Influence of Capital Risk on Financial Performance of Microfinance Institutions in Kenya

Ashiali Temesi Godfrey[1]
Dr. Maniagi Musiega[2]
Dr. Mary Nelima Sindani[3]

[1]temesigo@gmail.com
[2]gmaniagi@mmust.ac.ke
[3]mlyani@mmust.ac.ke

[1]https://orcid.org/0000-0003-1459-0454
[2]https://orcid.org/0000-0003-3248-6933
[3]https://orcid.org/0000-0002-0451-539X

[1]MBA Finance Student, [2,3]Ph.D, Senior Lecturer, [1,2,3]School of Business and Economics, Masinde Muliro University of Science and Technology, Kenya

……..

ABSTRACT

Microfinance Institutions (MFIs) services and activities in Kenya have helped the country reduce its poverty rate, but the country is still among the poorest in the world. Microfinance institutions in Kenya have also reported capital risk in terms of pricing since they have less flexibility to adjust prices due to their financial structure. The main objective of the study is to establish the influence of capital risk on the financial performance of microfinance institutions in Kenya. The study used a descriptive survey research design with a target population of 12 MFIs listed under the Central Bank of Kenya (CBK). The study used a census approach to sample the entire population. The study used secondary data from published CBK reports over a 7-year period from 2015 to 2021. Descriptive statistics are comprised of skewness, kurtosis, and jarque bera. Inferential statistics used were Pearson correlation and hierarchical regression. A study on financial risk factors and financial performance may be of value to the government in policy formation. The microfinance act policy formulators can use the study to ascertain contagious issues that need to be addressed, especially how to handle capital risk challenges. The study may assist the management of microfinance institutions in establishing the problems facing financial risk factors in their sector. Capital risk had a significant positive effect on the financial performance of the Nairobi Securities Exchange in Kenya (t =0.0346763, p<0.05). This model produced an R square of 0.378, implying that 3.78% of the variation in the risks of microfinance institutions is significantly affected by capital risk. Regarding microfinance size, the incorporation of IV*MV, thus interaction terms, moved R squared from 0.337 to 0.378, hence an increase of 0.041. The P value of 0.024 and an R squared increase of 0.041 shows that microfinance size has a moderatingly significant effect on the relationship between capital risk and the financial performance of microfinance institutions. The study rejected the null hypothesis. The findings guided the following recommendations: It was found that capital risk has a significant impact on financial performance; hence, microfinance firms should improve their assets so as to minimize the risks associated with their capital base.

Keywords: Financial Performance, Capital Risk, Microfinance Institutions

……..

I. INTRODUCTION

Financial sector policies have laid the foundation for the microfinance sector, which operates without legal formalities compared to banks. According to the World Bank (2016), microfinance institution (MFI) services and activities in Kenya have helped the country reduce its poverty rate, but the country is still among the poorest in the world. Studies have been done on financial risks. Globally, for instance, in Qatar, Achou and Tengue (2018) pointed out that better credit risk management results in better microfinance performance. They concluded that it is thus very important for microfinance to practice sound credit risk management to protect investors' interests and safeguard the assets of the microfinance institutions. Achou and Tengue (2018) further showed that microfinance institutions with robust credit risk management policies tend to incur lower loan defaults.

In Pakistan, a study by Hamza (2017) on the impacts of CRM on bank performance was carried out for a period of 2005–2014 on 13 commercial banks. Using a pooled regression model, bank performance was proxied by return on assets (ROA) and return on equity (ROE), while capital risk management (CRM) was measured by capital

adequacy ratio, liquidity ratio, non-performing loan ratio, loan and advance ratio, and bank size. The study results indicated ROA and ROE had a significant impact.

Regionally in the DRC, since the 1970s, MFIs have been working as unregulated entities and have served a large target population efficiently and effectively, according to the Organization for Economic Cooperation and Development (OECD, 2015). In addition, Kargi (2018) discovered in a study of Nigerian microfinance institutions between 2014 and 2018 that there is an important relationship between microfinance institution performance and credit risk management. He found that non-performing loans and loans and advances are major variables that determine the asset quality of microfinance institutions.

