Determinants of Performance of Licensed Microfinance Banks in Kenya

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Abstract: Microfinance institutions (MFIs) are acknowledged as official financial intermediaries serving the under-banked population. There has been a drastic negative decrease in the ROA between of the licensed MFBs in Kenya, 2015 to 2017 followed with fuzzy unpredictable ROA for the remaining years running to 2022. The main objective of this motivation was to use the current data to analyze the determinant of performance of the licensed Microfinance Institutions in Kenya. Specifically, the study analyzed; the loan portfolio quality of MFIs in Kenya, the efficiency of MFI's in Kenya and the capital adequacy of MFIs in Kenya. The study was based on Efficient Structure Theory and Capital Buffer Theory. The investigator adopted explanatory research design based on the secondary data obtained from published statements of accounts of all licensed Microfinance Banks by Central Bank of Kenya (CBK) publications for ten years. The study took a census of the 13 licensed Microfinance Banks by Central Bank of Kenya over the 10 years panel period of the study. The investigator found compelling evidence to support a positive and significant relationship between loan portfolio quality and operational efficiency with Return on Assets (ROA) among these institutions. This suggests that MFBs that prioritize maintaining high-quality loan portfolios and operate efficiently are more likely to achieve better returns on their assets. Conversely, the findings revealed an insignificant relationship between capital adequacy and the financial performance of licensed MFBs in Kenya. This suggests that while capital adequacy is traditionally considered crucial for financial stability and profitability in the banking sector, it may not have the same impact on MFBs in the Kenyan context.

Keywords: *Microfinance Banks Performance, Loan Portfolio Quality, Microfinance Banks Efficiency, capital Adequacy*

I. Introduction and background of the study

1.1 Introduction

Microfinance institutions (MFIs) are recognized as formal financial intermediaries catering to the unbanked demographic (Ali,Mia, Azman&Masron, 2022). These institutions are obligated to adhere to particular prudential regulations, notably concerning capital adequacy, which evaluate their capacity to withstand anticipated and unforeseen losses. It's noteworthy that such stringent regulations might not be applicable to credit-only MFIs, such as non-governmental organizations (NGOs) and nonbank financial institutions (NBFIs), which do not rely on deposits for their funding. The worldwide microfinance market, valued at approximately US$200 billion in 2022, is anticipated to expand to a revised size of US$506 billion by 2030. This growth represents a compound annual growth rate (CAGR) of 12.3% during the analysis period from 2022 to 2030 (Mix Market, 2023).

Microfinance institutions (MFIs) play a crucial role in many countries, particularly in developing nations, often representing the primary banking option for individuals. However, a significant hurdle for the microfinance sector is the issue of capital, as highlighted by Dorfleitner et al. (2016).Capital adequacy requirements serve as a gauge of MFIs' ability to withstand losses, as noted by TchakouteTchuigoua (2016). Consequently, due to insufficient deposits and debt capital, many MFIs must depend on owners' equity, donations, grants, and subsidized equity to facilitate loan allocation and support their initiatives, as highlighted by Tchakoute (2014).Microfinance banks are striving to operate as efficient business entities to improve their loan performance. Consequently, it is plausible that these self-sufficient microfinance institutions may not offer individuals the most expensive or the smallest loans (Woodcock, 2014). In 2017, the Kenyan Central Bank reported a 13% increase in net loan assets within the microfinance category. However, a pre-tax reduction of 18.9% was observed in 2015 and 2016. The decline in loan performance was attributed to a rise in non-performing credit arrangements, posing a credit risk in itself. As reported by the Association of Microfinance Institutions (2017), the

quality of loan portfolios emerges as a significant concern, with 59.3% of participants in 2016 ranking credit risk as the top or second highest risk in the microfinance banking sector.

As per the Central Bank of Kenya (2023), acquirers typically conduct financial due diligence to ensure the integrity of a company's financial records, the legitimacy of its profits, and the integrity of its balance sheet. Kenya's microfinance institutions reported a total loss of Kshs. 935.1 million as of June 2018, a significant increase from the loss of Kshs. 171.4 million reported in June 2017. Additionally, according to the Central Bank of Kenya (2019), customer deposits experienced a 5% decline. Microfinance institutions in Kenya are required to adhere to Central Bank of Kenya regulations regarding liquidity, credit risk, capital adequacy, and financial leverage (Central Bank of Kenya [CBK], 2020). Failure to conduct financial due diligence by microfinance banks could lead to reduced revenues in a country where commercial banks dominate the financial sector.Elzahi (2022) examined the performance of the regulatory and supervisory framework for Kenyan microfinance by analyzing secondary data sources. The findings revealed that Kenya lacks a unified regulatory and supervisory framework for the microfinance sector, based on logical descriptive analysis. The involvement of various entities such as associations, clubs, and churches in regulation may have compromised the effectiveness of oversight and posed additional challenges for the microfinance sector in Kenya. These findings hold significant implications for regulators and governments seeking to regulate MFIs.

Munyua (2022) conducted a study focusing on three large microfinance banks, five medium microfinance banks, and six small MFBs licensed by the Central Bank of Kenya. Panel data published by these MFBs between 2010 and 2020 was collected for analysis. Descriptive and inferential techniques were applied in the analysis. The correlation tests indicated that liquidity, market share, and regulatory requirements do not significantly affect Kenyan MFBs' Return on Assets (ROA). However, it was found that firm age and size have a significant positive impact on MFBs' ROA. The study concludes that while firm-level factors and regulatory compliance positively influence Kenyan MFBs' profits, liquidity levels do not have a significant influence, and market share has a negative but insignificant effect. Moreover, firm age was found to negatively impact MFBs' profits. The research suggests that microfinance banks should implement more robust liquidity management policies to enhance their ability to meet financial obligations.

