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Capital Adequacy and Financial Performance of Microfinance Banks in Kenya

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Abstract

The study examined the effect of capital adequacy on financial performance of microfinance banks in Kenya. Capital buffer theory and stakeholder theory was utilized. Causal research design was adopted and fourteen microfinance banks were targeted. Thirteen microfinance banks were selected based on purposive sampling technique which was informed by the time scope of the study which is 2013 to 2019. Secondary panel data was used and consequently, panel regression analysis was applied. The study concluded that core capital to total assets ratio is a significant predictor of financial performance of microfinance banks in Kenya. It was also concluded that core capital to total deposits ratio is important in determining the financial performance of microfinance banks in Kenya. The study recommends that microfinance banks should strive towards holding capital buffer with regards to core capital in relation to total assets upon reaching the minimum requirements. This should however be done in a prudent manner where financial intermediation role is not distorted. A joint core capital and total deposits objective should be put in place by the management of microfinance banks. The study recommends that the capital adequacy guidelines by the Central Bank of Kenya should be in view of underlying banking conditions. Capital regulatory and supervisory initiative by the apex bank should balance between protecting depositors and ensuring stable financial performance.

Keywords: *Capital Adequacy, Core Capital to Total Assets Ratio, Core Capital to Total Deposits Ratio, Financial Performance and Microfinance Banks*

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1.1 Introduction

Microfinance banks across the globe carry out a significant role towards economic development especially in the context of developing countries (David & Muendo, 2018). Microfinance banks have witnessed increased growth as well as growing profitability based on different business models adopted by various countries (Nyamasege & Mutswenje, 2023). In an effort to protect depositors, several governments across the globe have introduced microfinance laws and regulations. The legal framework for Microfinances in member states in the European Union cuts across dedicated legislation for provision of microfinance with regards to micro-lending. With respect to Romania and France, the underlying legal frameworks encompass specific rules for microcredit as well as nonbanking institutions (Madialo, 2022).

Across several developing countries, the microfinance model is the preferred development tool (Mia, Ahmad & Halim, 2022). Several African countries have experienced significant growth in the microfinance sector and it was documented that more than 100 million customers take up micro loans across the region (Madialo, 2022). In view of the growth and significance of this sector in Sub-Saharan Africa, microfinance regulations gained momentum in the region (Kweyu, 2022). The microfinance sector in Kenya is considered as one of the most vibrant in the Sub-Saharan African region as it is characterized by diversity of institutional forms and large branch network (Ngumo, Collins & David, 2020).

Governments have brought forth regulations and legislations for purposes of guiding the operations of microfinance banks while protecting depositors. Similarly, the Central Bank of Kenya has over the years put in place several regulations and guidelines. The 2006 microfinance act and the 2008 microfinance regulations provide the legal and supervisory frameworks for the microfinance sector in Kenya. In a move to boost the banking industry, the Central Bank of Kenya licensed another deposit-taking microfinance institution in 2016 which brought the total number to thirteen up to the year 2018 (Central Bank of Kenya, 2018). In the year 2019, another microfinance bank was licensed by the Central Bank of Kenya hence bringing the total number to fourteen. The fourteen microfinance banks in Kenya are guided by the Central Bank of Kenya regulations (Madialo, 2022).

Notably, financial performance serves as a benchmark for assessing the ability of an institution to earn targeted profits in view of set goals and objectives. It is the outcome of the activities of managing assets by bank managers with the aim of achieving effectiveness and efficiency in the financial sector (Syafrizal & Ilham, 2023). Profit-making banking institutions tend to hold more capital in relation to assets (Shabani, Morina & Misiri, 2019). Therefore, it is natural to have a positive relationship between capital adequacy ratio (CAR) and return on assets (ROA). Financial performance was measured using profitability ratio based on return on assets. Akims (2020) postulated that return on assets reflects management efficiency in the utilization of resources to generate income. A positive return on assets serves as an indication that the total assets utilized in business operations are generating profits. Conversely, a negative return on assets implies that an institution makes losses from the total assets utilized (Jamaluddin, 2022). Capital of banks establishes liquidity since deposits are susceptible to bank runs. Hence, having an adequate level of capital minimizes the likelihood of financial distress. Capital adequacy was considered based on core capital to total assets and core capital to total deposits ratios.