In the context of Kenya, MFIs have a big problem finding a perfect structure for their credit risk management that can help them avoid a higher default rate (Silikhe, 2018). Therefore, it seems almost impossible for them to implement efficient credit risk management procedures like debt collection processes, client appraisals, and others that can allow them to reduce the number of client defaults. With a perfect structure, MFIs can use their credit risk management efficiently to avoid a high default rate and stay profitable (Kitheka, 2012). Building on this research, the study examines the influence of capital risk factors on the financial performance of microfinance institutions listed at the Central Bank of Kenya.

1.1 Statement of the Problem

According to the World Bank (2016), MFI services and activities in Kenya have helped the country reduce its poverty rate, but the country is still among the poorest in the world. Capital risks impact the financial performance of microfinance institutions. According to the Association of Micro-Finance Institutions (AMFI, 2019), while over time credit-only institutions have been slowly improving, deposit-taking microfinance institutions improved in 2019–2020 but then worsened in 2020–2021. Microfinance institutions in Kenya have also reported liquidity pressure in terms of pricing since they have less flexibility to adjust prices due to their financial structure (International Micro-Finance Institute, 2019). A study by Biwott and Muturi (2014) found capital risk and credit risk had the greatest positive influence on the performance of microfinance institutions. Kimando et al. (2012) established that financial risk factors on liquidity and credit risk highly affected the sustainability of microfinance institutions negatively. Furthermore, Kariuki and Wafula (2016) noted that capital risk had a positive influence on the financial performance of MFIs, whereas Yahaya et al. (2016) found that capital risk had no influence on performance. Kariuki et al. (2017), while investigating the influence of capital risk on savings and credit cooperatives (SACCOs) in Kenya, recommended a further study on MFIs. This study was conducted for a 6-year period from 2016 to 2021, and thus, there was a need to investigate the influence of capital risk factors on the financial performance of microfinance institutions listed at the Central Bank of Kenya for a longer period of 7 years.

1.2 Objectives of the Study
  (i) To establish the influence of capital risk on the financial performance of microfinance institutions in Kenya
  (ii) To establish the moderating effect of firm size on the relationship between capital risk and the financial performance of microfinance institutions in Kenya

1.3 Hypothesis of the Study

H01: Capital risk does not significantly influence the financial performance of microfinance institutions in Kenya.

H02: Microfinance size has no significant moderating influence on the relationship between capital risk and the financial performance of microfinance institutions in Kenya.

II. LITERATURE REVIEW

2.1 Asymmetric Information Theory

Asymmetric information was introduced by Akerlof (1970). This refers to the state of an institution not displaying information or where information is hidden and players don't access the true information. Microfinance institutions therefore get to a state of giving funds to customers without knowing the true status of borrowers. As a result, this leads to capital risk tendencies where individuals are offered information on the basis of information earlier given, which at times is not true (Ekumah & Essel, 2003). When information is not available, adherence becomes a risk. The theory fails to show the mitigation approach for not providing information that may lead to the wrong award of credit. This theory demands that clients' information be known, hence managing credit risks (Maniagi, 2018). The

theory is relevant to the study as it articulates the credit risk where information about the borrower should be well sought to avoid defaults that make a firm perform poorly financially.

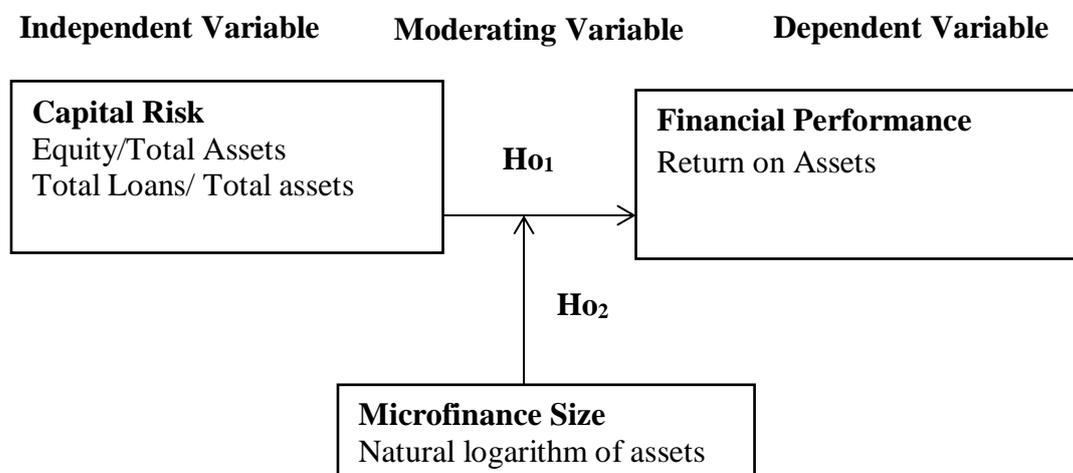## 2.2 Conceptual Review
2.2.1 Capital risk

