EFFECT OF MACROECONOMIC VARIABLES ON FINANCIAL PERFORMANCE OF MICROFINANCE BANKS IN KENYA

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DECLARATION

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

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

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DEDICATION

To my parents, Mr and Mrs Amos N. Nguru who have always provided me with moral support and a source of inspiration.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

CBK: Central Bank of Kenya

CE: Capital Efficiency

CRR: Cash Reserve Requirement

EPS: Earnings Per Share

GDP: Gross Domestic Product

KSH: Kenya Shilling

LIR: Lending Interest Rate

MFBs: Microfinance Banks

MFIs: Microfinance Institutions

NI: Net Income

ROA: Returns on Assets

ROCE: Returns on Capital Employed

ROE: Returns on Equity

USD: United States Dollar

ABSTRACT

Macroeconomic variables cause variation in organisations'financial accomplishments. This study aimed at determining the macroeconomic variables' effect on financial performance of Kenya's microfinance banks. The study relied on two theories that explained how equilibrium rates of interest and rate of growth can be determined, which are macroeconomic variables. The study identified six determinants of financial performance, i.e., the rates of interest, inflation and forex. Other determinants were GDP, firm size (index of market size) and the level of unemployment. Various local and international studies were reviewed, which assisted in the construction of a conceptual framework. Four independent variables were considered for this study to determine their effect on ROA. The study used longitudinal and descriptive research design for seven-year panel data. Thirteen microfinance banks in Kenya made up the population. Therefore, it was a census study. Secondary data sourced from annual CBK reports on supervision of financial institutions, from 2012 to 2018 were used. Three tests were duly executed on the data to analyse its normality, autocorrelation and multicollinearity. Normality was diagnosed used Shapiro Wilk test, while autocorrelation was determined using Durbin Watson test. The VIF value determined the level of multicollinearity. Subsequently, the data was subjected to further analysis to obtain descriptive statistics i.e., averages, and variances. Other descriptive statistics were maximum and minimum values. In addition, correlation matrix of all the variable associations, was generated. Regression analysis model summary, ANOVA and model coefficient tables were generated. From the analysis, the study found that adjusted R^2 was 23.1%. Therefore, the model explained 23.1% of the ROA variation as independent variables (interest, market size, inflation and exchange rate) varied. R was 53.7% and therefore, the model exhibited a moderate correlation between the independent variables and ROA. The ANOVA indicated a significance of 0.002 which was less than alpha (0.05) used in the test of significance. The model found that average lending rate had a significant and weak inverse influence on ROA. One-unit variation in lending rate had an impact of 0.012 units. Inflation rate had an insignificant and a weak positive effect on ROA. One-unit variation in inflation resulted in 0.004 units change in ROA. Exchange rate effect was negative and weak on ROA, but significant. ROA declined by 0.004 units as exchange rate rose by one unit. Market size index had a significant, weak and positive effect on ROA. ROA varied by 0.001 units due to one-unit change in market size index. From the findings, it is recommended that the variability of macroeconomic variables be checked by the regulating authority as their overall effect on performance is 53.7%. this would safeguard the MFBs' returns.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Important objectives of a profit-making organization such as a microfinance bank (MFB) include returns maximisation. The term "Microfinance" is derived from the term "microcredit", a concept founded by Muhammad Yunus in Bangladesh in the 1970$_s$ (MicroWorld.org, 2019). Today, the term "microfinance" refers to services that include savings, insurance, remittances, pension or other applicable credit services. Financially, MFBs' performance, which is subject to the various macroeconomic factors, is as important as that of other firms whose one of the goals is to maximise returns. However, macroeconomic variables affect performance of financial institutions, which include microfinance banks. Macroeconomic factors affect a broader section of the economy and include GDP, unemployment, inflation, exchange and interest rates.

This study reviewed two theories, which are Loanable Funds and Classical Growth. The Loanable Funds doctrine is essential in explaining the determination of interest rates, which is an important macroeconomic variable. The classical growth theory is essential in explaining the economic growth of regions or countries. The GDP measures economic growth. This variable has been identified as key macroeconomic variable affecting financial performance. Siraj and Pillai (2013) explain that researchers consider growth in GDP, as a significant variable, because, financially, it has an effect on commercial banks' performance.

The macroeconomic environment affects the MFBs financially and therefore, for this reason, the government should make attempts in the stabilisation of the macroeconomic conditions to safeguard the performance of microfinance banks. Through capping of the interest rate, CBK intended to put a limit for lending interest rates (CBK, 2017). However, this measure may have been detrimental to the financial institutions' performance. This study meant to look into the macroeconomic variables' influence on Kenya's MFBs financial performance.

1.1.1 Macroeconomic Factors

Macroeconomics deals with the aggregate economy of an entire region, group of countries or the world rather than the individual businesses separately. Brueggeman and Fisher (2011) stated that these factors are beyond the influence of an individual organisation. The macroeconomic elements are levels of GDP, inflation, interest, unemployment and currency exchange.

The GDP computes the worth of a region's or a country's goods and services, which have been produced in the specified duration, whereas the producer's nationality does not matter. It, therefore, measures a country's economic muscle. Inflation describes persistent rise in price, in a time frame, of some type of goods and services (basket) (Lumen, 2019 a). The basket includes not all but the essential goods, for this computation. The interest, which is indicated as a percentage, is used to determine the cost of funds borrowed. The rate is quoted for a specific duration, such as monthly or per annum rate of interest. Thus, the lending rate measures the cost of obtaining credit (to the borrower) or the lenders' returns. Exchange rate is also called forex rate. In the forex market, various currencies are exchanged at a certain rate, which is

dependent on the strength of the currencies. This rate measures the amount of a given home monitory unit that is to buy a unit of external monitory units (Lumen, 2019 b)

1.1.2 Financial Performance

In most organisations, performance justifies their existence. The performance, from a financial perspective, of a business organisation, whose one of the main aims is to make profits, is important for its survival. Generally, a firm accomplishes its financial objectives, within a certain time with the magnitude. this could be in one year. Investorwords (2014) has described performance, in financial context, as the degree of which a firm realises financial objectives for a given duration. This performance can be shown as earnings or losses. The financial performance describes how well an organisation employs resources to generate returns to its investors.

In a microfinance context, financial performance is the degree to which the MFBs in Kenya can achieve their objectives granted that there is competition amongst them. In Kenya, the shifting of market share and profitability of the micro finance indicate that the sector is under extremely high competition (King'ori, Kioko, & David, 2017). MFBs in Kenya should strive to maximise performance, whether socially or economically. According to Jørgensen (2011), microfinance institutions should find various ways of maximising performance. The income statement is one of the financial statements used to conduct financial performance analysis. According to Yenesew (2014), to determine financial performance, analysts can perform various calculations. The analysis may include ROA and ROCE. This analysis helps in comparing performance of one firm with the other or performance of a firm in different years under review. To determine the organisation's efficiency in managing its investment to make profit, such financial performance measures come in handy (Jørgensen, 2011). This research employed ROA in determination of Kenya's MFBs performance.

3

1.1.3 Macroeconomic Factors and Financial Performance

Macroeconomic factors impact on great populations and not just on individuals (Brinson, Singer, & Beebower, 1991). The macroeconomic variables might have effects that are negative or positive on the business setting. Any change in the set of macroeconomic variables will bring a change to the operating environment of the MFBs and have an impact on their performance. The macroeconomic environment of businesses is not static and therefore, this may affect the financial performance. Muchiri (2012), states that financial reporters' confirmation shows that shareholders, mostly deduce that macroeconomic measures and fiscal policy greatly influences performance in financial terms.. Economic factors have an influence on performance financially.

Economic conditions greatly influence funds allocation and it is probable that loan default may arise. These conditions would have outright effects, whether negative or positive, on lending behaviour. Banks reduce their lending rate during recession. In contrast, the rate reduction does not occur during boom when most loans are advanced by banks (Kwon & Shin, 1999). Macroeconomic conditions variance is significantly reduced. The economic environment is a routine risk component that has an impact on the economy. Economic Performance and progression are calculated in terms of macroeconomic aggregates.

1.1.4 Microfinance Banks in Kenya

The Microfinance Act (2006) helps in regulating the MFBs. It defines microfinance or a deposit taking institution as a business that offers to daily accept deposits. Through this legislation, the CBK is able to regulate the MFBs operations in Kenya. It states that, no branch of a microfinance bank in Kenya may be established outside the

country without the approval of the CBK (CBK, 2017). In addition, the institutions need approval from the regulator to close any of their branches. To cite the CBK (2017) annual report, Kenya had licensed thirteen MFBs as at 31 December 2017. Apart from regulating all commercial banks, the CBK also regulates the MFBs. Of the thirteen MFBs, eleven (11) of them were licence to operate nationally. This implies that they have branches throughout the country. Only two (2) of all the licence MFBs operate with community licenses. According to the annual report, the growth of the MFBs' assets for the period ended 31 December 2017, declined contrary to the trend in the previous years when they registered growth. Lending was the most important function that MFBs carried out.

MFBs (previously referred to as deposit taking microfinance institutions) are grouped into three. These categories are large, implying that the MFB has 5% or more of the market share, medium, which means that it is an institution with between 1% and 5% of the market share. A small MFB is one whose market share is below 1% (CBK, 2017). Going by this description, in 2017, Kenya Women Microfinance Bank, Faulu and Rafiki MFBs were considered large MFBs. The medium category comprised of SMEP, Caritas and Sumac MFB. The small MFBs included U&I, Remu, Uwezo, Maisha, Century, Daraja and Choice MFBs (CBK, 2017). The concept of MFBs has evolved now that the institutions can operate current accounts, issue cheques, operate foreign trade transactions and share information with credit reference bureaus. MFBs in Kenya have enabled entrepreneurs who borrow, to invest and make savings on the assets and available resources. As they offer credit access and other financial services, MFBs play a crucial role in communities perceived to be underdeveloped. Through sourcing credit from these institutions, the communities can engage in some tasks

with a view to generating earnings to improve their status economically (Dhakal & Nepal, 2016).