1.2 Statement of the Problem

Microfinance banks provide financial services to individuals with no collateral for getting loans from conventional financial institutions (that is the unbanked population), but have strong willpower for self-employment and revenue drive (Shrestha, 2023). These institutions come to the rescue of the less privilege who are financially excluded by other lending institutions (Kweyu, 2022). Hence, microfinance banks facilitate the creation of employment directly and indirectly. Directly through their own employment as institutions and indirectly by channeling funds to businesses hence, self-employment while through expansion, such businesses further increase in work force. It is important to note that only a financially performing microfinance bank can effectively and efficiently provide intermediation services to target groups and individuals, hence the significance of optimum financial performance.

Microfinance banks in Kenya have been characterized by fluctuating financial performance over the years. The ROA of MFBs in Kenya stood at 26% in September, 2015 which declined to 25% in November, 2016. In January 2017, the ROA of MFBs decreased to 21.1% (Kweyu, 2022). Additionally, the coronavirus pandemic impacted on the financial performance of microfinance banks in Kenya. A decline of 17.2% (Sh134.1 billion) in profit after tax of microfinance banking sector was recorded in June 30, 2020 with an accompanying 11.9% (Sh404.1 billion) in the form of increased expenditure by June 2020. This was further increased by bad debt charge of 150.8% (Central Bank of Kenya, 2020). Regulatory report indicates that microfinance banks have experienced difficulties which were evidenced by declining number of accounts at 4% while total assets decreased by 2% to Ksh.74.9 billion from Ksh.76.4 billion for the year 2019 (Munyua, 2022). With an adequate capital level, banks will be able to meet capital requirements and at the same time have sufficient liquidity to maintain their asset base.

Theoretically, higher capital adequacy level provides banks with buffer for cushioning against adverse shocks hence serving as a motivation for acquiring capital buffers as supported by capital buffer theory. Empirically, a number of studies have examined capital adequacy and financial performance relationships both locally and internationally. Goh, Erika, Henry and Syawaluddin (2022) reported that capital adequacy had an impact on financial performance of banking institutions listed at the Indonesia Stock Exchange. Kepramareni, Apriada, Putra and Rini (2022) reported that capital adequacy had no significant effect on financial performance of Bank Perkreditan Rakyat at Denpasar city. Tibebe and Gujral (2022) documented that capital adequacy had significant positive nexus with the profitability (based on return on assets) of banks. Laitupa and Christianty (2023) reported that capital adequacy significantly predicts financial performance (based on return on assets) of commercial banks listed at the Indonesia Stock Exchange. The previous studies were focused on other countries, notably each country is characterized by unique underlying economic conditions and regulatory framework.

Studies conducted in the context of Kenya are similarly characterized by various research gaps. Ngumo *et al*. (2020) established that capital adequacy had significant positive relationship with performance of microfinance banks in Kenya. Akims, Kiio, Tenai and Akims (2021) found that capital regulation had insignificant effect on

profitability of microfinance banks in Kenya. Kirimi, Kariuki and Ocharo (2022) reported that capital adequacy had insignificant effect on return on assets, return on equity and net interest margin. Nyanyuki, Nyanga'u and Onwonga (2022) documented that financial performance of commercial banks in Kenya is significantly determined by capital adequacy. Madialo (2022) established that capital adequacy had significant positive effect on financial performance (as measured by return on assets) of microfinance banks in Kenya. Despite some of the studies focusing on commercial banks which alongside microfinance banks are regulated by the Central Bank of Kenya, the underlying operational guidelines differ across these institutions which in turn limit the generalization of the findings. In view of these research gaps, this study examined the effect of capital adequacy on financial performance of microfinance banks in Kenya. Notably the current study explored capital adequacy based on core capital to total assets and core capital to total deposits ratios which in provided a more comprehensive outcome.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of the study was to examine the effect of capital adequacy on financial performance of microfinance banks in Kenya.

1.3.2 Specific Objectives

The specific objectives of the study were:

i. To determine the effect of core capital to total assets ratio on financial performance of microfinance banks in Kenya.
ii. To examine the effect of core capital to total deposits ratio on financial performance of microfinance banks in Kenya.

1.3 Research Hypotheses

The following null hypotheses were formulated and tested in line with the specific objectives:

H_{01}: Core capital to total assets ratio has no significant effect on financial performance of microfinance banks in Kenya

H_{02}: Core capital to total deposits ratio has no significant effect on financial performance of microfinance banks in Kenya.

2.1 Literature Review

2.2 Theoretical Literature Review

The relationship between capital adequacy and financial performance is supported by capital buffer theory and stakeholder theory. Capital buffer theory outlines the implications of under-capitalized and highly capitalized banks with respect to absorbing shocks and how these impact on financial performance. Stakeholder theory underpins financial performance which is postulated to be influenced by the interactions between both internal and external stakeholders.