Capital risk is of particular concern to MFIs because most microfinance is unsecured (Churchill & Coster, 2011). An increase in the default rate caused by the inefficiency of capital risk affects the financial performance of MFIs. MFIs have failed to apply the capital risk management procedures to perform well financially. With inefficient methods, they fail to gather necessary information about their clients and establish a debt collection process that could help them avoid high default rates and stay profitable. Khemraj and Pasha (2009) point out those high percentages. NPLs are often related to financial crises and the performance problems of banks in both developed and developing countries. Nonperforming loans to total loans ascertain the capital risk.

2.2.2 Microfinance Size

The size of an institution determines the financial performance of an entity to some extent. Microfinance size is ascertained by evaluating the asset log. Large microfinance institutions have more assets in comparison to smaller microfinance entities.

2.2.3 Financial Performance

Financial performance has been of great concern in most institutions. Lending institutions have therefore adopted return on assets as an appropriate measure for measuring financial performance (Sanghani, 2014). This is attained by dividing the income by the assets of the firm.

Independent Variable   **Moderating Variable**   **Dependent Variable**

Capital Risk Equity/Total Assets Total Loans/ Total assets	Ho_1	**Financial Performance** Return on Assets

Ho_2

Microfinance Size Natural logarithm of assets

Figure 1
Conceptual Framework

2.3 Empirical Review

In Pakistan, a study by Hamza (2017) on the impacts of capital risk management on bank performance was carried out for a period of 2005–2014 on 13 commercial banks. The objectives were capital risk and liquidity risk and their influence on performance. Using a pooled regression model, bank performance was proxied by ROA and ROE, while capital risk management was measured by loan loss provision ratio, capital adequacy ratio, liquidity ratio, non-performing loans ratio, loan and advance ratio, and bank size. The study results indicated that capital risk significantly affects bank performance. However, this study was conducted in a developed country, and therefore the current study sought to use panel data to carry out an investigation on MFIs in Kenya.

A survey study by Odalo et al. (2016) assessed the resultant influence of capital risk and performance based on a financial point of view among agricultural companies listed at Nairobi Securities Exchange Kenya. The core purpose was to examine capital risk and financial performance. In ascertaining capital risk ratios based on liquid to gross assets, the ratio gave a positive trend. On financial performance, the study got a positive trend on return on assets, earnings per share, and return on equity. A descriptive but causal research design enabled the association between capital risk and financial performance of all seven agricultural firms approached through a census survey.

The results of the study gave a sound indication of performance, which showed a significant positive relationship between listed manufacturing firms using ROE as a unit measure. The recommendations are based on current liabilities and the current assets to be monitored (Odalo et al., 2016). This study failed to clearly articulate the statistical approach on an inferential basis, guided by regression and correlation analysis. Furthermore, it laid emphasis on ROE, a shareholder strength measure, forgetting ROA, the management strength desire, which the current study addressed. The study banked hopes on seven firms, which was a small population compared to 39 firms for this study. Furthermore, the current study focused on commercial banks and not manufacturing firms.

A study by Bichanga and Chege (2017) examined non-performing and financial performance using a data set of 44 commercial loans in Kenya for the period 2011 to 2015. The study examined bank size, liquidity, operating costs, and capitalization. Non-performing loans were measured by bank size, liquidity, operating costs, and capitalization bank ratio, while ROA measured performance. Using data analysis techniques, the study indicated that non-performing loans (NPLs) have a significant effect on financial performance and on specific bank factors, including bank size, capitalization, and operating costs. This study was performed on commercial bank setups; thus, the current study will be carried out on MFIs to find out if there are any significant

III. METHODOLOGY

This study used a longitudinal research design. The purpose of longitudinal research is to increase the understanding of a researcher on a certain subject based on time trends (Ngechu, 2004). The study targeted twelve microfinance institutions listed in the Central Bank of Kenya's Banking Supervision Report (CBK, 2021). The researcher therefore assembled all the published CBK reports for 2015–2021 and captured the data needed under the guidance of the data collection template ratio guide. A census study was employed on all 12 MFIs listed in CBK reports.

