PRUDENTIAL REGULATIONS AND FINANCIAL PERFORMANCE OF MICROFINANCE BANKS IN KENYA

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ABSTRACT

As financial intermediaries, microfinance banks are crucial. The growth of an economy is significantly influenced by microfinance institutions' financial performance, in addition to their function in intermediation. The prudential guidelines and financial health of Kenyan microfinance banks were examined in this study. The precise objectives looked on how credit, capital adequacy, and liquidity regulations affected Kenyan banks' financial performance. Lastly, the researchers looked into how the microfinance institutions' size impacts prudential regulations and financial performance. The study was grounded in the theories of stakeholders, capital buffer, and liquidity management. The sample approach used was census sampling, and the research design was explanatory. The 13 MFBs that made up the target population and are accredited by the Central Bank of Kenya produced audited financial statements and yearly reports, which provided secondary data. Normality, multicollinearity, stationary, autocorrelation, heteroscedasticity, and diagnostic tests were performed on the data. Additionally, multiple regression analyses, correlation analyses, and descriptive statistics were carried out. The results showed that capital adequacy regulations significantly influenced MFBs' financial performance, highlighting the importance of maintaining sufficient core capital. However, liquidity regulations did not significantly impact performance, suggesting customer deposit ratios may not be a critical factor. Credit regulation, specifically non-performing loans, had a significant negative impact, highlighting the importance of effective credit management. The association between performance and prudential regulations is not affected by MFB size. These findings highlight the importance of targeted and effective regulatory measures in the microfinance sector.

Key Words: Capital Adequacy, Credit Regulations, Liquidity, Microfinance

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INTRODUCTION

Ngugi and Waithaka (2020) discovered that capital for low- and middle-income earners are mostly provided by the microfinance banks, this supports towards a nation's prosperity expanding. The increasing growth of microfinance banks globally has intensified the need for more prudential regulations (Mustafa, 2020). These prudential regulations will enable adequate funding just like commercial banks which will in turn affect their performances (Kabochi, 2020). It is essential for microfinance banks to be properly funded as good performance enables capital adequacy and internally generated funds rather than depending on externally generated funds (Ndegwa, 2018).

Kenyan microfinance banks have undergone several transformations and reformations over the past years (Rono, 2020). The absence of effective regulation and governance as governing bodies tend to focus more on profit generating banking institutions is one of the obstacles to the expansion of Kenyan microfinance institutions (Alastair, 2015). In 2006, the microfinance acts were introduced and in 2008, microfinance regulations were put in place to provide supervisory guidelines for the microfinance banks (Association of Microfinance Institutions, 2018). However, these prudential regulations can either positively affect their financial performance or negatively affect their financial performances.

These consist of guidelines and supervisory framework aimed at protecting the financial system of a system. Prudential regulations not only protect financial institutions but also all stakeholders involved (Wangari, 2020). Prudential regulations assist financial institutions to meet certain set goals and objectives and it also facilities the achievement of their vision (Wanjiru, 2016). Prudential regulations are established by governing bodies in order to maintain stability and financial growth of banks through the implementation of frameworks and policies (Eden, 2014). The Kenyan Central Bank has compiled a list of 22 prudential regulations (CBK, 2019). Capital adequacy, liquidity, credit risk,

operational efficiency, and investment requirements are among the rules. This present study will concentrate on capital adequacy, credit regulation, and liquidity regulation because there is substantial consensus in the literature that microfinance banks that do not pay close attention to these issues operate poorly based on their financial performance or wind up in merging and acquisitions.

This is usually analyzed based on monetary terms; it is regarded as the measure of a firm's monetary growth in accordance with achievement of vision, set goals and operations (Agola, 2014). According to Naz, Ijaz &Naqvi (2016) ROCE, Returns on Investment (ROI), ROA, and ROE amongst others can be used to measure financial performances. Given futuristic concerns, financial performance is gauged by considering a firm's growth prospects and stability, potentials, and economic moat and this enhances financial performances over time (Bhunia, Mukhuti & Gautam, 2011). Most Kenyan MFBs have not had good financial results considering the inception of the first licensed microfinance institution by CBK in 2009. Majority of accredited MFBs have experienced a decline in profits (Otieno, Nyagol, & Onditi, 2016).

Prudential regulations assist financial institutions to meet certain set goals and objectives and it also facilitates the achievement of their vision (Wanjiru, 2016). Prudential regulations are established by governing bodies in order to maintain stability and financial growth of banks through the implementation of frameworks and policies (Eden, 2014). This present study will concentrate on capital adequacy, credit regulation and liquidity regulation.