2.2.1 Capital Buffer Theory

As propounded by Diamond and Rajan in 1999, capital buffer theory holds that banking institutions aim at maintaining capital levels higher than the recommended threshold. Capital buffer is regarded as the excess levels of capital which banks hold above the stipulated minimum requirements. Ndegwa (2018) opine that financial institutions are required to adhere to stipulated minimum capital requirement as provided by the regulator which is set for purposes of ensuring a stable and sound financial sector. One of the significant concerns for microfinance banks is meeting the minimum stipulated capital level while holding sufficient capital for purposes of addressing the underlying risks which they are exposed to. Regulations regarding capital levels of lending institutions are aimed at promoting the creation of counter-cyclical buffers in view of the pro-cyclical lending nature of the financial sector (Milne & Whalley, 2001).

Capital buffer therefore serves as additional capital at a level higher than the minimum requirements as stipulated by the regulator (Abbas, Butt, Masood & Javaria, 2019). Capital buffer theory postulates that low capitalized banks aim at rebuilding and attaining higher capital levels through raising and increasing capital. Conversely, banking institutions which are characterized by high capital levels strive towards upholding the capital buffer. Higher capacity to absorb shocks is linked to highly capitalized banks, which in turn reduces the likelihood of distress.

However, excessive levels of capital buffer may limit intermediation process and consequently profitability. The nexus between capital adequacy and financial performance is underpinned by capital buffer theory.

2.2.2 Stakeholder Theory

Various concepts and models have been studied in view of the complexities of challenges faced by today's businesses. Notable among these is the stakeholder theory which was introduced by Freeman in 1963. Stakeholder theory is a narrative of understanding which addresses three interconnected problems faced by business firms (Parmar, Freeman, Harrison, Wicks, Purnell & De Colle, 2010). The issue of understanding the creation and trading of value, the issues connecting ethics and capitalism as well as that of facilitating business managers towards thinking about management in a way that the first two issues are solved. A stakeholder is regarded as an individual or groups which affect the activities of firms and/or are affected by these activities.

A firm ought to put the various interests of all stakeholders into consideration as against focusing solely on shareholders. This in turn creates value for everyone involved while achieving long-term success (Mahajan, Lim, Sareen, Kumar & Panwar, 2023). Stakeholder interests are considered crucial for the existence of business organizations. Hence, it is advocated that business managers directly (and explicitly) consider the various underlying needs and interests of stakeholders while aiming towards addressing them through various aspects of organizational strategy (Theodoulidis, Diaz, Crotto & Rancati, 2017). Stakeholder considerations further entails analyzing factors which are closely associated with enhancing stakeholder value (Harrison & Wicks, 2013). The interactions between internal and external stakeholders shape business operations and ultimately financial performance.

2.3 Empirical Literature Review

Ndegwa (2018) examined the effect of capital adequacy (total capital to total risk weighted average) on the financial performance of microfinance banks in Kenya. Descriptive research design was used with thirteen microfinance banks as the target population. Out of this population, secondary data for the period 2013 to 2017 was collected from eight MFBs as a result of unavailability of data. Panel regression (fixed effect) model was estimated and the results indicated that capital adequacy had significant positive relationship with financial performance (based on return on assets). The findings serve as an indication that higher capital leads to higher profitability of microfinance banks. It was therefore recommended that the Central Bank of Kenya should ensure that all microfinance banks meet the minimum stipulated capital requirements by being adequately capitalized. The current study explored capital adequacy in two forms (core capital to total assets and core capital to total deposits ratios), hence providing more robust empirical analysis and policy implications.

Onyango (2018) analyzed capital adequacy effect on financial performance of deposit taking savings and credit societies in Meru County, Kenya. Capital buffer theory, moral hazard theory and anticipated income hypothesis were adopted based on non-experimental research design. Secondary panel data was collected from the audited annual financial statements of the 14 deposit-taking savings and credit societies situated in Meru County, Kenya. The findings from the panel regression analysis reveal that core capital to total assets ratio had significant negative effect on financial performance based on return on assets. Additionally, it was established that the institutional capital to total assets ratio had significant positive effect on return on assets. However, core capital to total deposits ratio had insignificant negative effect on return on assets. The study concluded that financial performance was impaired by the level of required statutory core capital; hence it was recommended that the minimum requirements be reduced. The previous study explored various components of capital adequacy and their underlying effect on financial performance based on return on assets; however, the focus was on deposit taking savings and credit societies in Meru County, Kenya.