1.2 Research Problem

Financial performance measure will depict the level of efficiency in the microfinance sub-sector. Variables in Macroeconomic environment affect the commercial banks' performance and therefore, their profitability, (Gerlach, Peng, & Shu). The variation in one macroeconomic variable may have an effect on the others. For instance, inflation and unemployment have been shown to have a negative, but not a linear relationship. interest rate and inflation have a negative association. Higher inflation rate would affect the forex rate by depreciating currency. However, these factors need to be considered collectively rather than in isolation so that their overall effect on financial performance can be established. Due to various constraints, previous studies have used select but not all the macroeconomic variables while finding out their effect on financial performance. Therefore, the researcher chose other macroeconomic variable mix that had not been used in the previous studies involving MFBs in Kenya in addition to the interest rate as independent variables.

Microfinance main activity is lending, especially to lower income groups. With a view to containing high variability of interest rates, the capping of the rate of interest in Kenya came into being and was backed by legislation. While this measure was meant to encourage more and more people to access credit at a reduced cost, in the same period the microfinance banks did not improve on their financial performance as evidenced in the annual supervisory report (CBK, 2017). MFBs had a negative overall performance, owing to potential rivalry from commercial banks as they implemented capping of the interest rate law. Between 2016 and 2017, there was a diminished

commercial banks' performance, despite the institutions having increased their total assets (CBK, 2017). It was expected that a lower interest rate would encourage more borrowing by individuals and therefore improve the profitability of the financial institutions including the MFBs. However, from the financial reports involving commercial banks, the institutions did not have improved financial performance. During this time, the economic growth declined in 2017 as compared with the years preceding 2017 (CBK, 2017). The MFBs should design ways of dealing with rivalry from commercial banks in order to safeguard their financial performance, which may be adversely affected by the macroeconomic variables.

According to the literature reviewed, some issues were identified which launched the basis of carrying out the study. The issues related to the choice of independent variables considered as performance determinants. In addition, the data used involved a smaller size of MFB population as compared to the current size of population. In contrast to Nzuve (2016), this study included lending interest rate as an independent variable. However, the study in 2016, included unemployment rate and national savings as macroeconomic variables. Other studies involving macroeconomic variables exhibited mixed results as indicated in the empirical review of studies by Mwangi (2017) and Otambo (2016) which contradicted Nzuve (2016) findings. Mwangi (2017) and Ongeri (2014) had mixed results and therefore there was no consensus on the results obtained in the reviewed studies. Having found discrepancies on previous findings, sought to bridge the gaps by attempting to solve the research query: Is there an effect of macroeconomic factors on performance of Kenya's MFBs?

1.3 Research Objective

To determine the effect of macroeconomic variables on financial performance of Kenya's Microfinance Banks.

1.4 Value of the Study

Financial institutions will use the findings for them to deal with the dynamics of the macroeconomic environment, which may have a bearing on their performance. The link between macroeconomic variables (which comprise of the rates of economic growth – GDP – others are, inflation, interest and exchange rates) and performance was analysed and the MFBs will use this information to improve on their performance.

The government as a regulator will use the information from the findings to determine the effectiveness of the laws governing the microfinance-banking sector. Through the CBK, the government can develop a raft of appropriate policies, thus enhancing the performance of the MFBs, which may result in the elevated overall performance of the entire Kenyan economy.

The students and other researchers in finance will use information contained in this study for academic purposes. The study will help in adding on to the existing body of knowledge by previous researchers. Other researchers will use this study for reference and as a starting point to advance their field of study by filling the gaps that this research may leave out.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section details various and relevant theoretical reviews of past studies, which might be local or international. It discusses theoretical macroeconomic variables affecting performance of MFBs in Kenya. There are empirical studies covered in this chapter and forms the basis for developing a good conceptual framework.

2.2 Theoretical Review

This part reviewed two theories relevant to this study. The theories helped to explain the determination of the growth and interest rates. According to Camp (2010), theories help in explaining how variables are related to each other with a view to explaining or predicting a certain phenomenon. However, it may not be possible to include all theories to explain the relationship involving all the select variables for this study.

2.2.1 Loanable Funds Theory

The doctrine began in the 1930s (Robertson, 1934). It postulates that the demand for funds as well as the supply of funds in an economy, will determine equilibrium interest rate. It is thus achieved when funds demand and supply are at the same point. The interest is thus treated as the cost of credit for every unit of time. The demand for loanable funds is due to purposes such as dissaving, investment and hoarding (Kumar, 2019). Of the three purposes, investment is the main contributor of loanable funds demand. Investment is as a result of expenditure of buying goods with a view to making new goods and services. Investment can also include buying of the inventory.

The cost of acquiring the funds used for purchasing of the goods for investment is dependent on interest rate (Kumar, 2019). Entrepreneurs compare return on an investment with the interest rate. This comparison will have a bearing on the level of demand for the funds. With lower interest rate, loanable funds demand will be higher. Conversely, the implication is that when the interest rate is higher, loanable funds demand will be lower for investment purpose. Sometimes people demand loanable funds that they keep idle with a view to satisfying the yearning for liquidity. This purpose of demand is what is referred to as hoarding. At a lower interest, the demand for hoarding funds will be higher and the converse is true. People may spend more than they earn and this is referred to as dissaving. At lower interest, the funds demand for dissaving is higher (Kumar, 2019).

The loanable funds supply originates from four sources, i.e., disinvestment, savings, dishoarding, and bank credit. Of the four sources of loanable funds, the most important is the savings. Savings refers to the income less expenditure, i.e. (income – expenditure). Variations in interest rate will result to savings variations, with the assumption the income is held constant. Individuals and businesses will save more with interest rate being higher . Similarly, at a higher interest, dishoarding will be higher and this will increase the supply of loanable funds for investment. Existing capital stock may be left to wear out without replacement (Kumar, 2019).This is referred to as disinvestment. When prevailing interest rate provides higher returns than the present returns, the disinvestment will increase. Supply of loanable funds is also due to the banks' credit creation. Such funds become available for loans to businesses.

The Loanable Funds Theory comprises of two sides, i.e., the supply side and the demand side. Therefore, equilibrium is achieved where the supply and demand curves

cross each other. Therefore, supply equals demand for funds (Kumar, 2019). The supply curve for loanable funds will slope upwards to the right while that for demand for loanable funds will be downward slopping to the right. This theory was considered for this study as it aids in the understanding of the interest rate determination in the market that can influence borrowing capacity of individuals and hence the impact on financial performance. Capping of the interest rate introduced recently may not be in tandem with mechanisms of supply and demand for funds that influence the market interest rates for commercial bank sector, thus affecting their overall income and financial performance. Despite the capping of interest rate, economic growth and financial performance of Kenya's MFBs did not improve. This may have been due to greater competition that the MFBs faced from the commercial banks that began offering credit services at reduced rates contrary to what they did prior to the introduction of measures of interest rate capping. (CBK, 2017)

2.2.2 Classical Growth Theory

Under this theory, economic development models were developed shortly after World War II. This theory concentrated on the injection of capital, to realise the growth rates of GDP. Todaro and Smith states that there are two main models under this theory, i.e., the Harrod-Domar model as well as Rostow's stages growth model. In 1950's through to 1960's, theorists considered the development process a historical stages sequence. Rostow (1960) analysed the pattern of history of the developed countries of that time. According to Rostow, there are five stages to transform from underdevelopment to developed status. The transformation began with the traditional society thereafter came the preconditions for take-off stage, then followed the take-off stage, this was followed by the drive to maturity. At the end of the stages of the

model, there was the stage of high mass consumption age. For the underdeveloped to change status to the developed state they need decisive action at the take-off.

According to Harrod Domar model, the chief driver of economic growth is investments. Harrod (1948) Domar (1947) and Rostow (1960), rightly stated that there was association between economic growth and investment. However, this was not the only condition necessary for development. The model had weaknesses based on the assumptions made. For instance, first, the assumption that there is one production function for all countries. Second, that all countries would undergo the same phases, one after the other. However, Todaro and Smith (2009), argued that these stages may not arise in all economies or some economies may be stuck in a certain stage due to other factors that go together, such as availability of skilled labour and capacity to manage resources.

This theory helps explain the determinants of economic growth, which have a bearing on financial institutions' performance, including Kenya's microfinance banks. This theory may help explain the effect of economic growth (a macroeconomic factor) on performance of MFBs in Kenya (a developing country). It is expected that banks will perform better financially with increased economic growth arising from increased investments. Therefore, this theory is relevant to the study's objective as it explains that investments drive economic growth, a macroeconomic factor that may influence of MFBs' performance in Kenya. Economic growth varies across countries (developed or developing). Therefore, the researcher attempted to find out the effect of economic growth (measured by GDP growth) on performance. This theory assisted the researcher to understand whether the stages of economic development, had an influence on MFBs performance (financially) in Kenya.

2.3 Determinants of Financial Performance

This study considered five factors determining MFBs' financial performance. These factors are the rates of interest, inflation, forex (foreign exchange) and the GDP that were predictor factors representing macroeconomic variables. The fifth factor, market size index, was considered an internal variable.

Unemployment is another variable affecting performance although it was not included for study. The GDP was removed at diagnostic stage due to multi-collinearity. This was indicated by the high number of VIF.

2.3.1 Interest Rate

This is expressed in percentage form, implies the cost of borrowed funds or the reward for lending out funds for some time. It can be expressed as a monthly rate or a yearly rate. The interest rate spread is arrived at by finding the difference between two interest rates, which are deposits and lending rates (Knoema, 2019).Banks also charge a premium for risk on lending. This rate is derived from the deduction of risk-free Treasury bill interest rate from the lending rate. The rate is charged to private borrowers.

