EFFECTS OF INTEREST RATES ON LENDING BY DEPOSIT TAKING MICROFINANCE IN KENYA

BY

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DECLARATION

I, the undersigned, declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for examination.

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This Research project has been submitted for examination with my approval as the University supervisor

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DEDICATION

I dedicate this research to my parents Mr. and Mrs. Laban Toroitich, my son Ian, and my siblings Nahashon, Judith, Josephine, Ben, Dorcas and Julius

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LIST OF ABBREVIATIONS

AMFIS	Association of Microfinance Institutions in Kenya
ANOVA	Analysis of the Variance
CBK	Central Bank of Kenya
DTMBs	Deposit Taking Microfinance Banks
MFI	Microfinance Institutions
MFS	Microfinance Sector
MSEs	Micro small Enterprises
SMEs	Small and micro Enterprises

ABSTRACT

The objective of the study was to determine how and the extent to which interest rates impact on microfinance lending in Kenya. It also aimed at reviewing the increasing body of theoretical and empirical studies that have endeavored to examine the range of magnitude and effects of interest rates on microfinance lending in Kenya. The study employed a hybrid of descriptive and causal research design. The target population was all the licensed thirteen microfinance banks. Secondary sources of data were employed, and data was collected on; the total loan book, interest income, total assets, total revenue, and operating income. The unit period of analysis was annual, and data was collected for the period from 2013 to 2017. The study applied correlation analysis and multiple linear regression equation with the technique of estimation being Ordinary Least Squares (OLS) so as to establish the relationship of interest rates and microfinance banks' lending. The study found there is no significant association that exists between interest rates and microfinance lending. However, the study established that there was a positive relationship between microfinance institution's size and their lending. Thus, the study concluded that interest rates do not influence microfinance lending. The study recommended that; the government can regulate the prevailing real interest rates without considering the effect it will have on the issuance of loans by microfinance institutions. The governments through its various arms can device methods of influencing and stimulating the stock market. Investment banks, stock brokerage firms, institutional investors, and management of the microfinance institutions can be able to determine from the findings of the study the factors that can affect their strategy of expanding their loan book.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

In microeconomics, according to Kidwell, Blackwell, Whidbee and Peterson, (2008) the supply and demand of loanable funds points equals at equilibrium point (SL = DL). Lending rate is only temporary at equilibrium point. Any change in supply or demand points produces a change in equilibrium point of interest rate. Increased lending rates may increase demand for or decrease in the supply of loanable funds. Declining level of interest rates can be due to either an increase in the supply of or a reduction in the demand for loanable funds.

High lending rates usually discourage potential borrowers since the borrowers mainly aim at minimizing the cost of borrowing which is attached to the repayable interest rates; low lending interest rates attract borrowers. The existence of high interest rate inhibits the economic development and the expansion of the financial intermediation system. This is as such because borrowers are opposed to borrow at the high interest rates. This limits the possible opportunities of investments and resultantly, the feasible potential of the economic growing is impeded (Chelangat, 2014).

Mucugu (2012) on his study on factors of interest rates in the Microfinance institutions in Kenya established that various theories have indicated that the objectives pursued by microfinance institutions and other financial institutions tend to differ and are contrary with respects to their individual interests and this has given rise to control and review of rates in order to increase lending and saving. Keynes (1936) observed interest rates from perspective of supply and demand of money stocks in monetary system which is expressed as a function of level of income and interest rate.

Expectation theory is based on future expectation on interest rates and institutional practices being followed by microfinance institutions hence this theory has the effect on lending given that expectation on adoption of better institutional practices which will enable sharing of financial information which in turn will increase savings and deposits from customers hence increasing microfinance lending (Kinyura, 2011).

Loanable funds theory on the other hand argues that supply and demand of loanable resources or additional bank reserves forms the key determining factor of the rate of interest rates hence in circumstances in which the amount of loan demanded surpasses the supply of loanable funds; the rate of interest will increase towards Banks favor, hence to hindrance of borrowers. Therefore, if need for loanable funds rises, then interest rate will also rise hence affecting lending in a downward manner and vice versa (Ngugi 2004).

Kenya has observed a rise in the sum of Microfinance Institutions (MFIs) in the last ten years with the purpose of targeting and providing the less privileged or low income earners with cheaper credit. Regardless of this, great numbers of poor customers have experienced difficulties in accessing credit due to exorbitant lending rates over the years (Ngumi 2014). Microfinance institutions' exorbitant interest rates has been at the epicenter of storm from the commencement of microfinance given the fact that it has been used absolutely in achieving financial annexation of parties earlier excluded from the formal financial system. The borrowers now have to deal with the additional funds demanded by the MFIs to meet their operating expenditures and for lending to their clients which in turn has an effect on the financial performance of the MFIs (Chung, 2013)

Kamau (2008) indicated that the overall objective of microfinance institutions needs to be a balance between risk and returns in a way that it maximizes the MFI's market value to the owners. She also noted that the objective of the interest rates is to earn the highest margin it can in a manner consistent with reasonable stability in the interest margin.

1.1.1 Interest Rates

Interest rate is money charged for use of currency or an asset borrowed from a lender by a borrower and the amount which is indicated for usage of cash, habitually articulated as annual proportion of the principal (Crowley,2007). Lending rate represent the amount charged by microfinance financial organizations by advancing credits to their consumers and is typically created in manner that enables MFIs cover the cost incurred and profit when customers pay their facilities. From an economics perspective interest is the payment for the services of the capital provided or the price of hiring capital (Williamson, 1996).

An interest rate can also be termed as value paid by debtor for the use of cash owned by someone else, and has to bring it back to financier whom will receive for postponing its depletion, by loaning to the debtor. Interest may also be articulated as a fraction of cash consumed in short-term i.e. over the period of one year (Devereux &Yetman, 2002). Interest rates often vary due to price increases and regime rules hence the actual interest rates show interest rates factored off the effect of inflation. A non-positive actual interest rate signals that insignificant interest rate is lesser than the inflation percentage (Gagnon &Ihrig, 2004).

Reilly (1999) distinguished interest rates for both commercial and microfinance institutions are governed by inflation, levels of government appropriations and risk associated. Furthermore, Reilly noted out that higher commodity prices creates base for interest rate hence none of microfinance institution can give out loans at rates lower than the anticipated commodity prices over the comparable periods. On the other hand, amount of Regime borrowings from public creates the foundation for microfinance firms even though setting their interest rates. The peril associated to monies lend refers to peril exceptional which is indirectly encompassed in interest rate equivalence. This translates to higher interest rates when the currency depreciates hence the interest rate need be advanced than Shillings depreciation rate.

Kamau (2008) on his study established out that profit before tax of microfinance institutions depend largely on interest income, interest spending, stockholders' funds, loans and advances to customers. Gardner and Cooperman (2005) carried out a study and pointed out that interest rates represented the overall cost of borrowing principal for agreed length of time they also contended that price fluctuations are expected in actual world which forms part of processes determining microfinance interest rates. Emerging countries have slackened interest rates by permitting marketplaces powers to regulate interest rates. Hence, fewer customers oriented banking systems; insufficient governing framework and impervious insolvents for interest rates destabilize the competence of marketplace grounded credit distribution and interrupt the communication of financial indications with hostile penalties for macro-economic policies (Bernstein, 1996).

Interest rates are established by Central Bank of Kenya monetary policy committee (MPC) and are usually used in controlling inflation. MPC maintained CBR at 18% in 2014 implying that Commercial banks and DTMs charged loans in excess of this rate (CBK Annual Report, 2013/2014).

1.1.2 Micro Finance Lending

Lending is the business of loaning out cash to individuals with intend of getting back the amount loaned plus the interest after a certain period hence if a bank or a microfinance institution loans your deposit in the form of commercial loan then, the bank is entitled to charge a certain amount of interest on the principal lent to them. Lending is not always about money alone, but it can also be about objects as well. The establishments of monetary services, particularly credit and saving amenities plays an imperative part in growth of economy. Even with microfinance institutions efforts of taking microfinance services within the reach of unfortunate people and small enterprises having not benefit from conservative recognized financial systems, development and extension of microfinance establishments segments have failed to show any sign of sluggish progress and expansion (Albert ,2013)

Actual price of borrowing in microfinance institutions is always greater when there is transactional cost, greater payment extent as well as lesser sum borrowed. For instance, upward change in the cash borrowed has the effect of decreasing effective microfinance institutions interest rates while on the other hand greater payment size together with transaction cost result to upward change in effective interest rates. Additionally, upsurge in the total sum borrowed is related to sophisticated reservation interest rate; whereas relative with respect to installment size and business charge is

not positive. These outcomes show that microfinance institutions real cost of borrowing is greater for poor or marginal borrowers who in most cases are in need for small volume of credit; even though these represent target set of borrowers designed to benefit from microfinance lending (Laureti, 2012).