Akims and Akims (2019) determined the effect of capital adequacy on profitability of commercial banks listed at the Nairobi Securities Exchange, Kenya. Agency theory and capital buffer theory were utilized to underpin the relationship between the research variables. Secondary panel data as extracted from the annual financial statements of listed commercial banks was used for the period 2013-2017. Panel regression technique was used in analyzing data and the findings revealed that capital adequacy had significant positive effect on profitability of listed commercial banks. It was recommended that measures should be implemented by the Central Bank of Kenya which will ensure sufficient capital level for commercial banks. Despite the study adopting core capital to total assets in measuring capital adequacy while modeling return on assets as the dependent variable, the context varies from that of the current analysis which was based on microfinance banks in Kenya.

Ngumo *et al*. (2020) assessed the determinants of financial performance of microfinance banks in Kenya where descriptive research design was adopted based on secondary data. Data was sourced from seven MFBs for the time period 2011 to 2015. The data collected was analyzed using correlation and regression analyses. Empirical findings revealed that capital adequacy had significant positive relationship with performance of microfinance banks in Kenya. The current study provides additional empirical evidence on the subject matter since it focused on thirteen microfinance banks for the time period 2013 to 2019. Notably, capital adequacy was evaluated in terms of core capital to total assets and core capital to total deposits ratios which in turn enabled the documentation of a more comprehensive outcome.

Akims *et al*. (2021) studied the effect of capital regulation on profitability of microfinance banks in Kenya. The study was underpinned by agency theory and capital buffer theory. Panel secondary data was used which was collected for the period 2013 to 2019. While modeling capital adequacy among other variables to predict profitability, both descriptive analysis and panel regression analysis were used for purposes of analyzing the study data. The findings revealed that capital regulation had insignificant effect on profitability of microfinance banks in Kenya. It was notably suggested that further researches can be undertaken to explore capital regulation and profitability nexus in view of the insignificant relationship established. Despite the current study using similar methodology with the previous study with regards to context, time scope, data and method of data analysis, capital adequacy was considered based on two ratios which were core capital to total assets and core capital to total deposits.

Goh *et al*. (2022) examined the effect of capital adequacy ratio on financial performance based on return on assets for banking institutions listed at the Indonesia Stock Exchange. Secondary data was applied covering the time scope 2015 to 2019 based on a population of 43 banking institutions. In view of this population, a sample of 23 banking institutions was used. Empirical findings indicate that capital adequacy had an impact on financial performance of banking institutions listed at the Indonesia Stock Exchange. Despite adopting return on assets as a measure of financial performance, the study was based on banking institutions listed at the Indonesia Stock Exchange. Different countries are characterized by varying economic conditions and different regulatory frameworks, hence the limitation of the previous study. The current study is therefore different since the focus was microfinance banks in Kenya which are based on lower operational scale as compared to listed banking institutions.

Kepramareni *et al*. (2022) determined the effect of capital adequacy on financial performance of Bank Perkreditan Rakyat at Denpasar city. The study focused on Bank Perkreditan Rakyat on Denpasar city for the period 2018-2020. Based on purposive sampling technique, a sample of 23 was utilized with corresponding observations of 69. Multiple linear regression was employed for the data analysis and the results indicate that capital adequacy had no significant effect on financial performance of Bank Perkreditan Rakyat at Denpasar city. The previous study provides additional empirical evidence in literature with regards to capital adequacy and financial performance relationship, however the current study differs since the focus was on Kenya and specifically microfinance banks.

Kirimi *et al*. (2022) analyzed the effect of capital adequacy on financial performance of commercial banks in Kenya. Dynamic panel model was used in analyzing data as sourced from the financial statements of commercial banks for the period 2009-2020. Based on the empirical results, it was reported that capital adequacy had insignificant effect on return on assets, return on equity and net interest margin. The study contributes to existing body of empirical literature as it provided findings on capital adequacy and financial performance nexus based on several indicators; however the focus was commercial banks in Kenya. Despite both commercial banks and microfinance banks being regulated by the Central Bank of Kenya, the underlying operational guidelines differ across these institutions which in turn limit the generalization of the findings to the context of the current study. Consequently, examining the effect of capital adequacy on financial performance of microfinance banks in Kenya was the focus of this study.