The rate charged to prime borrowers in order to access credit is referred to as the lending rate (Knoema, 2019). It is the minimum rate that the banks can offer to borrowers. Banks pay interest to savers operating different accounts, such as fixed and other accounts on savings. The rate at which the banks pay such account holders is known as deposit interest rate. This study uses the lending rate to determine performance.

2.3.2 Gross Domestic Product

The GDP is the total worth of commodities and services, which a region or more commonly a country produces inside its borders. The producer does not have to be a citizen of the subject country. Therefore, GDP must be distinguished from the GNP, which considers the nationality of creators of goods and services within the given country. GDP growth is considered an essential variable, which affects the commercial banks performance in an economy (Siraj and Pillai, 2013).

Chimkono (2016) conducted a study that included economic growth as a determinant of performance of microfinance banks in Malawi. The GDP represented the economic growth, which was a moderating factor determining financial performance. Higher economic growth led to reduction in non-performing loans, which implied increase in financial performance. Therefore, economic growth increase is related to increased financial performance (Chimkono, 2016),

2.3.3 Inflation Rate

The inflation rate measures the level of insistent rise in commodities and services prices, in the specified time. it is also used to compare the rate of change of the general prices on a monthly basis in a given year. To compute the inflation rate, a set of goods is selected which form a common consumption basket. Different countries may have a different set of goods as a common consumption basket.

Inflation is generally determined by measuring GDP Deflator or CPI indicator. Increase in inflation influences banks performance negatively as indicated by reduced lending. With reduced lending, there is less credit available for investment, which also affects economic growth. Inflation has been found to have an inverse relationship with financial development (Khan, 2018)

2.3.4 Exchange Rate

The exchange rate measures how much of home monitory unit that is required to buy a foreign currency unit. The forex market determines this rate. Each country determines its own regime of forex rate. The regime includes the following types. There is the floating exchange rate. Another type is the fixed rate of exchange. The third type is the pegged float rate of exchange. The rate of exchange could be spot or forward.

Exchange rate positively affected performance of financial institutions i.e. deposit-taking (Nzuve, 2016). These revelations, however contradict Mwangi (2017) and Otambo (2016) who found that exchange rate negatively affected the financial performance. Exchange rate impacted on performance, although the nature of relationship varied with studies reviewed.

2.3.5 Size of the Firm

organisation size is a determinant of performance. In this study, it will be used for control. Pandey (2004) defines the size of the organisation in the form of the assets held. According to the CBK Annual Report, thirteen MFBs were grouped into large, small and medium peers with respect to a group of weighted measures (CBK, 2017). Most of the licensed MFBs are small in terms of assets held. Size of the bank market has been included as a control variable.

Other previous studies have recommended the inclusion of firm size factor in future studies involving banks. Future studies should incorporate other factors such as bank size and interest rate spread as well as use a different variable for control (Chimkono, 2016).Chimkono (2016) used economic growth rate measure i.e. GDP as control variable. Firm size is related to the ability to produce products that are technologically

complicated, resulting to concentration and fewer firms are in competition to supply the market and thus making more profit. This implies large firms have great market segments that yield higher returns

2.3.6 Rate of Unemployment

Unemployment rate has been identified in macroeconomics literature as a variable affecting financial performance. Inflation rate and unemployment rate have been found to have an inverse relationship according to Phillips Curve. Unemployment can lead into reduction in gross domestic product. Unemployment is able to cause a negative multiplier effect (Economics Help.Org, 2019). Therefore, it can cause a reduction in national income. Reduced financial performance of firms can arise from the inability by the unemployed proportion to purchase products.

The decision is left with the formulators of policy to strike a balance between inflation and unemployment according to priority of the two factors. However, critics of the Philips Curve model premised that there would be no trade-off in the long run (Economics Help.Org, 2019). Thus, both can increase at the same time, according to monetarists. The proponents of Philip Curve argue that high unemployment would cause workers to demand lower wages, which would bring down inflationary pressures

2.4 Empirical Studies

Ongeri (2014), using descriptive research design, studied how macroeconomic variables impacted on non-bank organisations' performance. Ongeri studied the organisations in Kenya using ROA to represent financial performance of 112 institutions. The macroeconomic variables studied were the following rates: inflation, currency growth, exchange, interest and the GDP. The researcher found that ROA of

non-banking financial institutions had not only a positive relationship but also a strong one with the exchange growth rate. However, Ongeri found a weak but also a positive relationship, between ROA and the rest of the variables; GDP, inflation rate, as well as interest. The researcher found adjusted R^2 to be 0.119. The research finding also indicated that ROA of non-bank financial institutions had not only positive but also a strong relationship with the rate of exchange growth rate.

Kituma (2016) and Otambo (2016), using descriptive research design, conducted similar studies on macroeconomic variables' effect. Both studies used ROA to represent financial performance. The researchers used an identical set of macroeconomic factors, which comprised of rate of inflation, exchange, interest and GDP. Kituma considered data for five years from 2011 to 2015 and employed 22 of 42 commercial banks sample. There was correlation that was not only positive but also strong between macroeconomic variables and financial performance, with 0.768 as correlation coefficient.

Kituma used asset quality and management efficiency as control variables, in addition to capital adequacy. Otambo, using data from January 2006 to December 2015 studied all the commercial banks that CBK had licensed. The researcher analysed and found a strong (R=0.792) association between performance indicator and independent variables. The macroeconomic variables were independent while the dependent variable was represented by proxies of financial performance. The study further revealed that interest and exchange rates negatively influenced commercial banks performance, while inflation and GDP affected the commercial banks' performance positively.

Nzuve (2016) conducted a similar research on nine (9) MFBs, registered with the CBK as of 2014. The researcher focused on effect of factors, (e.g. rates of inflation, exchange, GDP, national saving and employment rate), on Kenya's MFIs' performance. Nzuve used ten years' data, i.e., between 2005 and 2014, performed an analysis using multiple regression. Nzuve (2016) found that the inflation rate and financial performance had an inverse relationship for the years of study. However, the findings revealed that GDP, rate of exchange, national savings and the rate of employment all had an impact that was positive on financial performance.

Mwangi (2017) and Marende (2017) investigated macroeconomic variables' effect on performance (dependent). However, their dependent variables were somewhat different. While Mwangi (2017) used financial performance (dependent variable), Marende (2017) used financial development (dependent variable). On one hand, Mwangi studied the effects of rates of exchange, inflation, and also interest, on insurance companies' performance in Kenya. The researcher utilised descriptive as well as, longitudinal research design and analysed the performance of insurance companies over a period of four (4) years from 2012 to 2015. Mwangi (2017) also used regression analysis and found that all the indicators of performance had negative correlation with all the macroeconomic factors, namely, rates of inflation, exchange, and average interest. According to Mwangi (2017), the variations in rates of interest, had a relationship with financial performance, which was weak, and explained only 3 % of the change in ROA. The average exchange rates variations had a relationship, which was strong, with variations in performance and explained 85.1% of the variations in ROA.

 Marende (2017) studied the macroeconomic factors' effect on performance. GDP rate of growth, the exchange rate in USA dollar, supply of money, inflation, CPI and

lending rate of interest on financial development. The researcher used secondary data, beginning 2006 to 2016. Marende (2017) found a positive correlation between the following factors and financial development. This comprised GDP rate of growth, inflation rate, supply of money, commercial banks' lending rates. However, the researcher found a correlation that was negative, between financial development and rate of exchange of Kenya's commercial banks.

Ubesie and Ezeagu (2014) studied the effect of macroeconomic factors, using the Nigerian conglomerates sector, on financial performance indicators. They relied on data from 2011 to 2014. The researchers used data for three stock exchange listed companies (Nigeria). The two researchers used independent variables, i.e., inflation, monetary policy measures and exchange rate as well. The dependent variable indicators of profitability included EPS, ROE and ROA. The study used OLS model of regression. From the findings, there was not only a positive relationship but also a significant one, between the rate of monetary policy and the EPS. However, in contrast, inflation rate relationship with ROE was negative and insignificant. In addition, the rate of exchange and returns revealed a negative relationship even though it was weak.

Chimkono (2016) studied the influence of both microeconomic and macro-economic factors on Malawian commercial banks' performance (financially). Micro and macro-economic factors included Asset quality represented by (Non-Performing Loan ratio), Cash Reserve Requirement (CRR), Cost Efficiency (CE), and Lending Rate of Interest (LIR). The researcher investigated how the factors affected the commercial banks in Malawi. Chimkono also examined the impact of Economic Growth (GDP) as a moderating variable. The researcher utilised secondary data. Chimkono analysed data from 2000 to 2014, used a census technique and mixed research design

encompassing both descriptive and correlation research techniques. The study found that independent variables: Lending Rate of Interest, CE and Asset Quality, were statistically-significant at the 5% level, hence, Chimkono concluded that they had an impact on financial performance with respect to Malawi's commercial banking sector. The findings revealed that at the 5% level, the Cash Reserve Requirement was not statistically significant. Chimkono (2016) established that the moderating factor (Economic Growth) had an impact, which was significant, on the impact of four independent variables based on the analysis of the F-statistic and R-square of the moderated and un-moderated models.

performed a study on the European-banking sector and observed that there has been high earning volatility since 2000, across both time and respective banks, resulting in a steep fall in 2008 bank's profitability. The researchers used panel data to establish how the bank profitability responds to macroeconomic variables and the response heterogeneity. In addition, researchers aimed at finding the impact of growth in GDP on profitability. Using the world's GDP growth rate, it was found that the rate of growth in GDP and bank profitability had a positive relationship. In addition, Matinho, Oliveira and Oliveira (2017) found that the association between short-run interest rate and profitability was positive.