Additionally, firms should regularly review their compliance with regulatory requirements to maintain a healthy capital adequacy position. It is recommended that firms reassess their current market outreach strategies to capitalize on their market position and experience for improved financial outcomes. Lastly, maintaining effective asset management strategies is emphasized as crucial for enhancing firm value and overall financial performance.The central Bank of Kenya has licensed 14 Microfinance Banks in Kenya including; Faulu Microfinance Bank Ltd, Caritas Microfinance Bank Limited, Choice Microfinance Bank Ltd, Daraja Microfinance Bank Ltd, Century Microfinance Bank Limited, Rafiki Microfinance bank Ltd, Key Microfinance Bank ltd, Kenya Women Microfinance Bank PLC, Sumac Microfinance Bank Ltd, SMEP Microfinance Bank Limited, Uwezo Microfinance Ltd, U & I Microfinance Bank Limited, Maisha Microfinance Ltd and Muungano Microfinance Bank PLC.

1.2 problem statement

Microfinance banks experienced a downturn in performance for the year ending December 31, 2020. The sector collectively recorded a pre-tax loss of Ksh.2.2 billion by the end of 2020, a significant increase from the Ksh.339 million loss reported in December 2019. Among the fourteen institutions, only four were profitable, with the remaining ten reporting losses. Kenya Women Microfinance Bank Plc. and Faulu Microfinance Bank Limited were the primary contributors to the sector's loss, reporting pre-tax losses of Ksh.1.5 billion and Ksh.476 million respectively (CBK, 2020).

The decline in sector performance was largely attributed to the impact of COVID-19 on the economy, resulting in decreased credit uptake, a high level of non-performing loans (NPLs), and a reduction in interest income. NPLs rose by 32 percent, from Ksh.9.8 billion in 2019 to Ksh.13 billion, while interest income from the loan portfolio decreased by 11 percent, from Ksh.11.2 billion to Ksh.9.9 billion. The sector's provisions for loan impairment surged by 219 percent, from Ksh.539 million to Ksh.1.7 billion in 2019. Furthermore, the sector experienced increased expenses in staff costs, administrative expenses, and finance costs, constituting 29 percent, 19 percent, and 24 percent of total expenses respectively. Consequently, the sector's return on assets and equity ratios declined, standing at negative 3 percent and negative 28 percent, compared to negative 0.4 percent and negative 3 percent respectively as of December 31, 2019 (CBK, 2020). Inadequate empirical and recent panel analysis on determinants of performance of microfinance banks in Kenya motivated the investigator to examine the determinants of financial performance of licensed Microfinance Banks (MFBs) licensed by the Central Bank of Kenya (CBK).

1.3 Research objective

The main objective of this motivation was to use the current data to analyze the determinant of performance of the licensed Microfinance Institutions in Kenya. Specifically, the study analyzed; The loan portfolio quality of MFIs in Kenya, the efficiency of MFI's in Kenya and the capital adequacy of MFIs in Kenya.

II.   Theoretical framework

First, the study was based on Demsetz's (1973) efficient structure theory, which seeks to explain the relationship between market structure and performance. According to this theory, businesses that operate more efficiently than their competitors tend to be more profitable and can manage their operational costs more effectively. The efficient structure hypothesis (ES) outlines two primary efficiency approaches: X-efficiency and Scale efficiency. X-efficiency suggests that profitable institutions gain an advantage through cost-efficiency, while the scale strategy emphasizes financial prudence over administrative uniformity. Under the scale strategy, larger firms can achieve cost savings by capitalizing on economies of scale (Kolapo, 2012).

Second, the study was based on Capital Buffer Theory. The concept of capital buffers, situated within the broader context of charter value literature, has garnered increasing attention in recent years (Jokipii& Milne, 2011). This theory, discussed extensively in banking and finance literature, suggests that financial institutions maintain a level of capital above the required minimum as a protective measure. Within a regulatory framework, financial institutions weigh the regulatory costs and benefits associated with maintaining capital buffers (Hessou& Lai, 2017). Scholars in the financial field have historically deliberated on the notion of counter-cyclical buffers (Jiménez et al., 2017). Essentially, these buffers serve as a safety net during instances of financial distress or crisis, as institutions may not be able to swiftly adjust their capital levels due to market illiquidity or adjustment costs. Aligned with the principle of "more skin in the game," higher capital buffers are observed to promote shareholders' caution and mitigate agency problems in investment decision-making (Demirguc-Kunt et al., 2013).

2.1 Empirical studies

2.1.1 Loan Portfolio Quality of MFIs

Ngumo, Collins, and David (2020) investigated the factors influencing the financial performance of Microfinance banks in Kenya. Employing a descriptive research design, the study utilized secondary data spanning five years from 2011 to 2015 from seven Microfinance banks. Correlation and regression analyses were conducted on the collected data. The findings revealed a positive and statistically significant correlation between operational efficiency, capital adequacy, firm size, and the financial performance of microfinance banks in Kenya. Conversely, the study observed an insignificant negative correlation between liquidity risk, credit risk, and the financial performance of microfinance banks in Kenya. Consequently, the study concluded that there exists a direct relationship between operational efficiency, capital adequacy, firm size, and the financial performance of microfinance banks in Kenya.