The study used descriptive and inferential statistics. Descriptive analysis involved the use of mean, mode, skewness, kurtosis, and jarquebera tests. Inferential analysis involved correlation and multi-regression. The Hausman test was done to determine whether the model would take fixed effect regression or random effect regression. Fixed effect regression indicates that the firms have similar characteristics, and random effect regression indicates that the firms have different characteristics. If the p value is less than 0.05, the fixed effect; if it is more than 0.05, the random regression effect.

3.1 Model for obtaining data
Model for data collection

$Y_{ROA} = \beta o + \beta_1 X_{1it} + e$

$Y_{ROA} = \beta o + \beta_1 X_{1it} + \beta_1 X_1 M_{it} + e$

Where:

Y_{ROA} =   Financial performance.

β_1 = Regression coefficient, X_1= Capital risk, M= Microfinance size, e = error term, βo= Constant term, it= Time

Table 1

Operationalization of Variables

Category	Variable	Measurement	Formulae
Independent Variable	Capital risk	Capital riskratio	Equity/Total Assets
Moderating Variable	Microfinance size	Total Assets	Natural logarithm Assets
Dependent Variable	Financial Performance	ROA Ratio	Total income/Total assets

IV. RESULTS AND DISCUSSION

4.1 Diagnostic Tests

Table 2
Normality Test

Variable	Skewness	Kurtosis	JarqueBera adj chi2(2)	Prob>chi2
CR:E_TA	-0.9899	3.5251	14.68	0.00
MS: Log-TA	0.4508	3.1408	2.915	0.2328
ROA:TI/TA	-0.2323	2.6537	1.175	0.5557

CR: capital risk; MS: microfinance size; Log: logarithm; E: equity; TA: total assets; TI: total income.

A normal distribution has a value for skewness and kurtosis close to zero. Log-TA was skewed positively, while E_TA and Total Income over Total Assets (TI/TA) were skewed negatively. According to the Monte-Carlo rule, a figure less than 2 for skewness and less than 6 for kurtosis is termed normal. Similarly, figures between 2.0 and 3.0 for skewness and between 6.0 and 21.0 for kurtosis are termed non-normal. For this finding, there was no case of non-normal data.

Table 3
Multi-Collinearity

Variable	Tolerance	VIF
Capital Risk	0.000	2.091
Microfinance size	0.071	1.020

The variance inflation factors (VIF) from the coefficient table are below 10 (capital risk 2.091 and microfinance size 1.020), indicating a non-multi-collinearity problem. The values of tolerance in the coefficient table are less than 1 (capital risk = 0.000 and microfinance size = 0.071), hence the non-multi-collinearity problem.

Table 4
Test for Heteroscedasticity Results.

Walid Test	Walid test Statistic
Chi2 (28)	8.14
P-value	0.08501

Table 5: Heteroscedasticity test results indicate that the Walid test result was significant (chi-square = 8.14, p-values = 0.08501>0.05). The study rejected the null hypothesis and indicated that there was no heteroskedasticity problem.

Table 4
Panel Unit Root Test

Variable	Levin, Lin & Chu Stat	Phillips Perron
CR:Equity/Total Asset	-2.5244** (0.0058)	2.2175** (0.0133)
MS: Log Total Assets	-56.2700** (0.0000)	1.4181** (0.0081)
ROA:Total Income/Total Assets	-1.2723** (0.0027)	1.0035** (0.0178)

To ascertain stationery state, unit root tests were conducted to determine if a spurious effect existed. Levin Lin, Chu, and Phillips-Perron were conducted due to their strength in testing spurious effects. From Table 4 above, the p-values in parentheses ** and * denote rejection of the null hypothesis at 1% and 5% significance, respectively. All the P values were less than 0.05, showing there was no unit root. Therefore, the data was good for analysis.