2.5 Conceptual Framework

Macroeconomic factors made up independent variables while ROA (financial performance) was dependent variable. This is diagrammatically displayed in figure 2.1:

Independent Variables
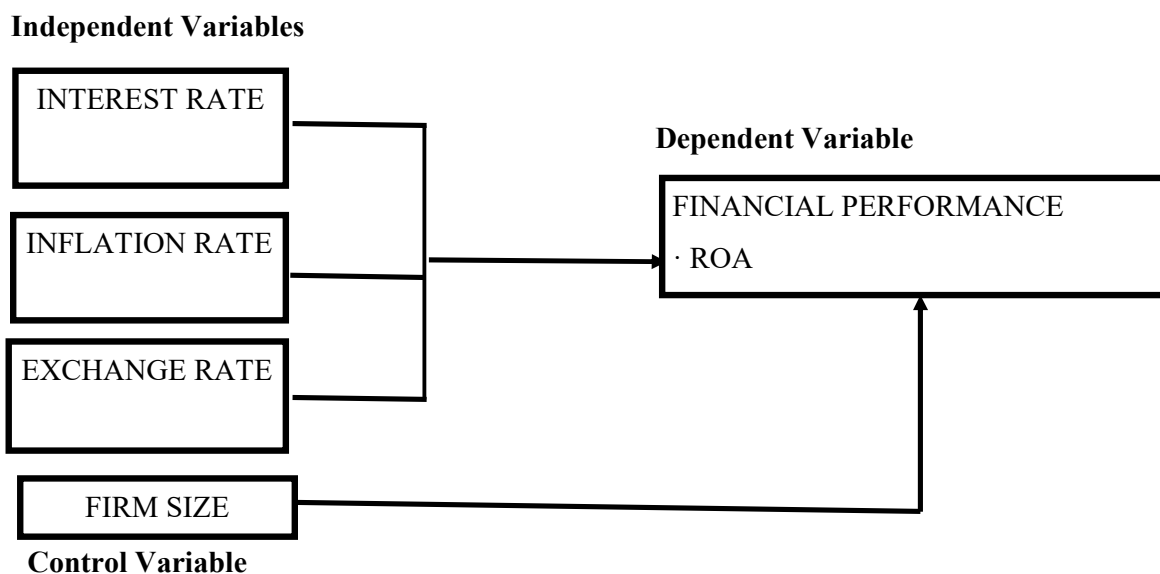
Figure 2.1: Conceptual framework

Researcher:2019

2.6 Summary of Literature Review and Research Gap

This research proposal reviewed both international and local studies. Studies by different researchers have shown different results despite being similar regarding the variables considered in the studies. Most studies have employed ROA as the measure of performance (the dependent variable). However, the various studies have considered different sets of macroeconomic variables (independent variables) to investigate their effect on financial performance. Each combination of selected variables (independent and dependent) yielded different results.

The effect of rates of interest, for instance, may vary with time as well as with banks. Various banks choose interest rate risk and the long-run and short-run interest rate exposure (Matinho, Oliveira, & Oliveira, 2017).Nzuve (2016) did not include the interest rate. The researcher stated that according to the empirical results obtained, other

factors apart from the macroeconomic variables selected for that study had an impact on financial performance and needed further research to be identified. The select factors had an impact to a certain percentage but not full effect (Nzuve, 2016). From this literature review, there are unresolved issues that this research will seek to address.

Some variables under observation exhibited conflicting results. In one study, on performance, exchange rate exhibited negative effect, while in another, exchange rate had a positive effect . This study meant to find the effect of macroeconomic factors on performance. The researcher expects to resolve the issue of exchange rate effect, which showed mixed effects on financial performance, while studying the impact of other independent variables. The researcher also considered the impact interest rate had, as a macroeconomic factor, on ROA of Kenya's MFBs. Other factors need to be studied, which were not included in the past studies (Nzuve, 2016)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The researcher elaborates study design and describes the population. it features the sample design used and the data collected or used. In addition, the chapter explains all statistical tests.

3.2 Research Design

Selltiz, Wrightsman, and Cook (1965), gave a description of research design. The researchers stated that it is how the conditions for gathering and analysing data are arranged, gearing towards integrating its relevance, for research. This is done with economic considerations. This study considered a longitudinal descriptive research design where aggregate measures of macroeconomic elements and performance (financially), were considered.

A regression model, aided in finding the link between macroeconomic factors and financial performance. Creswell (2003) states that descriptive research design may be applied with a view to describing a phenomenon or organisations. Correlation research design assist in expressing variables relationships. The absolute values of the correlation coefficients indicate the strength of the relationship. For this research, correlation coefficient was computed. As Mugenda and Mugenda (2003) states, it is essential to identify the variables that explain the phenomenon in question.

3.3 Population and Sample Design

The population includes entire elements in each category under study (Sekaran, 2003).All Kenya's thirteen MFBs made up the population for this study. Panel data

from the respective MFBs for seven years was used. There was no sampling as this was census study. The study used data from 2012 to 2018 for all MFBs licence to operate in Kenya.

The study, therefore, targeted thirteen MFBs for census data, which was derived from the income statements of the respective institutions. Data was also collected from the central bank supervisory reports. The institutions are Sumac Caritas, Century U&I, Choice, Uwezo Daraja, Faulu, , Maisha, Rafiki, Remu, SMEP, , and Kenya Women (CBK, 2018)

3.4 Data Collection

The researcher gathered secondary data. These included banking supervisory reports (CBK's) that were prepared annually and the websites of the respective MFBs. In addition, the researcher extracted relevant data such as from income statements and financial position statements covering the relevant period under study. The researcher included all years with complete data for the thirteen MFBs licence to operate in Kenya.

3.5 Data Analysis

This is the procedure of processing data into the more useful information for decisive action. The stages include choosing the data set, preparing it for conversion to information, model applications, establishing the findings and report generation. The researcher analysed data to evaluate how macroeconomic factors affected ROA. Thus, results once recorded, were used for interpretation. This formed the basis of discussion for this study.

The analytical model for this study is a multi-regression equation of the form:

$$Y = \alpha + \beta_1 X_{1} + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Such that Y is the (measure of ROA) financial performance, α is the constant level of financial performance, X_1 is the bank lending interest rate (main independent variable), X_2 is the rate of inflation, X_3 is the foreign exchange rate, X_4 is the market size, and ε stands for error term. The analytical model coefficients were determined following a regression analysis on the data.

3.6 Operationalisation of the Study Variables

The researcher defined all variables as used in this study as in Table 3.1

Table 3.1: *Study Variables*

	Indicator	Measurements	Supporting Literature
1	Interest Rate	Average lending interest rate in a year	CBK (2018)
2	Inflation Rate	Percentage annual inflation rate	CBK (2018)
3	Exchange Rate	Averaged annual exchange rate (1 USA Dollar to Ksh.)	CBK (2018)
4	Firm Size	Measured by weighting Assets, deposits, capital, no. of active deposits accounts and active loans	CBK (2018)

Source: Researcher 2019

3.7 Test of Significance

A test of significance is explained as formal steps that are used to compare data that is under observation given a claim. The P value is used to decide whether a result is statistically significant. Using $\alpha=0.05$, as the criteria for determining the significance, α usually denotes a value between 0% and 5%. This is set according to the test precision (Shattleworth & Wilson, 2006).

From the research question, the researcher compared the significance statistics with *p*-value (0.050) and interpreted values as indicated in the next chapter. While performing regression and correlation analysis, significance test was also done. The interpretation of significance values was dependent on the statistical test performed.

3.8 Diagnostic tests

The researcher used some tests for data reliability and validity. This study employed panel data for thirteen MFBs in Kenya. The data was subjected to three diagnostic tests. These tests included normality tests, autocorrelation tests and multi-collinearity tests. These diagnostic tests were vital as they aided in verifying the normality of data before further analyses on the data could commence. In addition, performing the tests aided in checking on the problem of autocorrelation and multi-co-linearity.

Normality test was important as it checked for distribution pattern of the data. Multi-co-linearity tests checked for the multiple linearity of the independent variables with each other. Multicollinearity implies that the data set is redundant (Yoo, et al., 2014).Autocorrelation test checked for data that is closely related to itself. Durbin Watson test tests for autocorrelation. Values of autocorrelation that range from zero to four were used to determine the problem of autocorrelation. To check for normality of data, Box Plots were used to remove the extreme values and the data was subjected to Shapiro Wilk test. To test for multi-co-linearity, data was analysed to determine VIF values.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

The part presents data analysation, according to the methodology described. The chapter includes diagnostic tests, descriptive and correlation analysis. It also includes regression analysis. Data analysis was based on thirteen microfinance banks licence in Kenya for seven years. The N statistic was 78. The chapter ended with discussions of Study.