Danstun and Harun (2019) conducted research on the impact of credit collection policies on the portfolio at risk of microfinance institutions in Tanzania. Their study utilized cross-sectional survey data gathered from microfinance institutions across three regions: Dar es Salaam, Morogoro, and Dodoma. A sample of 219 respondents was randomly selected from these regions. Multiple linear regression analysis was employed to assess the relationship between credit collection policies and the portfolio at risk of microfinance institutions. The findings indicate a positive correlation between the interest rates charged and the portfolio at risk of microfinance institutions. Conversely, variables such as grace periods on loans and loan sizes for borrowers showed a negative correlation with the portfolio at risk of microfinance institutions. The study suggests that microfinance institutions in Tanzania should reconsider their interest rate policies to improve the sustainability of their loan portfolios. Furthermore, they recommend enhancing the provision of grace periods to customers and establishing efficient loan product sizes that cater to diverse client needs. These measures are proposed to encourage timely repayments, thereby enhancing financial performance and reducing the risk of microfinance institutions' portfolios.

Harkat, Aguenaou, Abrache, and Ez-zarzari (2023) examined how loan portfolio characteristics influence the financial performance and sustainability of microfinance institutions (MFIs) in Morocco. Their study utilized the Mix Market dataset and employed fixed and random panel regression models to analyze six Moroccan MFIs spanning from 2003 to 2018. The models evaluated the impact of various loan portfolio characteristics, such as size, type, risk, return, management effectiveness, write-offs, and recoveries, on MFIs' return on assets (ROA), return on equity (ROE), and operational self-sufficiency (OSS). Using proxy variables to measure each loan portfolio characteristic, the empirical

findings revealed that the relationships between these variables and the dependent variables were diverse. Notably, the study found that MFIs' profitability and sustainability were positively influenced by factors including the number of outstanding loans, the gross loan portfolio for enterprise financing, and the portfolio at risk 90. Conversely, variables such as write-offs, the number of borrowers per staff member, and the number of loans per loan officer had a negative impact on the dependent variables.

Sifrain (2022) conducted a study on the factors influencing the loan portfolio quality of MFIs in Haiti from October 2016 to September 2021. The research focused on four non-cooperative MFIs (MFI1, MFI2, MFI3, and MFI4) offering individual loans. The study utilized Ordinary Least Squares (OLS) regression to assess the effects of macroeconomic variables (exchange rate and inflation rate) and micro-variables (loan amount per borrower and gross loan portfolio) on loan portfolio quality, measured by the portfolio at risk over 30 days (PAR30). Both a combined statistical model for all MFIs and individual statistical models for each MFI were employed. The results indicate that while there may be a tendency for MFIs' portfolio at risk to increase with currency depreciation and rising inflation, these findings were not statistically significant overall. Notably, the analysis revealed specific associations for each MFI. MFI1 and MFI3 showed a positive and statistically significant relationship with the exchange rate, while MFI4 exhibited a negative and insignificant relationship with the exchange rate. MFI2, on the other hand, demonstrated a negative and insignificant relationship with the inflation rate. Additionally, the growth of the loan portfolio had an adverse and significant impact on the loan portfolio at risk for most MFIs, except for MFI3, where the association was negative and insignificant. Among the four MFIs, only MFI4 displayed a significant improvement in loan portfolio quality with increased loan amounts disbursed per borrower, while for the others, higher loan amounts were associated with increased PAR30. These findings suggest the importance of creating a conducive macroeconomic environment to mitigate credit risk for MFIs. Furthermore, MFIs should strengthen their credit analysis and collection procedures to ensure loan portfolio growth without compromising quality.

Ochekede (2022) conducted a study to examine how the demographic characteristics of borrowers influence the loan portfolio performance of MFIs. The research focused on investigating the effects of age, gender, and education on loan portfolio performance in Uganda. The study utilized a simple random sampling technique to select registered and regulated financial institutions in Uganda from a population of 35, as reported by the Bank of Uganda as of June 30, 2019. This sampling method ensured an equal opportunity for each participant to be included in the study. The findings revealed that age plays a significant role in borrowers' preferences and self-selection in the credit market. Youthful borrowers were perceived as innovative and high-performing, but their inclusion also led to a riskier portfolio and increased loan delinquencies due to age differences. Additionally, the study found evidence suggesting that women are more likely to repay collateral-free microloans compared to men, although the reasons for such gender differences remain unclear. Moreover, borrowers with higher levels of education, accounting knowledge, and better business management skills were found to have an advantage in obtaining credit from formal institutions, as financial statements are a key requirement. Consequently, the study concluded that age, gender, and education positively influence loan portfolio performance.

Karanja and Simiyu (2022) conducted a study investigating the impact of credit management strategies on loan performance at microfinance institutions in Kenya. The study aimed to assess the influence of credit policy, customer evaluation, collection policy, credit conditions, and credit risk management on loan performance. Thirteen Kenyan microfinance banks were the focus of this research. The study utilized Financial Intermediation theory, Information Asymmetry theory, and Transaction Cost theory. A descriptive research approach was employed, utilizing both primary and secondary data. The data were analyzed using statistical metrics such as mean and standard deviation. The study utilized direct and moderating models to assess the impact of credit management strategies on loan performance. Inferential statistics with linear regression models were employed for analysis. Primary data collection was conducted through structured questionnaires, while secondary data were obtained from financial reports of microfinance banks and supervisory reports from the Central Bank of Kenya (CBK). The findings indicated that the firms conducted client appraisals and that these appraisals were effective. Moreover, the study found that the firms assessed the creditworthiness of clients before issuing loans and had credit analysts responsible for appraising potential loan customers.