The Kenyan MFBs are responsible for collecting deposits from customers and raising loans to individuals through capital generated from customers' deposits thereby making profits from interest generated (Alastair, 2015). The microfinance banks provide financial services to low-income earners (Gibson, 2012). Microfinance banks in Kenya are divided into licensed deposit taking microfinance banks and community

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microfinance banks (CBK, 2015). According to AMFI (2018), there are 13 depository MFBs in Kenya, and they are subjected to Microfinance Act (2006), These microfinance banks are subject to CBK's regulations and set rules as they provide guidelines regarding capital adequacy, credit and liquidity (Muganga, 2010). Kenyan microfinance sector was declared by Economist Intelligence Unit (EIU) in 2016 as second best in Africa and among top leaders in the world (EIU, 2016).

Microfinance banks are required to follow strict capital, lending, and liquidity regulations within the regulatory framework. Microfinance banks must maintain Core Capital to 12% Total capital to TRWA ratio and a 10% Total Risk Weighted Assets (TRWA) in terms of capital. In terms of liquidity standards, institutions must sustain a liquidity ratio of 37% (CBK 2008). Microfinance institutions can be affected by inadequate regulations to the point of closing down, whilst favorable rules can improve their performance. Compliance with rules can be expensive for institutions, lowering their performance (Debapratim, Trilochan, & Biswajit, 2014).

Problem Statement

Microfinance banks were first introduced by Muhammad Yunus in Bangladesh in 1976. It was introduced to bridge the gap between high income earners and low-income earners. It made loans and other financial services easily accessible for people in the rural areas (Wanjiru, 2016). Through microfinance' banks investment in the life of various low-income earners, their living standards has improved and hence able to sustain themselves, (Alastair, 2015). Generally, microfinance banks are majorly funded through deposits, goodwill donations, and loans from other financial institutions (Alastair, 2015) and have been faced with competition from commercial banks as they tend to have access to more funding (Addisalem, 2015).

Over the years, the microfinance banks in Kenya have suffered decline in their financial performance. In the year 2015, ROA stood at 26%

then dropped to 25% in 2016 and 23% in year 2017, also in the year 2017 they reported a loss of Ksh. 622 million before tax. In 2018, microfinance banks financial performance dropped by 131 % with a loss before tax of Ksh. 1.4 billion (CBK 2018). In 2019, a total loss before tax of 339million ksh. was reported which made the performance of that year better compared to the year 2017 and 2018. In 2020 the performance deteriorated since the industry posted a deficit overall prior to taxes of Ksh. 2.2 billion.

The primary causes of the losing positions, with losses before tax of Ksh. 476 million and Ksh.1.5billion were Faulu MFB and Kenya Women MFB PLC respectfully. As a result, the sector's return on assets and equity ratios both fell to negative 28 percent and negative 3 percent, respectively (CBK, 2020).

The researchers Ofeimun, Akpotor, Godwin and Afure (2020) in their research reported negative impacts of capital adequacy on performances of banking institutions in Nigeria. Similarly, Kabochi (2020) carried out research on influences of capital adequacy regulation on commercialized banking establishments performances in Kenya. Although financial performance was proxied as efficiency a positive result was observed, despite Kenya being the focus of the study, it laid more emphasis on commercial banks which are controlled by different prudential regulations. Akims and Akims (2019) investigated how credit regulation focusing on banking institutions listed on NSE, the study relied on panel data which revealed that in terms of ROA the performance was significantly affected by credit regulations negatively, in this study we shall concentrate on Microfince banks in Kenya. In Uganda, Mafumbo (2020) established insignificant effects of credit managements on selected banks' performances in Uganda using universal sampling technique. Quarshie and Djimatey (2020) reported a significant link between performance of banks and liquidity, but the findings are specific to Ghanaian banks. In view of the various contextual and methodological gaps and in addition to the fact that there have been limited studies explaining the

nexus between prudential regulations and Kenyan MFBs' performances forms the basis of this study.

Research Objectives

The general objective of this study was to examine effects of prudential regulations on financial performances of microfinance banks in Kenya. The study was guided by the following specific objectives;

- Explore how capital adequacy regulations affect Kenyan microfinance banks financial performance.
- Evaluate the influence of credit regulations on the Kenyan microfinance banks financial performance.
- Examine the effects of liquidity regulations on the Kenyan microfinance banks financial performance.
- Investigate the role of microfinance size as a moderating factor and its impact on the correlation between prudential regulations and financial performance.

The research hypotheses were;
- H01: There is no observable effect of capital adequacy regulation on the financial performance of microfinance banks in Kenya.
- H02: The financial performance of microfinance banks in Kenya is not noticeably influenced by credit regulation.
- H03: The financial performance of microfinance banks in Kenya is unaffected by liquidity regulation.
- H04: The size of microfinance banks does not significantly alter the relationship between prudential regulations and the financial performance.