1.1.3 Interest Rate and microfinance Lending

Cost of borrowing from a deposit taking microfinance is high when transaction cost and installment amounts are high, installment size being (as a % of amount borrowed) which in turn reduces the amount lent out as loans. An addition to total amount lent leads to a reduction in effective lending interest rate. An addition to amount lent is related to higher reservation interest rate, similarly, the installment size and transaction cost will be negative. These findings depicts that the less privileged in the society and marginal borrowers who are in need for minimum amount of loans incur higher cost of borrowing; although these are the people to whom MFI is designed to target (Laureti, 2012)

Lending is the process of giving out cash to individuals with intend of collecting back the amount loaned plus the interest after a certain period. Hence, if a bank or a microfinance institution Lents out an amount of loan, then it has a right to charge interest on it. Lending is not about money alone, but objects as well. Financial services play a critical in the development of an economy. Despite the fact that microfinance institutions has taken its services within the reach of poor people and MSEs it has not benefited from it, development of microfinance institutions sectors had not shown any sign of slow growth and expansion (Albert 2013)

Habibulla (2010) and John (2011) established that lending and borrowing in microfinance institutions both in Bangladesh and Zimbabwe raised the amount of income from medium, small enterprises operators and poor people. Their research intensified on business performance in aspects of improved transactions, procurement of assets and technologies while household studies concentrated on raised pay from a firms profit or wages and salaries to create a link amongst the obtain ability of microfinance lending and inclusive well-being of the poor. Thus, both investigation and practice have seen an aggregate concern about the microfinance institutions' interest and microfinance lending and borrowing performance. Moreover, the experimental evidence developing from various studies such as of Mkazi (2007) about the MFIs rates on MFIs lending and borrowing performance has so far generated diverse outcomes that are indecisive especially for evolving countries like Kenya.

According to Gemmill and Thomas (2004), Compulsion reaction functions shows that low and lagged response of lending and borrowing contribute to the decline in microfinance banking spread following an increase in currency marketplace rates, thus, undesirably distressing banking activities. Microfinance lending policy decides who the target customer is and it is extensively alleged that variations of lending and borrowing exert significant influence on the activities of microfinance institutions in Kenya (Chirwa and Mlachila, 2004). Improved performance of the microfinance in Kenya has impacted positively to Kenyan economy there has been tremendous growth in past years with real GDP growing at 5% in 2017

1.1.4 Micro Finance Institutions in Kenya

From 2006 Microfinance Act and MFIs regulations of 2008, microfinance institutions in Kenya are certified and controlled by the Central Bank of Kenya (CBK). Kenya's Microfinance sector comprises of approximately 250 institutions with 50 being certified by the Association of Microfinance institutions (AMI), which is their main umbrella body. Nine of them are authorized by CBK to take deposits and usually most of these institutions double-up as deposit taking institutions with the remaining institutions being unregulated by the Central Bank and provide microfinance services in partnership with other service providers (Microfinance amendment Act, 2013).

Microfinance institutions in Kenya can be traced back prior to liberation when multi-lateral and bilateral lenders failed to provide Africans with credit services and hereafter easy-going credit clusters such as Merry go rounds being created in rural areas societies. Microfinance is business accepting currency through deposits and charge on deposits which is eventually given to other customers for purposes of financing businesses, providing loan and other services to small enterprises and little income earners (Mwangi, 2014)

Kenya has seen a steady increase in the total number of Microfinance Institutions (MFIs) in the last ten years established for targeting the poor by offering inexpensive credit. Regardless of this, majority of poor customers have not been able to get access to credit as a result of unfriendly borrowing interest over the years. Chung (2013) emphasizes about high interest of Microfinance institution (MFI) which has always been the centre of argument since the start of microfinance. Microfinance have been applied entirely in accomplishing financial enclosure of parties earlier debarred from

the official monetary structure for additional funds demanded by the MFIs to meet their operational expenses and for on lending to their customers (Mwangi, 2014).

The Central Bank of Kenya recognizes the role played by financial inclusion in combating poverty, and desires to promote the savings investment cycles that lead to economic development. Thus, the regulator has undertaken several initiatives and reforms to boost monetary inclusion by means of developing the suitable monetary structure through permitting deposit-taking MFIs and credit reference bureau; promoting up take of mobile phone financial services and the agency banking model. Already such creativities or improvements have led to extraordinary developments in the levels, scope and deepness of access to fiscal services, especially among the lower classes of the population (Otieno, 2011).

1.2 Research Problem

One of the problems that have raised the interest of economists is to know how interest rates affect lending in micro finance institutions. A change in interest rate has negatively affected the growth of the economy, (Nyangena, 1991). A part from negating the growth, there are also chances of default on the borrowers due to increase in the interest payable from their loans.

Micro finance institutions in Kenya have increased in number in the last decade. (MFs) micro finance institutions are established to target the poor households by providing cheaper credit. Despite this, accessing credit for the less privileged has been a challenge due to increased interest rates over years. Chung (2013) concluded that Microfinance institutions (MFIs) high interest rate has been controversial from the

beginning of microfinance. Borrowers have to contend with the additional funds demanded by the MFIs to meet their operational expenses and for on lending to their customers. The objective of this study, therefore, was to find out whether there exist a relationship between lending interest rates and lending by DTMs in Kenya. Higher lending rate charged by the DTMs in Kenya has been high and has faced a lot of criticism over time. Despite the Government's effort to lower it down they have still remained high. High rates of interest are against the recent finance bill regulation which proposes that interest rates should be pegged against the Treasury bill. It states that no interest rate should exceed four percent of the base lending rate of the central bank (Finance Bill, 2011).This however may not be applicable if the financial institution that is making losses.

Stiglitz and Weiss (1981) argued against high lending rates. They argued that the two effects of interest rates; the adverse and incentive selection negatively affect the quality of bank loan if they change a higher lending rates. Borrowers may worry less about the prospect of nonpayment (adverse selection effect). This implies that the rational profit maximizing MFIs will practice credit rationing which defeats the assumption generally made in financial liberalization literature, that of interest rate liberalization eliminating credit rationing.

Prior studies on interest rates and performance, lending and borrowing by financial institutions have been done locally. For instance, Ongweso (2005) did a study on affiliation amongst interest rates and non-performing loans and the results showed decreasing tendency of ordinary interest rates signifying enhanced macro-fiscal variables over the period.

Kimutai (2003) did a study on the interrelationships amongst lending interest rate and financial performance of micro finance establishments in Kenya. From his study, he concluded that impulse reaction asks shows low and lagged reaction of lending rates contributing to the decline in lending spread following an increase in money market rates, adversely affecting micro financing activities and that high level of interest rates hinders financial institutions' profitability. Gardner (2005) on their study on interest rates on profitability of microfinance institutions indicated that Interest rates determine the profitability of MFIs among other factors.

Past studies have discussed the way in which interest rates impacts on commercial banks and MFIs financial performance? Since most of the research conducted on interest rates have focused on different perspectives rather than effect of interest rates on micro finance lending by deposit taking micro finance institutions (DTMFs) thus pointing to a research gap, none has focused on addressing the interconnection between interest rates and micro finance lending by(DTMFS) in Kenya Therefore ,this study will establish the impacts of interest rates on lending by microfinance institutions in Kenya by answering the following key question: What are the relationships between interest rates and lending by (DFMFs) in Kenya?

1.3 Research Objective

The study objective was to determine the effect of interest rates on microfinance lending in Kenya.

1.4 Value of the Study

This study will be of significance because micro finance institutions will be enlightened on the impact of interest rate on their lending thus allowing them to make proper and informed decisions. Scholars and researchers will also provide contextual information to other researchers and scholars who might be interested in carrying out further research on how interest rate affect micro finance lending. Furthermore, financial management professional specialized in offering consultancies to stakeholders and financiers can also make use of the study to inform their investors on various matters involving microfinance lending and how the interest rates affect microfinance sector in Kenya.Due to the increasing need to serve the growing needs of customers, this study will inform the benefits of adopting moderate rates as a tool to enhance efficiency and cost reduction. The policies will enrich international effectiveness of the country, robust economies and realization of four critical state objectives.