Olando and Muratenyi (2022) conducted a study utilizing a census approach and relied on published audited financial reports. The researchers employed a document review as a secondary data collection tool and analyzed the data using SPSS program Version 24.0 with support from Microsoft Excel Windows 2010. The study outcomes were presented

using tables and figures. Significant positive correlations were observed between each independent variable proxy and the dependent variables. However, contrary to expectations, the associations between allowance for loan loss and gross impaired loans and advances with return on equity were positive and negative but statistically insignificant, respectively. The study's general conclusion was that loan portfolio quality was significantly associated with the financial performance of Kenya's commercial banks. The coefficients of determination for return on assets and return on equity were 0.1620 and 0.0363, respectively. This indicated that loan portfolio quality accounted for 16.20% and 3.63% changes in the financial performance of Kenya's commercial banks in terms of return on assets and equity, respectively. In summary, the study suggests that parameters related to loan portfolio quality, such as loan loss provision, allowance for loan loss, and gross impaired loans and advances, are determinants of the financial performance (return on assets and return on equity) of commercial banks in Kenya. The study recommends that the management of these banks vigorously pursue measures to effectively manage loan portfolio quality to realize increased returns on assets and equity.

Shakir (2022) conducted a review of qualitative and quantitative research regarding the impact of microfinance, particularly micro-credit, on the impoverished population in Kenya. The aim was to provide practitioners, donors, and policymakers with a comprehensive understanding of the available evidence. Despite the existence of numerous impact studies on the effectiveness of microfinance in alleviating poverty in Kenya, no systematic review has been conducted to consolidate and evaluate the evidence. Overall, the study finds that microcredit has a positive impact on the poor, although the results are not consistent across all studies. The notion of microfinance as a cure-all for poverty and women's empowerment may be oversimplified. Conversely, microcredit could potentially do more harm than good if funds are used for consumptive purposes rather than investment, or if businesses fail to generate sufficient profits. The study recommends a balanced consideration of both the potential benefits and risks when making policy decisions regarding microfinance in Kenya. Additionally, it suggests the development of a standardized methodological framework for assessing microfinance impacts to ensure consistency in results. Moreover, microfinance should not be viewed as the sole solution to poverty; instead, structural issues such as poverty require a multifaceted approach involving other interventions alongside microfinance.

2.1.2 The efficiency of MFIs

Ngumo, Collins, and David (2020) investigated the factors influencing the financial performance of Microfinance banks in Kenya. Employing a descriptive research design, the study utilized secondary data spanning five years from 2011 to 2015 from seven Microfinance banks. Correlation and regression analyses were conducted on the collected data. The findings revealed a positive and statistically significant correlation between operational efficiency, capital adequacy, firm size, and the financial performance of microfinance banks in Kenya. Conversely, the study observed an insignificant negative correlation between liquidity risk, credit risk, and the financial performance of microfinance banks in Kenya. Consequently, the study concluded that there exists a direct relationship between operational efficiency, capital adequacy, firm size, and the financial performance of microfinance banks in Kenya.

Dube and Kwenda (2023) assert that Microfinance Institutions (MFIs) in Southern Africa face challenges of being labeled unprofitable and unsustainable, often stemming from unhealthy loan portfolios. To address these issues, the study empirically examines the correlation between credit risk management and the financial performance of MFIs in Southern Africa. Utilizing panel data spanning from 2012 to 2018 sourced from the Microfinance Information Exchange (MIX) online database, the study focuses on a sample of 44 MFIs. Descriptive statistics and regression analysis were employed for data analysis. A panel data regression model incorporating lagged financial performance (profitability), productivity, and microfinance size as control variables was constructed to explore the relationship between financial performance (dependent variable) and credit risk management (independent variable). The model was estimated using the Generalized Method of Moments (GMM) technique for dynamic panel data analysis. The findings reveal operational efficiency is found to negatively impact ROA.

Kinyangi, Musiega, and Nelima (2023) conducted a study to assess the impact of governance structure on the financial performance of microfinance banks in Kenya, utilizing the agency theory as the underlying framework. Employing a causal research design aimed at exploring cause-and-effect relationships, the study targeted all 14 microfinance banks in Kenya, utilizing a census approach for sampling. Secondary data from the Central Bank of Kenya (CBK) and the banks' websites spanning from 2018 to 2022 were utilized. Descriptive and inferential statistics were employed for data analysis. Descriptive statistical analysis summarized the data using frequencies, skewness, kurtosis, percentages, means, and standard deviations, with the results presented in tables and models for easy comparison and inference. The findings revealed that the estimated coefficient of governance structure was significantly non-zero ($\beta = 0.639906$, $t = 2.30$, p-value = 0.034), indicating that a unit increase in governance structure would lead to a 0.639906 unit increase in

financial performance levels. Governance structure accounted for 16.08% (overall R square = 0.1608) of the variation in the financial performance of microfinance banks in Kenya. Based on these findings, it is recommended that shareholders prioritize including individuals from diverse professional backgrounds in the process of board member selection.

Fall, Akim, and Wassongma (2018) found that MTE (Microfinance Total Efficiency) scores have increased over time in the microfinance industry. However, despite this trend, there is still room for improvement, as indicated by an MTE rate of approximately 61.1%. The study suggests that MFIs (Microfinance Institutions) may be using more resources than necessary to achieve their outcomes in terms of outreach and revenue generation. The results also highlight variations in MTE depending on the methodological approach used in studies. Specifically, studies with a larger number of variables (inputs and outputs) tend to produce higher MTE scores compared to those with fewer variables. Furthermore, MTE scores are higher in studies that assume variable returns to scale compared to those assuming constant returns to scale. Additionally, studies adopting a production approach tend to yield higher MTEs than those using an intermediation approach. Lastly, studies involving a large number of MFIs tend to have lower MTE scores compared to those with a smaller sample size.

