inflation as well as the weakening of the local currency relative to other world hard currencies contribute to high price of loans. This study was inclined to the determinants of loan pricing of commercial banks in Kenya and not determinants of portfolio quality. Additionally, the study was carried out among commercial banks while the current study will be conducted on investment groups.

2.8.2 Group Leverage Level and Portfolio Quality

Ghosh (2005) sought to establish if leverage influence banks' non-performing loans in India. The study examined the association between corporate leverage and banks' non-performing loans. Using data on Indian manufacturing sector in India for 1993–2004, the findings indicate lagged leverage to be an important determinant of bad loans of banks. In terms of policy implications, the analysis suggests that the leverage ratio can serve as a useful signpost of asset quality and second, the analysis points to the need to improve the collection of data

from the corporate sector. This study only considered leverage level as a determinant of non-performing loans ignoring other institutional and macroeconomic variables. Secondly, this study was conducted in India while current study will be carried out in Kenya.

Dell'Ariccia, Laeven and Suarez (2017) studied the relationship between bank leverage and monetary policy risk-taking channel in the United States. The study used confidential data on banks' internal ratings on loans to businesses over the period 1997 to 2011 from the Federal Reserve's Survey of Terms of Business Lending. They found that ex ante risk-taking by banks (measured by the risk rating of new loans) is negatively associated with increases in short-term interest rates. This relationship is more pronounced in regions that are less coordinated with the nationwide business cycle, and less pronounced for banks with relatively low capital or during periods of financial distress. The study focused on monetary policy's risk-taking channel and not on portfolio quality. The study was carried out in United States while the current study will be conducted in Kenya.

Locally, Chemjor (2007) sought to determine the significance of the factors contributing to non-performing loans in Commercial Banks in Kenya. This study aimed at determining the significance of the factors leading to non-performing loans problem in commercial banks in Kenya. A survey of commercial banks in Kenya was done. The findings of this study revealed that borrowers' company dissolution have the highest significant contribution to non-performing loan problem. The second factor was death of the borrower. The study further revealed that poor monitoring and control of loans by bank management, breach of contract, lack of proper knowledge, artificial and natural disasters, bank takeovers by other banks contribute to non-performing loan problem. In addition, company dissolution due to loan default, loss of job by the borrower, bankruptcy of the debtor and closing down of businesses with commercial bank loan due to competition have significant contribution to non-performing loan problem. This study sought to determine the significance of the factors contributing to non-performing loans and not the determinants of the factors in themselves. Additionally, the study was conducted in commercial banks while the current study will be conducted among invest groups.

Waweru (2010) studied factors influencing repayment of bank loans. The purpose of this study was to establish the factors that influence loan repayment at NIC Bank Ltd. The research was guided by four objectives namely to establish the extent to which demographic

factors influenced loan repayment; to investigate the level at which the type of loan influenced repayment; to determine the relationship between duration of loan and loan repayment and lastly to explore strategies used to improve loan repayment. Both quantitative and qualitative approaches were used in the research study and descriptive statistics was employed to present the findings. The population of interest constituted thirteen loan officers at NIC Bank and ninety two NIC loan customers. The study found that demographic factors influenced loan repayment both positively and negatively. There was a higher' loan repayment success rate among high income earners, older borrowers in terms of age and female loonies. The type and duration of loan also positively influenced repayment with long-term loans having recorded lower default rate as compared to short and medium-term loans. However, the study showed that the level of education did not necessarily influence loan repayment. The study considered demographic factors, loan type and loan duration as the determinants of bank loans repayment ignoring other factors such as macroeconomic variables, leverage level and capitalization level. This study was carried out in only one bank, which may be a complete representative of all banks in Kenya.

Gweyi and Karanja (2014) studied the effect of financial leverage on financial performance of deposit taking savings and credit co-operative in Kenya and showed perfect positive correlation between debt equity ratio with return on equity and profit after tax. Kyule and Ngugi (2014) investigated the influence of capital structure on leverage of SMEs in Kenya and proved that firm leverage directly influences the size of the firm. They noted that when the value of the firm increases the ratio of direct bankruptcy costs to the firm value would decrease proportionately. Thus, use of debt in the capital structure affects both the value of the firm and the credit rating of the firm. The study focused on financial leverage on financial performance of deposit taking Saccos in Kenya. The current study focuses on determinants of microcredit and how they affect portfolio quality of investment groups.

Mukono (2015) sought to establish the determinants of loan repayment by small and medium enterprises in Nairobi County, Kenya. The objective was to investigate the determinants of loan repayment by Small and Medium Enterprises (SMEs) in Nairobi County, Kenya. The study employed a descriptive research design and a sample of 160 respondents was used. The sample was 2% of the total population and the study target SME owners and managers and focused on SMEs that have obtained a loan facility with any financial institution in Kenya. Simple random and stratified sampling methods were used to select the respondents and a

questionnaire was used to collect data for the study. The data collected was classified, summarized analyzed using the descriptive statistical tools and inferential statistics using Gretel. The study used the logit regression to model the determinants of loan repayment by SMEs in Nairobi County. The study concluded that loan, borrower, firm and lender characteristics influence loan repayment by SMEs. The focus of this study was on establishing the determinants of loan repayment by small and medium enterprises while the current study will be on investment groups.

Geitangi (2015) studied the relationship between credit risk management practices and the performance of loan portfolio of commercial banks in Kenya. The objective was to establish the relationship between credit risk management practices and the performance of loan portfolio of commercial banks in Kenya. The study used a descriptive survey research design. A census of all commercial banks in Kenya was adopted and data collected for five years from 2010 to 2014. Primary data was collected using semi-structured questionnaires. The secondary data was collected from commercial banks financial reports and CBK supervisory reports. The study used qualitative and quantitative techniques in analyzing the data. The study established that commercial banks used credit risk control practices in credit risk management to a very great extent to minimize credit loss. The focus of the study was on credit risk management practices as a determinant of loan portfolio in commercial banks. This study therefore ignored other variables such as macroeconomic variables, leverage level, borrower characteristics and capitalization level.

Ochieng (2015) carried out a study on modelling the relationship and impact of the factors affecting loan default among small, micro and medium enterprises. This researcher analysed loan repayment and credit management of Small, Micro and Medium Enterprises in a Kenyan financial institution. The binary Logit model was therefore used to assess the relationship and impact of the determinant factors affecting loan repayment. The study analysed 1000 loans granted to small business owners by a Kenyan commercial bank. Net income, loan repayment period, interest rate and repayment amount were found to be statically significant and were the major factors that influenced default. The study sought to determine factors affecting loan default among small, micro and medium enterprises while this study focuses on determinants of micro credit and their influence on portfolio quality.

2.8.3 Group Capitalization and Portfolio Quality

Gambacorta and Mistrulli (2004) sought to establish whether bank capital affect lending behaviour. This paper investigated the existence of cross-sectional differences in the response of lending to monetary policy and GDP shocks owing to differences in bank capitalization. The study used excess capital-to-asset ratio, to control the riskiness of banks' portfolios, and disentangling the effects of the bank-lending channel from those of the bank capital channel. Results of the study based on a sample of Italian banks, indicate that bank capital matters in the propagation of different types of shocks to lending, owing to the existence of regulatory capital constraints and imperfections in the market for bank fund-raising. This study used bank capitalization as a determinant of lending behaviour while the current study considers capitalization level as a determinant of portfolio quality.

Rossi, Schwaiger and Winkler (2009) sought to establish how loan portfolio diversification affects risk, efficiency and capitalization. The aim of the paper was to analyze how diversification of banks across size and industry affects risk, cost and profit efficiency, and bank capitalization for large Austrian commercial banks over the years 1997–2003. Employing a unique dataset, provided by the Austrian Central Bank, the study for several different types of managerial hypotheses, formalized according to a modified version of the Berger and DeYoung model, 1997. The study found that although diversification negatively affects cost efficiency, it increases profit efficiency and reduces banks' realized risk. Finally, diversification seems to have a positive impact on banks' capitalization. This study considered capitalization as a dependent variable while in the current study it is treated as an independent variable. Additionally, the study did not show the relationship between capitalization and portfolio quality.

Mangram (2013) studying how much capital banks should have found that, for banks with low capital ratios, decreases in bank capitalization precede increases in problem loans measured through NPLs. Their result supports the evidence that undercapitalized banks may respond to moral hazard incentives by taking increased portfolio risks. However, Louzis et al. (2012) find no support to the moral hazard hypothesis within the Greek banking sector since the solvency ratio taken as proxy for the banks' risk attitude does not have explanatory power for NPLs. According to this hypothesis, banks with relatively low capital increase their loan portfolio leading to a burgeoning number of problem loans, which reflects the classical problem of excessive risk-taking when another party is involved in the risk and cannot easily

charge for or prevent such risk-taking. This study was conducted among banks while the current study will be conducted among investment groups. This study also did not show the relationship between bank capitalization and portfolio quality. In addition, the study was not conducted in Kenya.

Locally, Sungwacha (2012) studied factors influencing repayment of loans among group borrowers focusing on group businesses in Bungoma County. The main objective of the study was to investigate and establish factors influencing loan repayment ability of entrepreneurs accessing credit through groups and make necessary recommendations to policy makers. The target population were the social groups formed by borrowers to enable them access loan finance and the financial institutions that lend these borrowers. The study adopted descriptive research design and random sampling to generate a sample size of fifty respondents. The study showed that poor loan repayment results from lack of clients to identify key market conditions prior to investing. Evaluating clients before giving out loans, increases the probability of repaying as it minimizes loaning potential defaulters. Participating in credit camps by group members increases repayment discipline as members utilize the forum to encourage each other to repay and evaluate new members. Lastly, loan disbursement procedure has an impact on loan repayment with cash disbursement being recommended because clients get a chance to select suitable investment projects. This study though closely related to the current study, only dwelt on institutional determinants and did not consider macroeconomic determinants. Secondly, the study was conducted in Bungoma County while the current study will be conducted in Nairobi County.

2.8.4 Group Characteristics and Portfolio Quality

Roslan and Karim (2009) conducted a study on the determinants of microcredit repayment in Malaysia. The study aimed at establishing the determinants of microcredit repayment in Malaysia based on the case of Agrobank. Based on survey of 2630 respondents, the results of Probit and Logit models showed that the probability for loan repayment default is influenced by the gender of the borrower, business activity type and amount of loan, repayment period and training. This study was closely related to the current study however, the study was conducted in Malysia and not in Kenya. Additionally, the study only considered internal institutional factors. Everett (2015) studied group membership, relationship banking and loan default risk: the case of online social lending. Using descriptive research design, the results

indicated that personal relationships could mitigate the moral hazard problem. This study also only considered internal factors and ignored macroeconomic factors.

Giné and Karlan (2014) evaluated group versus individual liability, Short and long-term evidence from Philippine microcredit lending groups. Two randomized trials tested the overall effect, as well as specific mechanisms. The first removed group liability from pre-existing groups and the second randomly assigned villages to either group or individual liability loans. In both, groups still held weekly meetings. The study found no increase in short-run or long-run default and larger groups after three years in pre-existing areas, and no change in default but fewer groups created after two years in the expansion areas. Though this study was informative to this study, but it was carried out among Philippine microcredit lending groups.