MFIs would also understand the effect of interest rates on their lending and borrowing and endeavour to inspire or de-motivate banking rates inventions based on such findings. The findings of this study are expected to be of significance consumers in the country who will be beneficial to amplified lending and borrowing if the study apprise the same.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter studies the obtainable literature on interest rates as well as its effects on lending in microfinance institutions in Kenya. The literature accessible gives the basis of the research and consists of the broad outline of interest rates, lending and empirical review. The section also outlines the overview of factors that lead to borrowers to take up loans, assessing what borrowers consider in the uptake of loans as well as the determinants of lending, theoretical review conceptual framework that show correlation between interest rates and microfinance lending performance.

2.1 Theoretical Review

This section looks at the theories relating to the study and exploring tabled concepts and theoretical literature in financial management that will be of beneficial to interest rates and microfinance lending in Kenya. For purpose of this study, the following theories will be adopted; Liquidity preference, Expectation theory of interest and Loanable funds theories.

2.1.1 Liquidity Preference Theory

This theory was firstly developed by kynes (1936) it indicates that stakeholders continuously desire for short period securities as compared to longer period securities hence in order to cheer them embrace lengthy period bonds, long term securities needs to produce greater interests than small period bonds resulting to upward sloping yield curve. Keynesian analyses interest rate elements as fiscal aspects such as supply and demand of money. According to Keynes, interest rate is virtuously financial

phenomenon and customers prefer to hold money with relatively than spending them in properties consequently in favorite for liquid cash (Tennant, 2006).

The microfinance mark-up on the set percentage is typically based on microfinance peril and liquidness contemplations as well as the magnitude of rivalry in profit-making banking sector. From this methodology, interest rates configuration is dependent on liquidity preference rather than the level of interest rates. The microfinance liquidity preference is a determining factor for the mark-up and hence the extent amid the base rate and the market rate of interest if liquidity preference and hazard deliberations of reserved financial institutions and, hence, their markups stay persistent. Central banks interest rates determination on the base money market is also a determinant to the credit market rate of interest (Smithin, 2003).

Microfinance deposit taking institutions determine credit market rate interest by considering their regulators bank's allowable rate as well as supplying loan based on set rate to credit worthy loan seekers. These institutions consequently double up as makers of prices and quantity takers, within the scope provided by credit worthiness. Also, businesses readiness and families to transact based set rate of interest by financial institutions on credit marketplace is an essential but not a satisfactory circumstance to get credit hence there will continuously be some kind of credit controlling persons failing to deliver prerequisite collateral (Wolfson, 2006).

Beneath these circumstances, base rate variations as well as rate of interest in credit markets are the outcome of fluctuations in monetary policy position. Variations in central bank's allowable rate will eventually move credit supply curve thus affecting

demand of credit and hence actual fiscal actions funded by credit. Conversely, if microfinance liquidness and risks contemplations or the amount of competition variation in the surface of a fluctuating interest base rate, financial policies might not determine the credit market rate of interest straightly. The horizontality viewpoint does not recommend that monetary policy is unrestricted for setting rate of interest at whatever level, regardless of economic situations (Athanassopoulos & Giokas, 2008).

2.1.2 Expectation Theory of Interest

Lutz (1940) developed the expectation theory which embraces anticipations formed by investors on forth coming interest rates from entirely obtainable market place data and information. Most particularly, the impending interest rate is projected from present commercial rate, putting into deliberation tendencies in lending rates over time. From this theory, interest variation arises as a result of unanticipated information or economic changes. The expectation theory aids to expound how investors respond to available information. This theory can be integrated together with loan able funds theory for better consideration of existing information within the country's economy. Therefore, if microfinance loan customers are expecting rise in bank interest rates, many of them will relent or evade borrowing, this will impact microfinance lending owing to condensed earning on interest rate, but if the lending rate is expected to decrease then customers would be eager to borrow and this will advance microfinance lending and borrowing performance due to rise in interest rate earning (Bekaert, 2008).

Although there are many scholars supporting expectancy theory, several financiers and financial professionals believe existence of flawed reasoning behind expectations

theory and therefore not qualified to serve as a precise gauge of forthcoming short-term rates (Sharma and Rajesh, 2013). The expectation theory has another limitation of not considering elements of risk that may affect the level of microfinance interest rates in overall. For instance, the theory does not identify the fact that forward rates don't continuously offer a clear depiction of impending rates, a state of affairs that makes the hazard of capitalizing on short term bonds rather than long-term bond issues slightly sophisticated. The possibility of reinvestment taking place is not included by the theory hence coming up with a new factor having a theoretical bearing on interest rates (Njoka, 2013)

It is experimental truths that nominal interest rates are extremely insistent and the unfortunate supremacy of out dated univariate category assessments against the insignificant of a unit root (Stock, 1994) has led many scholars settle that interest rates are incorporated. The expediency of working with recognized outcomes for unified processes has made it eye-catching to accept the existence of a unit root for experimental resolutions. For instance, minimal interest rates have been termed as integrated of order one in abundant experimental (Gemmill and Thomas 2014).

2.1.3 Loanable Funds Theory

This theory was developed through Knut Wicksell who was a famous Swedish economist in 1930s. He argued that the rate of interest which is price of credit is factored by supply and demand of loan able resources. The quantity and request of loan able money or surplus bank investments is the key element of interest rates. In circumstances where demand for loan surpasses supply of credits, interest rates will increase in the courtesy of Banks, and to the detriment of borrowers. This theory is

founded on conventional theory of interest rate by distinguishing the facts that currency quantity suggestively influencing savings and investments. The market interest rate is decided at the rate connecting the supply of loans to the demand of loan (Ngugi 2001).

Loanable funds theory has repercussions on financial institutions, investors and loaners which should be adequately rewarded at symmetry and interest rate on credit be organized in a manner commensurate and comfortable to all parties. The equilibrium between the demands and supplies of loan able resources or the intersection between demand and supply curves of loan able funds indicates the purpose of the market rate of interest. Provided the supplies of loan able reserves, if the demand for loan able funds rises, then interest rate will also rise and vice versa. Equally, provided the demand for loan able funds, interest rate will increase with the decrease in supply of loan able funds. However, this theory has been criticized by many with Prof. Hansen asserting loan able funds theory being just similar to classical and the Keynesian theories of Interest indeterminate owing to the circumstance that interest rates determination is contingent upon savings which is dependent on income. Income further depends on investment and investment itself depends on interest rate (Kinyuru, 2011).

2.2 Determinants of Microfinance Lending

Microfinance lending is determined by various factors which some are within the control of the microfinance institution while others are beyond their control.

2.2.1 Operational Efficiency

According to Rosenberg, Gonzalez, and Narain (2010), operating efficiency cost consists of 50 percent of nominal interest yields in a worldwide comparison. Minimum amount of advances require higher administrative expenses, which doesn't substantially offset economies of scale. Similarly, as the Microfinance Institution ages it produces substantial reductions. Rosenberg et al, (2009) study found that Administrative costs impacts the lending rates more, and have been reducing by one percentage point annually. They conclude that the reduction of administrative expenses is contributed by improvement in customer service, not only the loan sizes. Their outcome concludes that the level of these costs is positively related to the age of the Microfinance Institution, and they conclude that inefficiency is high when the Microfinance Institution are relatively small, since most national microfinance markets are not mature and in competitive.

Further, while microfinance institutions have higher returns on assets than commercial banks, these same authors claim that the search for returns is not an important driver of interest rates The sustainability of a deposit taking microfinance is contributed mainly by organizational, managerial or financial sustainability Thapa, (2007). Financial sustainability has received most attention. According Nepal (1997), a deposit taking micro finance is said to be sustainable when its income from operational activities from lending is enough to gather for all of its operating costs. They argue that financial viability and institutional sustainability (self-sufficiency) of the deposit taking micro finance lending which contributes to the sustainability of the deposit taking microfinance. Microfinance institution on the other hand is referred to be institutional and financially self sufficient that is it is able to gather for all its actual operating

expenses from income generated ,its financial service operation, after inflation adjustment and subsidies by micro credit summit campaign by the micro credit summit campaign

2.2.2 Size of the Deposit Taking Microfinance

Deposit taking micro finance is given by the natural log of total assets in a deposit taking microfinance. It accounts for economies and diseconomies of scale. Therefore, a study by Obamuyi (2013), Economies of scale increases with the firm size up to a certain level then it starts experiencing diseconomies of scale the outcome of this is a mixed relationship between total assets and profitability. When lending rates are low, bigger micro finances earn less profit, however, if the bigger micro finance control big market share in a noncompetitive environment, they may earn more profits by charging high interest rates on the total amount of loan they, and low deposit rates. But ideally, bigger micro finance institutions would expect to be identified with lower lending rates due to its of large economies of scale and technology which in return enhance efficiency.