2.1.3 Capital adequacy of MFIs

Afrifa, Gyapong, and Zalata (2019) conducted an empirical analysis utilizing a sample of 625 microfinance institutions (MFIs) across 40 countries from 2010 to 2015. Their study aimed to investigate the impact of buffer capital on MFI performance and how this impact is influenced by loan portfolio quality. The findings indicate a negative correlation between buffer capital and MFIs' performance. Additionally, the study reveals that higher loan portfolio quality positively moderates the relationship between buffer capital and MFI performance. Interestingly, this moderating effect remains consistent across deposit-taking, profit-making, and regulated MFIs. These results provide insights into the significance of capital in microfinance institutions. The study also employs a unique method to address potential biases arising from omitted variables when evaluating the results.

Parvin, Hossain, Mohiuddin, and Cao (2020) examined the relationship between capital structure and the financial performance of microfinance institutions (MFIs), aiming to achieve program objectives by serving deserving clients without collateral. They utilized a dataset comprising 187 MFIs to establish this relationship, employing panel data regression analysis with Random Effect and Fixed Effect models. Return on Asset (ROA) and Net Income to Expenditure (NIER) were used as metrics for financial performance. The study found that Equity to Asset Ratio (EAR), Debt to Loan Ratio (DTL), Risk, and Size significantly influence NIER. Additionally, EAR and DTL have a positive impact on ROA, while Risk has a negative effect. These findings provide insights for MFIs to optimize their capital structure by diversifying their capital sources from market-based funds, thereby enhancing financial performance and expanding outreach to impoverished clients without collateral.

Duho (2023) investigated the factors influencing capital adequacy and voluntary capital buffers in microfinance institutions (MFIs). Employing the two-stage least squares (2SLS) method with instrumental variables to address endogeneity concerns, the research utilizes quarterly panel data from 439 MFIs in Ghana spanning 2015 to 2018. The findings indicate that credit risk, income diversification, size, profitability, lending channel, and equity-to-asset ratio significantly impact capital adequacy. Specifically, income diversification positively affects capital adequacy, particularly among deposit-taking MFIs that have regulatory freedom for additional financial activities. Size exhibits a non-linear relationship with capital adequacy, showing an inverted U-shape pattern, with size potentially being irrelevant for non-deposit-taking MFIs. Profitability is positively associated with capital adequacy, while the equity-to-asset ratio shows a negative relationship, particularly among deposit-taking MFIs. Moreover, lending channels negatively influence capital adequacy, especially among deposit-taking MFIs. Although economic growth initially decreases capital adequacy, this effect becomes insignificant when controlling for quarter fixed-effects.

Ndegwa (2018) conducted a study to examine the impact of capital adequacy on the financial performance of microfinance banks in Kenya. Employing a descriptive research design, the study targeted thirteen microfinance banks in Kenya over a five-year period from 2013 to 2017. However, due to data availability, secondary data was collected for only eight microfinance banks. A fixed-effect regression model was developed to assess the relationship between the dependent variable (financial performance) and the independent variable (capital adequacy), while controlling for asset quality, management efficiency, liquidity, and size. The findings revealed a positive and significant relationship between capital adequacy and Return on Assets (ROA). Additionally, a positive but insignificant relationship was observed between size and ROA, while liquidity and management efficiency exhibited a negative and significant association with ROA. Conversely, the relationship between asset quality and ROA was negative and insignificant. The study concluded that capital adequacy, liquidity, and management efficiency significantly influence the financial performance of microfinance banks in Kenya, with capital adequacy demonstrating a positive correlation with financial performance. This suggests that higher capital reserves held by microfinance banks correspond to increased profitability.

III. Research design and methodology

3.1 Research design
This explanatory study was based on the secondary data obtained from published statements of accounts of all licensedMicrofinanceBanksby Central Bank of Kenya (CBK) publications for ten years from 2013 to 2022. It uses panel data due to the advantage that it has. It helps to study the behavior of each MFI over time and across space (Baltagi, 2005; Gujarati, 2003). There are 13 licensed Microfinance Banks by Central Bank of Kenya.

3.2Unit of analysis
The unit of analysis in this study was all the licensed Microfinace Institution Banks in Kenya. All the licensed MFI banks in Kenyawas the target population of this study.

3.3 Sample design
The study took a census of the 13 licensed Microfinance Banks by Central Bank of Kenya over the 10 years panel period of the study (2013-2022).

3.4 Data collection, analysis and presentation
The secondary data which was used in this study was obtained from the financial statements of the licensed Microfinance Banks by Central Bank of Kenya. The data collected using data collection sheet were edited, coded and cleaned. Then the data was analyzed using STATA data analysis software.A multiple linear relationship model and a t-statistic were used to determine the relative importance (sensitivity) of each explanatory determinant of performance of the licensed Microfinance Banks by Central Bank of Kenya was analyzed.

3.5 Model specification
The major dependent performance indicators used wasthe licensed Microfinance Banks Returns on Asset (ROA), while the independent variables wereloan portfolio quality, efficiency of the MF Banks and capital adequacy.The analyzed model is as follows;

$ROA = \beta_0 + \beta_1 LPQ + \beta_2 Eff + \beta_2 CA + \Omega$ --- (1)

Where:

$\beta_{0-}$is the beta coefficient from time 1 to time 4

Ω is the error term

LPQisLoan Portfolio Quality

EFF is Efficiency

CAis the capital adequacy

IV. Findings and Discussions

4.1 Introduction
The descriptive statistics help in exhibiting the basic features of the data used in the study. It provides the trends of financial indicators of the Licensed Microfinance Banks in Kenya. This was carried out and the results was shown in the table 1.