Nyanyuki *et al*. (2022) evaluated capital adequacy effect on financial performance of commercial banks in Kenya. The study was underpinned by capital buffer theory while correlational design was adopted. While using 43 commercial banks in Kenya as the target population, 10 banks were selected based on purposive sampling technique. Secondary panel data was used which was sourced from the financial statements of listed commercial banks for the period 2015 to 2019. The inferential analysis indicates that capital adequacy had significant negative effect on financial performance of commercial banks in Kenya. It was recommended that commercial banks can increase their regulatory capital ratios either by increasing the numerator of the capital ratio that is, their levels of regulatory capital or by decreasing the denominator which is their levels of risk weighted assets and capital reserves which will in turn bring about improved financial performance. The current study differs in that it was carried out in the context of microfinance banks in Kenya.

Tibebe and Gujral (2022) assessed the extent by which capital adequacy determines profitability of commercial banks in Ethiopia. Explanatory research design was adopted and secondary panel data was utilized based on thirteen commercial banks for the period 2010 to 2018. Return on assets (ROA) was used as a proxy variable for profitability (dependent variable). Fixed effect model was estimated as informed by the output of the hausman specification test. The empirical findings indicated that capital adequacy had significant positive nexus with the profitability (based on return on assets) of banks. Notably, the previous study focused on commercial banks in Ethiopia. The current study differs as the focus was microfinance banks in Kenya, hence varying with regards to institutions and country covered.

Madialo (2022) evaluated the effect of capital regulations on the social and financial performance of microfinance banks in Kenya. The microfinance schism and the public interest theory of regulation were adopted to underpin the nexus between the study variables. While applying descriptive research design, 13 deposit taking microfinance institutions in Kenya were targeted. Based on unbalanced panel secondary data, the period 2014 to 2020 was covered. Descriptive and inferential analyses were conducted and it was established that capital adequacy had significant positive effect on financial performance as measured by return on assets. The study recommended that banks should enhance capital adequacy in view of regulatory requirements so as to improve performance. The approach of the current study differs in that causal research design was adopted since the study sought to evaluate cause and effect relationships with respect to capital adequacy and financial performance.

Laitupa and Christianty (2023) determined the effect of capital adequacy on financial performance of commercial banks in Indonesia covering the COVID-19 pandemic period. The study focused on banks listed at the Indonesia Stock Exchange (IDX) for the period 2019-2021. Capital adequacy was the predictor variable while financial performance as proxied by return on assets constituted the dependent variable. Based on purposive sampling method, secondary data was collected from the annual reports of commercial banks for the time scope of the study and in view of predetermined criteria where out of 47 commercial banks, 46 met the criteria. Empirical analysis from the multiple regression output indicates that capital adequacy had significant effect on financial performance (based on return on assets) of commercial banks listed at the Indonesia Stock Exchange. Despite the previous study was on the banking sector, commercial banks notably operate on a higher scale as compared to microfinance banks. The variations in the regulatory frameworks and economic conditions of countries further make the current study different from the previous study.

3.1 Research Methodology

In view of the focus of the study, causal research design was adopted and fourteen microfinance banks in Kenya were targeted. However, only thirteen microfinance banks were considered based on purposive sampling technique which was informed by the time scope of the study that is, 2013 to 2019. Secondary panel data was used as sourced from the financial statements of the microfinance banks of interest and consequently, panel regression analysis was applied. The panel regression model expressed financial performance as a function of core capital to total assets ratio and core capital to total deposits ratio as follows:

$$\mathbf{FPF_{it} = \beta_0+\beta_1 CTA_{it}+\beta_2 CTD_{it}+\varepsilon}$$

Where:

FPF = Financial Performance
CTA = Core Capital to Total Assets Ratio
CTD = Core Capital to Total Deposits Ratio
i = Bank
t = Time period
$\beta_0 - \beta_2$ = Panel Regression Coefficients
ε = Error term

4.1 Data Analysis and Discussions

Data was analyzed based on descriptive and panel regression analyses in line with the specific objectives and research hypotheses of the study.

4.2 Descriptive Analysis

The findings of the study from the descriptive analysis are captured based on statistics such as mean, standard deviation, minimum and maximum values and total observations as contained in Table 4.1.

Table 4.1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Financial Performance	72	-0.072	0.128	-0.542	0.038
Core Capital to Total Assets Ratio	72	0.270	0.246	-0.520	0.836
Core Capital to Total Deposits Ratio	72	0.005	0.010	-0.005	0.058

Source: Computations Using Study Data (2023)

The results in Table 4.1 indicate that all the variables used in the study each had a total observation of 72. Notably, the study was based on a balanced panel data since the research variables each had the same number of observation. Financial performance as measured by return on assets had mean of -0.072 and standard deviation of 0.128. Additionally, minimum and maximum values of -0.542 and 0.038 were established for financial performance. These statistics further evidence the research problem which is the dwindling financial performance of microfinance banks in Kenya based on profitability ratio, return on assets.