LITERATURE REVIEW

Theoretical Review

Liquidity Management Theory

Keynes (1939) postulated this theory. There are various methods supporting the liquidity management theory namely: commercial loan, shiftability, anticipated income, liability management theories etc. The study will focus on commercial loan and shiftability theories (Cai & Wang, 2006). Commercial loan theory majorly focuses on the growth structure of the various assets owned by banks and not primarily on the marketability of the assets (Dodds & Nwankwo (1992). Whenever money is deposited into a bank, the liquidity is certain as far as the assets are liquidated for certain business operations and leveraged using short term loans (Bassey & Moses, 2015). The theory does not include long term loans which is a major hindrance due to the conflicting link it has with nation's economic development (Dodds & Nwankwo, 1992). According to Emmanuel (1997), liquidity banks majorly are ensured through the self-liquidation of loans. The theory further implies that loans are lent to banks based on the security of short-term loans whenever they make short term self-liquidating productive loans.

Harold G. Moulton postulated the Shiftability theory in 1915. This theory opined that before an asset can be totally shiftable, the asset must be able to move directly without any loss of capital whenever there is a need for liquidity (Harold, 1915). The theory asserts that with the help of credit instruments being held as a form of liquidity reserve, banks generally can adequately protect themselves and prevent massive deposit withdrawals. Nwankwo (1991) argues that there is no point in storing liquidity on the asset side due to the fact that they can be bought by banks. The paradox of liquidity and its impact on banks will be used to establish a link in accordance with the objective of this study. Commercial loan theory supports my study in that this theory only includes short term loans hence there is no risk of running into a bad dept, assets can also be liquidated for certain business operations therefore earn income. Shiftability theory supports my study in that it involves short term loans therefore there is no risk of running into a bad dept.

Capital Buffer Theory

Marcus modified this theory in the period 1984, asserted that capital is usually held more than

recommended. The overflowing capital of a bank which is available after meeting certain prudential capital regulation is referred to as the capital buffer (Jokipii & Milne, 2011). Aside from the prudential requirements, the ratio of Basel capital to risk-weighted capital. Adequate capital tends to limit the risk of bankruptcy by absorbing shocks. Therefore, buffer capital reduces the absorptive capacity of banks to survive in highly hostile conditions (Bitar, Mohammad, Kuntara, & Thomas, 2018). Certain regulations which are aimed at creating enough capital buffers are also aimed at reducing the rate of lending (Von. Thadden, 2004).

Laeven and Levine (2009) found out bank's capital raising is achieved when portfolio risk tends to increase. Banks therefore need to raise capital to meet credit demand. As capital deregulation eases, banks' capital reserves change periodically (Ikpefan, 2013). During times of market uncertainty, capital buffers remain critical to banks' risk acceptance. As stated in the buffer theory, the importance of high and low buffers on a bank's financial performance is used to strengthen research findings that aims at examining impacts of prudential regulation on MFBs in Kenya. The hypothesis is important to my research because it accelerates the rate at which a bank loses its ability to absorb shocks to the economy. Regulations attempt to build up enough capital buffers to slow down lending and improve performances.

Stakeholders' Theory

Ian Mitroff proposed the stakeholder idea in 1983. Shareholders and management are not the only significant stakeholders in the operation of any business. According to Miles (2012), stakeholder theory examines broader groups that influence corporate goals and policies, unlike agency theory, which considers only management and shareholders. Internal and external stakeholders are both recognized in this paradigm. Employees, executives, and owners are internal stakeholders, whereas suppliers, the government, creditors, consumers, society, and the environment in which the firm operates are external stakeholders.

Involving other stakeholders in decision making of the organization helps reduce conflict and facilitates business operations (Turnbull, 1994). In stakeholder theory, there are three major approaches: normative descriptive, and instrumental. The descriptive technique is used to demonstrate the features and behavior of a company's management. The instrumental approach demonstrates the link between the management group of stakeholders and the goals of the company. The normative approach defines morality for organizational management and effective functioning (Donaldson & Preston, 1995).

All of the following stakeholders are recognized by bank regulation since they play a critical role in the bank's performance. According to McDonald and Puxty (1979), companies no longer focus solely on shareholders because every firm operates within a society that must be acknowledged. For the past few years, the topic of social and environmental accounting has become increasingly essential in the recent market According to Starik and Rands (1995), the domain is an important stakeholder in company performance. Information regarding the environment in which the company operates is becoming increasingly relevant to both businesses and knowledge users since it gives more insight that aids in the discharge of societal accountability. It also aids in proving the firm's reaction to particular ethical challenges that arise in that community. According to Gray, Collision & Bennington (1997), some businesses that promote community environmental issues are growing in their operations. Stakeholders Theory's suggests support banks' varying performance as a factor of numerous stakeholders and will thus be used to buttress financial performance in this study.

The participation of both internal and external stakeholders in organizational decision making can help lessen conflict leading to improved performance for example knowledge on business environment so as to identify ethical challenges arising in communities.

Empirical Review

Leekaso, Cherono, and Rintari (2020) studied how financial performance of Samburu County SACCOs is affected by capital adequacy laws' impact. For this study, a descriptive study approach was adopted. A purpose-designed sampling process was employed to gather data from a survey of twenty-six Sacco executives. Data obtained were analyzed using SPSS software for the inferential statistics which includes regression analysis and Pearson correlation and descriptive statistics, including percentage, frequency, mean. The study then reported that SACCO performances in Samburu County are significantly affected by the capital adequacy due to lack of credit facilities. However, unlike this study, which will concentrate on depository microfinance banks, the previous study focused on SACCOs in Samburu County, so the results may not be applicable to other microfinance institutions in Kenya.