Onyeagocha, Chidebelu and Okorji (2012) analyzed the loan repayment performance, institutional factors, and factors affecting repayment rate of microfinance institutions (MFIs) in the Southeast states of Nigeria. Results from the study, affirmed that the formal segment was more organized, better equipped with higher quality and well-motivated staff than the semi-formal and informal segments. The informal sector presented the best repayment picture of the three segments, followed by the semi- formal institutions. Outstanding among the determinants of loan repayment of microfinance institutions were outreach, shocks, training duration, loan size and credit officer's experience. In addition, use of debt limits the tendency of managers to use firm's resources inefficiently. In summary, financial leverage helps in disciplining managers and forces them to pursue business value maximizing goals for the shareholders. This study sought institutional factors affecting repayment rate of microfinance institutions. This study therefore only concentrated on institutional factors.

Locally, Kitaka and Kalio (2013) assessed the influence of structured loans on agribusiness borrowing at first community bank, Kenya. Adopting a descriptive research design, a sample of 35 respondents was drawn from the target population using stratified random sampling method. Both descriptive and inferential analyses were conducted. The study established that there exist a strong positive and statistically significant relationship between repayment structure and Agribusiness borrowing. Further findings revealed the existence of a negative and statistically significant relationship between credit risk mitigation and Agribusiness borrowing. Ochung (2013) studied factors affecting loan repayment among customers of commercial banks in Kenya. The purpose of the study was to investigate factors affecting

loan repayment among customers of commercial Banks in Kenya with specific reference to Barclays Bank of Kenya Limited. The target population included 78 respondents drawn from Barclays Bank staff (Credit Administrators and Relationship Managers) as well as mass-market customers and the relationship-managed customers. The research design used was descriptive statistics while data was collected using questionnaires and interview schedules. This study concluded that there is a significant relationship between firm/group factors and the loan repayment among customers of commercial banks in Kenya. The study also concludes that there is a significant relationship between individual borrowers' factors and the loan repayment among customers of commercial banks in Kenya. The study further concludes that there is a significant relationship between loan factors and the loan repayment among customers of commercial banks in Kenya. This study was carried out among agribusiness groups at first community bank, which follows doctrines Muslim religion and may therefore not be applicable in conventional institutions.

Kiraithe (2015) carried out a study on factors influencing loan defaulting by SME owners in Kenya. The study focused on the factors influencing loan defaulting by the SME owners operating within Thika Township of Kiambu County. Descriptive research design was adopted, where 50 questionnaires were administered to SME owners and detailed discussions of the questions conducted with 10 key informants in the SME sector. The probability and non-probability sampling techniques were used in the study. The data was analysed using descriptive techniques and the findings presented using graphs, tabulations and cross tabulations and percentages. It also found that majority of the SME entities had been in operation for four years or less while the SME owner's ability to manage a loan was enhanced by education, skills and experience. The study also found that lack of need for achievement in business and diversion of loan funds influence SME owners to default on their loans while the type/nature of business and mode of loan repayment was found to be a less influencing factor of loan defaulting. This study only considered type or nature of business, mode of loan repayment, skills and experience as determinants of loan repayment, which are not variables in the current study.

2.9 Summary of Literature and Research Gap

Based on the reviewed empirical literature it comes out clearly that although numerous studies have been conducted on the study constructs, most of these studies concentrated on the broader aspects of factors influencing non-performing loans and the effect of non-

performing loans on portfolio quality. It was noted that most studies concentrated on single variables such as interest rates volatility macroeconomic determinants, microeconomic determinants consumer loans, business loans, mortgages loans, loan size, borrower's gender and level of education as determinants of portfolio quality and ignored important determinants such as group characteristics, capitalisation level, and leverage level.

Besides, the study noted that majority of the existing literature relates to other jurisdictions such as Pakistan, India, United States, Austraria, Malysia, Philippine and Nigeria. The study finds that some these study contexts such as United States and Malysia are significantly different from the current study context in terms of economic development and credit policies. The once conducted in the local context focused on the mainstream banks which are larger in scope than microfinance banks such as Sidian bank. Moreover, these studies ignored group dynamics in their analysis, a concept that was factored in in the current study.

2.9.1 Conceptual Framework

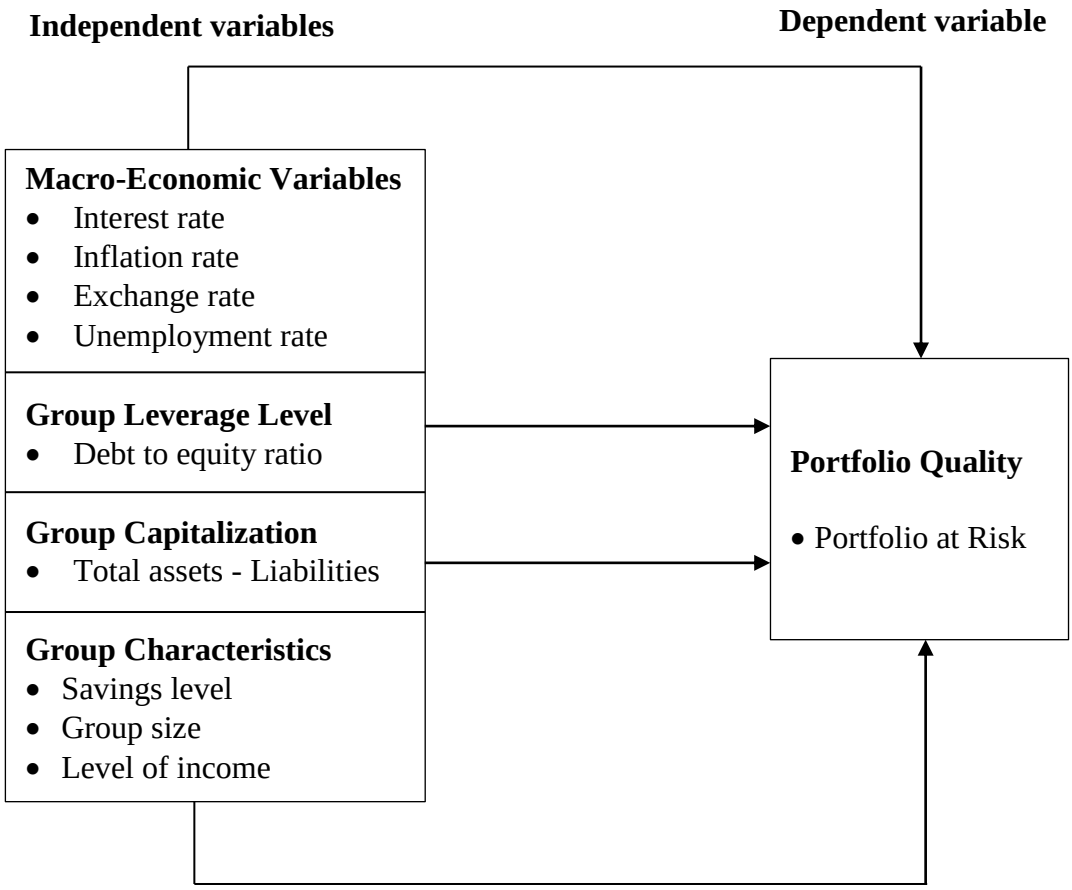

Figure 2.1: Conceptual Framework

The conceptual framework in figure 2.1 illustrated the expected relationship between the study variables. The study anticipated a direct but negative relationship between macro-

economic variables as measured through interest rate, inflation rate, exchange rate and unemployment rate and portfolio quality of investment groups in the 9 branches under Sidian bank within Nairobi region. In addition, the study predicted a negative relationship between group leverage levels (debt to equity ratio) and portfolio quality. However, group capitalization was expected to be positively and linearly related to portfolio quality measured through portfolio at risk. Moreover, a direct positive relationship was expected between group characteristics and portfolio quality of investment groups financed by Sidian bank within Nairobi region

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the methodology that was used by the researcher to find answers to the research questions. In this chapter, the research methodology is presented in the following order, research design, target population, sampling procedure, data collection methods, instruments of data collection and the pilot study. The section also explains how data was analysed to produce the required information necessary for the study. Finally, the chapter provides the ethical issues.

3.2 Research Design

The study adopted a case study research design. This design was adopted because the study sought to establish in details the determinants of portfolio quality in investment groups under Sidian bank. Further, it helps the researcher to describe the state of affairs, as it exists at present in the study (Taylor, Bogdan & DeVault, 2015). The researcher intends to apply this design to establish the determinants of portfolio quality in investment groups under Sidian bank in Nairobi region. This design was useful in studying the inter-relations between the variables already mentioned in the conceptual framework (Churchill & Iacobucci, 2010).

3.3 Target Population

Target population according to Lampard and Pole, (2015) is a well-defined and specified set of people, group of things, households, firms, services that are being investigated. This study was based in Nairobi County and the target population was all the 56 investment groups in the 9 branches under Sidian bank within Nairobi region (Sidian bank, 2017). Nairobi region was selected because it has the highest number of investment groups that are financed by Sidian bank. In addition, the region has the most active investment groups. Owing to the few number of investment groups, this study carried out a census of all the 56 investment groups under Sidian bank in Nairobi region.

Table 3. 1: Target Population

Branch	Number of Groups	Percentage
Moi avenue Branch	8	14.29
Kenyatta Avenue Branch	7	12.50
River Road Branch	4	7.14
Kangemi Branch	6	10.71
Buruburu Branch	6	10.71
Sameer Park Branch	7	12.50
Kilimani Branch	6	10.71
Mlolongo Branch	6	10.71
Kawangware Branch	6	10.71
Total	**56**	**100.00**

Source: Sidian Bank (2017)

3.4 Data and Data Collection Instruments

Secondary data, which was quantitative in nature, was obtained from Sidian bank offices in each of the branches within Nairobi region. This data was used because data relating to investment groups financed by Sidian bank is readily available from the credit manager and other credit officers in Sidian bank offices as well as their website (*https://www.sidianbank.co.ke)*. Data on group leverage, group capitalization and group characteristics as well as portfolio quality was obtained from the bank website. Where the data was not available, the credit manager was contacted for the data. Data relating to macroeconomic variables was obtained from central bank website (*https://www.centralbank.go.ke)* as well as Kenya bureau of statistics (KNBS) website, *https://www.knbs.or.ke*. Any additional Secondary data was obtained from Sidian bank brochures, industry journals and periodicals and other relevant sources available to the researcher using a checklist attached in appendix I.

3.5 Data Analysis and Presentation

Data obtained was entered into Statistical Packages for Social Sciences (SPSS V 21). In order to effectively analyse the quantitative data, descriptive statistics including percentages, frequencies, means and standard deviation was used. Inferential analysis was carried out using correlation analysis and regression analysis. Correlation analysis was used to establish the relationship that exists between the independent variable and the dependent variable.

Regression analysis was conducted to show how macroeconomic variables, group leverage level, group capitalization and group characteristics influence portfolio quality of investment groups financed by Sidian bank in Kenya. Portfolio quality was measured using portfolio at risk.

The regression model was as follows:

$$Y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + \varepsilon \qquad \ldots\ldots 3.1$$

Where: ***Y*** =Portfolio quality as measured by Portfolio at Risk.