Core capital to total assets ratio had mean of 0.270, standard deviation of 0.246, minimum value of -0.520 and maximum value of 0.836. This is an indication that despite the negative minimum value, capital adequacy in terms of core capital to total assets ratio was relatively stable over the period of the study. Mean and standard deviation of 0.005 and 0.010 respectively were established for core capital to total deposits ratio. Additionally, core capital to total deposits ratio had minimum value of -0.005 and maximum value of 0.058. Similar to the case of core capital to total assets ratio, core capital to total deposits ratio was relatively stable over the period of the study.

4.3 Diagnostic Tests

Muticollinearity test, normality test, stationarity test, heteroskedasticity test and model specification test were conducted which were aimed at ensuring the suitability of the research data while fulfilling the requirements for panel regression analysis.

4.3.1 Multicollinearity Test

Multicollinearity test was conducted within the framework of the Variance Inflation Factor (VIF) test procedure and the results are presented in Table 4.2.

Table 4.2: Multicollinearity Test Results

Variables	VIF	Comment
Core Capital to Total Assets Ratio	2.11	Low Multicollinearity
Core Capital to Total Deposits Ratio	2.11	Low Multicollinearity

Source: Computations Using Study Data (2023)

The VIF test procedure was employed in assessing the level of collinearity among the predictor variables and this was informed by a threshold of 5. The results in Table 4.2 indicate a VIF value of 2.11 for each of the capital adequacy ratios (core capital to total assets and core capital to total deposits). These statistics are notably below the threshold of 5, hence there were no excessive multicollinearity levels among the predictor variables.

4.3.2 Normality Test

Normality test was carried out for purposes of assessing the distribution of the research data and this was done using the Shapiro Wilk test for normal data. The results are contained in Table 4.3.

Table 4.3: Normality Test Results

Variable	Obs	W	V	Z	Prob>z
Financial Performance	72	0.72758	17.157	6.191	0.00000
Core Capital to Total Assets Ratio	72	0.95324	2.945	2.353	0.00932
Core Capital to Total Deposits Ratio	72	0.57294	26.895	7.170	0.00000

Source: Computations Using Study Data (2023)

The Shapiro Wilk test for normal data was based on the null hypothesis that the research data is normality distributed. The test was carried out using a threshold of 0.05 significance level. In view of this, all the three variables were characterized by non-normal distribution which led to the rejection of the null hypothesis. However, in view of the nature of the data used which is panel data based on a time scope of 2013 to 2019 for 13 MFBs, the issue of non-normal distribution can be ignored.

4.3.3 Stationarity Test

In order to ascertain the stationarity levels of the research variables, the fisher-type unit root test based on Augmented Dickey Fuller test procedure was conducted. The results from the stationarity test are documented in Table 4.4.

Table 4.4: Stationarity Test Results

Variable	Statistic	P-value	Comment
Financial Performance	25.7970	0.0000	Stationary
Core Capital to Total Assets Ratio	10.0037	0.0000	Stationary
Core Capital to Total Deposits Ratio	44.3999	0.0000	Stationary

Source: Computations Using Study Data (2023)

The test for stationarity was informed by the null hypothesis which stated that all panels contain unit roots based on the threshold of 0.05 significance level. The various p-values obtained provided evidence that all the research variables were stationary. Specifically, financial performance, core capital to total assets ratio and core capital to total deposits ratio each had a p-value of 0.0000. Despite the initial non-stationary of core capital to total assets ratio where the p-value was slightly above the threshold, the inclusion of time trend led to the data being stationarity.

4.3.4 Heteroskedasticity Test

Heteroskedasticity test is carried out with the aim of assessing whether the error term in a regression model has constant variance over time. For this study, the Breusch-Pagan test was used. The findings are documented in Table 4.5.

Table 4.5: Heteroskedasticity Test Results

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

H_o: Constant variance

Variable: fitted values		**Corporate Tax Planning**
chi2(1)	=	2.10
Prob> chi2	=	0.1471

Source: Computations Using Study Data (2023)

The heteroskedasticity test was guided by a null hypothesis stating that the residuals in the regression model are homoskedastic. Based on the results obtained in Table 4.5, the residuals are homoskedastic as indicated by a p-value of 0.1471 which is above the threshold of 0.05.