4.2 Diagnostic tests

Various tests were executed to inspect appropriateness of data for use in further data analysis as described in section 3.8. The tests included normality test, multi-co-linearity test and autocorrelation test. Data for analysis is assumed to be from a normally distributed population. The researcher began normality diagnostic procedure by first checking entered data for outliers above three standard deviations from the mean. This was followed by Shapiro Wilk test. The procedures are illustrated in figure 4.1 using Box Plots, which illustrate relationships with ROA:
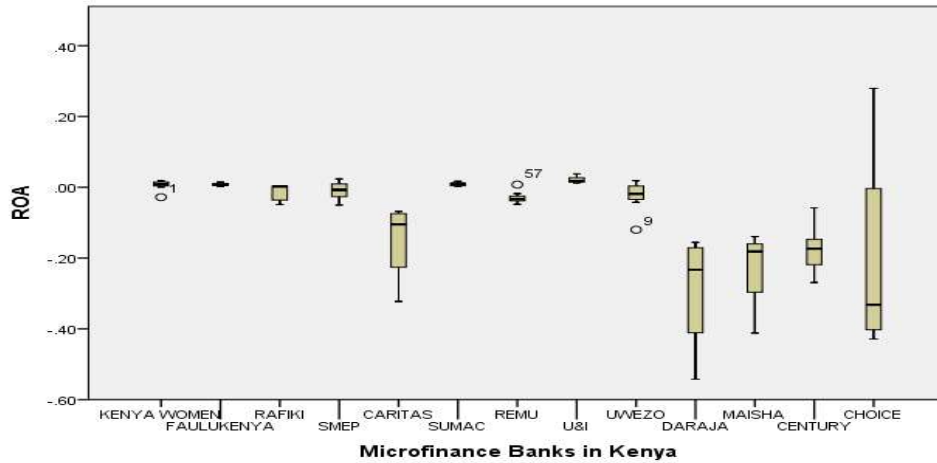
Figure 4.1: Box Plot I
Source: Researcher 2019

The outliers in the cases grouped by Microfinance Banks in Kenya did not indicate

extremely high or low values and therefore the procedure was repeated using Lending

interest rate variable as independent variable against financial performance (ROA) as

indicated in figure 4.2
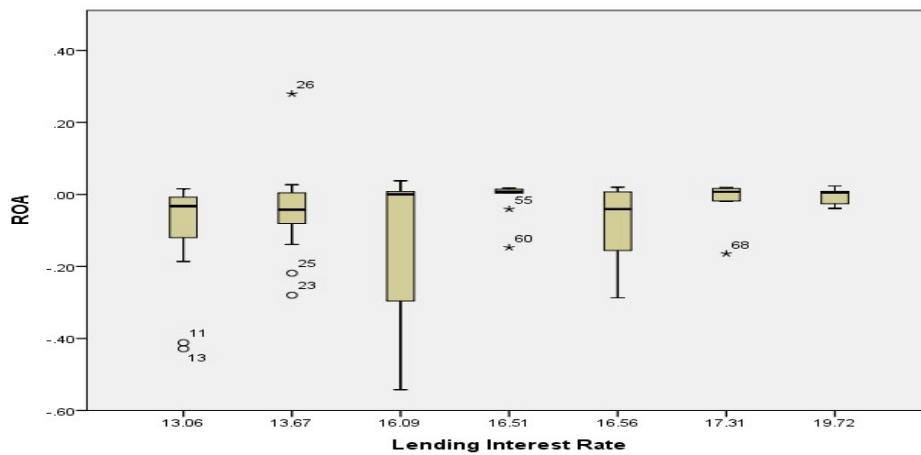
Figure 4.2: Box Plot II
Source: Researcher 2019

Cases marked with asterisk were removed from the data i.e.26, 55, 60 and 68 and the

procedure was repeated each time the Box Plot was generated using different

variables. The procedure was repeated until there were no extreme outliers as shown

in figures 4.3, 4.4, 4.5 and 4.6 in succession.
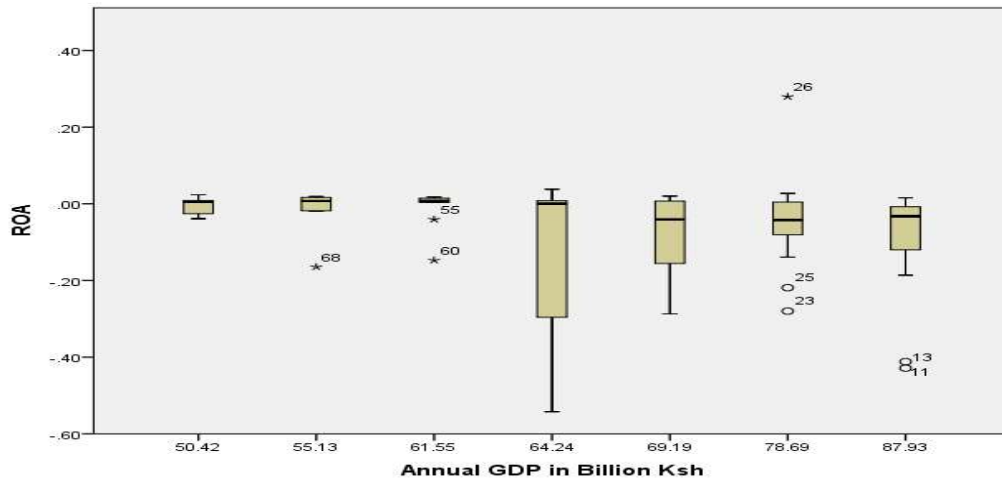
Figure 4.3: Box Plot III
Source: Researcher 2019
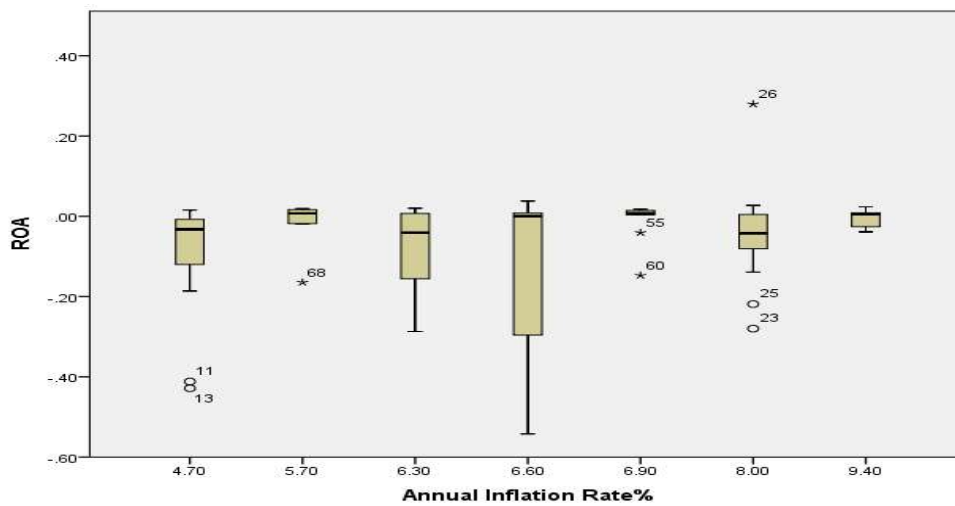
Figure 4.4: Box Plot IV
Source Researcher: 2019.
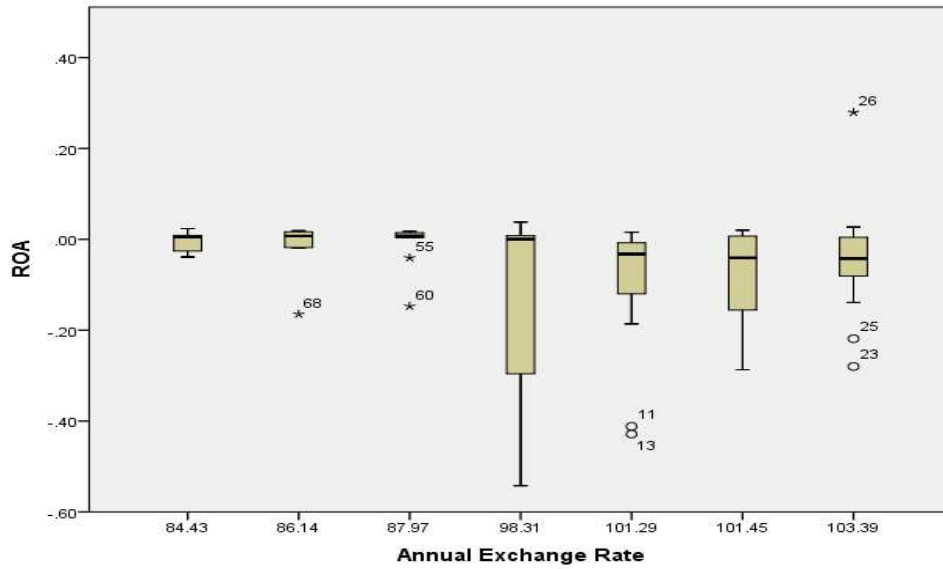
Figure 4.5: Box Plot V
Researcher: 2019.
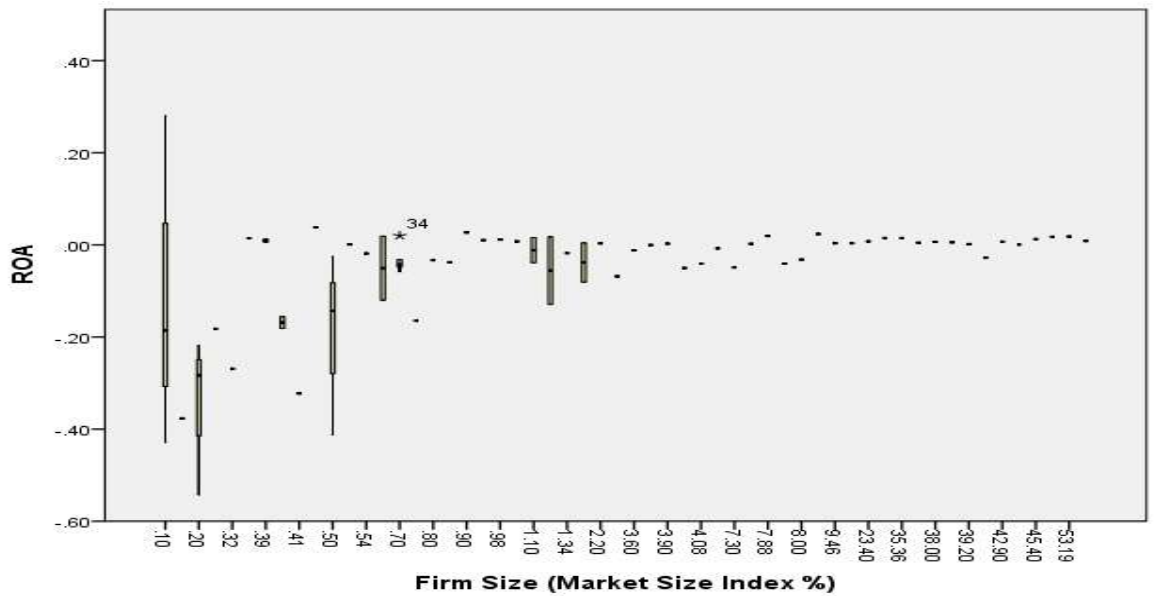
Figure 4.6: Box Plot VI
Researcher: 2019.