Ofeimun *et al.* (2020) aimed at assessing capital and bank performance nexus for Nigeria with the use of an ex post facto study design, which is a content analysis of corporate financial statements from 2010 to 2019. The study significantly employed correlation analysis, regression analysis and descriptive statistics in determining research outcomes. Outcome revealed that customer deposit has an important negative nexus with financial performance. Although previous research attempted to establish a connection, it still applies to banks because of relationships between adequate capital and financial performances. in Nigeria, and thus, this current study will focus Kenya's MFB.

Echobu and Nkiri (2019) while exploring the banking sector in Nigeria aimed at analyzing credit risk and performance associations with emphasis on Nigerian commercial banks. Secondary quantitative data was gathered banks' financials gather through banks' financial statements while regression tools were made use of for the analysis. Research concluded that NPL had a substantial adverse impact on Nigerian banks' performances. In spite the previous research purposes to determine the connection between capital adequacy and credit risk, it however, failed to include liquidity regulation in which will be a predictor in the present study.

Akims and Akims (2019) investigated credit regulation effect with focus on bank performance for banking institutions in the listed category. The timing was between 2013 and 2017 as the study relied on panel data using panel data methodology. Findings proved that commercial banks' ROA performance listed on NSE was significantly affected by the credit regulations in a negative way. The study however analyzed listed commercial banks on NSE, and results might not be applicable to other non-listed banking institutions. Therefore, this present study will be focused on MFBs in Kenya.
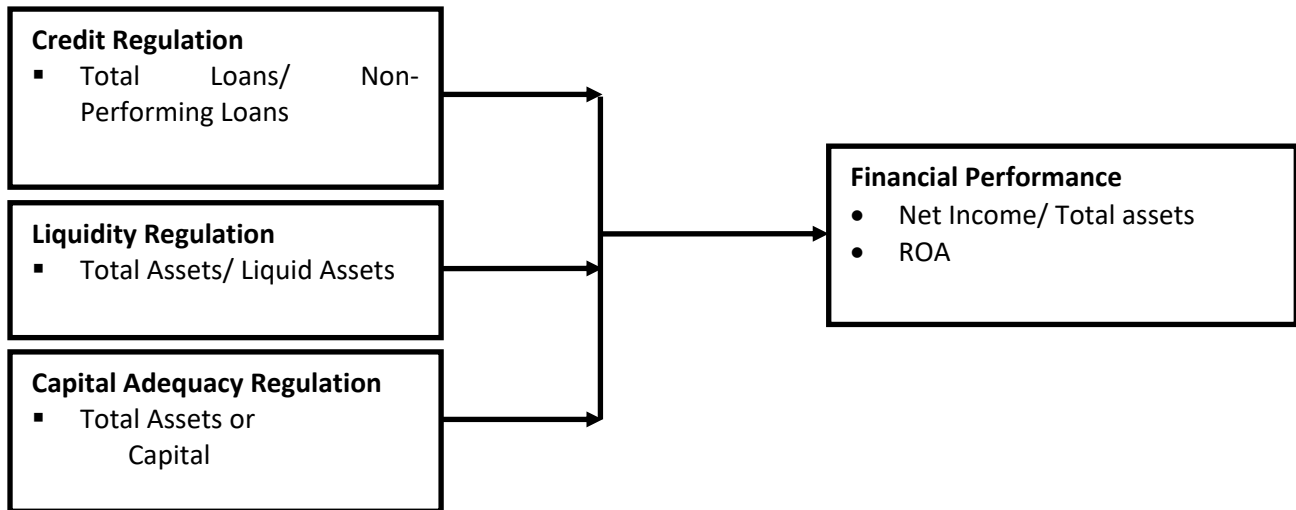
Mashamba (2018) examined how Basel III liquidity requirements impact bank profitability in Zimbabwe by applying the Generalized Method of Moments (GMM) for analysis. Forty (40) Zimbabwe banks associated and operational in eleven (11) emergency markets for as long as five years were used as the sample size. It was revealed concrete evidence from the research findings to reveal that financial performance of banks in developing markets are positively influenced by liquidity regulations. Accordingly, the study recommended the adequate availability of liquid assets by the banks. The above research was performed in Zimbabwe as well as results of the investigation are specific to banks in Zimbabwe and may not be relevant to Kenyan banks.

In a study in 2018 by Onyekwelu, Chukwuani, and Onyeka on the impacts of cash management on the finance performances of five sampled depository banking establishments in Nigeria. Data was gotten from statement of accounts and annual reports from the past 10 years of selected Nigerian depository banks. Reports and statements representing ten (10) years. Multiple regression analysis was utilized in analyzing collected data. Research demonstrated banking performance and efficient liquidity management has an existing

relationship which is strongly positive in terms of profitability and ROCE. The aforementioned study is largely relevant to banking establishments in Nigeria and a result of the study is country specific. Nevertheless, this current study will establish results based on Kenyan microfinance banks.