4.3.5 Model Specification Test

Model specification test was conducted in order to select the most appropriate model for estimation. The hausman specification test was utilized and the results presented in Table 4.6.

Table 4.6: Hausman Specification Test

	(b)	(B)	(b-B)	Sqrt (diag(V_b-V_B))
	Fixed	Random	Difference	S.E.
Core Capital to Total Assets Ratio	0.2287131	0.2417807	-0.0130677	0.0111066
Core Capital to Total Deposits Ratio	-7.854717	-8.068432	0.2137153	0.2430312
Chi2(2)	1.39			
Prob>chi2	0.4991			

Source: Computations Using Study Data (2023)

The hausman specification test was conducted for purposes of selecting between fixed effect model and random effect model. The test was guided by a null hypothesis which states that random effect model is the most appropriate model for estimation. A p-value of 0.4991 was established and based on a threshold of 0.05, the null hypothesis was not rejected. Consequently, the random effect model was adopted for estimation.

4.4 Panel Regression Analysis

In order to establish the significance of the effect of capital adequacy on financial performance of microfinance banks in Kenya, panel regression analysis was applied. The panel regression analysis was based on the random effect model as established by the hausman specification test and the results are contained in Table 4.7.

Table 4.7: Panel Regression Results

Financial Performance	Coef.	Std. Err.	Z	P>|z|	[95% Conf.	Interval]
Core Capital to Total Assets	0.2417807	0.0498001	4.86	0.000	0.1441744	0.3393871
Core Capital to Total Deposits	-8.068432	1.129495	-7.14	0.000	-10.2822	-5.854662
cons	-0.1173524	0.0317168	-3.70	0.000	-0.1795161	-0.0551886
R^2 =0.3125						
Wald chi2 (2) =51.30						
Prob> chi2 =0.0000						

Source: Computations Using Study Data (2023)

Table 4.7 indicates an R squared of 0.3125 and p-value of 0.0000, hence implying that 31.25 percent of the fluctuations in financial performance of microfinance banks in Kenya are attributed to the capital adequacy ratios used which are core capital to total assets and core capital to total deposits.

4.5 Hypotheses Testing

The study sought to establish the effect of capital adequacy on financial performance of microfinance banks in Kenya. In order to achieve this objective, two specific objectives were derived. Consequently, corresponding null hypotheses were formulated in view of the specific objectives as documented in the succeeding sub-sections. The hypotheses were tested using the output from the panel regression analysis where the p-value method was applied. The criterion used was to reject the null hypothesis if the p-value obtained is less than the threshold of 0.05.

4.5.1 Effect of Core Capital to Total Assets Ratio on Financial Performance of Microfinance Banks in Kenya

The study sought to determine the effect of core capital to total assets ratio on financial performance of microfinance banks in Kenya. In order to achieve this objective, the following null hypothesis was tested:

H_{01}: Core capital to total assets ratio has no significant effect on financial performance of microfinance banks in Kenya

The findings from the panel regression analysis in Table 4.7 indicate a p-value of 0.000<0.05 which implies significance. Consequently, the null hypothesis which stated that core capital to total assets ratio has no significant effect on financial performance of microfinance banks in Kenya was rejected. The effect of core capital to total assets ratio on financial performance was captured by a coefficient of 0.2418. This implies that a unit increase in core capital to total assets ratio enhances the financial performance of microfinance banks by 0.2418. The positive

relationship can be attributed to the fact that profit making institutions tend to hold more capital to total assets ratio. A positive return on assets serves as an indication of efficient utilization of bank resources to generate profit which is further driven by core capital to total assets ratio.

The study findings align with literature both from the theoretical and empirical perspectives. Capital buffer theory supports positive capital adequacy and financial performance relationships. Hence, increases in core capital in relation to total assets lead to corresponding increases in the return on assets of microfinance banks. Empirically, Ndegwa (2018) found that capital adequacy had significant positive relationship with financial performance (based on return on assets). Akims and Akims (2019) similarly reported that capital adequacy based on core capital to total assets had significant positive effect on profitability as measured by return on assets. Ngumo *et al*. (2020) also documented that capital adequacy had significant positive relationship with financial performance. Also, Tibebe and Gujral (2022) found that capital adequacy had significant positive nexus with profitability (based on return on assets). Additionally, Madialo (2022) established that capital adequacy had significant positive effect on financial performance (as proxied by return on assets).