4.2 Descriptive statistics
Table 1shows the summary of descriptive analysis results for all the financial indicators of the Licensed Microfinance Banks including; Profit before Tax, Customers Deposits, Loan Portfolio, Capital Adequacy and Return on Asset.

Table 4.1: Descriptive statistics of the study

Indicator	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Pre-Tax Profits	530	1,002	592	(377)	(622)	(1,437)	(339)	(2,240)	(722)	(980)
Customer Dep	24,745	34,446	40,589	40,198	38,916	40,961	43,941	49,356	50,413	46,492
Loan Port	27,477	39,184	45,749	47,047	42,847	44,179	46,652	44,179	40,115	39,334
Capital		10,895	11,633	11,622	11,301	10,443	11,177	8,113	9,235	8,752
ROA	0.1	0.1	0.0	(0.5)	(0.9)	(5.5)	(0.4)	(3.8)	(1.0)	(1.4)

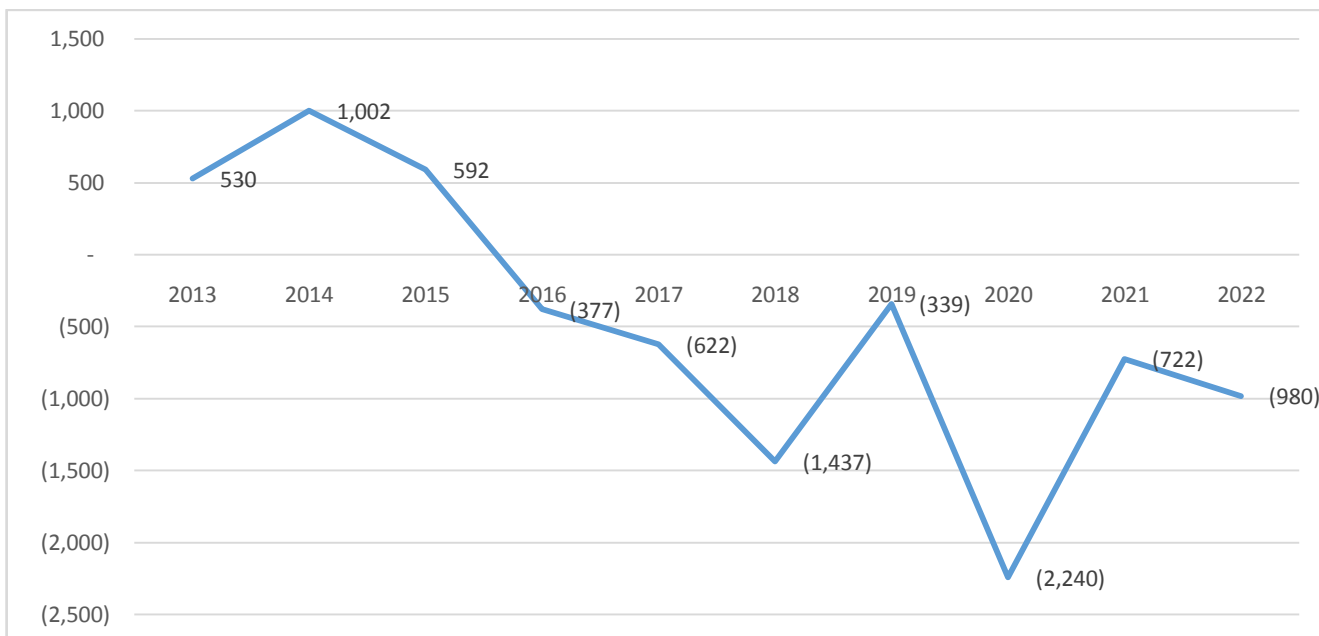**Source (CBK, 2013-2023)**

Figure 1: Trends in the Profit before Tax of the MF Banks in Kenya (2013-2022)