The size of a deposit taking micro finance impacts lending reason being that larger firms uses this preference to get financial benefits in relation to business . Large deposit taking microfinance has easier access to useful factors of production, including labour and cheaper funding (Akhigbe and McNulty, 2005). Also, large organizations are able to get cheaper source of funds to enable them to be competitive. Such funds however, are given with strict restrictions which can be easily met by large micro finance (Morgan and Samolyk, 2009).

2.2.3 Interest Rates

According to Lloyd (2006) and McConnell (2009), interest rates represent the charge waged for loaning money modeled as a proportion per year. Alternatively, it can be termed as price needed by debtor for reimbursement to bank for shifting buying supremacy to the future. Keynes (1936) indicated rate of interest to symbolize borrowing cost of principal for given period of time and provided borrowing remains substantial foundation of finance for companies and businesses, interest rate is of unlimited prominence to them since it momentously touches their pay and in addition their actions.

According to Cargill (1991), lending and supplementary monetary intermediaries' interest rates signify configuration for damage in value of the advanced principal rising predominantly from price increases as well as revenue margin to recompense the lender for the defaulting risk exposures during the loan period. Lloyd (2006) continued further to claim that interest rates are ranked amid the greatest vital variables with macro-economic term in finance sphere. Additionally, Reilly (2009) distinguished that interest rates for deposit taking microfinance institutions are dependent on factors such as price increases, level of government borrowing and perils associated. He additionally instituted that inflation creates surface for interest rate and hence there is no microfinance institution which can lend at the rate lower than estimated inflation level over the similar period.

Government level of borrowing from public formulates foundation for MFIs while setting their interest rates with peril associated to amount borrowed being risk premium and is indirectly incorporated in interest rate uniformity. This therefore

indicates that, when nation's money depreciates, interest rate is obligated to be higher than the rate in which the Shilling depreciates. It is alleged that variations of market interest rates exercises substantial impact on the lending and borrowing performance of microfinance institutions (Reilly, 2009). According to Samuelson (2010), beneath universal situations, financial institutions' profits rise with growing interest rates. He claimed that the banking system as a whole is infinitely facilitated rather than stalled by an increase in interest rates.

2.3 Empirical Review

This section reviews what other researcher has done and their findings. Different researchers have done studies on influence of interest rates on financial performance of Microfinance institutions both in Kenya and other developing nations. Wensheng (2002) did a study on influence of interest rate changes on banking sector performance; he established an increase in Hong Kong dollar risk premium being denoted by spread augmentation amongst their dollar and US dollar interest rates influencing banks' productivity largely through its effect on property excellence affecting provisioning charges and net interest margin.

Boldbaatar (2006) undertook a study to establish any existing affiliations amongst commercial banks' interest rate spreads used in advancing and deposit rates. The study envisioned to observe issues affecting interest rate spreads in SEACEN nation's financial institutions. Study findings revealed banks' spreads being affected by bank specifics, market place powers and governing surroundings. Conversely, larger financial institutions have a tendency of operating with lesser spreads owing to improved managerial proficiency.

Adofu and Audu (2010) conducted a study using normal least squares technique to scrutinize the influence of interest rates non-regulation in improving farming production in Nigeria. The study established that interest rate plays substantial role in improving financial undertakings and as such, financial establishments should guarantee suitable willpower of interest rate level that will break the double edge influence of interest rate on customers and resident shareholders. Rosemberg, Gonzalez and Narain (2009) and Gonzalez (2010), suggested that small advances with very small non-payment rates need higher organizational expenses which appear not to be compensated by economies of scale. Based on above authors, organizational costs are the distinct biggest factor to interest rates. Further, though microfinance institutions have advanced returns on assets than money-making banks, hunt for earnings is not a significant determinant of interest rates. Whereas such assumptions may be interesting, these authors do not expound how they reached such inferences since there are no facts concerning either the econometric technique used or other illustrative variables considered

Kipngetich (2011) through usage of regression model to examine the affiliation amongst interest rates and ROE with monetary performance recognized that there was correlation between variables though the influence of interest rates on productivity is not weighty in all the financial institutions. From such observation, other dynamics influencing success needs to be heightened in order to advance the financial performance of banks in Kenya

Njihia (2005), established that loan element have a substantial consequence on quoted banks profit because if financial institutions fails to get sufficient payments, capital

sustainability level can be influenced with postponement of credits failing to be done here after charge on deposits is an significant deliberation. Diverse amounts of resistance lead to non-equivalent variations in the worth of properties and obligations as market place rates variation will touch on the value of investing firms.

Mang'eli (2012) carried out a study on correlations between the rate of interest spread and financial performance of commercial banks using descriptive research design .He concluded that interest rate spread influence performance of commercial banks, given that it raises the expenditure of loans levied on customers and rules on interest rates have significant impact on efficiency of commercial banks subsequently determining interest rate spread in banks as well as aiding mitigation of moral perils accompanying productivity of commercial banks, credit risk administration practices lightly affecting the worth of financial institution interest rate spread. This is because interest rates remain bench marked alongside connected less performing loans. Non-performing credits impacts the performance of Commercial Banks owing to provision influence and monitoring costs associated.

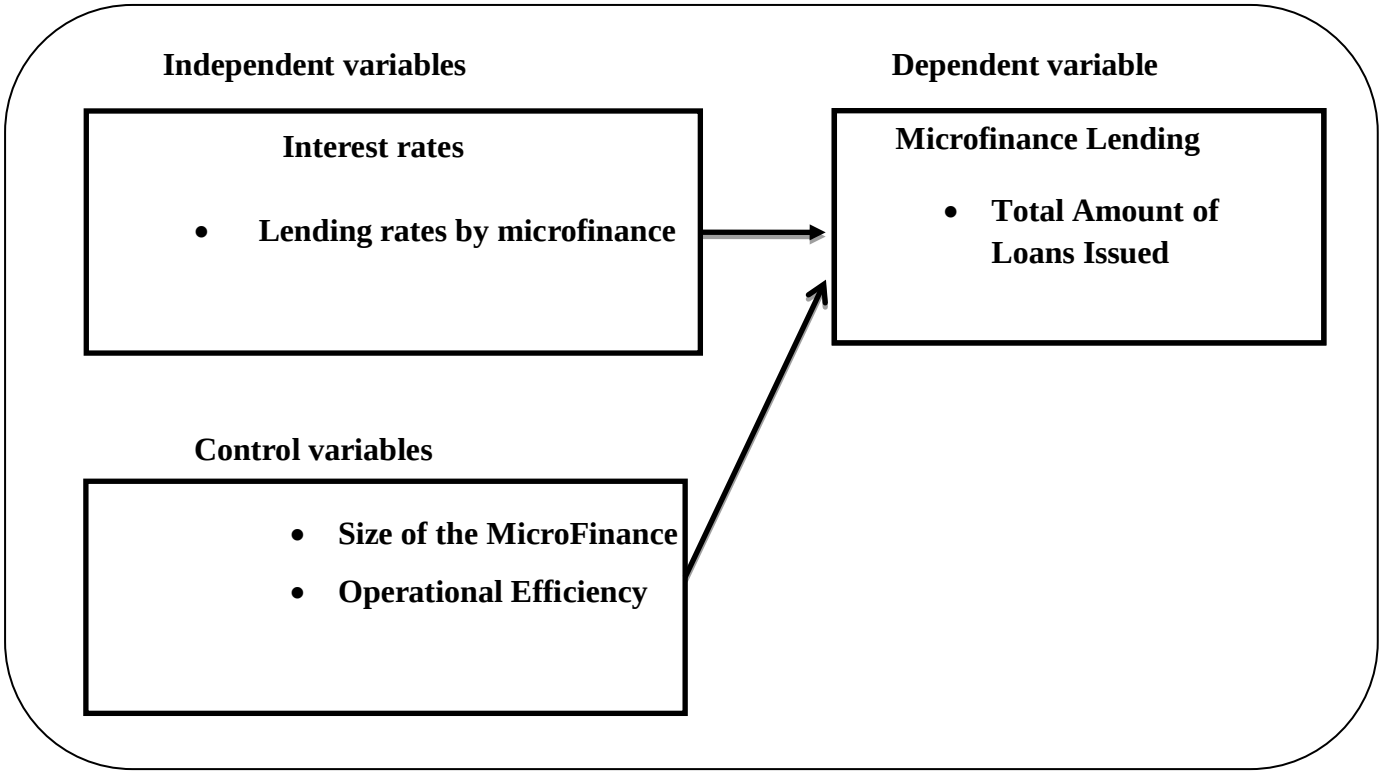
Onyekachi and Okoye (2013) studied the relationship existing among lending rate and performance of Deposit Money Banks in Nigeria. It precisely examined the impacts of lending rate and monetary policies rate on performance of Nigerian deposit money banks. The study employed secondary data econometrics in a regression, where time-series and quantitative design were collectively used and predicted. The conclusions of the study were that lending rate and monetary policies rate affects performance both progressively and substantially in Nigeria.