Portfolio at Risk = (Outstanding Balance on Arrears over 30 days / Total Outstanding Gross Portfolio (Total loan)

x_1 = Macroeconomic variables as measured by interest rate, inflation rate, exchange rates and unemployment rate

x_2 = Group leverage level measured by Debt to equity ratio =Total liabilities/ Total equity

x_3 = Group capitalization measured = Total assets - Total liabilities

x_4 =Group characteristics measured by Savings level, Group size and Level of income.

ε = Error term

b_0 = Constant Term;

b_1, b_2, b_3 and b_4 = Beta coefficients;

3.6 Ethical Issues

According to Neuman and Robson (2014) ethical concerns in social sciences involves making a judgment about right and wrong behaviour. Such judgements relate to confidentiality of the data collected, identity of respondents and voluntary participation in research (Field, 2009). In this study, the information provided was treated with confidentiality at the highest level. The researcher made use of codes to ensure the information got from the questionnaires responses is kept confidential. In addition, the identity of the respondents was concealed since no respondent were required to provide their names or any other identification information. As noted by Csikszentmihalyi and Larson (2014) the researcher informed the respondents the use of the research. The researcher sought a research permit from the National Commission for Science, Technology and Innovation (NACOSTI). Further, the researcher ensured that all the respondents participated voluntarily and no one was coerced to take part in the study.

CHAPTER FOUR
DATA ANALYSIS, RESULTS AND INTERPRETATION

4.1 Introduction

This chapter presents the information processed from the data collected during the study on the micro credit determinants and portfolio quality of investment groups under Sidian bank, Nairobi region. This chapter comprise of the following sub-section; descriptive statistic, inferential statistics and interpretation of the findings.

4.2 Descriptive Statistics

This section focuses on the general description of the study variables characteristics including the, mean, standard deviation, skewness and kurtosis for portfolio at risk, group leverage level, group capitalization measured and group characteristics.

4.2.1 Portfolio Quality

The findings for portfolio quality are as presented in Table 4.1.

Table 4.1: Descriptive Statistics for Portfolio at Risk

Year	2012	2013	2014	2015	2016	Aggregate
Annual Average (Mean) for Portfolio at Risk	0.379	0.262	0.303	0.248	0.264	0.291
Std. Dev.	0.021	0.0058	0.053	0.081	0.055	0.043
Skewness	1.445	1.037	1.180	1.078	0.549	1.058
Kurtosis	0.053	0.041	0.237	0.113	0.119	0.113

The results in Table 4.1 showed that portfolio at risk had a mean score of 0.291. Analysis of skewness shows that portfolio at risk is asymmetrical to the left around their mean. The kurtosis for portfolio at risk was greater than zero hence their data exhibits leptokurtic distribution. Chang, 1999). The problem of non-performing loans can put serious adverse effects on the economy; the government has implemented various policy measures for management of non-performing loans and securing confidence in the financial system. Quality of assets in lending technologies is normally measured by the quantum of non-performing loans and has been found a direct and interlinked relationship between both.

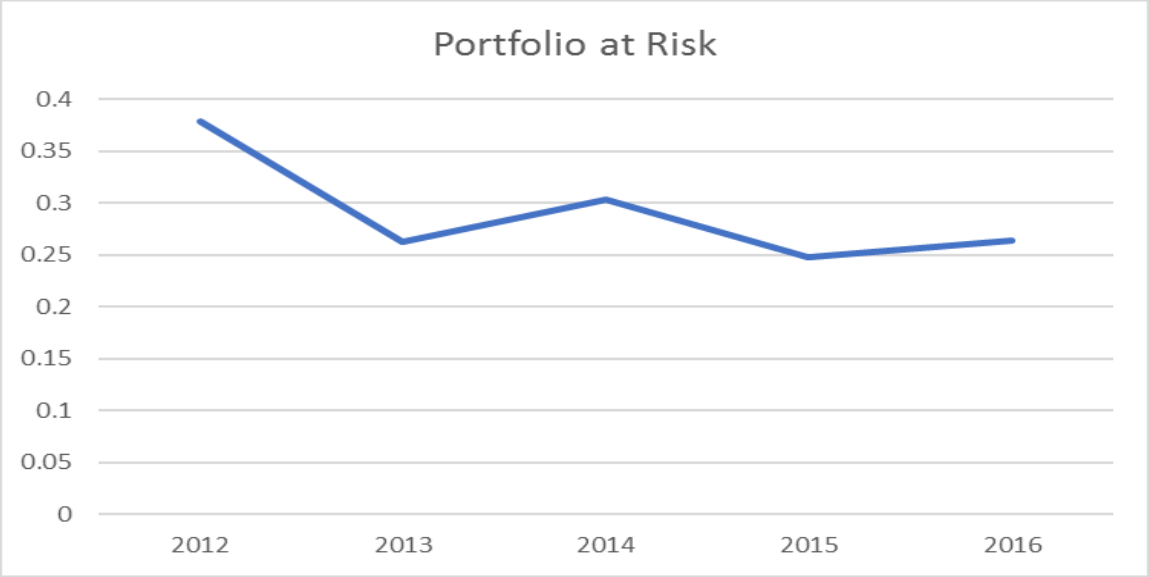

Figure 4.1: Trend in Portfolio at Risk
Source; Survey Data (2018)

From the Figure 4.1 above its clear that portfolio at risk has been decreasing since 2012 to 2016. Miller and Sardais (2011) concluded that high leverage reduces the amount of free cash flow available for use by managers and hence reduces agency costs between owner and managers. They noted that the use of debt impacts on agency cost in several ways. First, use of debt reduces the free cash flow available to managers because interest payments to debt holders decrease cash flow available for investments

4.2.2 Group Leverage Level

The findings for Group leverage level were as illustrated in Table 4.2.

Table 4.2: Descriptive Statistics for Group leverage level

Year	2012	2013	2014	2015	2016	Aggregate
Annual Average (Mean) for Group leverage level	0.323	0.814	0.446	0.813	0.315	0.545
Std. Dev.	0.325	0.266	0.474	0.118	0.224	0.28
Skewness	0.462	0.737	0.340	0.538	0.521	0.527
Kurtosis	0.521	0.412	0.621	1.013	1.203	0.752

The results in Table 4.2 showed that group leverage level had a mean score of 0.545. Analysis of skewness shows that group leverage level is asymmetrical to the left around their mean. The kurtosis for group leverage level was greater than zero hence their data exhibits leptokurtic distribution. The findings are also consistent with These findings agree with Saunders and Cornett (2014) who argued that the higher the leverage, the higher the amount of debt in the capital structure of a firm. Financial leverage comes in various forms and has

different maturity and priority structures. When a firm decides to borrows, it must decide not only on the amount but also on the type of debt finance, on the maturity and on the priority of the debt.

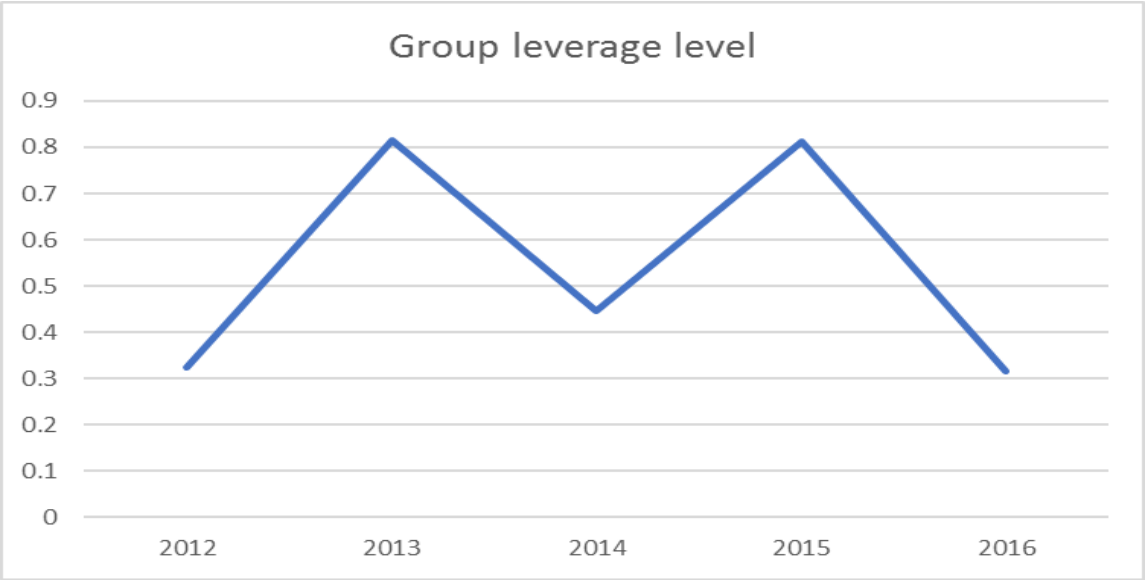

Figure 4.2: Trend in Group Leverage Level

As per the results in Figure 4.2, the group leverage level has been fluctuating between 2012 and 2015 where it increased between 2012 and 2013, decreased between 2013 and 2014 and increased between 2014 and 2015. Miller and Sardais (2011) concluded that high leverage reduces the amount of free cash flow available for use by managers and hence reduces agency costs between owner and managers. They noted that the use of debt impacts on agency cost in several ways.

4.2.3 Group Capitalization

The findings for group capitalization are as shown in Table 4.3.

Table 4.3: Descriptive Statistics for Group capitalization

Year	2012	2013	2014	2015	2016	Aggregate
Annual Average (Mean) for Group Capitalization	7.65	7.744	7.912	8.005	8.208	6.696
Std. Dev.	0.368	0.684	0.598	0.228	0.844	0.545
Skewness	-0.591	-0.811	-0.766	-0.966	-0.781	-0.784
Kurtosis	-0.276	-0.516	-0.326	-0.203	-0.326	-0.329

The results in Table 4.3 showed that group capitalization measured had a mean score of 6.696 Analysis of skewness shows that group capitalization measured is asymmetrical to the left around their mean. The kurtosis for group capitalization measured is less than zero hence

their data depicts platykurtic distribution. This is consistent with Malkiel (2014) who argues that market value of capital and basically depends on the price of the company's stock in an open market. An investment group may be overcapitalized, undercapitalized or medium capitalized.