Conceptual Framework

Credit Regulation ▪ Total Loans/ Non-Performing Loans		
Liquidity Regulation ▪ Total Assets/ Liquid Assets	→	**Financial Performance** • Net Income/ Total assets • ROA
Capital Adequacy Regulation ▪ Total Assets or Capital		

Independent Variables   **Dependent Variable**

Figure 1: Conceptual Framework
Source: Researcher, 2024

METHODOLOGY

The study adopted explanatory research design because it is used for solving undefined research problems and also helps the researcher understand a particular problem in depth (Saunders, Lewis & Thornhill, 2007). The 13 accredited MFBs operational between 2015 and 2020 formed the target population for this study. These microfinance banks was used because they were the current operational microfinance banks.

To analyze the collected data, a multiple regression model was applied. For this study the sample size was the 13 microfinance banks in Kenya. A census sampling technique was adopted for this research. This was suitable for the study due to the small sample size (Mugenda & Mugenda, 1999). Secondary data for period 2015-2020 was utilized in carrying out this study and for purposes of analysis of data. This data was based on panel data as it cut across various time periods and firms. This data was collected using a data review guide across the MFBs in Kenya.

Audited financial statement of the microfinance banks and Annual reports published between period of 2015 to 2020 by the CBK was collected and used for this study. The explanatory variables to be collected was data based on core capital, total assets, liquid assets, bad debts and total loan for capital adequacy, liquidity and credit regulations and experimental variable data is going to be net income and total assets for financial performance (ROA).

Gathered data from annual reports and financial statements was then be analyzed using correlation, descriptive, and multiple regression analyses. Multiple regression analysis was used in assessing effects of prudential regulations on financial performances. In establishing relationships existing between financial performances and prudential regulations, correlation analysis was used. Measures of central tendency were employed in evaluating data. SPSS was employed in carrying out all inferential analysis. Results from this analysis were shown in tables

FINDINGS AND DISCUSSIONS

Descriptive Statistics

The study looked at three different variables. Table 1 provides a quick review of the descriptive statistics that were gathered.

Table 1: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Capital adequacy	86	2.2700	12.3800	0	84.36
Credit regulation	86	2496.78	5212.80	60	4565
Liquidity regulation	86	3.0351	6.7025	0.01	47.74
MFB size	86	4.2967	0.8477	1.93	5.85
ROE	86	31.1465	184.6178	0.04	1234.86

Source: Researcher (2023)

The data indicate that the Microfinance Banks (MFBs) have considerable differences in key financial parameters between one another. The range of capital adequacy values was 0 to 84.36, with a mean of 2.27. There are notable differences in capital adequacy, as evidenced by the high standard deviation of 12.38, with certain MFBs having substantially higher capital levels than others. The reason for these variations is that certain MFBs have standard deviations that are noticeably greater.

The evaluation of credit regulation, which was accomplished through the use of non-performing loans, revealed a high degree of risk across the majority of MFBs, having 60 minimum value, 4565 maximum value, and a mean value of 2496.78. The significant range in credit risk that exists between the MFBs is reflected by the staggeringly large standard deviation value of 5212.

The liquidity variable's value varied from a low of 0.01 to a high of 47.74, with an overall average of 3.04. The 6.7 SD highlights considerable differences in liquidity, suggesting that some MFBs maintained significantly higher levels of liquidity than their counterparts.

The total assets natural logarithm determined the MFB's size; the mean value was 4.30. 1.93 was the lowest value and 5.85 was the highest. The low SD of 0.85 suggests that the sample's MFB size is mostly constant.

The ROE, which assessed the company's financial performance, had a mean of 31.15. with a minimum of 0.04 and a high of 1234.86. 184.62, the high standard deviation figure, shows that there is a big variation in ROE among the MFBs; some MFBs achieve returns that are noticeably higher than those of other MFBs.

Diagnostic tests

Regression modeling is dependent on many assumptions, the most important of which are that the data is normal, homoscedastic, autocorrelated, multicollinear, and stationary. In the event that these presumptions are broken, it is recommended that one interpret the results of the model that was fitted with extreme caution. Given this, the study's scholars utilized a variety of diagnostic techniques in confirming that the data set in question is correct and that no assumptions were violated.

Normality test

The degree of normalcy was investigated using the Shapiro-Wilk tests for residuals. Normality test outcomes are displayed below.

Table 2: Findings

	Variable	Obs	W	V	z	Prob>z
Model 1	Residuals	86	0.982	1.301	0.578	0.282
Model 2	Residuals	86	0.988	0.867	-0.315	0.624

Source: Researcher (2023)

Multicollinearity test

The Variance Inflation Factors (VIF) was calculated as a test for multicollinearity; values between 1 and 10 indicated the absence of multicollinearity, as demonstrated. Table 3 displays the findings.