Mwangi (2014) studied the relationship of interest rate and financial performance of Deposit Taking Microfinance Institutions in Kenya. The study involved collecting secondary data from Central Bank of Kenya, individual Deposit Taking Microfinance Institutions and the Association of Microfinance Institutions in Kenya. Consequently, data for nine DTMs will be analyzed for five years (2009-2013) using multivariate regression model. The finding of the study was that there is perfect relationship between lending interest rates and financial performance of DTMs. To test the significance of the findings, analysis of variance (ANOVA) was done.

2.4 Conceptual Model

The study adopted the following conceptual model in determining the relationship between interest rates and microfinance lending in Kenya.

Figure 2.1: Conceptual Model



Source: Researcher (2018)

The above diagrammatic demonstration of conceptual framework indicates how independent, control variables and dependent variables are related. Total amount of loans is indicator of dependent variable, which measures microfinance lending in kenya.Lending rate is the main independent variable.size of the micro finance and operation efficiency are control variables Changes in any of the interest indicators will affect the microfinance lending rates which will either affect lending of funds from same institutions either positively or negatively depending on the indicators direction of change.

2.5 Summary of Literature Review

Literature evaluation displays varied results. Certain studies maintain that interest rates meaningfully and absolutely do lead to the improvement and progression of businesses especially microfinance institutions, while other studies indicated that interest rates imposed by microfinance institutions did not show any effect on lending ,borrowing and growth of loan transactions .The studies already done in this extent have intensified mainly on the relationship between interest rates and financial performance in the commercial banking sector as indicated by Wensheng (2002), Boldbaatar (2006) and Njihia (2005), therefore from perspective of these studies, it is ostensible that more research needs to be done by widening the scope of the study so as to concentrate on MFIs. Due to mixed results, it necessary to examine the connection between microfinance interest rates and their lending performance.

CHAPTER THREE: RESEARCH METHODOLOY

3.0 Introduction

This chapter outlines methodology which was adopted in the operationalization of the research and achievement of the study objectives. It covers the research philosophy, research design, target population, sample and sampling, data collection instruments, data collection procedure, data analysis, conceptual model, analytical model, parameterization and diagnostic test.

3.1 Research Design

Descriptive research design will be used to conclude how lending interest rates impacts the lending on performance of microfinance institutions in Kenya. According to Mugenda and Mugenda (2003), descriptive research is practice of gathering data for testing assumptions or answering queries regarding the present position of the study subjects hence will aid in clarifying features of a given group in a specified condition by presenting data in a rational form. The study will also adopt a causal research design where the causal relationship between the variables will be studied using the explanatory approach.

3.3 Study Population

Population of the study will constitute all the deposit taking microfinance institutions regulated by CBK as at December 2017, the deposit taking MFIs stood at 13.

3.4 Data Collection

The study will adopt use of secondary data as its collection method for the period 2013 -2017. The data will be acquired from sources such as data on borrowing interest rates trends and monthly lending averages from the individual deposit taking MFIs, annual financial statements and banking supervision reports on the deposit taking MFIs under consideration which will be obtained from the Central Bank of Kenya website and deposit taking MFIs themselves. Secondary data from the Association of Microfinance Institutions in Kenya (AMFIs) will also be useful and will be used in this study.

3.5 Data Analysis

The data analysis will be carried out using multivariate regression model to determine the association amid the independent and dependent variable. In aid of data scrutiny, study will adopt Statistical package for Social Sciences (SPSS version 22) to be able to determine the existing connections amongst interest rates and lending by deposit taking micro finance institutions in Kenya.

3.5.1 Diagnostic Test

The Augmented Dickey-Fuller (ADF) unit root tests (Dickey and Fuller, 1979) will be used to check for stationary of the interest rate and microfinance lending data series. Co-integration tests will involve establishing whether the stochastic trends contained in unit roots have long-run relationship and if the computed ADF will be found to be greater than the precarious value (5% and/or 1%), the null hypothesis of existence of co-integration between the Interest rate and micro finance lending will be Linearity show that variables X and Y relates by a scientific equation Y=bX where c is a

constant number. The constant from the analytical model will help test the level of microfinance lending when all the explanatory variables are zero.

The linearity test will be obtained through the F-statistic in analysis of variance (ANOVA) which will show whether or not a model is a good fit for the data. The goal of the study is to conclude on the effect of interest rates on microfinance lending hence the percentage of variation in lending explained by interest rate will be determined by R-Square (R^2). The percentage difference will determine the variations in microfinance lending which is explained by other factors which will have not been captured in the study. Regression coefficients will also be used to test the magnitude impact of the study variables on microfinance lending (Burns & Burns, 2008). The strength of the relationships between interest rates and microfinance lending in Kenya will be tested by use of Pearson correlation coefficient (r) generated by SPSS software. The r value produced by the test will represent correlation value between study variables. Typically, the strength of correlation for r values is interpreted as: r value of 0 to +/- 0.30 is weak, +/- 0.31 to +/- 0.7 is moderate, and +/- 0.71 to +/- 1 is strong. +/- indicates positive or negative values.

The variables will be measured by use of ratio scale. The reliant variable is established by total loans issued in a given period 2013 to 2017. Size of the Deposit taking micro finance will be measured by the natural log of total assets. Lending rates will be given by, each individual microfinance. Operation efficiency will be measured by Ratio of operating cost to total income multiple regression and correlation examination will be conducted to establish Coefficients and find out the nature of association amongst the dependent variable. The importance of a regression model is

to provide a basis for estimating the relationship between variables, specifically the relationship between interest rates and microfinance lending.

3.5.2 Analytical Model

The multivariate regression to be used will consist of several variables combined together to fit the analytical model provided below:

$$\mathbf{Y = a + bX_1 + bX_2 + bX_3 + e}$$

Where:

Y= Micro Finance lending measured by the log of the total amount of loans issued in a given period of time.

a= Regression Constant. The Y intercept when X is zero, b1, b2, and b3are regression weights devoted to variables.

X1= Lending interest rate by the micro finance

X2= size of the Deposit taking micro finance

X3=operation efficiency

e=error term

Table 3.1: Parameterization and Measurements of Study Variables

Parameter	Measurement
Microfinance lending	Total amount of loans issued in a given period of time
Interest rates	Lending interest rate by the micro finance
Size of the deposit taking micro finance	Natural log of total assets
Operation efficiency	Ratio of operating cost to total income

Source: Researcher (2018)

CHAPTER THREE: RESEARCH METHODOLOGY

3.0 Introduction

This chapter outlines methodology that is to be adopted in the operationalization of the research and achievement of the study objectives. It covers the research philosophy, research design, target population, sample and sampling, data collection instruments, data collection procedure, data analysis, conceptual model, analytical model and parameterization.

3.1 Research Design

Descriptive research design was used to conclude on how lending interest rates impacts the lending on performance of microfinance institutions in Kenya. According to Mugenda and Mugenda (2003), descriptive research is practice of gathering data for testing assumptions or answering queries regarding the present position of the study subjects hence will aid in clarifying features of a given group in a specified condition by presenting data in a rational form. The study also adopted a causal research design where the causal relationship between the variables was studied using the explanatory approach.

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Population of the study constituted all the deposit taking microfinance institutions regulated by CBK as at December 2017, the deposit taking MFIs stood at 13.

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The study adopted use of secondary data as its collection method for the period 2013 - 2017. The data was acquired from sources such as data on borrowing interest rates trends and monthly lending averages from the individual deposit taking MFIs, annual financial statements and banking supervision reports on the deposit taking MFIs under consideration which was obtained from the Central Bank of Kenya website and deposit taking MFIs themselves. Secondary data from the Association of Microfinance Institutions in Kenya (AMFIs) was also useful and was used in this study.