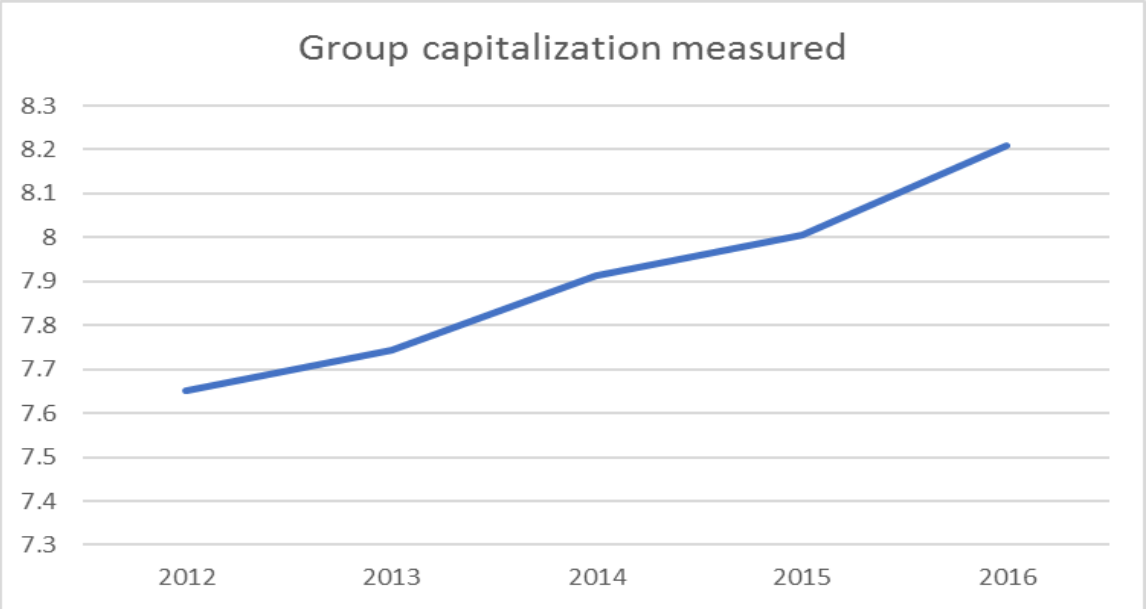

Figure 4.3: Trend in Group capitalization

As per the findings in Figure 4.3, Group capitalization has been increasing from 2012 to 2016. However, the increase has been gradual. These results were consistent with the descriptive results shown in Table 4.3. Additionally, the results were consistent with the observations made by Mwangi and Muturi (2016) who showed that the level of savings amongst the small income earners has been on the rise. This has been channelled through both formal and informal groupings. It is no wonder then that investment groups have experienced steady increase in their capitaisation.

4.2.4 Group Characteristics

The findings for Group characteristics were as illustrated in Table 4.4.

Table 4.4: **Descriptive Statistics for Group characteristics**

Year	2012	2013	2014	2015	2016	Aggregate
Annual Average (Mean) for Group Characteristics	7.492	7.631	7.747	7.877	7.927	6.603
Std. Dev.	0.351	0.431	0.383	0.241	0.105	0.303
Skewness	-0.133	0.232	-0.015	-0.314	-0.364	-0.118
Kurtosis	-1.978	-0.879	0.062	0.124	-1.965	-0.927

The results in Table 4.4 showed that Group characteristics had a mean of 6.603. Analysis of skewness shows that group characteristics are asymmetrical to the left around their mean. The kurtosis for group characteristics is less than zero hence their data depicts platykurtic distribution. These findings agree with Resnik (2010) who identifies savings as a means of determining who to give credit and how much, whereby a borrower is required to accumulate savings both prior to and after borrowing. The borrower may also be required to pledge such savings as collateral.

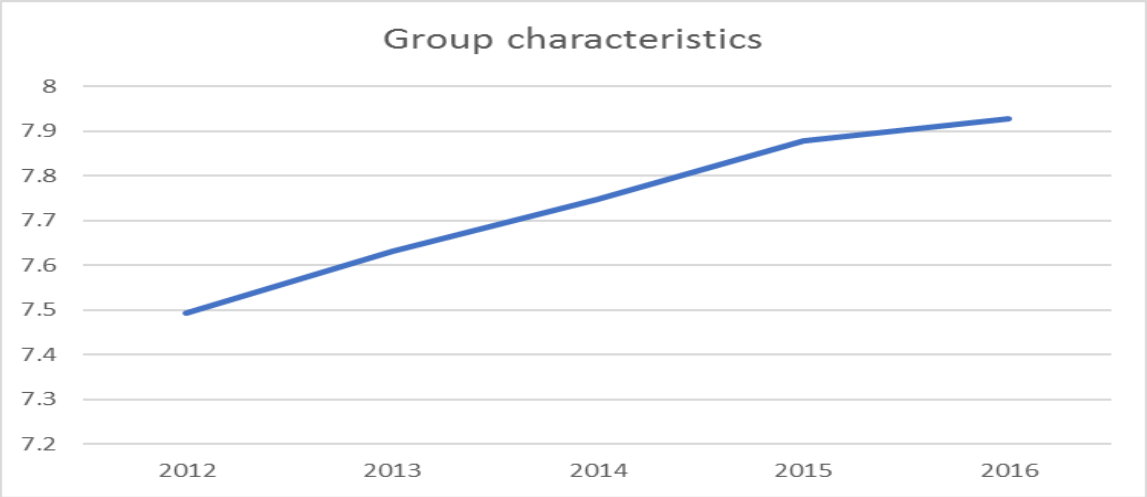

Figure 4.4: Trend in Group Characteristics

From the findings, the results show that the group characteristics has been increasing gradually between 2012 and 2016. Roslan and Karim (2009) found that repayment performance is significantly affected by borrower's characteristics, lenders characteristics and loan characteristics. Repayment problems can be in form of loan delinquency and default

4.2.5 Macroeconomic Variables

The findings for that macroeconomic variables were as illustrated in Table 4.5.

Table 4.5: Descriptive Statistic for Macroeconomic Variables

	Mean	Std. Dev.	Skewness	Kurtosis
Interest rate	13.8	0.865	0.869	-0.141
Inflation rate	6.976	2.871	2.267	6.090
Exchange rates	91.65	7.662	0.033	-0.008
Unemployment Rates	11.68	0.1584	-0.006	-0.716

The findings in Table 4.5 showed that interest rate had a mean score of 13.8, inflation rate had a mean score of 6.976, and exchange rates had a mean score of 91.65 while unemployment rate averaged 11.68. Analysis of skewness shows that interest rate, inflation

rate, exchange rates and unemployment rate were asymmetrical to the right around their mean. The kurtosis for interest rate and exchange rates and Unemployment Rates were less than zero hence their data exhibits platykurtic distribution while for inflation rate was greater than zero hence their data depicts leptokurtic distribution. This is in agreement with Ng'etich and Wangari (2011) who observed that high interest rates have the negative effect of increasing the cost of borrowing and consequently limiting the level of aggregate investment and consumption and the overall portfolio quality in an institution. Interest rate levels are influenced by markets forces, supply and demand factors, inflation and default risk. The descriptive statistics obtained are summarized as follows:

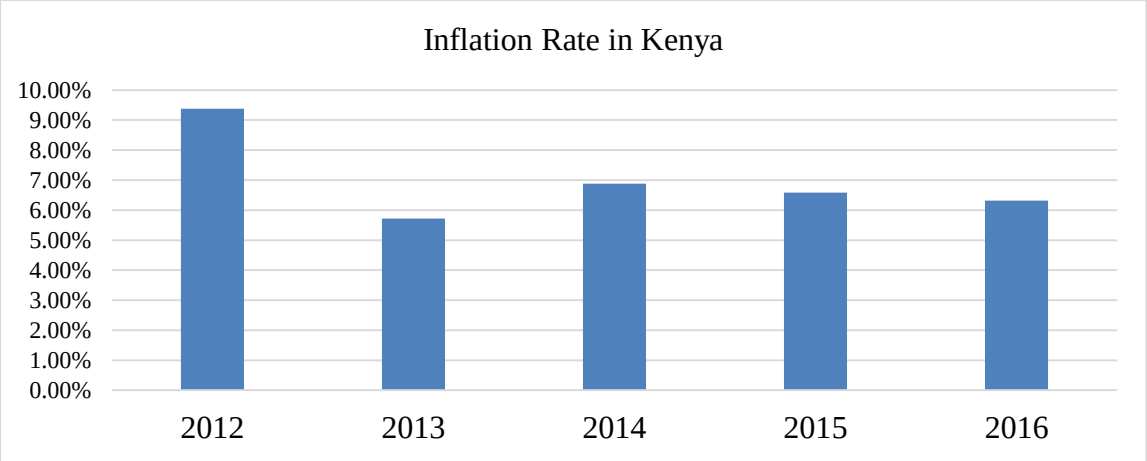

Figure 4.5: Trend in Inflation Rate in Kenya
Source: Central Bank of Kenya

From figure 4.5 above, the study fund that the inflation rates averaged 9.38% in 2012, 5.72% in 2013, 6.88% in 2014, 6.58% in 2015and 6.32% in 2016.

The results for unemployment rates are as shown in figure 4.6.

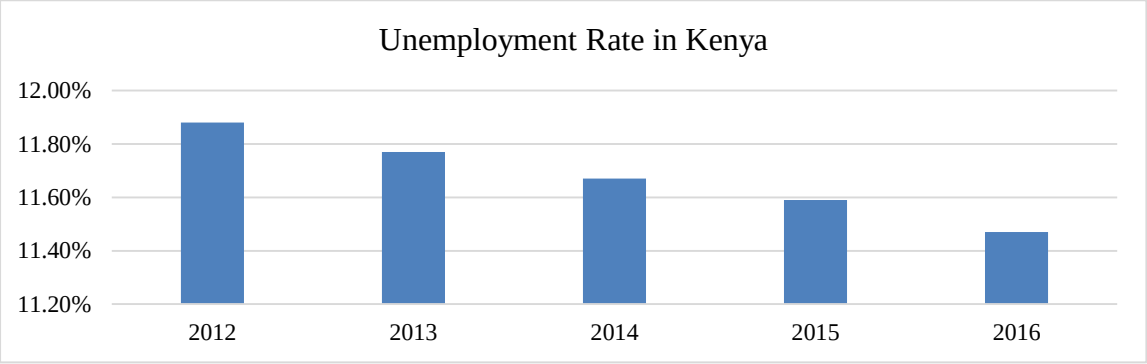

Figure 4.6: Trend in Unemployment Rate in Kenya
Source: Central Bank of Kenya

Based on the results shown in figure 4.6 above, the study shows that unemployment rate in Kenya has consistently decreased from 11.88% in 2012 to, 11.77% in 2013, 11.67% in 2014, 11.59% in 2015 and 11.47% in 2016.

The data for interest rates in Kenya from 1991 to 2016 is summarized as shown in figure 4.7.