Table 5
Hausman Test

	ROA
Chi-sq statistic	12.41
Prob	0.0061

Results in Table 5 indicated a prob>chi2 value of 0.0061, which was less than the 0.05 level of significance, leading to the adoption of a fixed effect model. A fixed model indicates that the microfinance institutions had similar characteristics.

4.2 Correlation Analysis

Table 6
Correlation Matrix

VARIABLES	CR:E_TA	MS: Log TA
CR:Equity/Total Assets	1.0000	
MS: Log of Total Assets	0.1318*	1.0000
	0.2322	
ROA:Total Income/Total Assets	0.0706*	0.4470*
	0.0235	0.0000

The data did not depict a high correlation among variables with correlation coefficients of less than 0.9. The relationship between capital risk and ROA (capital risk: equity/total assets = 0.0706) was positive and significant (p-value =0.0235< 0.05). Furthermore, microfinance size was positive and significant (0.4776*, p-value =0.000 < 0.05), respectively. For all the variables, the p values were less than 0.05, hence significant.

Table 7
Regression Fixed Effects of ROA on Capital Risk

. xtreg ROA_ Ratio Capital_risk_ Ratio,fe						
Fixed-effects (within) regression	Number of obs =	84				
Group variable: FIRM	Number of groups =	12				
R-sq:	Obs per group:					
within = 0.1071	min =	7				
between = 0.7667	avg =	7.0				
overall = 0.0050	max =	7				
F(1,71) = 8.52						
corr(u_i, Xb) = -0.2061	Prob> F =	0.0047				
ROA_Ratio |	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Capital_risk_Ratio|	-.1203394	.0412379	-2.92	0.005	-.2025653	-.0381135
_cons |	.6510963	.0346763	18.78	0.000	.5819537	.7202388
sigma_u| .07394387						
sigma_e| .06427649						
rho | .56960128 (fraction of variance due to u_i)						
F test that all u_i=0: F(11, 71) = 8.87		**Prob> F = 0.0000**				

The result obtained from the fixed effect model indicated that capital risk accounted for 10.71% (overall R square = 0.1071) of the variation in financial performance of microfinance institutions. The corresponding p-value is

0.0000, which is less than 0.05. This relationship was further found to be statistically significant since the p-value was 0.000, which was lower than the adopted significance level of 0.05. The regression model is as shown below.

LNROA=0.6510963-0.1203394CR

Capital risk was significant, hence the rejection of the null hypothesis. Kariuki and Wafula (2016) conducted a study on the capital risk and financial performance of microfinance firms in Kenya and found capital risk to be significant. Yahaya, Mansor, and Okazaki (2016) found capital risk to be positive but insignificant to the financial performance of financial institutions. Yahaya et al. (2016) study generalized financial institutions, hence the possibility of variation.

4.3 Moderating effect of Microfinance Size on Capital Risk and Performance of Microfinance Institutions

Table 8
Model 1-Independent and Dependent Variables

Source	SS	df	MS	Number of obs =	84
F(1, 82) = 1.05					
Model	.000580171	1	.000580171	Prob> F = 0.0384	
Residual	.045287961	82	.000552292	R-squared = 0.0126	
Adj R-squared = 0.0006					
Total	.045868132	83	.000552628	Root MSE = .0235	
ROE	Coef.	Std. Err.	t	P>|t| [95% Conf. Interval]	
CR	-.0033912	.0033087	-1.02	0.308 -.0099733	.0031909
_cons	.0219466	.0029907	7.34	0.000 .0159971	.0278961

Model one entails ROA and financial risk factors. The model of independent and dependent variables produced an Rsquare of 0.0126, implying that 1.26% of the variation in capital risk of microfinance institutions is significantly affected by capital risk. This contribution is significant, as shown by P = 0.0384, implying that capital risk is a significant predictor of financial performance.

$$LNROA=-0.0033912-0.0033912X_1$$

Table 9
Model 2-Independent, Moderating and Dependent Variables

Source	SS	df	MS	Number of obs =	84
F(2, 81) = 20.55					
Model	.015439099	2	.00771955	Prob> F = 0.0000	
Residual	.030429033	81	.000375667	R-squared = 0.3366	
Adj R-squared = 0.3202					
Total	.045868132	83	.000552628	Root MSE = .01938	
ROE	Coef.	Std. Err.	t	P>|t| [95% Conf. Interval]	
CR	-.0053448	.0027465	-1.95	0.055 -.0108093	.0001198
SIZE	-.0177673	.0028251	-6.29	0.000 -.0233883	-.0121463
_cons	.1964443	.0278552	7.05	0.000 .1410211	.2518675