Table 3: Results

Variable	VIF	Judgement
Capital adequacy	1.20	No collinearity
Credit regulation	1.17	No collinearity
Liquidity	1.08	No collinearity
MFB size	1.30	No collinearity
Aveg VIF	1.19	No collinearity

Source: Researcher (2023)

Based on the findings, all Variance Inflation Factors (VIFs) fell within the range of 1 to 10, indicating the absence of multicollinearity in the dataset used for the panel regression.

Heteroscedasticity test

The Breusch Pagan Godfrey test tested for heteroscedasticity and evaluate if heteroscedasticity was present or not. Table 4 has the results

Table 4: Heteroscedasticity test

	Model
chi2(1)	461.01
Prob > chi2	0.0000

Source: Researcher (2023)

The 0.0000 p-value, which is less than the 0.05 significance level, indicated the rejection of the heteroscedasticity hypothesis. According to this finding, the data were homoscedastic, which indicated that panel regression analysis was appropriate.

Autocorrelation test

The Durbin-Watson test was utilized in this study to determine whether serial correlation was present. There is no serial correlation when the value is very close to 2. The null hypothesis that was being tested required the computed value to be higher than the lower critical value (DL) in order to be detected. Table 5 presents the associated statistical findings.

Table 5: Durbin Watson test

Durbin Watson indicators	Finding
N	40
k (regressors)	5
Hypothesis (H0)	Zero autocorrelation
Durbin Watson value	2.704526
Critical value (95%)	1.718 (DL)
	1.809 (DU)
Judgement	Hypothesis not rejected

Source: Researcher (2023)

The fact that the Durbin-Watson value (D) is higher than the lower crucial value (DL) (D=2.704526 > 1.718) indicates that the data lags utilized did not have a serial correlation issue.

Stationarity test

Before beginning data analysis, the stationarity test is performed to determine whether time series data exhibit stationarity. If a series has a unit root problem, it is said to be non-stationary. In this study, the Fisher-type unit-root test assessed stationarity. Outcomes are tabulated below.

Table 6: Stationarity test

Variable	Inverse chi-squared (P)	Inverse normal (Z)	Inverse logit t (L*)
Capital adequacy	104.99 (0.000)	-2.31 (0.010)	-5.73(0.000)
Liquidity	191.62 (0.000)	-8.09 (0.000)	-14.21(0.000)
Credit regulation	94.18 (0.000)	-2.89(0.000)	-4.91(0.000)
MFB size	83.53(0.0000)	-2.75(0.0030)	-4.42(0.000)
ROA	77.69 (0.000)	-3.39 (0.000)	-4.75 (0.000)

Source: Researcher (2023)

Conducted through Fisher-type unit-root test due to the unbalanced panel data used. Based on the findings, each variable exhibited stationarity. This result is supported by the the inverse logit t's p-

values, inverse normal, and inverse chi-squared tests, all of which were less than 0.05. Consequently, results suggest that the dataset used in the study was stationary and that the unit root assumption was supported.

Hausman Test

This test helped in determining which of the fixed and random effects models was the best fit. This test helps choose between a random and fixed effects model. Table 7 has the outcomes.

Table 7: Hausman Test

	Model 1	Model 2
chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)	3.48	18.45
Prob>chi2	0.6266	0.0024
Interpretation	REM is appropriate	FEM is appropriate

Source: Researcher (2023)

The Fixed Effects Model (FEM) is the best choice if the p-value is < 0.05 (supporting H1), and the Random Effects Model (REM) is the best choice if the p-value is more than 0.05 (showing H0).

Correlation Analysis

The degree and intensity of the correlations between the variables were assessed by a Pearson correlation analysis. Unlike Spearman correlation, which looks at the monotonic relationship, The linear connection between two continuous variables is evaluated by Pearson correlation. Rather than using the raw data, the Spearman correlation coefficient is computed using the ranked values of each variable. The correlation matrix from Table 8 is displayed here.

Table 8: Correlation Matrix

	ROA	Capital adequacy	Liquidity	Credit regulation	MFB size
ROA	1				
Capital adequacy	0.314*	1			
	0.003				
Liquidity	0.087	0.533*	1		
	0.424	0.00			
Credit Regulation	- 0.249*	-0.265*	0.046	1	
	0.02	0.013	0.668		
MFB size	0.419*	-0.064	-0.206	-0.17	1
	0.00	0.553	0.056	0.115	

Source: Researcher (2023)

There was a weak, positive, and notable correlation between capital adequacy and MFB's financial performance (ROE), liquidity and ROA, a marginally significant negative association between credit regulation and MFB ROA, and a weak, positive, and notable correlation between the size and ROE of MFBs, as shown in table 8.