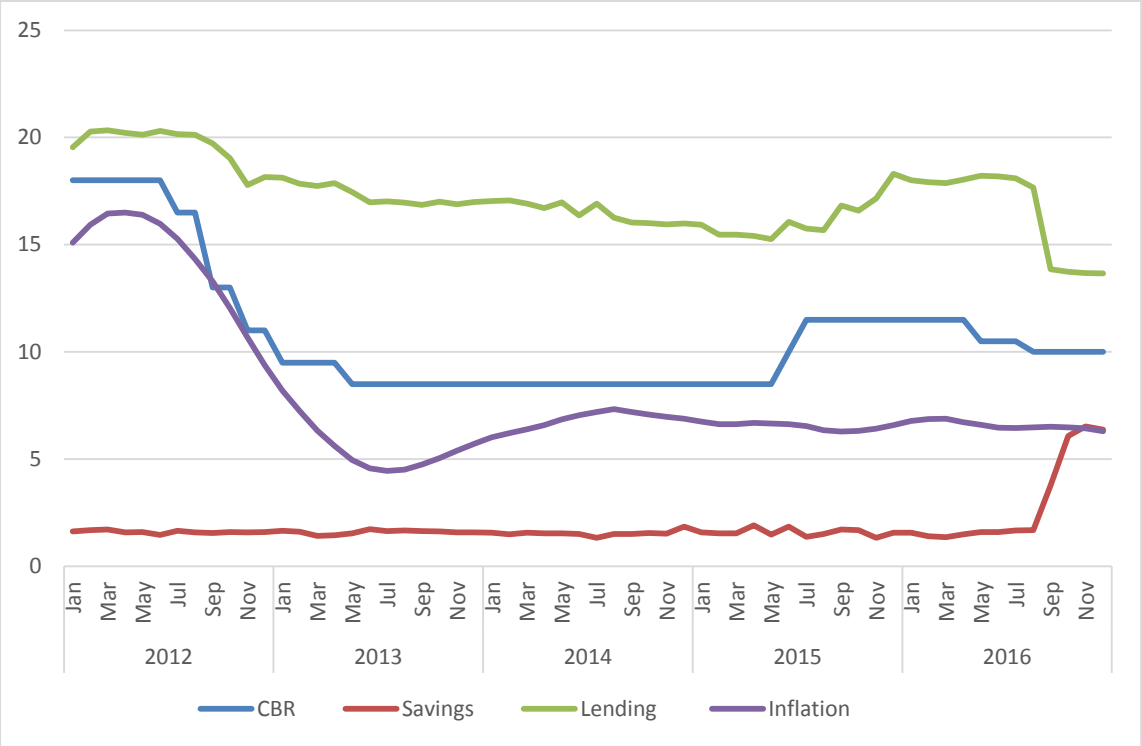

Figure 4.7: Trend Analysis for Interest Rate in Kenya
Source: Central Bank of Kenya

From figure 4.7, it is seen that average interest rates in Kenya was 8% in 2012, reduced to 9.5% in 2013, reduced further to 8.5% in 2014 before increasing to 11.5% in 2015 and 2016.

4.3 Inferential Statistics

The study conducted multiple regression analysis and Pearson's correlation for inferential analysis. Correlation analysis was used to establish the relationship that exists between the independent variable and the dependent variable. Regression analysis was conducted to show how macroeconomic variables, group leverage level, group capitalization and group characteristics influence portfolio quality of investment groups financed by Sidian bank in Kenya.

4.3.1 Correlation Analysis

Pearson's correlations analysis was then conducted at 95% confidence interval and 5% confidence level 2-tailed.

Table 4.6: Correlation Matrix

		Portfolio quality	Macroeconomic variables	Group leverage level	Group capitalization	Group characteristics
Portfolio quality	Pearson Correlation	1				
	Sig. (2-tailed)	.				
	N	56				
Macroeconomic variables	Pearson Correlation	.847*	1			
	Sig. (2-tailed)	.047	.			
	N	56	56			
Group leverage level	Pearson Correlation	.858*	.371*	1		
	Sig. (2-tailed)	.000	.002	.		
	N	56	56	56		
Group capitalization	Pearson Correlation	.764*	.492*	.666*	1	
	Sig. (2-tailed)	.002	.000	.000	.	
	N	56	56	56	56	
Group characteristics	Pearson Correlation	.740*	.206*	.252*	.272*	1
	Sig. (2-tailed)	.009	.017	.003	.038	.
	N	56	56	56	56	56

The findings show that macroeconomic variables and portfolio quality of investment groups financed by Sidian bank in Kenya are positively correlated as shown by 0.847. Further, as shown by a coefficient of 0.858, Group leverage level and portfolio quality of investment groups financed by Sidian bank in Kenya are positively correlated. It was also noted that macroeconomic variables were positively and significantly correlated with group leverage, group capitalization and group characteristics as shown by 0.371, 0.492 and 0.206 coefficients respectively. Moreover, the study found that group capitalization and portfolio quality of investment groups financed by Sidian bank in Kenya are strongly and positively related as shown by a coefficient of 0.764.

Further the study found that group characteristics and portfolio quality of investment groups financed by Sidian bank in Kenya are positively correlated as shown by 0.740. It was further established that these coefficients were significant at 95% confidence level. This concurs with Nduba (2010) who notes that customer characteristics include, character, capacity, condition, collateral contribution and finally, common sense. Character refers to maturity,

honesty and trustworthiness, integrity, discipline, reliability and dependability of a customer. Character is no doubt the most important quality of any client. A person of good character will pay his debt whether it is secured or not. Such a person will disclose all the facts of his deal because his intentions are to seek guidance and help from the organization.

4.3.2 Multiple Regression Analysis

In this study, a multiple regression analysis was conducted to test the influence among predictor variables. The regression model was specified as follows;

$$Y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + \varepsilon$$

The model summary is presented in the Table 4.8.

Table 4.7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.837	0.701	0.678	2.113

The study used coefficient of determination to evaluate the model fit. The adjusted R^2, also called the coefficient of multiple determinations, is the percent of the variance in the dependent explained uniquely or jointly by the independent variables. The model had an average adjusted coefficient of determination (R^2) of 0.678 which implied that 67.8% of the variations in portfolio quality of investment groups financed by Sidian bank in Kenya are explained by changes in macroeconomic variables, group leverage level, group capitalization and group characteristics. The analysis of Variance results were as shown in Table 4.9.

Table 4.8: Analysis of Variance (ANOVA)

Model		**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sign.**
1	Regression	566.126	4	141.532	29.930	.000
	Residual	241.168	51	4.729		
	Total	**807.294**	**55**			

From the ANOVA statics, the study established the F-statistic for the model had a P-value of 0.00 which was less than 5% indicating that the model as constructed was fit in predicting portfolio quality. The calculated F value was greater than the F-critical value (29.930>2.4088). The significance value was less than 0.05 indicating that the model was significant. This concurs with Roslan and Karim (2009) who found that repayment performance is significantly affected by borrower's characteristics, lenders characteristics and loan characteristics. Repayment problems can be in form of loan delinquency and default.

Table 4.9: **Regression Coefficients**

	Un standardized Coefficients		Standardized Coefficients	t	Sig
	B	Std. Error	Beta		
(Constant)	0.988	0.112		8.821	.000
Macroeconomic variables	0.856	0.393	0.733	2.178	.034
Group leverage level	0.896	0.345	0.761	2.597	.012
Group capitalization level	0.767	0.239	0.718	3.209	.002
Group characteristics	0.742	0.298	0.702	2.490	.016

The regression equation obtained from this outcome was: -

$$\mathbf{Y = 0.988 + 0.856X_1 + 0.896X_2 + 0.767X_3 + 0.742X_4}$$

As per the study results, it was revealed that if all independent variables were held constant at zero, then the portfolio quality of investment groups financed by Sidian bank in Kenya will be 0.988. From the findings the study revealed that if macroeconomic variables increase by one unit, then portfolio quality of investment groups financed by Sidian bank in Kenya would increase by 0.856. This variable was significant since p=0.034 is less than 0.05. This is in line with Rasheed and Jabeen (2016) observed that inflation ties up money that could be used to pay for loans by individuals and firms. Inflation disturbs the distribution of income and wealth by creating unemployment and lowering economic growth making it difficult for borrowers to arrange for loan repayment. It creates uncertainty and raises costs of production.

The study further revealed that if Group leverage level changes it would lead to 0.896 change in portfolio quality of investment groups financed by Sidian bank in Kenya. The variable was significant since p-value=0.012<0.05. Moreover, the study showed that if all other variables are held constant, variation in group capitalization level variates portfolio quality of investment groups financed by Sidian bank in Kenya by 0.767. This variable was significant since p=0.002 was less than 0.05. Finally, the study revealed that variation in group characteristics would change the portfolio quality of investment groups financed by Sidian bank in Kenya by 0.742. This variable was significant since p-value=0.016 was less than 0.05. This corresponds to Saunders and Cornett (2014) who opined that companies have to decide on whether debt should be in the form of leases, convertible loans, loan capital, bank loans and overdraft, notes and bills; should be short or long-term and whether debt should be secured, unsecured or subordinated.

Generally, group leverage level had the greatest influence on portfolio quality of investment groups financed by Sidian bank in Kenya followed by macroeconomic variables while group capitalization level then group characteristics had the least effect on the portfolio quality of investment groups financed by Sidian bank in Kenya. All the variables were significant since p-values were less than 0.05. This conforms to Aaker (2009) findings that to manage their portfolios, bankers and other microfinance institutions must understand not only the risk posed by each credit but also how the risks of individual loans and portfolios are interrelated.

4.4 Test of Hypothesis

This section presents analysis and results of the tests of hypotheses using regression analysis. The section presents the results of statistical analyses and interpretations of the results in relation to the research hypotheses.

4.4.1 Macroeconomic Variables and Portfolio Quality

The hypothesis one was that macroeconomic variables have no significant effect on portfolio quality of investment groups financed by Sidian bank in Nairobi region. This hypothesis was tested using regression analysis. To test the first hypothesis, the index of portfolio quality of investment groups financed by Sidian bank in Nairobi region as index of dependent variable was regressed against macroeconomic variables. From the findings shown in Table 4.10, the coefficient for macroeconomic variables is 0.856 with a significance level of 0.034 which is less than the 0.05 meaning that macroeconomic variables were significant in predicting portfolio quality of investment groups financed by Sidian bank in Nairobi region. Since the coefficient of macroeconomic variables is significant at 0.05 significance level, the null hypothesis is rejected and concluded that macroeconomic variables have a significant effect on portfolio quality of investment groups financed by Sidian bank in Nairobi region.

The findings correlated with De Bock and Demyanets (2012) who found that economic activity turns slow when NPLs increases, while exchange rate tends to depreciate. In addition, Siddigui and Shah (2012) concluded that rising NPLs in Pakistan are significantly but not solely affected by the volatility in the cost of borrowing. Further, Ibeleme, Godwin and Odionye (2013) revealed that loan size by oil palm processors was significantly determined by processing experience, gross annual income and interest rate. For the farmer-borrowers, the major determinants of loan size were educational level and interest rate all of which fell in line with a priori expectations as indicated by the signs of the coefficients of relevant variables. On loan repayment rate and credit worthiness rating, results of data analysis

showed that loan-asset ratio and distance between home and source of loan were significant determinants of loan repayment rate. Further, Mboka (2013) found a strong correlation between inflation and gross domestic product and current account deficit. GDP also correlated strongly with inflation and Money supply. CAD correlated strongly with inflation only while Money supply correlated strongly with GDP. While Munguti (2014) established that the determinants of micro credit performance include the age of the borrower, gender and level of education.

4.4.2 Group Leverage Level and Portfolio Quality

The second hypothesis claimed that there is no significant relationship between group leverage level and portfolio quality of investment groups financed by Sidian bank in Nairobi region and regression analysis was used to test it. To test this hypothesis, portfolio quality of investment groups financed by Sidian bank in Nairobi region was regressed against group leverage level. The results were as showed that the coefficient for group leverage level is 0.896. The coefficient of group leverage level had a P-value of 0.012 which was found to be less than the 0.05 significance level used in this study. The study therefore concluded that group leverage level has a significant effect on portfolio quality of investment groups financed by Sidian bank in Nairobi region. Consequently, the second null hypothesis that there is no significant relationship between group leverage level and portfolio quality of investment groups financed by Sidian bank in Nairobi region is rejected and concluded that there is a significant relationship between group leverage level and portfolio quality of investment groups financed by Sidian bank in Nairobi region.