From the above procedure, 23 data points were removed. N changed from 78 to 55. In addition to the Box Plot, Shapiro-Wilk test was carried out to test for normality of data.

4.2.1 Normality Test

Test for normality of data relating to performance of microfinance banks was conducted using Shapiro-Wilk test. Table 4.1 revealed the results.

Table 4.1: *Test of Normality*

| Microfinance Banks in Kenya		Kolmogorov-Smirnov			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Financial Performance (ROA)	KWFT	.180	6	.200*	.943	6	.680
	FAU	.240	7	.200*	.883	7	.242
	RAF	.347	7	.011	.767	7	.019
	SME	.227	6	.200*	.915	6	.468
	CARIT	.312	3		.896	3	.374
	SUM	.206	5	.200*	.936	5	.640
	REM	.242	6	.200*	.942	6	.674
	U&I	.306	5	.141	.856	5	.215
	UWE	.187	6	.200*	.969	6	.887
	CENTU	.260	2				
Lending Interest Rate (%)	KWFT	.222	6	.200*	.941	6	.665
	FAU	.207	7	.200*	.940	7	.642
	RAF	.207	7	.200*	.940	7	.642
	SME	.170	6	.200*	.955	6	.780
	CARIT	.324	3		.876	3	.313
	SUM	.306	5	.141	.804	5	.088
	REM	.170	6	.200*	.955	6	.780
	U&I	.259	5	.200*	.893	5	.372
	UWE	.222	6	.200*	.941	6	.665
	CENTU	.260	2				
Annual Inflation Rate (%)	KWFT	.241	6	.200*	.926	6	.549
	FAU	.188	7	.200*	.975	7	.931
	RAF	.188	7	.200*	.975	7	.931
	SMEP	.210	6	.200*	.967	6	.873
	CARIT	.177	3		1.000	3	.967
	SUM	.233	5	.200*	.959	5	.802
	REMU	.210	6	.200*	.967	6	.873
	U&I	.170	5	.200*	.990	5	.979
	UWE	.241	6	.200*	.926	6	.549
	CENTU	.260	2				
Annual Exchange Rate (%)	KWFT	.250	6	.200*	.862	6	.198
	FAULU	.241	7	.200*	.837	7	.093
	RAF	.241	7	.200*	.837	7	.093
	SME	.283	6	.144	.805	6	.065
	CARIT	.361	3		.807	3	.131
	SUM	.289	5	.200*	.801	5	.082
	REM	.283	6	.144	.805	6	.065
	U&I	.243	5	.200*	.869	5	.263
	UWE	.250	6	.200*	.862	6	.198
	CENTU	.260	2				
Firm Size (Market Size Index (%)	KWFT	.237	6	.200*	.870	6	.224
	FAU	.304	7	.050	.801	7	.041
	RAF	.259	7	.169	.895	7	.299
	SME	.362	6	.014	.764	6	.027
	CARIT	.219	3		.987	3	.780
	SUM	.193	5	.200*	.921	5	.534
	REM	.242	6	.200*	.871	6	.230
	U&I	.327	5	.087	.806	5	.090
	UWE	.180	6	.200*	.977	6	.936
	CENTU	.260	2				

*. Lower bound of true sig
a. Lilliefors Sig Correction

Source: Researcher 2019

From Table 4.1, the researcher conducted normality test, on financial performance as the dependent variable. The significant values are indicated in the table 4.1. If p~value

< 0.05, it implies a value that is significant. From the results tabulated in the table above, the p-values for financial performance of two microfinance banks namely SMEP with significance value of 0.027 for data relating to market size was not normally distributed. Similarly, the p~value for Faulu Kenya was 0.041 for data relating to market size index. Rafiki with a p-value of 0.019 for data relating to ROA had data, which was not normally distributed. Century did not have significant values and thus failed the test, for all the variables. Therefore, it implies that the data on nine microfinance banks was normally distributed considering five variables, i.e., ROA, Interest, Inflation, Exchange rates and Market Size. To pass normality test, the *p-value* had to be greater than 0.05

4.2.2 Test for Multi-co-linearity.

Multicollinearity is occasioned independent variables highly affecting each other (Kothari, 2004). To test for multi-co-linearity problem co-linearity diagnostics were undertaken using SPSS software. From the diagnostic tests, the GDP variable (measured in billion Ksh) manifested a multi-co-linearity problem and was subsequently removed as an independent variable affecting financial performance. Table 4.2 shows variance inflation factor statistics.

Table 4.2: *VIF Coefficients*

Model		95.0% Confi.Intervl for B		Collinearity Statistics	
		Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	.199	.927		
	Interest	-.022	-.002	.339	2.947
	Inflation	-.006	.014	.762	1.312
	Exchange	-.007	-.002	.397	2.522
	Market Size (Index)	.000	.001	.970	1.031

a. Dependent Variable: Financial Performance (ROA)

Source: Researcher 2019

VIF for lending interest rate was 2.947 implying that the statistic was less than 10. The values of VIF greater than 10 would indicate multi co-linearity problem. Similarly, VIF values for annual inflation rate, annual exchange rate and market size index were less than 10 at 1.312, 2.522 and 1.031respectively implying that there was no multi-co-linearity

4.2.3 Test for Autocorrelation.

Autocorrelation may occur in time series data. Autocorrelation refers to close relationship of data that that is observed at relatively shorter intervals than data that is observed at longer intervals (Statistics Solutions, 2019). Autocorrelation, for instance, may imply the ease of predicting data values for the next year given the known data values for this year and those of the previous year. Thus, in a time series, data that is immediate for a given variable is correlated by itself, which decreases the independence of the observed data in subsequent periods. The Durbin Watson test generated the results shown in Table 4.3:

Table 4.3: *Model Summary*

Model	R	R Sq.	Adj. -R -Sq.	Std. Error of Estimate	Durbin- Watson
1	.537a	.288	.231	.04274	1.701

a Predictors: (Constant), Market Size Index (%),Infl. Rate (%),Exc. Rate (%),Int. Rate (%)
b. Dependent Variable: ROA
Source: Researcher 2019

Durbin Watson values range from zero to four. Values close to two imply that there is less autocorrelation of data. Autocorrelation can be negative or positive (Statistics Solutions, 2019). The autocorrelation test for data used in this study revealed a value

of 1.701 implying that there was little autocorrelation of data based on the five variables.

The Durbin Watson no. 1.701 is slightly below 2.0 and it implies that there was a slight positive autocorrelation of variables under study across the years as 1.701 is less than two. Durbin Watson no. 1.701 lies within 1.5 and 2.5 and therefore there was no problem of autocorrelation. Durbin Watson value of ranging 1.5 to 2.5 is taken as normal (Karadimitriou & Marshall, 2019)

4.3 Descriptive Statistics

This part highlights measures such as mean for various variables. Other measures are the standard deviations, coefficient of variation, kurtosis and skewness. Following diagnostic tests above, descriptive statistics were worked out. The summary is contained in Table 4.4

Table 4.4: *Descriptive Statistics*

	N	Min.	Max.	Mean	Std. Dev.	Var.	Skewness		Kurtosis	
							Statistic	Std. Error	Statistic	Std. Error
Interest	55	13.06	19.72	15.9444	2.00904	4.036	.110	.322	-.582	.634
Inflation	55	4.70	9.40	6.7164	1.36093	1.852	.467	.322	-.304	.634
Exchange	55	84.43	103.39	96.0116	7.39795	54.730	-.594	.322	-1.500	.634
Market Size	55	.30	61.70	11.7511	17.30316	299.399	1.468	.322	.732	.634
Financial Performance (ROA)	55	-.18	.04	-.0179	.04874	.002	-2.049	.322	4.223	.634
Valid N (listwise)	55									

Source: Researcher 2019

The mean is a measure of averages for the variables used. The mean ROA of microfinance banks for the period between 2012 and 2018 was ⁻0.0179, implying that

overall performance of MFBs for this period had negative return on assets of ⁻ 1.79%.

The mean lending rate for financial institutions was 15.94%, implying that lending

interest rates for financial institutions had an average of 15.94 % for the period

between 2012 and 2018. The annual inflation rate averaged at 6.72% implying that

the inflation rate rose by6.72percentage on average annually for the period between

2012 and 2018. The mean exchange rate of one unit of the USA dollar to the Kenyan

shilling was 96.01, implying that the USA dollar exchanged at an average of 96.01

Kenyan shillings for the period under study. The market size index of microfinance

banks had an average of 11.75% implying that most microfinance banks were in small

peer group and therefore resulting to a small average size percentage of MFBs in

Kenya, given that the total size added up to 100%. N statistic of 55 implies that the

data for microfinance banks for 2012 to 2018 had 55 complete entries of data values.

The standard deviation of financial performance was 0.049 implying that deviation

from the mean ROA was 0.049points. The lending interest rate had a standard

deviation of two, which implies a deviation from the mean lending interest rate for

financial institutions of 2 points. The standard deviation for the exchange rate was

7.40 implying that exchange rate values for the period under study deviated from the

mean by 7.40 points. The market size index had a std. deviation of 17.30 implying

high deviation from the mean market size of microfinance banks of 17.30 points.