3.5 Data Analysis

The data analysis was carried out using multivariate regression model to determine the association amid the independent and dependent variable. In aid of data scrutiny, the study adopted Statistical package for Social Sciences (SPSS version 22) to be able to determine the existing connections amongst interest rates and lending by deposit taking micro finance institutions in Kenya.

3.5.1 Diagnostic Test

The linearity test was obtained through the F-statistic in analysis of variance (ANOVA) which will show whether or not a model is a good fit for the data. The goal of the study was to conclude on the effect of interest rates on microfinance lending hence the percentage of variation in lending explained by interest rate was determined by R-Square (R^2). The percentage difference determined the variations in microfinance lending which was explained by other factors which will have not been captured in the study. Regression coefficients were also used to test the magnitude

impact of the study variables on microfinance lending (Burns & Burns, 2008). The strength of the relationships between interest rates and microfinance lending in Kenya was tested by use of Pearson correlation coefficient (r) generated by SPSS software. The r squared value produced by the test represented correlation value between study variables. Typically, the strength of correlation for r values is interpreted as: r value of 0 to +/- 0.30 is weak, +/- 0.31 to +/- 0.7 is moderate, and +/- 0.71 to +/- 1 is strong. +/- indicates positive or negative values.

The variables were measured by use of ratio scale. The reliant variable was established by total loans issued in a given period 2013 to 2017. Transaction cost was measured by the amount of money spent on the process of requesting for loans. Interest rates consist of simple and compound interest which was measured on the principal amount of the loan and on interest earned respectively. Multiple regression and correlation examination was conducted to establish Coefficients and find out the nature of association amongst the dependent variable. The importance of a regression model is to provide a basis for estimating the relationship between variables, specifically the relationship between interest rates and microfinance lending.

3.5.2 Analytical Model

The multivariate regression used consisted of several variables combined together to fit the analytical model provided below:

$$\mathbf{Y = a + bX_1 + bX_2 + bX_3 + e}$$

Where:

Y= Micro Finance lending measured by the log of the total amount of loans issued in a given period of time.

a= Regression Constant. The Y intercept when X is zero, b1, b2, and b3are regression weights devoted to variables.

X1= Lending interest rate by the micro finance

X2= size of the Deposit taking micro finance

X3=operation efficiency

e=error term

Table 3.1: Parameterization and Measurements of Study Variables

Parameter	Measurement
Microfinance lending	Total amount of loans issued in a given period of time
Interest rates	Lending interest rate by the micro finance
Size of the deposit taking micro finance	Natural log of total assets
Operation efficiency	Ratio of operating cost to total income

Source: Researcher (2018)

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.0 Introduction

In this section, a presentation, interpretation and discussion of the findings are done. The chapter will be divided into four sections. It will include; Descriptive statistic correlation analysis, regression analysis,analysis of variance and the interpratation and discussion of findings. In summary, the chapter showcases data analysis, presentation, and interpretations of the study.

The study analyzed the effect of interest rates on lending by microfinance institutions in Kenya. The study was conducted for a period of five years, from 2013 to 2017 across the thirteen microfinance institutions in Kenya. Data will be obtained from CBK, AMFI, and the individual MFI's. The variables employed in the analysis include; logarithm of total amount of loans, effective lending rate, logarithm of total assets, and operational efficiency.

4.1 Descriptive Statistics

A descriptive study tries to explain or describe a subject frequently by establishing an outline of a collection of problems, individuals, or events, by collecting data and the tabulation of the frequencies of research variables or their relationship. It provides a range of research objectives such as; explanation of an event or characteristics linked with a subject population, approximation of extent of the population that possesses these features, and unearthing of linkages among varying variables (Ngechu, 2004). In this study, descriptive research design was selected since it will enable the

generalization of the findings of the population; it will allow analysis and relation of variables.

Table 4.1: Descriptive Statistics

	Log Total Amount of Loans	Lending Rate	Log Total Assets	Operation Efficiency
N STATISTIC	46	46	46	46
MINIMUM STATISTIC	0.692151	0.1629	0.710752	0.4365
MAXIMUM STATISTIC	0.866035	0.4166	0.87548	1.1597
MEDIAN STATISTIC	0.817141	0.235	0.838099	0.673
MEAN STATISTIC	0.798855	0.242914	0.814854	0.688752
STANDARD DEVIATION	0.065464	0.057488	0.064193	0.154951
SKEWNESS	-0.51249	1.473212	-0.61967	1.128646
KURTOSIS	-1.45125	3.056648	-1.49841	3.316748

From the findings in Table 4.1 above, the highest value for the lending rate is 41.66% while the lowest value is 16.29%. The following measures of central tendency were exhibited; a mean of 24.29%, and a median of 23.5%. Also, the value of the standard deviation depicts variability in the effective lending rate of ±5.75%. The data in the series is not normally distributed because it has skewness out of the range of -0.8 to +0.8, and a kurtosis out of the range of -3 to +3.

The findings also exhibit that, the highest value for the operational efficiency ratio is 1.16 while the lowest value is 0.44. The following measures of central tendency were exhibited; a mean of 0.69 and a median of 0.67. The data in the series does not exhibit normal distribution because its skewness lies out of the rage of -0.8 to +0.8, and the kurtosis out of the range of -3 to +3. In addition, the value of the standard deviation depicts variability in the variable of ±0.16.

Further results from the findings indicate that the values of total amounts of loans lent out by MFIs and total assets with logarithmic functions introduced exhibit a normal distribution. This is because their skewness values lie within the range of -0.8 to +0.8, and kurtosis values within the range of -3 to +3.

4.2 Correlation Analysis

Correlation analysis establishes whether there exists an association between two variables lying between (-) strong negative correlation and (+) perfect positive correlation. Pearson correlation was employed to analyze the level of association between stock returns and real interest rates. The study employed a Confidence Interval of 95%, as it is the most utilized in social sciences. A two tailed test was utilized.

Table 4.2: Correlation Analysis

		L_TotalLoans	Effect_LendRate	L_TotalAssets	Operat_Eff
L_TotalLoans	Pearson Correlation	1	.094	.976**	-.617**
	Sig. (2-tailed)		.685	.000	.003
	N	46	46	46	46
Effect_LendRate	Pearson Correlation	.094	1	.099	.095
	Sig. (2-tailed)	.685		.669	.681
	N	46	46	46	46
L_TotalAssets	Pearson Correlation	.976**	.099	1	-.643**
	Sig. (2-tailed)	.000	.669		.002
	N	46	46	46	46
Operat_Eff	Pearson Correlation	-.617**	.095	-.643**	1
	Sig. (2-tailed)	.003	.681	.002	
	N	46	46	46	46

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

The study findings in Table 4.6 above indicate that total amount of loans are significantly correlated at the 1% significance level (consequently also significant at

the 5% significance level) to total assets and operational efficiency. Thus, the findings imply that there is a positive relationship between the total amount of loans and total assets. A negative relationship is also exhibited between total amount of loans and operational efficiency.

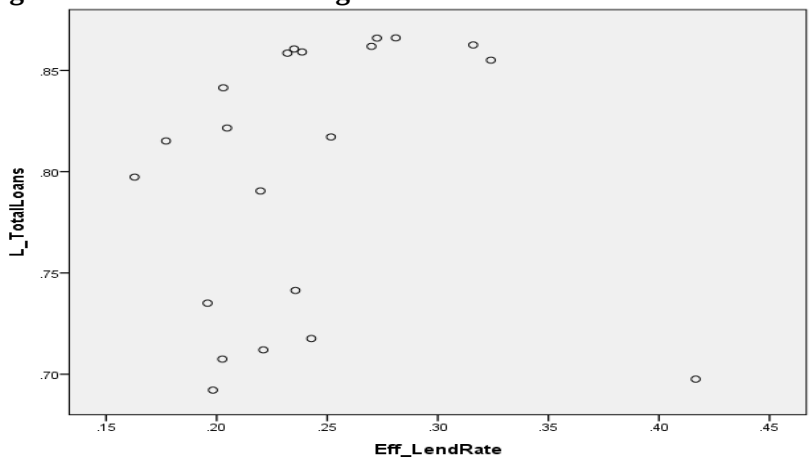
The significant correlation at the 1% significant level (hence also significant at the 5% significance level) between the predictor variables; total assets and operational efficiency indicates multi-collinearlity. Multicollinearity is a statistical phenomenon in which there exists a perfect or exact relationship between the predictor variables. When there is a perfect or exact relationship between the predictor variables, it is difficult to come up with reliable estimates of their individual coefficients. Thus, it will result in incorrect conclusions about the relationship between outcome variable and predictor variables.