The results in the study concurs with the findings of Ghosh (2005) who indicated that lagged leverage was an important determinant of bad loans of banks. In terms of policy implications, the results suggested that the leverage ratio serve as a useful signpost of asset quality and second, the analysis points to the need to improve the collection of data from the corporate sector. In addition, Dell'Ariccia, Laeven and Suarez (2017) noted that risk-taking by banks (measured by the risk rating of new loans) is negatively associated with increases in short-term interest rates. This relationship is more pronounced in regions that are less coordinated with the nationwide business cycle, and less pronounced for banks with relatively low capital or during periods of financial distress.

Moreover, Waweru (2010) found that the type and duration of loan positively influenced repayment with long-term loans having recorded lower default rate as compared to short and

medium-term loans. Geitangi (2015) established that commercial banks used credit risk control practices in credit risk management to a very great extent to minimize credit loss while Ochieng (2015) showed that net income, loan repayment period, interest rate and repayment amount were found to be statically significant and were the major factors that influenced default.

4.4.3 Group Capitalization and Portfolio Quality

The third hypothesis was that group capitalization has no significant effect on portfolio quality of investment groups financed by Sidian bank in Nairobi region. The study utilized regression analysis to test this hypothesis. To test it, portfolio quality of investment groups financed by Sidian bank in Nairobi region was regressed against group capitalization. The results in Table 4.10 showed that the coefficient for group capitalisation level was 0.767 with a significance level of 0.002 which was found to be less than the 0.05 significance level. This showed that group capitalisation significantly affected portfolio quality of investment groups financed by Sidian bank in Nairobi region. The null hypothesis that group capitalization has no significant effect on portfolio quality of investment groups financed by Sidian bank in Nairobi region was therefore rejected and study concluded that group capitalization has a significant effect on portfolio quality of investment groups financed by Sidian bank in Nairobi region.

This is similar to the results posted by Rossi, Schwaiger and Winkler (2009) found that although diversification negatively affects cost efficiency, it increases profit efficiency and reduces banks' realized risk. Finally, diversification seems to have a positive impact on banks' capitalization. Mangram (2013) studying how much capital banks should have found that, for banks with low capital ratios, decreases in bank capitalization precede increases in problem loans measured through NPLs. Their result supports the evidence that undercapitalized banks may respond to moral hazard incentives by taking increased portfolio risks. At the same time, Malkiel (2014) who observed that the large companies have usually been around for a long time, and they are major players in well-established industries. Investing in large-cap companies does not necessarily bring in huge returns in a short period, but over the long run, these companies generally reward investors with a consistent increase in share value and dividend payments.

Furthermore, Sungwacha (2012) showed that poor loan repayment results from lack of clients to identify key market conditions prior to investing. Evaluating clients before giving out

loans, increases the probability of repaying as it minimizes loaning potential defaulters. Participating in credit camps by group members increases repayment discipline as members utilize the forum to encourage each other to repay and evaluate new members. Lastly, loan disbursement procedure has an impact on loan repayment with cash disbursement being recommended because clients get a chance to select suitable investment projects.

4.4.4 Group Characteristics and Portfolio Quality

The fourth hypothesis was that group characteristics has no significant effect on portfolio quality of investment groups financed by Sidian bank in Nairobi region. The study utilized regression analysis to test this hypothesis. To test it, portfolio quality of investment groups financed by Sidian bank in Nairobi region was regressed against group characteristics.

From the findings shown in Table 4.10, the study established that the coefficient of group characteristics 0.742. This coefficient had a P-value of 0.016 which was found to be less than the significance level of 0.05. It was thus concluded that group characteristics significantly affected portfolio quality of investment groups financed by Sidian bank in Nairobi region. Consequently, the null hypothesis that group characteristics has no significant effect on portfolio quality of investment groups financed by Sidian bank in Nairobi region was rejected and study concluded that group characteristics has a significant effect on portfolio quality of investment groups financed by Sidian bank in Nairobi region.

This concurs with CBK (2002) report that notes that group savings are acceptable collateral among microfinance institutions. Collateral in this sense refer to the security against the loan, in terms of non-encumbered assets or savings. Businesses and investment groups may not have adequate collateral thus the microfinance banks may not have any security for loans. Additionally, Roslan and Karim (2009) on the determinants of microcredit repayment in Malaysia showed that the probability for loan repayment default is influenced by the gender of the borrower, business activity type and amount of loan, repayment period and training. Onyeagocha, Chidebelu and Okorji (2012) affirmed that the formal segment was more organized, better equipped with higher quality and well-motivated staff than the semi-formal and informal segments. The informal sector presented the best repayment picture of the three segments, followed by the semi- formal institutions.

Besides, Kitaka and Kalio (2013) revealed that existence of a negative and statistically significant relationship between credit risk mitigation and Agribusiness borrowing. Ochung

(2013) concluded that there is a significant relationship between firm/group factors and the loan repayment among customers of commercial banks in Kenya. The study also concludes that there is a significant relationship between individual borrowers' factors and the loan repayment among customers of commercial banks in Kenya. Kiraithe (2015) found that lack of need for achievement in business and diversion of loan funds influence SME owners to default on their loans while the type/nature of business and mode of loan repayment was found to be a less influencing factor of loan defaulting. However, Giné and Karlan (2014) had contradicting results by showing no relationship between short-run or long-run default and larger groups after three years in pre-existing areas, and no change in default but fewer groups created after two years in the expansion areas.

CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary, conclusion and recommendations of the main findings on the determinants of portfolio quality in investment groups under Sidian bank in Nairobi region. This chapter puts forward the summary of the findings, conclusions of the study, recommendations of the study, limitation of the study and suggestions for further studies.

5.2 Summary of Findings

The study sought to establish the determinants of portfolio quality in investment groups under Sidian bank in Nairobi region. The study adopted a descriptive survey research design. The population of interest for this study was investment groups financed by Sidian bank based in Nairobi County and the target population was all the 56 investment groups in the 9 branches under Sidian bank within Nairobi region. The study targeted the group officials and their Managers in this region. Secondary data was used because data relating to investment groups financed by Sidian bank is readily available from the credit manager and other credit officers in Sidian bank offices as well as their website for five-year period commencing 2012 up to 2016. The data collected were thus cleaned, coded and analytically organized in a method that facilitates analysis using the Statistical Package for Social Sciences (SPSS). So as to test the relationship between the variables the inferential tests including the regression analysis was used.

The study found that indicated that macroeconomic variables significantly influence portfolio quality of investment groups financed by Sidian bank in Kenya. The study found that macroeconomic variables have a significant effect on portfolio quality of investment groups financed by Sidian bank in Nairobi region. The study also found that a unit change in macroeconomic variables changes leads to 0.856 units change in portfolio quality of investment groups financed by Sidian bank in Nairobi region.

The study revealed that Group leverage level significantly influences portfolio quality of investment groups financed by Sidian bank in Kenya. The study established that there is a significant relationship between group leverage level and portfolio quality of investment groups financed by Sidian bank in Nairobi region. The study further revealed that that group

leverage level significantly leads to 0.896 change in portfolio quality of investment groups financed by Sidian bank in Nairobi region since p=0.012 was less than 0.05.

This showed that group capitalisation significantly affected portfolio quality of investment groups financed by Sidian bank in Nairobi region. The study also revealed that all other factors held constant a unit change in group capitalisation would lead to a 0.767 change in portfolio quality of investment groups financed by Sidian bank in Nairobi region. It was thus found that group capitalization has a significant effect on portfolio quality of investment groups financed by Sidian bank in Nairobi region.

The study revealed that group characteristics significantly affected portfolio quality of investment groups financed by Sidian bank in Nairobi region. Consequently, the study found that group characteristics has a significant effect on portfolio quality of investment groups financed by Sidian bank in Nairobi region. Moreover, it was found that a unit increase in group characteristics would lead to a 0.742 increase in portfolio quality of investment groups financed by Sidian bank in Nairobi region.

5.3 Conclusions

The study concluded that macroeconomic variables significantly influence portfolio quality of investment groups financed by Sidian bank in Kenya. Kyule and Ngugi (2014) concluded that interest rates are influenced by inflationary conditions, open market factors including foreign interest rates and the expected depreciation of local currency, monetary conditions and output levels.

The study further concluded group leverage level significantly influences portfolio quality of investment groups financed by Sidian bank in Kenya. This was in agreement with Caprio (2006) who opined that a weak legal system, where the courts are not oriented toward prompt enforcement of contracts and property rights are ill defined, increases credit riskiness and MFIs have no incentive to charge lower rates.

The study concluded that group capitalization level variates portfolio quality of investment groups financed by Sidian bank. This agrees with Beck, Jakubik and Piloiu (2013) who argues that companies can be ranked according to their market capitalizations, and the general format is to rank them as large-cap, mid-cap and small-cap companies.

The study concluded that variation in group characteristics influences the portfolio quality of investment groups financed by Sidian bank in Kenya. This is in line with Giné and Karlan (2014) who focused on the effects of program design, community and group characteristics on the repayment performance of groups.

5.4 Recommendations for Policy and Practice

Inflation disturbs the distribution of income and wealth by creating unemployment and lowering economic growth making it difficult for borrowers to arrange for loan repayment. It creates uncertainty and raises costs of production. Profitability of investment is lowered making it less attractive as a result. This will in turn lowers tax collection since the government will lose the revenue that would have been generated if the investment were profitable. Therefore, there is a need for the Government to generate policies to control inflation like Monetary policy where interest rates are set in which higher interest rates reduce demand, leading to lower economic growth and lower inflation and control of money supply which monetarists argue there is a close link between the money supply and inflation, therefore controlling money supply can control inflation.

The study recommends that Sidian bank need to manage their portfolios, by understanding that not only the risk posed by each credit but also how the risks of individual loans and portfolios are interrelated. These interrelationships can multiply risk beyond what it would be if the risks were not related. Loan portfolio is viewed in its segments and as a whole and consider the relationships among portfolio segments as well as among loans. These practices provide management with a more complete picture of the bank's credit risk profile and with more tools to analyse and control the risk.

The study also recommended that, banks should be allowed to invest more in loans and advances as long as such banks have enough reserves to finance such investments and that banks should be allowed to scale up their operations so long as there is adequate capitalization to support their growth. The study further recommends that regulatory authority (CBK) and other stake holders should create an enabling environment that removes all these inefficiencies to the policy concern of high cost of credit. The legal and regulatory environment should be more efficient and robust to serve as a major strategy for mitigating credit default rate and this will assist banks enhance portfolio quality.

5.5 Limitations of the Study

The major limitations of this study with relative to data availability, the data was tedious to collect and compute as it was in its very raw form. In addition, the study could not consider other predictor variables for portfolio quality of investment groups under Sidian Bank, Nairobi region since they were considered out of scope.

Due to the constantly evolving macro-economic climate, the study may likely be limited by new macroeconomic variables such as unaccounted legal regulations and taxation instituted by the government thorough the relevant regulatory bodies.

Lastly, the study focused on financial statements data at the firm level and did not take into consideration the qualitative information from Group. Qualitative assessment can be an important addition to the process of better assessing an insurer's financial conditions. Window dressing of the financial statements could be a potential problem in this study.

