



George Kariuki Njenga, MBA* & Morris Irungu Kariuki, Ph.D**

*Ph.D Student, Department of Finance and Accounting, University of Nairobi

**Lecturer, Department of Finance and Accounting, University of Nairobi

Abstract

This study aimed at determining the macroeconomic variables' effect on financial performance of Kenya's microfinance banks. 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 Central Bank of Kenya (CBK) reports on supervision of financial institutions, from 2012 to 2018 were used. Descriptive statistics were maximum and minimum values. In addition, correlation and regression analysis were used. From the analysis, the study found that adjusted R squared was 23.1%. Therefore, the model explained 23.1% of the Return on Assets (ROA) variation as independent variables (interest, market size, inflation and exchange rate) varied. Coefficient of correlation (R) was 53.7% and therefore, the model exhibited a moderate correlation between the independent variables and ROA. The model found that average lending rate had a significant and weak inverse influence on ROA. Inflation rate had an insignificant and a weak positive effect on ROA. Exchange rate effect was negative and weak on ROA, but significant. 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 Microfinance Banks' (MFBs') returns.

Key words: Firm size, Inflation rate, Exchange rate, Interest rate, Return on assets



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Introduction

Important objectives of a profit-making organization such as a MFB include returns maximisation. The term "Microfinance" is derived from the term "microcredit", a concept founded by Muhammad Yunus in Bangladesh in the 1970s (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.

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.

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).

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 Ongeru (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?

Research Objective

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

Empirical Literature

Ongeru (2014), using descriptive research design, studied how macroeconomic variables impacted on non-bank organisations' performance. Ongeru 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, Ongeru 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 (2016) 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. The researcher used secondary data, beginning 2006 to 2016. Marende (2017) found a positive correlation between the following factors and financial development. This factor 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' financial performance. 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.

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)

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.

Data Analysis

This is the procedure of processing data into the more useful information for decisive action. 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.

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 1

Table 1: Descriptive Statistics

	Min.	Max.	Mean	Std. Dev.	Var.	Skewness	Kurtosis
Interest	13.06	19.72	15.9444	2.00904	4.036	.110	-.582
Inflation	4.70	9.40	6.7164	1.36093	1.852	.467	-.304
Exchange	84.43	103.39	96.0116	7.39795	54.730	-.594	-1.500
Market Size	0.30	61.70	11.7511	17.30316	299.399	1.468	.732
ROA	-0.18	.04	-.0179	.04874	.002	-2.049	4.223

N=55

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 by 6.72% 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 0.049 points. 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.

Correlation Analysis

Correlation has been described as association between a pair of variables (Explorable, 2019). The magnitude of correlation is between -1 and +1. -1 and +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

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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 2: 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					
	Int. Rate	.250				
	Inf. Rate	.259	.000			
	Exc. Rate	.004	.000	.019		
	Market Size	.007	.167	.203	.127	

N=55

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 coefficients. 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, that is $0.019 < 0.05$. 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 -0.319 and 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 3: Correlation Matrix

		ROA	Interest	Inflation	Exchange
	ROA	1			
Firm Size (Market Size Index (%))	Interest	.052	1		
	Inflation	.055	.459		
	Exchange	-.319	-.765	-.267	1
		.019	.000	.051	.

N-55, Sig (2-tailed)

Regression Analysis

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

Table 4: Model Summary

Model	R	R Squared	Adjusted R Squared.	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

The R value of 0.537 indicates the correlation between 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.

Table 5: Analysis of Variance

Model	Sum of Squares	df	Mean Square	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 (%)

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 is 5.056. Thus, a value of F greater than 1 gives rise to an efficient model for study (Project Guru, 2019).

Table 6: Model Coefficients

Model	Unstandardized Coefficients Beta	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.563	.181	3.108	.003
	Interest	-.012	.005	-2.469	.017

Inflation	.004	.005	.108	.787	.435
Exchange	-.004	.001	-.664	-3.506	.001
Market Size	.001	.000	.282	2.324	.024

From the Table 6, 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 be 0.563 units. However, following variations in macroeconomic factors and market size index, One unit rise in annual inflation rate resulted in a rise in financial performance by 0.004 units. One percentage rise in annual lending rate resulted to a fall in performance by 0.012 units. One unit rise in the annual exchange rate gave rise to 0.004units fall in ROA. One unit rise in market size index of microfinance banks increased financial performance by 0.001 units

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 MFB's 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 one unit.

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.

Conclusion of the study

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.

Recommendations of the Study

From the analysis 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 monetary

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.

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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