4.5.2 Effect of Core Capital to Total Deposits Ratio on Financial Performance of Microfinance Banks in Kenya

The study further sought to examine the effect of core capital to total deposits ratio on financial performance of microfinance banks in Kenya. In view of this objective, the study tested the following null hypothesis:

H_{02}: Core capital to total deposits ratio has no significant effect on financial performance of microfinance banks in Kenya

The results obtained from the panel regression analysis in Table 4.7 indicate a p-value of 0.000<0.05, hence denoting significance. In view of this, the hypothesis which stated that core capital to total deposits ratio has no significant effect on financial performance of microfinance banks in Kenya was rejected. The coefficient -8.0684 was obtained for the effect of core capital to total deposits ratio on financial performance. A unit increase in core capital to total deposits ratio leads to a depletion of financial performance by 8.0684. Despite the financial intermediation role of banks being fueled by customer deposits, these deposits remain liabilities as banks are obligated to have such funds available to customers upon request for withdrawal. As such, a growing core capital to total deposits ratio does not necessarily translate to improved financial performance except in a situation whereby it is prudently managed, hence, the justification of a negative nexus between core capital to total deposits ratio.

Additionally, the significant negative nexus between core capital to total deposits ratio and financial performance largely emanates from the fact that customer deposits held by banks are susceptible to withdrawals by depositors despite its underlying circular nature. The results of the study on the effect of core capital to total deposits ratio on financial performance are in line with some findings from empirical literature. Nyanyuki *et al*. (2022) similarly reported that capital adequacy had significant negative effect on financial performance. Laitupa and Christianty (2023) found that capital adequacy had significant effect on financial performance (based on return on assets)

5.1 Conclusion and Recommendations

The conclusion and recommendations are informed by the findings of the study. The effect of core capital to total assets ratio on financial performance of microfinance banks in Kenya was determined. It was concluded that core capital to total assets ratio is a significant predictor of financial performance of microfinance banks in Kenya. The study recommends that the capital adequacy guidelines by the Central Bank of Kenya should be in view of underlying banking conditions. Upon reaching the minimum capital requirements, microfinance banks should strive towards holding additional buffer with regards to core capital to total assets ratio. This should however be done in a prudent manner where financial intermediation activities are not distorted.

The study examined the effect of core capital to total deposits ratio on financial performance of microfinance banks in Kenya. In view of the findings for this objective, it was concluded that core capital to total deposits ratio is important in determining the financial performance of microfinance banks in Kenya. Banks connect depositors and borrowers together largely through deposits and loans respectively. Hence, when attracting and accepting customer deposits, it should be noted that these are liabilities on the side of the bank. Despite the attributed benefits of capital accumulation in enabling banks to cushion against adverse conditions, it is not without underlying implications on financial performance. A joint core capital and total deposits objective should be put in place by the management of microfinance banks. Capital regulatory and supervisory initiative should balance between protecting depositors and ensuring stable financial performance.

5.3 Contribution to Knowledge

The study contributes to existing body of knowledge in several ways. From the practical perspective, the Central Bank of Kenya and the management of microfinance banks have been provided with recommendations for policy and practice respectively with regards to capital adequacy and financial performance nexus. Similarly, other financial institutions will find this study useful as it serves as a source of reference when formulating policies related to capital adequacy and financial performance.

Theoretically, the study documented key theories which are stakeholder theory and capital buffer theory. The two theories provided underpinnings with regards to the relationship between capital adequacy and financial performance. The importance of having appropriate capital level and how it relates to financial performance as depicted by capital buffer theory was elaborated. The need to consider several relevant stakeholders and how financial performance is determined by such interactions is highlighted under stakeholder theory prepositions.

Empirically, several studies have been reviewed which relate to capital adequacy and financial performance nexus. Additionally, an empirical model has been documented modeling financial performance as a function of two capital adequacy ratios (core capital to total assets and core capital to total deposits). The model in turn informed the statistical analysis of the study, hence providing robust empirical findings on the effect of capital adequacy on financial performance. These in turn contribute to existing body of empirical knowledge on the relationship between capital adequacy and financial performance.

5.3 Suggestions for Further Studies

The study examined the effect of capital adequacy on financial performance of microfinance banks in Kenya. Further studies can be done employing other profitability based measures of financial performance such as return on equity and net interest margin. The effect of capital adequacy on financial performance can also be assessed focusing on other institutions in the financial sector such as commercial banks and insurance firms. This in turn will serve as basis for comparisons across these institutions and consequently lead to more effective policy making.

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