5.6 Suggestions for Further Research

The study established that macroeconomic variables, group leverage level, group capitalization and group characteristics explained 67.8% of variations in portfolio quality of investment groups. Therefore there is need to carry out a research to establish other factors that explain 32.2% of the variations in the portfolio quality of investment groups financed by Sidian bank in Kenya since the studies so far conducted are not comprehensive enough.

It will also be important to carry out a study to establish the relationship between competition, performance and portfolio quality in Microfinance Markets. Further the study suggests the need for future studies to focus on a market-based measure of credit portfolio quality and banks' performance during the subprime crisis.

Further the study recommends that there is a need to carry out a study using another research design instead of descriptive survey research design used in this study. Future studies can make use of collaborative and adaptive research design.

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APPENDICES

Appendix I: Secondary Data Collection Sheet

Year **Variable**	**2012**	**2013**	**2014**	**2015**	**2016**
Average Interest rate					
Average Inflation rate					
Average Exchange rate					
Average Unemployment rate					
Total liabilities					
Total Equity					
Total assets					
Total Savings					
Membership number					
Asset base					
Level of income					
Outstanding Balance on Arrears over 30 days					
Average Gross loans					
Central bank base rate					

Appendix II: List of Investment Groups

BRANCH NAME	NAME OF INVESTMENT GROUP
MOI AVENUE BRANCH	BAMAWAS
	ASSORTED WOMEN
	KIKWETU
	MWANGAZA
	YOU AND ME
	SUPER LADIES
	VICTORY
	ELGON
KENYATTA AVENUE BRANCH	INUKA
	SAPEL
	YOUNG ACHIEVERS
	HORIZON
	SILOAM
	PLANWISE
	BRILLIANT
RIVER ROAD BRANCH	PAGEMAC
	EASTLEIGH
	GIKOMBA
	ZIMMERMAN
KANGEMI BRANCH	LUMFA
	PROMISE
	UNITED SCORES
	ANNOINTED TREASURE
	KOPHAMA
	GOLDEN WOMEN
BURUBURU BRANCH	RELIANCE KATIKATI
	PASATU
	STEPPING STONE
	FANIKISHA -DISINTERGRATED
	FAITH IN ACTION

	ADONAI
SAMEER PARK BRANCH	ROAST HOUSE
	HIGHRIDGE
	KARIOBANGI
	ST TERESAS
	CITY PARK
	MWALIMU CO-OP
	JUPITER
KILIMANI BRANCH	AHOTANI
	WAZALENDO
	TOGETHER WE RISE
	HIPPO SAVE
	MEKATRONIQUE
	BLUE BERRY
MLOLONGO BRANCH	MUHIMU
	UPPEKI
	GACHIE JIJENGE
	SYLVESTER LUCY AND JOSPHAT JOINT
	HURRY BEAM
	SUNSHINE
KAWANGWARE BRANCH	MLANGO KUBWA
	NEW SILVERMINE
	ZIWANI AIC
	SOUTH B
	NYAMAKIMA
	ABBEY HOTEL
TOTAL 9 BRANCHES	56 INVESTMENT GROUPS

Appendix III: Data

	TOTAL LIABILITIES						TOTAL EQUITY						TOTAL ASSETS						Portfolio at Risk				
NAME OF INVESTMENT GROUP	2012	2013	2014	2015	2016		2012	2013	2014	2015	2016		2012	2013	2014	2015	2016		2012	2013	2014	2015	2016
BAMAWAS	117261	543103	377578	252190	483023		644664	979284	772291	772312	343468		2656584	3265148	3126584	1528145	3851268		432000	864000	1296000	1965600	2864526
ASSORTED WOMEN	366708	183866	220865	221177	269502		142984	118587	799057	311922	6739743		815623	1584263	2301546	3056248	4026584		120000	240000	360000	480000	600000
KIKWETU	264236	736,31 7	637678	251462	640821		286028	142966	1052440	320239	6926779		2956012	4056286	5126849	6231526	8635169		468000	936000	1404000	1872000	2340000
MWANGAZA	156495	513057	726263	584398	70168		646833	704261	1149019	1149031	1149043		1562325	2875126	3984230	5692358	7156238		234658	436953	684223	1452123	1642563
YOU AND ME	679029	162564	262611	23161	804057		647056	10188	1881431	1881535	13519		526984	1256328	1925412	3026584	4035698		480000	960000	1440000	1920000	2400000
SUPER LADIES	304598	211532	243145	704315	950252		1039601	45763	2297698	30576.5	696255		217853	257461	319082	430142	5412655		144000	288000	432000	576000	720000
VICTORY	62418	826313	156512	634214	378159		146196	121799	802269	315134	6742955		647756	10188	181431	182662	183893		120000	240000	360000	480000	586000
ELGON	59939	107676	193181	266019	634539		648935	916345	1151121	1151133	1151145		278931	27032	118143	333142	639682		84000	180000	264000	348000	432000
INUKA	179185	78929	55476	236009	101797		648980	1008112	1149131	332359	6938899		2634470	3243034	5104470	6506031	7829154		409886	841886	1273886	1943486	2842412
SAPEL	336010	79932	56479	190070	88060		6477817	1100200	1881543	344367	6950907		837736	1606376	2323659	3078361	4048697		142113	262113	382113	502113	622113
YOUNG ACHIEVERS	49220	80935	57482	450000	1153652		286028	141966	1052440	320239	6926779		2933878	4034152	5104715	6209392	8613035		445866	913866	1381866	1849866	2317866
HORIZON	215406	1229983	849221	1126738	103245		648868	347061	1149019	332247	6938787		1540091	2852892	3961996	5670124	7134004		212424	414719	661989	1429889	1620329
SILOAM	403986	830612	247295	142864	687748		6477705	120188	1881431	344255	6950795		523771	1253115	1922199	3023371	4032485		476787	956787	1436787	1916787	2396787
PLANWISE	324289	2011152	550177	552382	1458770		273784	129722	1040196	307995	6914535		2901666	4001940	5072503	6177180	8580823		413654	881654	1349654	1817654	2285654
BRILLIANT	859651	1265652	1081006	1265652	115489		661112	359305	1161263	344491	6951031		615525	1384165	2101448	2856150	3826486			39902	159902	279902	399902
PAGEMAC	48062	908801	259171	289718	619083		648980	1008112	1149131	332359	6938899		837736	1606376	2323659	3078361	4048697		142113	262113	382113	502113	622113
EASTLEIGH	913945	2458457	863134	722716	1735741		651290	1010422	1151441	334669	6941209		859850	1628490	2345773	3100475	4070811		164227	284227	404227	524227	644227
GIKOMBA	448097	762725	1278545	696310	66415		653600	1012732	1153751	336979	6943519		712757	1813031	2883594	3988271	6391914		423655	891655	1359655	1827655	2295655
ZIMMERMAN	215050	379053	30085	62695	316358		655910	1015042	1156061	339289	6945829		2301248	2909812	4771248	4172809	7495932		76664	508664	940664	1610264	2509190
LUMFA	191703	98729	32706	89307	576774		105821	49781	331259	206274	538245		1071080	1839720	2557003	3311705	4282041		375457	495457	615457	735457	855457
PROMISE	106283	77913	299333	735839	184506		414319	607061	343592	540501	599565		837736	1606376	2323659	3078361	4048697		142113	262113	382113	502113	622113

UNITED SCORES	240593	328123	97750	131036	472553		440624	440838	364499	658813	661923		881061	1649701	2366984	3121686	4092022		185438	305438	425438	545438	665438
ANNOINTED TREASURE	56885	19594	468784	463425	464681		472642	472856	1740487	771797	774907		1328850	2641651	3750755	5458883	6922763		1183	203478	450748	1218648	1409088
KOPHAMA	152476	259107	289074	251161	248586		419781	419995	191274	484160	278597		814315	1582955	2300238	3054940	4025276		118692	238692	358692	478692	598692
GOLDEN WOMEN	603189	98795	85603	128674	186250		607061	607275	472553	440624	363272		1048860	1817500	2534783	3289485	4259821		353237	473237	593237	713237	833237
RELIANCE KATIKATI	451839	156795	184123	141322	251665		141322	154653	2062874	757403	186464		2900667	4000941	5071504	6176181	8579824		412655	880655	1348655	1816655	2284655
PASATU	59198	120726	156795	366848	207993		163394	164725	540501	414319	159136		1352242	2665043	3774147	5482275	6946155		24575	226870	474140	1242040	1432480
STEPPING STONE	168377	141322	120726	202029	314289		164422	177753	658813	440624	123067		1172610	5130571	726263	584398	6126155		1126371	1486371	1846371	2206371	2566371
FANIKISHA	353048	330480	141322	200792	152256		172262	185593	207993	472642	143663		3667080	1625640	262611	2231610	1246155		424848	829438	1323978	2859778	3240658
FAITH IN ACTION	91526	415260	62410	184123	757403		777409	790740	314289	315291	64751		264236	211532	243145	704315	326155		426339	786339	1146339	1506339	1866339
ADONAI	141322	314289	13410	25147	81744		101750	115081	152256	153258	185751		156495	826313	156512	634214	1246155		383431	713981	1118020	2372768	2683947
ROAST HOUSE	34111	485421	167596	218258	267163		201523	419936	694617	695619	251538		596812	725377	758745	94176	199644		123113	212133	382156	512113	162113
HIGHRIDGE	596812	96210	132096	528874	150125		97413	464381	750408	751410	326016		179185	199644	230679	1126738	658323		1445860	811300	1381800	249700	317812
KARIOBANGI	376679	376891	55882	64681	481939		381105	482060	483192	484194	484424		336010	658323	550177	142864	828546		2382275	3143675	3905075	4666475	5427875
ST TERESAS	546408	546620	184633	317281	1790448		530319	1790569	1791701	1792703	1792933		49220	228546	3081006	352382	199644		336010	658323	550177	142864	859651
CITY PARK	210517	217729	118369	929537	34374		1183492	341495	342627	343629	343859		215406	100677	164972	1265652	658323		49220	828546	1081006	552382	34111
MWALIMU CO-OP	1270699	1270911	163947	303365	249132		164070	249253	249385	249387	249617		1403986	216750	258202	218258	828546		215406	100677	164972	1265652	48062
JUPITER	217173	27385	183025	99193	341030		1183148	341151	342283	343285	343515		324289	257673	863134	289718	100677		403986	216750	258202	218258	641868
AHOTANI	145151	80257	79945	155238	180333		266157	14258	105369	320368	626908		1117261	513057	726263	584398	1266546		100147	87567	62695	799503	722716
WAZALENDO	27700	168893	168581	37787	168969		266028	14129	105240	320239	626779		366708	162564	262611	23161	3635169		220972	1824557	1969287	1707749	264683
TOGETHER WE RISE	36904	647965	647653	46991	148041		648833	7061	119019	130142	141265		264236	211532	243145	704315	7156238		199006	163315	328706	378152	576774
HIPPO SAVE	78979	170160	169848	89066	270236		647756	10188	181431	182662	183893		156495	826313	156512	634214	1735651		680090	109872	299333	176214	184506
MEKATRONIQUE	22538	266028	265716	32625	366104		278931	27032	118143	333142	639682		679029	107676	193181	266019	1130478		125758	77913	97750	735839	472553
BLUE BERRY	964993	648833	48521	275080	348909		3186114	134215	225326	440325	746865		304598	96210	132096	528874	1130478		125098	328123	468784	122441	248586
MUHIMU	1386	1888	8756	1538	1490		3419	1386	4320	1516	4410		8156	1584	2301	3056	40265		1147	4457	5928	7707	3988