The lowest lending interest rate for the period beginning 2012 to 2018 was 13.06%

while the maximum lending interest rate was 19.72%. The minimum exchange rate

for the period was one United States dollar to 84.43 Kenya shillings while the

maximum exchange rate was one United States dollar to 103.39 Kenya shillings. The

minimum market size index was 0.30% while the maximum was 61.70% for the

period under study.

The skewness indicated the direction of data distribution to the left or to the right. Data can be negatively skewed, positively skewed or not skewed. If skewness value is between -1 and +1 then there is no skewness. Values that are less than -1.5 indicate data that is negatively skewed while values greater than +1.5 indicate positive skewness. From the descriptive statistics, the skewness values were +0.110.for lending rate, 0.467 for inflation, -0.594 for exchange rate, +1.464 for market size index and ROA had a skewness statistic of -2.049. This implies that only ROA was skewed since its negative skewness was greater than -1.5.

The kurtosis statistic indicated the shape of the peak and tail of the normal distribution slope or the flatness of the distribution tails. For a distribution to be normal, it implies that its kurtosis should be 3. From the descriptive statistics obtained for the interest, inflation, exchange rates, market size index and ROA, it was indicated that they had -0.582, -0.304, -1.5, +0.732 and +4.223 respectively. The negative values indicated that the distribution is slightly flatter at the tails than in a perfectly normal distribution.

4.4. Correlation Analysis

Correlation has been described as association between a pair of variables (Explorable, 2019). The magnitude of correlation is between -1 and +1. -1and +1 indicate the strongest correlations between paired variables. The positive coefficient is indicative that, as one variable rises the other variable falls while the negative correlation coefficient indicates an inverse relationship, which means one factor rises, as the other falls. Assuming absolute values, correlation value of between 0.4 and 0.6 is considered moderate while a correlation of between 0.7 and 1.0 is considered strong. A relationship between variables is described weak if it is between 0.1 and 0.3.

This section revealed the correlation that exists between the studied macroeconomic factors and ROA of Kenya's MFBs. ROA of MFBs was analysed for correlation with macroeconomic factors; the lending rate, inflation and exchange rates. Table 4.5.1 displays findings.

Table 4.5.1: *Correlation Matrix*

		ROA	Int.Rate	Inf. Rate	Exc. Rate	Market Size
Pearson Correlation	ROA	1.000				
	Int, Rate	.093	1.000			
	Infl. Rate	.089	.467	1.000		
	Exc.Rate	-.350	-.769	-.280	1.000	
	Market Size	.331	.133	.114	-.157	1.000
Sig. (1-tailed)	ROA		.250	.259	.004	.007
	Int. Rate	.250		.000	.000	.167
	Inf. Rate	.259	.000		.019	.203
	Exc. Rate	.004	.000	.019		.127
	Market Size	.007	.167	.203	.127	
N	ROA	55	55	55	55	55
	Int. Rate	55	55	55	55	55
	Inf. Rate	55	55	55	55	55
	Exc.Rate	55	55	55	55	55
	Market Size Index	55	55	55	55	55

Source: Researcher 2019

The lending interest rate had correlation coefficient of .0093 with financial performance, which implied that it was a weak relationship. The annual inflation rate had a correlation coefficient of 0.089 with ROA implying that it was a weak but also positive. The inflation and lending interest rates were positively, moderately correlated with 0.467 coefficient. Exchange rate and ROA had a coefficient of -0.350, which implies a relationship that was moderate and negative. Exchange rate had correlation coefficients of -0.769 and -0.280, with interest and inflation rates respectively. Market size index and ROA had a correlation of 0.331, which implied a

positive but also weak relationship. The market size index and interest rate had a correlation coefficient of 0.133 implying a positive weak relationship. The market size index had a correlation coefficient of 0.114 with inflation rate implying a positive weak relationship. The market size index and exchange rate had a correlation of -0.157 implying a negative weak association.

The significant values indicate a significant association between the interest rate and annual inflation rate, which had a significance value less than 0.05, i.e., 0.00. Exchange rate had a statistically significant association with annual inflation rate. I.e. 0.019 < 0.05. The association between ROA and exchange rate was statistically significant. The exchange rate had also a statistically significant with the interest rate, since their significance values were below p- value of 0.05. The N implies the data points used without controlling for market size index.

While controlling for market size index of respective microfinance banks, the researcher found the following correlations with ROA. The performance of MFBs under study was positively correlated with the interest rate at 0.052 with a two tailed significance of 0.707 The annual inflation rate had a positive but also weak correlation with ROA at 0.055 and a two tailed significance level of 0.694. The annual exchange rate for one United States dollar to Kenya shilling had a negative correlation with ROA at -0.319and a two-tailed significance of 0.019. When p-value is 0.05 a two-tailed significance value < 0.05 is considered linearly significant correlation, otherwise the association between the variables is not linearly correlated. From the analysis, the two-tailed significance of correlation between ROA and lending interest rate was not statistically significant considering the value 0.707 > 0.05. similarly, the inflation rate relationship with ROA was not statistically significant since 0.694>0.05. in contrast, exchange rate had a statistically significant

negative association with ROA since its significance value was 0.019, which is less than 0.05

Table 4.5.2: *Correlation Matrix*

Control Variables			(ROA)	Interest	Inflation	Exchange
Firm Size	ROA	Correl.	1.000	.052	.055	-.319
(Market Size		Sig (2-tailed)	.	.707	.694	.019
Index (%)		df	0	52	52	52
	Interest	Correl.	.052	1.000	.459	-.765
		Sig (2-tailed)	.707	.	.000	.000
		df	52	0	52	52
	Inflation	Correl.	.055	.459	1.000	-.267
		Sig (2-tailed)	.694	.000	.	.051
		df	52	52	0	52
	Exchange	Correl.	-.319	-.765	-.267	1.000
		Sig (2-tailed)	.019	.000	.051	.
		df	52	52	52	0

Source: Researcher 2019

While using market size index as controlling variable the N statistic changed from 55 to 52.

4.5 Regression Analysis

The section revealed summary results of the model. It also described the analysis of variance, model coefficients and correlation.

4.5.1 Model Summary

Table 4.6: *Model Summary*

Model	R	R Sq.	Adj. R Sq.	Std. Error of the Estimate	Durbin-Watson
1	.537[a]	.288	.231	.04274	1.701

a. Predictors: (Constant), Firm Size (Market Size Index (%), Annual Inflation Rate (%), Annual Exchange Rate (%), Lending Interest Rate (%)

b. Dependent Variable: ROA

Source: Researcher 2019

The R value of 0.537 indicates the correlation between Kenya's MFBs' ROA and macroeconomic variables, implying a moderate relationship. R square measures the closeness of data to a line of best fit (Kothari, 2004). According to findings R=0.537, R^2= 0.288, adjusted R^2 = 0.231 while the standard error of estimate = 0.04274 and Durbin Watson value is 1.701. The adjusted R^2 value of 0.231 implies that the model explains only 23.1% of the variation in microfinance banks performance following changes in the levels of macroeconomic variables. Thus, it implies some variables not studied influenced ROA. The variables could have been the cause of the other 76.9% of the variability.

4.5.2 Analysis of Variance

Table 4.7: *Analysis of Variance*

	Model	Sum of Sq.	df	Mean Sq.	F	Sig.
1	Regression	.037	4	.009	5.056	.002[b]
	Residual	.091	50	.002		
	Total	.128	54			

a. Dependent Variable: Financial Performance (ROA)

b. Predictors: (Constant), Firm Size (Market Size Index (%), Annual Inflation Rate (%), Annual Exchange Rate (%), Lending Interest Rate (%)

Researcher: 2019.

The significant value was 0.02, (< 0.05 level of significance or 95% confidence interval). It implies that the result is significant. The F value is5.056. Thus, a value of F greater than 1 gives rise to an efficient model for study (Project Guru, 2019).

4.5.3 Model Coefficients

Table 4.8: *Model Coefficients*

Model	Unstandardized Coefficients		Standardized Coefficients	t		Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta				Lower Bound	Upper Bound
1 (Constant)	.563	.181		3.108		.003	.199	.927
Interest	-.012	.005	-.506	-2.469		.017	-.022	-.002
Inflation	.004	.005	.108	.787		.435	-.006	.014
Exchange	-.004	.001	-.664	-3.506		.001	-.007	-.002
Market Size	.001	.000	.282	2.324		.024	.000	.001

Source: Researcher 2019.

From the table, the following model is derived.

$Y=0.563 -0.012x_1+0.004x_2-0.004x_3+0.001x_4$

It implies that financial performance (ROA) =0.563+0.012(Lending interest rate) +0.004(Annual Inflation rate) -0.004(Annual Exchange rate) +0.001(Market size index)

From the above model equation, the level of ROA, holding macroeconomic variables constant, will be0.563 units. However, following variations in macroeconomic factors and market size index, 1-unit rise in annual inflation rate resulted in a rise in financial performance by 0.004 units. 1% rise in annual lending rate resulted to a fall in performance by 0.012 units .1-unit rise in the annual exchange rate gave rise to

0.004units fall in ROA. 1-unit rise in market size index of microfinance banks increased financial performance by 0.001 units

4.6 Discussion of Findings

According to the findings, it can be stated that macroeconomic variables affected Kenya's MFBs financial performance. Three independent variables indicated that there was macroeconomic variables' effect, which was statistically significant, on ROA based on the *p*-values. However, all the variables studied influenced ROA as indicated in the model equation

$$Y = 0.563 - 0.012X_1 + 0.004X_2 - 0.004X_3 + 0.001X_4$$

Where X_1, X_2, X_3 and X_4 represent rates of interest, inflation, exchange, as well as market size index respectively. From the model equation, the interest rate negatively associated with the financial performance. In contrast, inflation rate had a positive effect on ROA. The exchange rate impacted negatively on the financial performance while the market size index had a negative impact on Kenya's MFBs ROA. The findings support some of the studies highlighted in the literature review in chapter two.