The results from Figure 1 indicated that the profit before tax of the Licensed Microfinace Banks in Kenya rose in the year 2014 and drastically dropped the year 2015. There was a negative performance of profit before tax in the year 2016 which continued through 2022. The cause for this poor performance was due to Poor loan portfolio quality, characterized by a high level of non-performing loans (NPLs) or defaults, can significantly impact profitability. If borrowers fail to repay loans, microfinance banks may incur losses on their loan portfolios, leading to a decline in profit before tax.
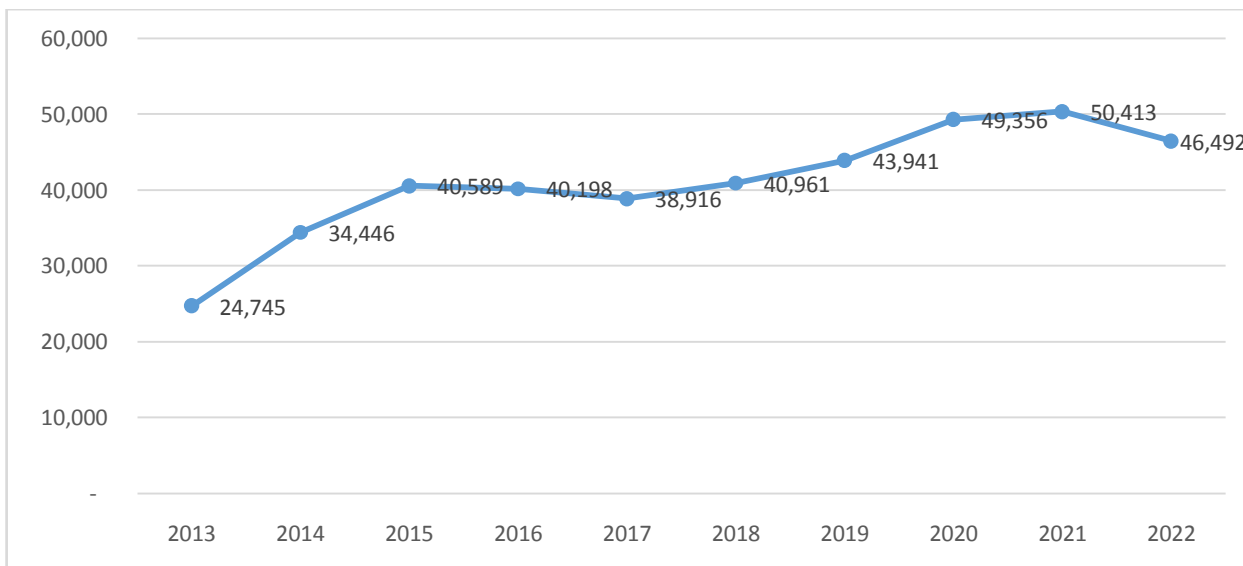

Figure 2: Trends in Customers Deposit of the MF Banks in Kenya

Results from Figure 2 indicated a continuous increase in customers deposits by the MF Banks in Kenya starting with Kshs. 24,745,000,000 to a maximum of Kshs. 50,413 which slightly dropped in 2022 to Kshs. 46,492,000,000. The reasons for the increase is that Kenya has been at the forefront of financial inclusion initiatives, and MFBs play a significant role in providing banking services to unbanked and underbanked populations. The continuous increase in customer deposits could reflect the success of these initiatives, as more individuals and businesses gain access to formal banking services and choose to deposit their funds in MFBs. Again, there was positive customer experiences, strong customer service, and a good reputation in the market can contribute to increased customer confidence in MFBs. As trust in these institutions grows, customers may be more willing to deposit their funds with them, leading to a continuous increase in deposits over time. Lastly the increase in Customers Deposit was occasioned by introduction of new deposit products

and expansion of the existing product offerings during this period. Offering a variety of deposit products tailored to different customer needs and preferences could attract a broader customer base and encourage higher deposit inflows.
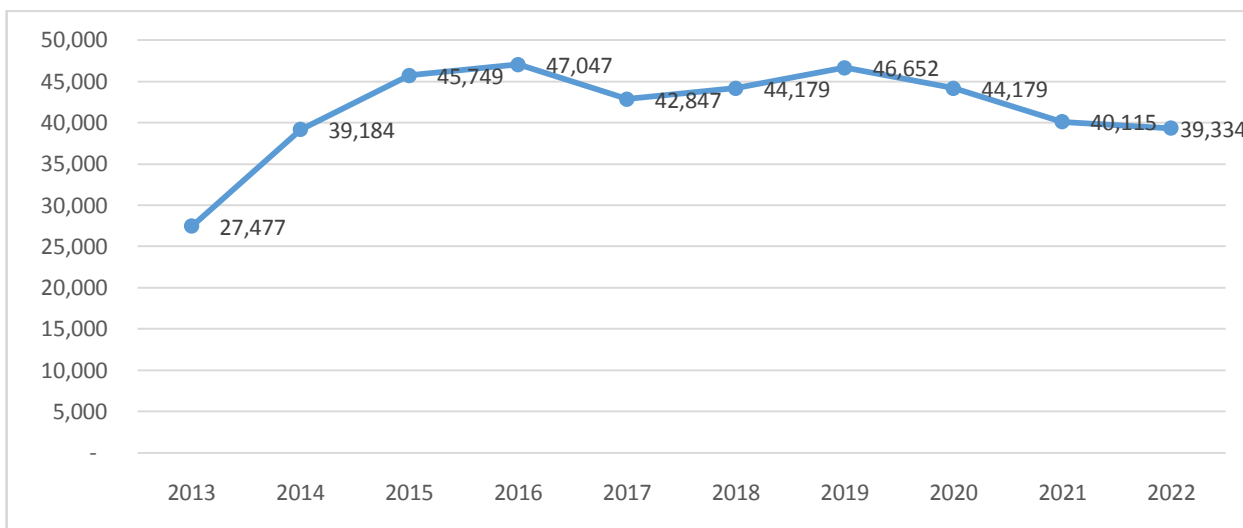
Figure 3: Trends in Loan Portfolio of the MF Banks in Kenya