	724	596	7	41	783		936	724	03	656	31		23	263	546	248	84		302	18	77	72	408
UPPEKI	155430	1824557	1478214	1707749	2535391		2464381	155430	1476448	2285362	1485476		2956012	4056286	5126849	6231526	8635169		1068828	685905	805560	4183690	805512
GACHIE JIJENGE	125098	163315	1969287	3869403	371990		1386724	2125098	1398791	255030	1407819		1562325	2875126	3984230	5692358	7156238		2360412	672018	725528	650668	926734
SYLVESTER LUCY AND JOSPHAT JOINT	137408	175625	1981597	3881713	384300		1386724	1388881	1398791	1518813	1407819		2524688	4129421	5486892	3629487	9735651		631652	1526187	2085155	944342	2493753
HURRY BEAM	196811	298683	297654	363928	700870		2155430	157587	167497	287519	176525		1898039	1774852	6328234	1947542	11300478		654581	1684232	1068156	849530	924568
SUNSHINE	255430	124557	1578214	1807749	235391		1325098	527255	437165	1257187	846193		-	-	-	-	-		902208	934093	1738409	2350402	1167266
MLANGO KUBWA	328706	349815	1700226	1929761	2757403		247110	2149267	2159177	3279199	268205		3336010	2658323	2550177	142864	334111		681977	1390810	2344823	1098883	2843312
NEW SILVERMINE	299333	320442	1479425	1708960	2536602		465592	156641	477659	6286573	486687		49220	2828546	1081006	3552382	336997		1109049	1625605	1010527	2339363	2228489
ZIWANI AIC	97750	118859	2002731	3902847	405434		1407858	1410015	1419925	1539947	1428953		215406	2100677	164972	4265652	330085		963378	1168468	1357099	269905	1668084
SOUTH B	468784	489893	309679	375953	1712895		642048	1608836	654115	1738768	663143		403986	216750	258202	218258	3696310		1402279	1785450	2069588	1582824	2524681
NYAMAKIMA	289074	310183	169759	38965	1270147		267206	15307	6106418	321417	627957		324289	257673	863134	2289718	48062		1865384	2992396	3485087	2086487	3470793
ABBEY HOTEL	85603	106712	1481603	1711138	2538780		467770	158819	5479837	288751	488865		859651	641868	799503	722716	3100147		2535031	708897	736980	3502924	823060

Source; Sidian Bank (2017)

Macroeconomic Variables

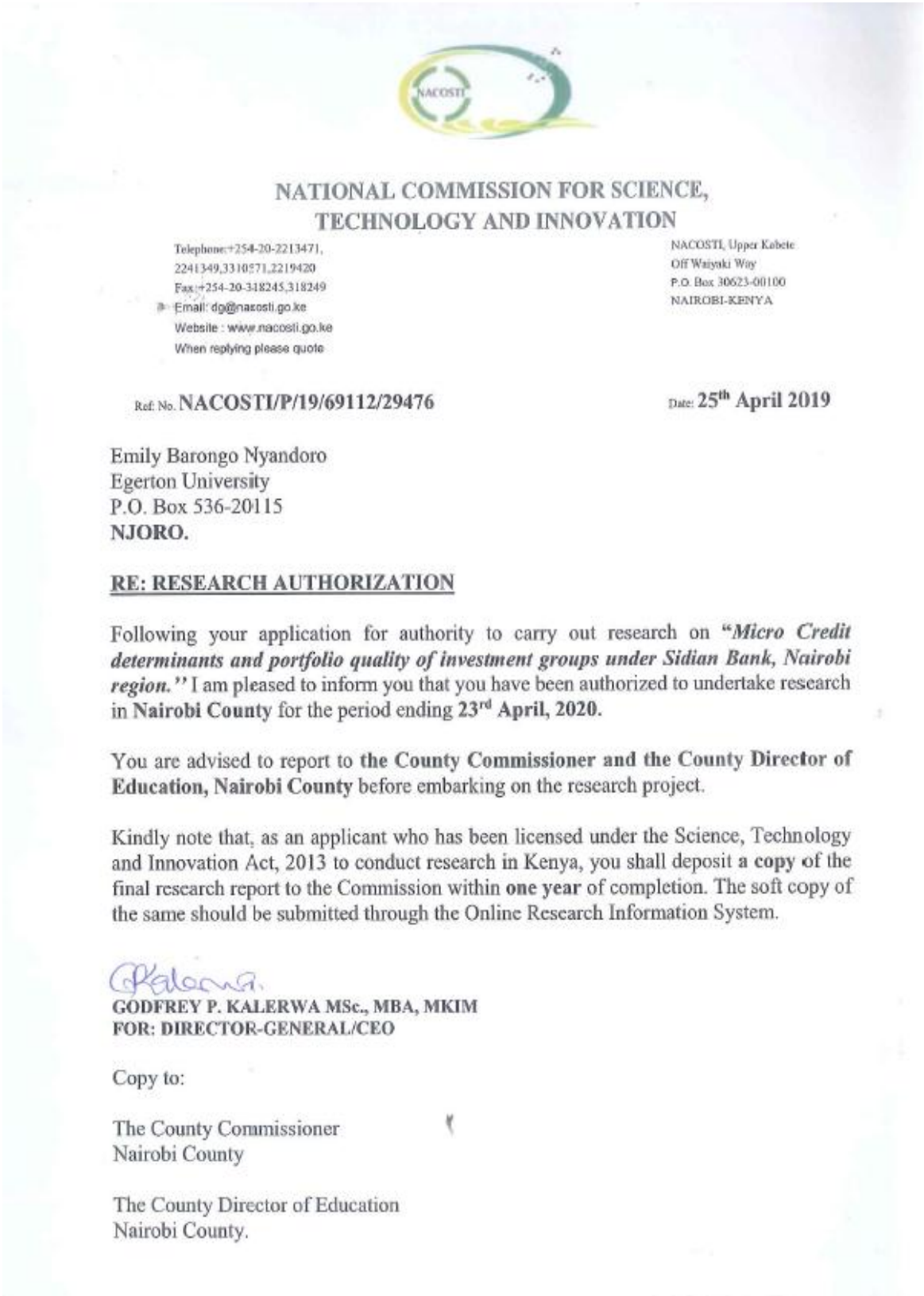
Year	Month	CBR	Interest Rate	Inflation Rate	Unemployment rate	Exchange rate
2012	Jan	18	19.54	15.1		129.61
	Feb	18	20.28	15.93		129.21
	Mar	18	20.34	16.45		128.96
	Apr	18	20.22	16.5		129.38
	May	18	20.12	16.4		129.41
	Jun	18	20.3	15.97		128.76
	Jul	16.5	20.15	15.27		128.99
	Aug	16.5	20.13	14.33		129.22
	Sep	13	19.73	13.29		130.43
	Oct	13	19.04	12.04		130.20

	Nov	11	17.78	10.67		130.52
	Dec	11	18.15	9.38	0.1196	130.62
2013	Jan	9.5	18.13	8.2		130.63
	Feb	9.5	17.84	7.24		129.35
	Mar	9.5	17.73	6.33		128.84
	Apr	9.5	17.87	5.61		128.40
	May	8.5	17.45	4.96		128.17
	Jun	8.5	16.97	4.56		128.50
	Jul	8.5	17.02	4.44		129.20
	Aug	8.5	16.96	4.5		129.27
	Sep	8.5	16.86	4.75		129.69
	Oct	8.5	17	5.05		129.20
	Nov	8.5	16.89	5.39		129.67
	Dec	8.5	16.99	5.72	0.1189	129.41
2014	Jan	8.5	17.03	6.01		128.57
	Feb	8.5	17.06	6.21		129.05
	Mar	8.5	16.91	6.39		129.29
	Apr	8.5	16.7	6.58		129.67
	May	8.5	16.97	6.85		130.01
	Jun	8.5	16.36	7.05		130.24
	Jul	8.5	16.91	7.19		129.98
	Aug	8.5	16.26	7.33		129.98
	Sep	8.5	16.04	7.19		129.26
	Oct	8.5	16	7.08		129.12
	Nov	8.5	15.94	6.97		128.87
	Dec	8.5	15.99	6.88	0.118	128.35
2015	Jan	8.5	15.93	6.74		127.68
	Feb	8.5	15.47	6.63		127.61
	Mar	8.5	15.46	6.63		127.23

	Apr	8.5	15.4	6.69		129.23
	May	8.5	15.26	6.65		129.91
	Jun	10	16.06	6.63		130.72
	Jul	11.5	15.75	6.54		131.44
	Aug	11.5	15.68	6.34		132.06
	Sep	11.5	16.82	6.29		132.33
	Oct	11.5	16.58	6.31		131.02
	Nov	11.5	17.16	6.42		130.49
	Dec	11.5	18.3	6.58	0.113	130.85
2016	Jan	11.5	18	6.77		130.02
	Feb	11.5	17.91	6.87		130.08
	Mar	11.5	17.87	6.88		131.10
	Apr	11.5	18.04	6.72		131.44
	May	10.5	18.22	6.59		130.62
	Jun	10.5	18.18	6.46		130.91
	Jul	10.5	18.1	6.44		130.84
	Aug	10	17.66	6.47		130.93
	Sep	10	13.86	6.5		131.08
	Oct	10	13.73	6.48		130.35
	Nov	10	13.67	6.43		129.97
	Dec	10	13.66	6.3	0.110	129.55

Source; KNBS (2017)

Appendix IV: Research Permit



NATIONAL COMMISSION FOR SCIENCE,
TECHNOLOGY AND INNOVATION

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Website : www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/19/69112/29476**

Date: **25th April 2019**

Emily Barongo Nyandoro
Egerton University
P.O. Box 536-20115
NJORO.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Micro Credit determinants and portfolio quality of investment groups under Sidian Bank, Nairobi region."*** I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **23rd April, 2020.**

You are advised to report to **the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nairobi County

The County Director of Education
Nairobi County.

THIS IS TO CERTIFY THAT:
MISS. EMILY BARONGO NYANDORO
of EGERTON UNIVERSITY, 419-40200
KISII,has been permitted to conduct
research in *Nairobi County*

on the topic: *MICRO CREDIT DETERMINANTS AND PORTFOLIO QUALITY OF INVESTMENT GROUPS UNDER SIDIAN BANK, NAIROBI REGION*

for the period ending:
23rd April,2020

Permit No : NACOSTI/P/19/69112/29476
Date Of Issue : 25th April,2019
Fee Recieved :Ksh 1000

.....
Applicant's Signature

.....
Director General
National Commission for Science, Technology & Innovation

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licenses is guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014.

CONDITIONS

1. The License is valid for the proposed research, location and specified period.
2. The License and any rights thereunder are non-transferable.
3. The Licensee shall inform the County Governor before commencement of the research.
4. Excavation, filming and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
5. The License does not give authority to transfer research materials.
6. NACOSTI may monitor and evaluate the licensed research project.
7. The Licensee shall submit one hard copy and upload a soft copy of their final report within one year of completion of the research.
8. NACOSTI reserves the right to modify the conditions of the License including cancellation without prior notice.

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