R-Square Diff. Model 2 - Model 1 = 0.324   F(1,81) = 39.553 p = 0.000

Model two entails ROA (dependent variable), capitalrisk (independent variable), and microfinance size (moderating variable). The model of independent, moderating, and dependent variables produced an Rsquare of 0.3666, implying that 33.66% of the variation in microfinance institutions is significantly affected by capital risk. The introduction of additive microfinance size moved R squared from 0.0126 to 0.3366, indicating an increase of 0.324. Though microfinance had a significant effect, the increase was small, with a P value of 0.001, implying significance. The second regression model is as shown below.

$$LNROA=0.1964443 -0.0053448X_2$$

Table 10
Model 3-Independent, Moderating, Interaction and Dependent Variables

Source	SS	df	MS	Number of obs =	84
F(3, 80)	=	16.21			
Model	.017338396	3	.005779465	Prob> F	= 0.0000
Residual	.028529736	80	.000356622	R-squared	= 0.3780
Adj R-squared	=	0.3547			
Total	.045868132	83	.000552628	Root MSE	= .01888
ROE	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]
CR	-.1605476	.0673055	-2.39	0.019	-.2944898 -.0266054
SIZE	-.0215596	.0032057	-6.73	0.000	-.0279392 -.01518
CR_SZ	.0158515	.0068687	2.31	0.024	.0021822 .0295207
_cons	.2346966	.0318013	7.38	0.000	.17141 .2979832
R-Square Diff. Model 3 - Model 2 = 0.041 F(1,80) = 5.326 p = 0.024					

Model	R2	F(df)	p	R2 change	F(df) change	p
1:	0.013	1.050(1,82)	0.038			
2:	0.337	20.549(2,81)	0.000	0.324	39.553(1,81)	0.000
3:	0.378	16.206(3,80)	0.000	0.041	5.326(1,80)	0.024

Model three entails ROA, the capital risk, microfinance size and the association between capital risk and microfinance size.

This model produced an R square of 0.378, implying that 3.78% of the variation in the risks of microfinance institutions is significantly affected by capital risk. The incorporation of (IV*MV), thus interaction terms, moved R squared from 0.337 to 0.378, hence an increase of 0.041. The P value of 0.024 and an R squared increase of 0.041 show that microfinance size has a moderatingly significant effect on the relationship between capital risk and the financial performance of microfinance institutions.

$$NRROA=0.2346966 -0.1605476X1-0.0215596M+.0158515X1M$$

This finding agrees with Mule et al. (2015), who found a significant positive relationship between firm size and the relationship between capital risk and profitability of microfinance institutions; however, it disagrees with King'ori et al (2017), who found firm size moderation insignificant on the performance of banks. The difference is attributed to banks in comparison to microfinance institutions.

IV. CONCLUSIONS & RECOMMENDATIONS

4.1 CONCLUSIONS
The study concludes that an additional unit of capital risk led to a significant increase in the financial performance of microfinance institutions listed on the Nairobi Securities Exchange in Kenya. Therefore, capital risk has significantly influenced the financial performance of microfinance institutions on the Nairobi Securities Exchange in Kenya. The study concluded that the size of the firm had a significant moderating effect on the relationship between capital risk and the financial performance of microfinance firms.

4.2 RECOMMENDATIONS
It was found that capital risk has a significant impact on financial performance; hence, microfinance firms should improve their assets so as to minimize the risks associated with their capital base. Microfinance should open up an asset base and improve deposits so as to ensure the size of SACCOs grows.

REFERENCES

Achou, H., & Tengen (2018). *The Influence of Competition on Performance of Microfinance Institutions in Ethiopia* (MBA Project, Addis Ababa University, Ethiopia).

Akerlof, M. (1970). Information Asymmetry. The Market for Lemons, Quality Uncertainty and the Market Mechanism. *The Quarterly Journal of Economics, 84*(3), 488-500.

King'ori, S.N., Kioko, W.C., & Shikumo, H.D. (2017). Determinants of Financial Performance of Microfinance Banks in Kenya. *Research Journal of Finance and Accounting, 8* (16), 1-18.