4.3 Regression Analysis

The test for homoscedacity was conducted and was combined with the test of normality to ascertain linearity. A data series must both be linear and homoscedacity to achieve the condition of linearity.

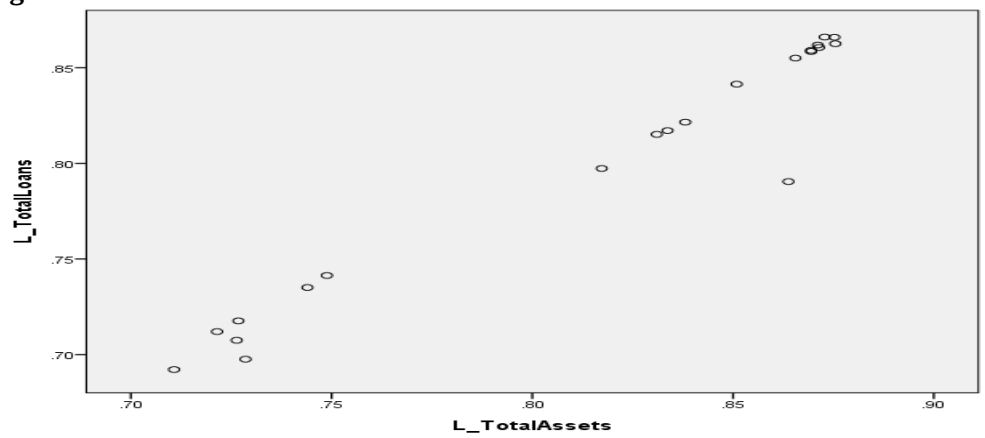
For the data series effective lending rate, the results are displayed in Figure 4.1 contained in the subsequent page. The plotted points indicate that there is a curvi-linear relationship with one moment between effective lending rate and total loans. Thus, there is presence of a heteroscedacity between the two variables.

Figure 4.1: Effective Lending Rate Scatter Plot



For the data series total assets, the results are displayed in Figure 4.2 below.

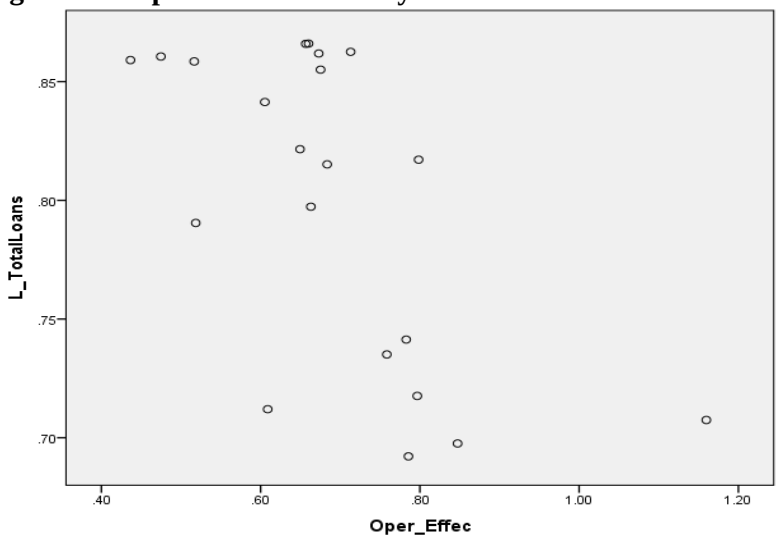
Figure 4.2: Total Assets Scatter Plot



The plotted points indicate that there is a linear relationship between total assets and total loans. Thus, there is presence of a homoscedacity between the two variables.

For the data series operational efficiency, the results are exhibited in Figure 4.3 contained in the following page. The plotted points indicate that there is a curvi-linear relationship with one moment between operational efficiency and total loans. Thus, there is presence of a heteroscedacity between the two variables.

Figure 4.3: Operational Efficiency Scatter Plot



The variable effective lending rate is not normally distributed as displayed by the skewness and kurtosis statistics in Table 4.1 and it is also heteroscedastic as exhibited in Figure 4.1. Thus, it has no linear relationship with total loans. The variable total asset is normally distributed as displayed by the skewness and kurtosis statistics in Table 4.1 and it is also homoscedacstic as exhibited in Figure 4.2. Thus, it has a linear relationship with total loans. The variable operational efficiency is not normally distributed as displayed by the skewness and kurtosis statistics in Table 4.1 and it is also heteroscedastic as exhibited in Figure 4.3. Thus, it has no linear relationship with total loans.

The total amount of loans variable was first regressed against the predictor variables, effective interest rate, total amount of loans, and operational efficiency using multiple linear regression. The logarithm function was introduced to the total amount of loans and total assets variables. The regression analysis was undertaken at 5% significance level. The critical value obtained from the F test and T test were compared with the values obtained in the analysis. The findings are indicated below.

Table 4.3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.976[a]	.952	.944	.01548	2.205

a. Predictors: (Constant), Operat_Eff, Effect_LendRate, L_TotalAssets

b. Dependent Variable: L_TotalLoans

R squared, being the coefficient of determination indicates the deviations in the response variable that is as a result of changes in the predictor variables. From the outcome in Table 4.7 above, the value of R square was 0.952, a discovery that 95.2% of the deviations in total amount of loans are explained by the variables effective lending rates, total assets, and operational efficiency. Other variables not included in the model justify for only 4.8% of the variations in total amount of loans.

To test for autocorrelation, Durbin-Watson statistic was applied which gave an output of 2.205 as displayed in Table 4.7 above.. The Durbin-Watson statistic is always between 0 and 4 and a value of 2 means that there is no autocorrelation in the sample. Values from 0 to less than 2 indicate positive autocorrelation and values from more than 2 to 4 indicate negative autocorrelation. A rule of thumb is that test statistic values in the range of 1.5 to 2.5 are relatively normal. Values outside of this range could be cause for concern. Field (2009) however, suggests that values under 1 or more than 3 are a definite cause for concern. Therefore, the data used in this panel is not serially autocorrelated since it meets this threshold.

Table 4.4: Analysis of Variance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.082	3	.027	113.573	.000[b]
	Residual	.004	42	.000		
	Total	.086	45			

a. Dependent Variable: L_TotalLoans

b. Predictors: (Constant), Operat_Eff, Effect_LendRate, L_TotalAssets

Rule of thumb indicates that a model is significant if the p value obtained from the study findings is less than the critical value of 0.05 or the F value indicated is greater than the obtained critical value. The study indicates I Table 4.8 a p value of 0.00, which is below the critical value. A critical value of 3.19677685 was obtained from the F-Test tables. The F statistic indicated in the study findings of 113.573 is greater than the critical value. Thus, the overall model is significant in predicting total amount of loans.

Table 4.5: Model Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-.027	.072		-.381	.708	-.180	.125		
	Effect_LendRate	-.007	.062	-.006	-.109	.914	-.137	.124	.947	1.056
	L_TotalAssets	1.009	.072	.989	14.007	.000	.857	1.161	.560	1.785
	Operat_Eff	.008	.030	.020	.285	.779	-.054	.071	.561	1.783

a. Dependent Variable: L_TotalLoans

The coefficient of the independent variables was used as an indicator of the magnitude and direction of the relationship between the independent variables and stock returns. The p-value and t test were used to establish the significance of the association of the independent variable to the dependent variable. A confidence interval of 95% was utilised and hence, a p-value of less than 0.05 was interpreted as a measure of statistical significance. As such, a p-value above 0.05 indicates a statistically insignificant link between the dependent and independent variables.

Conversely, a t test statistic that lies out of the range of the critical value indicates statistical significance. The findings are as shown in Table 4.9 in the preceding page.

From the results, it is evident that the total assets variable has a statistically significant positive relationship with total loans. It has a p-value of 0.00 which is less than the critical value of 0.05. It also has a t test statistic that is greater than the critical value of ±2.085963 signifying significance. However, the main predictor variable of interest to the study, lending rates, has no statistically significant relationship with total loans.

4.4 Interpretation and Discussion of Findings

The study sought to determine the effect of interest rates on lending by microfinance institutions in Kenya. The variables; total assets and operational efficiency were also included. The effect of each of the independent variable on the dependent variable was analyzed in terms of strength and direction.