Regression Analysis

The connection between the response and the explanatory variables—capital sufficiency, liquidity, and credit regulation, MFB size, and financial performance (ROA)—was investigated using a linear regression model. The association with ROA was examined through random effects model; Results are tabulated below.

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Table 9: Random-Effects GLS Regression (Model I)

Dependent variable – ROA

Variables	Model I (a)	Model I (b)	Model I (c)	Model I (d)
Capital adequacy	.0187 (0.63)	.0243 (0.96)		
Liquidity		.0104 (0.50)		-.0051 (-0.18)
Credit Regulation			-.4769 (-2.13)*	-.4886 (-2.19)*
MFB size	-.0066 (-0.91)	-.0070 (1.02)	.0025 (0.26)	.0033 (0.37)
R-square (overall)	0.1927	0.1926	0.2051	0.2169
Wald chi2	6.29***	3.3	20.41*	30.88*
Prob > chi2	0.0984	0.3483	0.0001	0.000
No. of observations	86	86	86	86

t values in parentheses; P-values presented in *** <0.1, ** <0.5 and *<0.05

Source: Researcher (2023)

The first model, known as Model 1, sought to investigate the connection between control variables (like MFB size), financial performance of MFBs (ROA), and microfinance regulations (such as capital adequacy, liquidity, and credit regulation). The total R-squared value, or coefficient of determination, was 0.2169 based on the data displayed in Table 9. This suggests that 21.69% of the variation in MFB's ROA may be attributed to liquidity, capital adequacy credit regulation, and MFB size and composition. It was determined that the Wald chi-squared statistic was statistically significant with a 30.88 value and 0.000 p-value, this is < the 0.05 significance level. This implies that the regression model fit the study well.

With a coefficient () of 0.0243, capital sufficiency also exhibited a positive effect, albeit one that was not statistically significant (p-value > 0.05). Liquidity also had a negative effect, but it was not statistically significant (p-value = 0.854 > 0.05), with a value of -0.0051. Conversely, credit regulation had a statistically significant negative effect (p-value = 0.028 0.05) with an of -0.4886. This suggests that a 0.4886 unit drop in ROA is correlated with a rise in credit regulation. MFB size had a positive effect, but it was not statistically significant (p-value = 0.710 > 0.05).

The results showed that credit regulation significantly harmed Microfinance Banks' ability to succeed financially, as indicated by ROA (Return on Assets). This shows that a decrease in ROA is linked

to stricter credit restrictions, suggesting that these laws may hinder the profitability of these banks. The results align with the research conducted by Otieno, S. and Nyagol, M. (2016), which revealed a noteworthy inverse association between ROA and credit regulation.

Table 10: Fixed-Effects (Within) Regression (Model II)
Dependent variable – ROA

Variables	Model II (a)	Model II (b)	Model II (c)	Model II (d)
Capital adequacy	.0979 (0.70)			.0358 (0.27)
Liquidity		.6399 (3.84)*		.6189 (3.62)
Credit Regulation			-.8399 (-1.13)	-.6189 (-0.89)
MFB size	-.1268 (-5.46)*	-.113 (-5.27)*	-.1112 (-4.05)*	-.1008 (-3.93)*
R-square (overall)	0.0955	0.3658	0.1374	0.3386
F	10.62*	17.47*	10.99*	10.47*
Prob > chi2	0.000	0.000	0.000	0.000
Number of observations	86	86	86	86

Source: Researcher (2023)

The second model examined the connection between control variables (MFB size) and MFB financial performance, specifically their return on assets (ROA), as well as MFB regulations (capital adequacy, liquidity, and credit regulation). The data in Table 10 suggest that these variables account for 33.86% of the variation in ROA based on the total R-squared value. Additionally, the model's applicability for this study is indicated by its F-statistics value of 10.47, which has a p-value of 0.000 and confirms the model's statistical significance. Capital adequacy positively impacted ROA, with a coefficient (β) of 0.0357; nevertheless, when compared to the individual factors, the effect was found statistically insignificant (p-value = 0.786 > 0.05). Liquidity had a statistical notable and positive impact on ROA (p-value = 0.001 < 0.05) with a coefficient (β) of 0.6189. Conversely, credit regulation had a negative influence on ROA, as the coefficient (β) of -0.6189 indicates; however, this effect was not statistically significant, as indicated by a p-value of 0.377 > 0.05. Finally, ROA was found to be negatively impacted by MFB size, with a statistically significant coefficient (β) of -0.1007 (p-value = 0.000 < 0.05).

According to the model, a number of factors, including capital adequacy, liquidity, credit regulation, and MFB size, work together to affect MFBs' financial success as indicated by return on

assets (ROA). Each variable's relevance, however, changes, indicating that they may have distinct effects on ROA. These findings align with the study by King'ori et al. (2017) who revealed that MFB size and liquidity are key factors affecting MFBs' financial performance.