AMFI. (2018). *Association of microfinance institutions directory: List of microfinance institutions in Kenya*. Impact Communications: Nairobi.

Biwott, E., & Muturi, O. (2014). *The Relationship between Funding Structure and Financial Performance of Microfinance Institutions in Kenya* (MBA Project, University of Nairobi).

Bichanga, R., & Chege, M. (2016). Assessment of the Influence of Financial Factors on the Growth of Microfinance Institutions in Bahati Sub-County, Kenya. *International Journal of Economics, Commerce, and Management, 4*(3), 415-437.

Central Bank of Nigeria. (2021). *Annual Report and Financial Statements 2020/2021*. Central Bank of Nigeria.

Churchill, H., & Coster, J. (2011). *Research Design: Qualitative, Quantitative and Mixed Method Analysis* (4th ed.). SAGE Publications.

Ekumah, G., & Eseli, T. (2003). "Microfinance Institutions in Ethiopia, Kenya, and Uganda: Loan Outreach to the Poor and the Quest for Financial Viability." The Horn Economic and Social Policy Institute Policy Paper no. 02/14.

Hamza, A. (2010). *Financial Performance Evaluation: A Case Study of Awash International Bank (AIB)* (MSc project. Mekelle University, Ethiopia).

Kargi, A. N. (2018). *The Profitability of Microfinance Institutions and the Connection to the Yield on the Gross Portfolio* (Thesis, Copenhagen Business School).

Kariuki, D., & Wafula, M. (2016). *Effect of Financial Innovation on Profitability of Deposit-Taking Microfinance Institutions in Kenya* (MBA Project, University of Nairobi).

Kariuki, N., & Wafula, W. (2016). Effect of Credit Risk Management Practices on Financial Performance of Deposit-Taking Savings and Credit Cooperatives in Kenya. *IOSR Journal of Business and Management, 19*(04), 63–69.

Kimando, L. N., Kihoro, J. M., & Njogu, G. W. (2012). Factors Influencing the Sustainability of Micro-Finance Institutions in Murang'a Municipality. *International Journal of Business and Commerce, 1*(10), 21-45.

Kitheka, N. (2012). Effects of credit risk management on financial performance of international academic. *Journal of Information Sciences and Project Management, 1*(3), 157–172.

Khemraj, T., & Pasha, S. (2009). "The determinants of non-performing loans: an econometric case study of Guyana." MPRA Paper 53128, University Library of Munich, Germany.

Maniagi, G. M. (2018). *Influence of Financial Risk on Financial Performance of Commercial Banks in Kenya* (Doctoral dissertation, JKUAT, Kenya).

Mule, R. K., & Mukras, M. S. (2015). Financial leverage and performance of listed firms in a frontier market: panel evidence from Kenya. *European Scientific Journal, ESJ, 11*(7). https://eujournal.org/index.php/esj/article/view/5339

Ngechu, M. (2004). *Understanding the Research Process and Methods: An Introduction to Research Methods* (MBA Thesis, School of Business: University of Nairobi, Kenya).

Odalo, S. K., Achoki, G., & Njuguna, A. (2016). Relating Company Size and Financial Performance in Agricultural Firms Listed in the Nairobi Securities Exchange in Kenya. *International Journal of Economics and Finance, 8*(9), 34-40.

Sanghani, D. A. (2014). *The effect of liquidity on the financial performance of non-financial companies listed at the Nairobi Securities Exchange* (Master's Thesis, University of Nairobi, Kenya).

Yamaha, P., Mansor, J., & Okazaki, R. (2016). *Microfinance Profitability: Does Financing Choice Matter?* (PhD Thesis. University of Birmingham).

Yahaya, Mansor, and Okazaki (2016). Financial Performance and Economic Impact on Capital Adequacy Ratio in Japan. *International Journal of Business Management, 9*(17), 1-24.

World Bank (2016). "Does Regulatory Supervision Curtail Microfinance Profitability and Outreach?" Policy Research Working Paper 4748. The World Bank.

Silikhe, R. (2018). Financial Performance of Microfinance Institutions: Bank Vs. NBFC. *International Journal of Management and Strategy, 2*(2), 1-14.