The descriptive statistics in Tables 4.1 reveal that the variables effective lending rate and operational efficiency do not have a normal distribution. However, the variables for total amount of loans and total assets are normally distributed; this might be because a logarithmic function had been introduced to both variables.

The homoscedacity tests displayed in Figure 4.1 to Figure 4.3, and the together with the kurtosis and skewness statistics indicate that only the total assets variable is linearly related to total loans. The test for correlation in Table 4.6 shows that the variable total loan is significantly correlated to total assets and operational efficiency.

However, the analysis reveals that there is no significant relationship between total loans and the main predictor variable of interest in the study, interest rates.

In the regression analysis, the model summary contained in Table 4.7 indicates that the variables chosen for the study account for a great part in the variations of total loans. From the analysis of variance in Table 4.8, shows that the model developed is significant as evidenced by the F and P values obtained when compared to the critical values.

The model coefficients in Table 4.9 exhibit that total assets value has a positive significant relationship to the total loans. The coefficient of 1.00 shows that a unit increases in the predictor variable would lead to an equal increase in the response variable. However, the main predictor variable of interest in the study, interest rates, has no significant effect on total loans issued.

The study findings contradict those of the study conducted by Mwangi (2014) which found out that a strong relationship exists between lending interest rates and financial performance of DTMs. The current study findings also contradicts those of the various studies cited in the study which found that interest rates have a significant influence on total loan books of financial institutions. The current study findings are that interest rates have no significant relationship with total loans.

CHAPTER FIVE: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.0 Introduction

This section discusses the summary of the study's findings and offers conclusions and recommendations of the study on the effect of interest rates on the stock market returns. It further goes on to state the limitations of the study and provide suggestions for further research.

5.1 Summary

This study aimed at determining the effect of interest rates on lending by microfinance institutions in Kenya. The unit period of analysis was annually, and data was collected for the period from 2013 to 2017. Secondary data was collected on; total loans, effective lending rate, total assets, total income, and total operating expenses. The study employed the use of correlation analysis, and regression analysis to establish the effect of interest rates on total loans issued.

The study established that interest rates do not have a significant effect on total loans. This was revealed in the correlation and regression analysis. The study also found out that out of the other variables utilized in the study, only total assets has a significant influence on total loans. This was revealed from the regression analysis. The correlation analysis revealed that total assets and operational efficiency have a relationship with total loans.

5.2 Conclusion

From the above findings, it can be concluded that certainly, interest rates do not affect the total loan book of MFIs. However, the size of the MFIs has a considerable effect on the loan book value.

5.3 Recommendations

Policy recommendations are that since interest rates have been established not to exhibit significant effect on total loans issued, the government through the central bank can regulate the prevailing real interest rates by setting the appropriate interest rates through the Monetary Policy Committee (MPC) without considering the effect it will have on the issuance of loans by MFIs. Recommendations can also be made to MFIs as they can be able to determine from the findings of the study the factors that can affect their strategy of expanding their loan book.

5.4 Limitations of the Study

Due to time and cost limitations, the scope of the study has been limited to five years, between 2013 and 2017. Thus, it has not been determined if the result findings would hold for a longer time period. Furthermore, it is uncertain whether similar findings would result beyond 2017. Since the study employed secondary sources of data, some of this data was not readily available, especially the total loans and total assets values, and it took great lengths to obtain it. Some data could also not be used in its raw form, for instance operational efficiency. Effective interest rates could also not be obtained directly from the financial statements. Thus, delays were imminent as data was to be edited and processed further before the researcher could be able to compile it.

5.5 Recommendations for Further Study

On the basis of information gathered and the knowledge gained in this study, the researcher has suggested some areas for further research. First, there are also other variables impacting total loans issued, apart from the ones highlighted in the study. Further research can be done to identify these factors. The study utilized nominal lending rates, other studies can be conducting using real interest rates. The current study's scope was limited to five years; further research can be done beyond five years to ascertain if the findings would hold. Thus, future studies may use a range of many years, for instance, from 1970 to date and this can be helpful to confirm or disapprove the findings of this study. The scope of the study was also limited to the Kenyan context; researchers in other East African, African, and other global countries can conduct the study in these jurisdictions to ascertain whether the current study findings would hold.

Secondary data was solely utilized in the study, alternative research can be employed using primary sources of data like in-depth questionnaires and structured interviews to be administered to all the stock market participants. These can then approve or disapprove the current study findings. Linear regression and correlation analysis were used in this research; further research can incorporate other analysis methods like factor analysis, cluster analysis, and discriminant analysis.

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APPENDICES

Appendix I: List of Deposit Taking Microfinance Institutions (as at 30th June 2018)

1	Faulu Microfinance Bank Limited
2	Kenya Women Microfinance Bank Limited
3	UWEZO Microfinance Bank Limited
4	SMEP Microfinance Bank Limited
5	Remu Microfinance Bank Limited
6	Rafiki Microfinance Bank Limited
7	Century Microfinance Bank Limited
8	SUMAC Microfinance Bank Limited
9	U & I Microfinance Bank Limited
10	Daraja Microfinance Bank Limited
11	Choice Microfinance Bank Limited
12	Caritas Microfinance Bank Limited
13	Maisha Microfinance Bank Limited

Source: CBK Website

Appendix II: Research Data

Microfinance Bank	Year	Log Total Amount of Loans	Lending Rate	Log Total Assets	Operational Efficiency
Faulu Microfinance Bank Limited	2013	8724915	0.203	12419216	0.6053
	2014	1488387	0.2198	20319958	0.5185
	2015	16583682	0.232	25323666	0.5166
	2016	17954979	0.235	27368909	0.4747
	2017	16957894	0.2386	25325157	0.4365
Kenya Women Microfinance Bank Limited	2013	14530512	0.324	21752092	0.6753
	2014	18854096	0.27	27047034	0.673
	2015	22094294	0.2725	31867484	0.6566
	2016	22168550	0.281	28930905	0.6602
	2017	19373625	0.316	32153420	0.713
UWEZO Microfinance Bank Limited	2013	92343	0.3325	187432	0.8473
	2014	94852	0.3462	201347	0.7967
	2015	96383	0.4166	225059	1.1597
	2016	165707	0.2428	214094	0.6631
	2017	125542	0.2026	211514	0.6836
SMEP Microfinance Bank Limited	2013				
	2014				
	2015				
	2016				
	2017				
Remu Microfinance Bank Limited	2013	123789	0.1983	231465	0.7828
	2014	132764	0.2211	229873	0.6053
	2015	145786	0.1959	232456	0.5185
	2016	152378	0.2356	237653	0.5166
	2017	164327	0.2065	239543	0.4747
Rafiki Microfinance Bank Limited	2013	1865642	0.1629	3678751	0.4365
	2014	3418152	0.1771	5975126	0.6753
	2015	4270435	0.2047	7728524	0.673
	2016	3660922	0.2517	6581449	0.6566
	2017				
Century Microfinance Bank Limited	2013	231768	0.203	301654	0.713

	2014	243764	0.2198	310675	0.8473
	2015	241287	0.232	311462	0.7967
	2016	254762	0.235	312567	1.1597
	2017	261784	0.2386	321763	0.6631
SUMAC Microfinance Bank Limited	2013				
	2014				
	2015				
	2016	63267	0.324	123654	0.7856
	2017	76528	0.27	125234	0.6089
U & I Microfinance Bank Limited	2013	81243	0.2725	129654	0.7585
	2014	83581	0.1983	137246	0.7828
	2015	142016	0.2211	184484	0.4747
	2016	271270	0.1959	351357	0.4365
	2017	325511	0.2356	405717	0.6753
Daraja Microfinance Bank Limited	2013	123764	0.3325	201654	0.673
	2014	143892	0.3462	202654	0.6053
	2015	175623	0.4166	213645	0.5185
	2016	181763	0.2428	215722	0.5166
	2017	210983	0.2026	248762	0.4747
Choice Microfinance Bank Limited	2013				
	2014				
	2015				
	2016				
	2017				
Caritas Microfinance Bank Limited	2013				
	2014				
	2015	71234	0.1983	123874	0.7967
	2016	83465	0.2211	135623	1.1597
	2017	104652	0.1959	136893	0.6631
Maisha Microfinance Bank Limited	2013				
	2014				
	2015				
	2016	23467	0.2428	103765	0.7856
	2017	87653	0.2026	154876	0.6089

Key

	Data not Available
	Not yet Licenced by CBK to Commence Operations