Without variations in the macroeconomic variables, ROA would be constant at 0.563 units based on ROA. From the model, ROA would decrease by 0.012 units following a rise in the lending rate by 1 unit while a rise in inflation rate by a unit would result in rise in financial performance of MFBs in Kenya by 0.004 units. Similarly, ROA would decrease by 0.004 units following an increase in exchange (One USA dollar to Ksh.) rate by 1 unit, while ROA (financial performance) would increase by 0.001 units following an increase in market size index by 1unit.

Mwangi (2017) found that interest rate change caused a weak and negative effect on performance which agrees with the findings of this study that reveal a decrease in financial performance by only 0.012 units following an increase of interest rate by 1 unit According to Mwangi (2017) only minimal variation in ROA arises from the variation in interest rates. Mwangi stated that the interest rate variation affected performance of insurance. Similarly, the study supports Otambo (2016) findings that show that interest and exchange rates had a negative effect on returns, while inflation had a positive effect.

Marende (2017) found that exchange rate negatively affected financial development of commercial banks. The researcher's findings are similar to the findings of this study, which found a negative effect of change in exchange rate on ROA

Ubesie and Ezeagu (2014) studied macroeconomic factors effect, using Nigerian conglomerates sector, on financial performance indicators. The researchers found that the rate of exchange and returns had a negative relationship even though it was weak. This study agrees with Ubesie and Ezeagu who found that exchange rate had a weak negative relationship with performance. This study found that the relationship was significant even though it was weak.

From the findings of these studies, macroeconomic variables affect financial performance of various sectors by varying degrees. While Mwangi (2017) found that variations in exchange rate explained 85.1 % variation of returns following, this study found that the change in exchange rate by one unit brought about 0.004 units change in ROA.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section highlights the findings summary and conclusions based on the study, recommendations as well as future research suggestions.

5.2 Summary

This study had one main objective, which was to determine the effect of macroeconomic variables on Kenya's MFBs financial performance. To fulfil this goal, the study utilised secondary data for seven years beginning from 2012 to 2018. The study was on financial performance of licenced MFBs in Kenya as the dependent variable while the macroeconomic factors were the independent variables while controlling for market size index. The study period was between 2012 and 2018, which provided complete panel data for analysis. the total number of observed values N was 55. The average annual lending interest rate for the financial institutions was 16.27%. The average annual inflation rate was 6.72% while the average exchange rate for one United States of America dollar was 95.42 Kenya shilling. The average market size index was 9.68%. The average financial performance was ⁻0.054, which implies an average decrease in performance by 5.4% during the period under study.

Having analysed the data, the researcher found the correlation coefficient R, to be 0.537 implying a moderate association between macroeconomic economic variables and financial performance. R^2 was found to be 0.231 implying that the model explained only 23.1% of the total variation in ROA of microfinance.

5.3 Conclusion

Having summarized the findings, the researcher concluded that macroeconomic variables selected for the study only explained a small fraction of the variability in ROA of MFBs as indicated by R^2. Thus, the model could not explain the larger fraction of variability in financial performance as result of changes in macroeconomic factors. The study also found small but statistically significant variations (in accordance with the p-values obtained) of financial performance as a result of changes in macroeconomic variables.

5.4 Recommendations of the Study

From the analysation of data and the findings documented in this study it is prudent to recommend that increase in exchange rate need to be checked as it negatively affected the ROA of Kenya's MFBs, for instance, the Central Bank of Kenya CBK can apply monitory policy to control the supply of local currency in circulation by reducing it. This would make the Kenyan shilling stronger as compared to the US Dollar.

The study recommends microfinance to charge appropriate lending interest rates to improve their financial performance because higher interest rate have been associated with decrease in returns.

5.5 Limitations of the Study

The researcher did not collect primary data but gathered secondary data that had been published by regulatory agencies.

The number of licence microfinance banks studied was not uniform in all the years studied and this could have influenced the results. In addition, this research focused on Kenya's MFBs financial performance and not all microfinance institutions in the

country. The researcher could not choose all the possible macroeconomic variables due to constraints.

5.6 Suggestions for Further Research

According to results obtained, there is need to carry out research for a longer period to better determine the impact of independent variables on returns. The GDP variable could be studied in other fields in future as a determinant of performance since it was excluded from this study after diagnostic tests on variables. Researchers can choose other variables, which the study did not include in order to add on to the literature of studies in existence. It is recommended that more internal variables be studied as independent variables affecting performance. This is because the study found that only 28% of variability in ROA for MFBs in Kenya could be explained by the regression model leaving out 72% unexplained. This implied other factor caused variability of ROA.

This study focused on Kenyan MFBs to determine the effect of macroeconomic variables on ROA. However, this study could be done elsewhere in other countries for comparison of findings. Other countries in which microfinance banks have existed for a longer period than the ones in Kenya could provide a longer period of study.

The study found that there is still a large portion of unexplained variation in financial performance. Therefore, future researchers should consider other factors that the study did not include as variables. The findings explained 28.8 % of the variations in ROA as a result of changes in macroeconomic variables.

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APPENDICES

Appendix 1: Population

SNO.	MICROFINANCE BANK	DATE OF LICENCING	BRANCHES
1	Faulu Kenya	21/05/2009	39
2	Kenya Women	31/03/2010	31
3	Uwezo	08/11/2010	2
4	SMEP	14/12/2010	7
5	Remu (Key)	31/12/2010	3
6	Rafiki	14/06/2011	17
7	Century	17/09/2012	2
8	Sumac	29/10/2012	4
9	U&I	08/04/2013	2
10	Daraja	12/01/2015	1
11	Choice	13/05/2015	1
12	Caritas	02/06/2015	1
13	Maisha	21/05/2016	1

Source: CBK (2018)

Appendix II: Raw Data

Microfinance Banks Data

YEAR	MFB	MARKET SIZE INDEX	INCOME	TOTAL ASSETS	ROA
2018	FAULUKENYA	38	181	27225	0.01
2018	RAFIKI	8	-192	6050	-0.03
2018	SMEP	4.2	-22	2942	-0.01
2018	CARITAS	2.3	-85	1244	-0.07
2018	SUMAC	2.2	5	1530	0
2018	REMU	0.7	-14	433	-0.03
2018	U&I	1.1	8.4	534	0.02
2018	CENTURY	0.7	-25	431	-0.06
2017	KENYA WOMEN	44	19	28931	0
2017	FAULUKENYA	38.4	143	25325	0.01
2017	RAFIKI	7.3	-329	6727	-0.05
2017	SMEP	3.6	-32	2734	-0.01
2017	CARITAS	1.7	-71	879	-0.08
2017	SUMAC	1.7	5	1137	0
2017	REMU	0.7	-17	354	-0.05
2017	U&I	0.9	11	406	0.03
2017	UWEZO	0.7	-9	212	-0.04
2016	KENYA WOMEN	42.9	224	32153	0.01
2016	FAULUKENYA	39.2	43	27369	0
2016	RAFIKI	7.9	-298	7327	-0.04
2016	SMEP	4	-134	2659	-0.05
2016	CARITAS	1.3	-74	574	-0.13
2016	SUMAC	1.3	14	803	0.02
2016	REMU	0.8	-12	362	-0.03
2016	UWEZO	0.6	4	214	0.02
2016	DARAJA	0.4	-28	180	-0.16
2016	MAISHA	0.4	-31	171	-0.18
2016	CENTURY	0.3	-41	225	-0.18
2015	KENYA WOMEN	45.4	394	31861	0.01
2015	FAULUKENYA	36.55	115	25324	0
2015	RAFIKI	10.32	29	7729	0
2015	SMEP	3.79	-1	2592	0
2015	SUMAC	0.98	7	608	0.01

YEAR	MFB	MARKET SIZE INDEX	INCOME	TOTAL ASSETS	ROA
2015	REMU	0.87	-15	397	-0.04
2015	U&I	0.44	7	184	0.04
2015	UWEZO	0.53	0.2	226	0
2014	KENYA WOMEN	47.92	474	26985	0.02
2014	FAULUKENYA	35.36	299	20320	0.01
2014	RAFIKI	9.46	21	5975	0
2014	SUMAC	0.91	4	390	0.01
2014	U&I	0.38	2	137	0.01
2014	UWEZO	0.39	1	160	0.01
2013	KENYA WOMEN	53.19	395	21752	0.02
2013	FAULUKENYA	26.64	183	12434	0.01
2013	RAFIKI	7.73	9	3679	0
2013	SMEP	7.88	48	2490	0.02
2013	REMU	1.34	-6	337	-0.02
2013	U&I	0.39	1	80	0.01
2013	UWEZO	0.54	-2	107	-0.02
2012	KENYA WOMEN	61.7	173	20384	0.01
2012	FAULUKENYA	23.4	58	7638	0.01
2012	RAFIKI	3.9	5	1838	0
2012	SMEP	9.4	54	2290	0.02
2012	REMU	1.1	-7	181	-0.04
2012	UWEZO	0.5	-2	78	-0.03

Macroeconomic Variables Raw Data

YEAR	INTEREST RATE	INFLATION RATE	EXCHANGE RATE
2018	13.06	4.7	101.29
2017	13.67	8	103.39
2016	16.56	6.3	101.45
2015	16.09	6.6	98.31
2014	16.51	6.9	87.97
2013	17.31	5.7	86.14
2012	19.72	9.4	84.43