Table 11: Summary of hypothesis testing

Hypothesis	Verdict
H_{01}: Capital Adequacy regulation has no significant effect on financial performance of MFBs in Kenya.	Rejected
H_{02}: Liquidity regulation has no significant effect on financial performance MFBs in Kenya.	Rejected
H_{03}: Credit regulation has no significant effect on financial performance of MFBs in Kenya	Rejected
H_{04}: The association between MFBs' financial performance and prudential regulations is not significantly mediated by MFB size.	Not rejected

Source: Researcher (2023)

SUMMARY

The primary research objective was to explore the effect that appropriate capital regulation has on the financial performance of microfinance banks in Kenya. The core capital to total assets ratio was used as the calculation to assess whether or not there was sufficient capital. When it comes to core capital, it was obvious that there were huge swings in the capital adequacy of MFBs over the course of the six-year period. These major fluctuations were shown by the large standard deviations. It appears from this that some MFBs had access to a much bigger amount of capital in the sector than others had, whereas others had relatively less capital. The statistical analysis indicated that the regulation of capital adequacy positively impacted with a 0.0243 coefficient (β), although it was not statistically significant (p-value > 0.05).

Examining how Kenyan MFBs' financial performance is affected by liquidity regulation was the study's second goal. By dividing customer deposits by the total assets of MFBs, liquidity was evaluated. The outcomes demonstrated that liquidity regulation had an adverse impact, as evidenced by a beta coefficient (β) of -0.0051. Moreover, this impact was not statistically significant, with a p-value of 0.854 exceeding the standard 0.05 significance level.

Determining how credit regulation impacted MFBs' financial performance was the third goal. The measurement of credit regulation was based on non-performing loans. In contrast to liquidity regulation, credit regulation had a negative impact with a beta coefficient (β) of -0.4886, and this effect was statistically significant (p-value = 0.028, which is <0.05). This suggests that an increase in credit

regulation is associated with a decrease in ROA by 0.4886 units.

Evaluating the impact of MFB size on the link between prudential norms and financial performance was the study's fourth objective. We used the natural logarithm of total assets to determine MFB's size. A beta coefficient () of 0.0033 indicated that MFB size had a favorable effect, according to the data. Nevertheless, this effect did not reach statistical significance (p-value = 0.710, larger than 0.05). This suggests that the size of MFBs had little bearing on the link between prudential rules and MFB performance, and that the model's overall behavior was not significantly impacted by the interplay between MFB size and prudential laws (liquidity, capital adequacy, and credit regulation).

The findings indicate that, of the factors examined, credit regulation significantly harmed Microfinance Banks' ability to operate financially, as measured by ROA. This implies that tighter or more stringent loan regulations may hinder the profitability of these institutions as they are linked to a decline in ROA.

CONCLUSION

In conclusion, this research investigated a number of important features of prudential rules and how they have an effect on the Kenyan MFBs' financial performance. These findings give light on the relationship between various regulatory measures and the efficiency of these diverse financial organizations.

First, it was evident that capital adequacy regulation notably and positively influenced the financial performance of MFBs. This leads one to believe that the amount of core capital kept by these banks has a significant effect on the cumulative performance of their financial operations. The disparity in the levels of capital sufficiency that existed between the MFBs over the course of the six years pointed to the necessity of efficient regulation in this field in order to

guarantee the continuity and effectiveness of these institutions.

However, there was no proof that the management of liquidity affected MFBs' financial performance in a way that was statistically significant. This shows that, in the context of this debate, the ratio of client deposits to total assets—a widely used indicator of liquidity—might not be a major performance driver.

Credit regulation, as measured by non-performing loans, had a statistically significant negative impact on MFBs' financial performance. This conclusion demonstrates how essential it is for these institutions to have efficient credit control and management in order to keep their financial health in good standing.

Additionally, the significance that MFB size plays in the connection between prudential regulations and financial performance was investigated during the course of this study. It was discovered that the MFB size had no significant effect on the association between these regulations and performance; this finding suggests that the influence of prudential regulations was largely similar across a variety of various sized MFBs.

RECOMMENDATIONS

Based on the study's findings, recommendations may be made to enhance both the regulatory environment and the operating procedures of Kenyan Microfinance Banks (MFBs).

The requirements for adequate capital should be tailored to the specific size and risk profiles of individual MFBs, and the CBK should think about doing this. This can assist ensure the stability of these institutions, which is especially important considering the reported variances in capital sufficiency among MFBs.

Given that liquidity regulation did not show a statistically notable effect on financial performance, CBK may want to reevaluate and potentially refine liquidity requirements for MFBs. It is essential to find a middle ground between the imperatives of guaranteeing adequate liquidity and avoiding the

imposition of unwarranted restrictions on these institutions.

MFBs ought to focus a significant amount of emphasis on the implementation of efficient credit regulation and risk management procedures. This involves keeping an eye on loans that aren't making their payments, putting in place responsible lending practices, and improving credit evaluation procedures. For the purpose of ensuring that MFBs adhere to best practices in credit risk management, CBK should offer guidance and monitoring to these organizations.

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