Figure 3 indicated that the trends loan portfolio by the MFBs in Kenya sharply increased between Kshs. 27,477,000,000 in the year 2013 to 45,749,000,000 in the year 2016 before plaguing in the succeeding years. The reasons for the increase in loan portfolio by the MFBs in Kenya was that during the period of sharp increase, there may have been a surge in demand for credit from individuals and businesses. Economic growth, expansion of small and medium-sized enterprises (SMEs), and increased consumer spending could have fueled this demand for loans. Again, the MFBs in Kenya MFBs adopted innovative lending practices during this period, such as the use of technology for credit scoring, mobile banking, or group lending models. These innovations could have enabled MFBs to reach more borrowers, streamline the lending process, and mitigate credit risks, leading to an expansion of the loan portfolio.
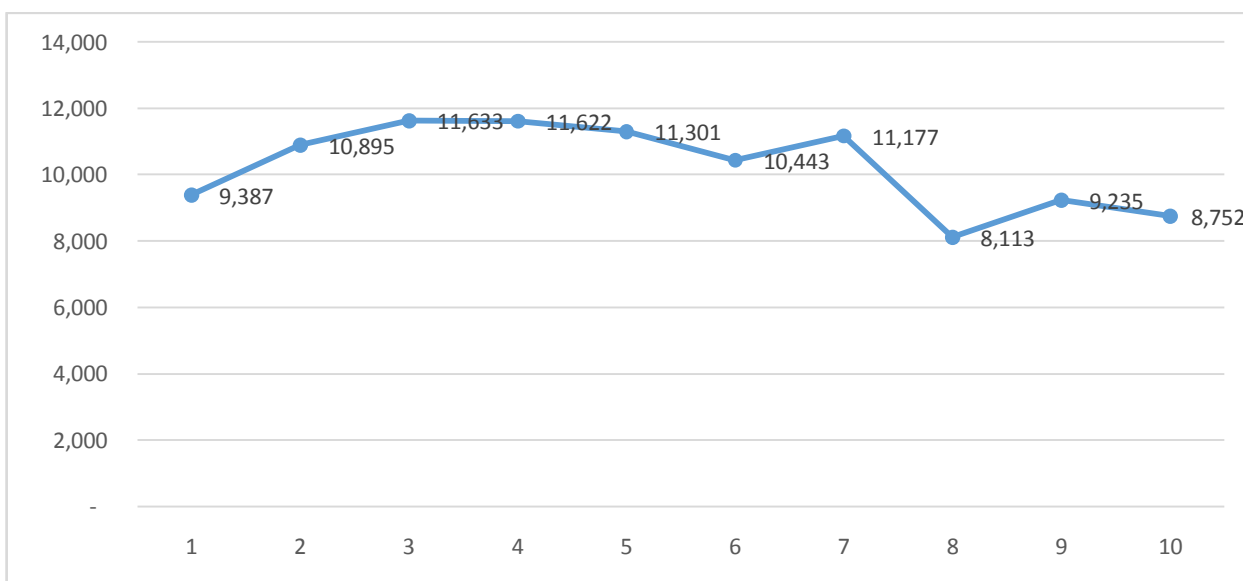
Figure 4: Trends in Capital Adequacy of the MF Banks in Kenya

Results from Figure 4 indicated that capital adequacy of the MFBs in Kenya slightly increase between the year 2013-2016 and continued to slightly reduce. At the beginning of 2013, the MFBs proactively increased their capital reserves in response to regulatory requirements during the period of slight increase. Compliance with regulations such as the

Capital Adequacy Ratio (CAR) mandated by the Central Bank of Kenya could have driven this trend. The growth in assets during the initial period also led to a temporary increase in capital adequacy. As MFBs expanded their loan portfolios or invested in new assets, their capital base may have expanded accordingly, temporarily boosting capital adequacy ratios. Further, improved profitability during the period of slight increase c contributed to higher retained earnings, thereby increasing the capital base of MFBs. Higher profits could result from increased interest income, improved operational efficiency, or effective risk management practices.
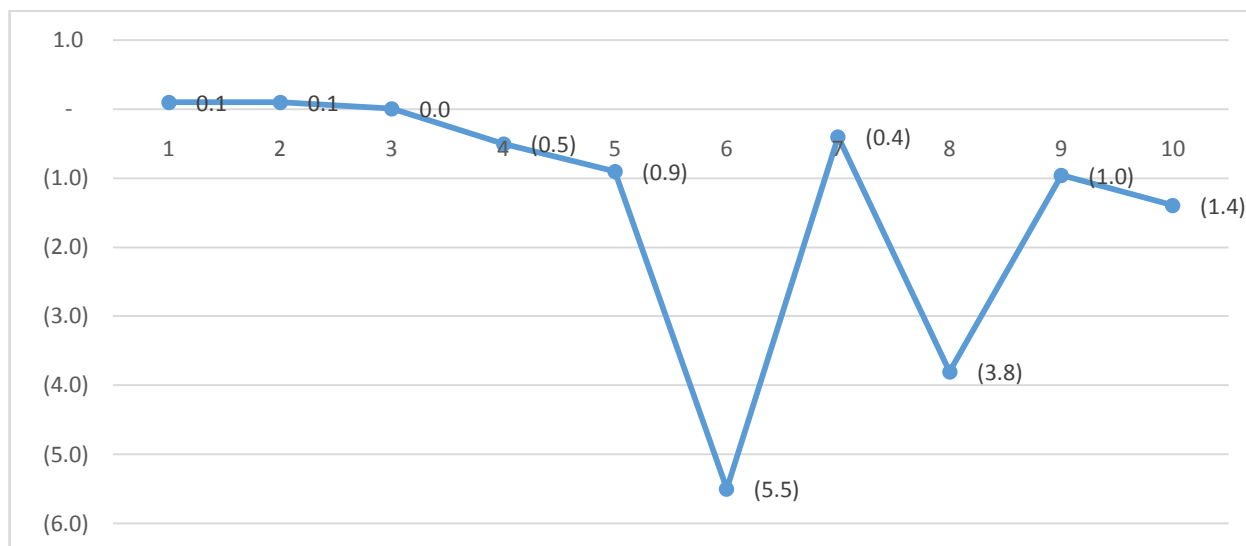

Figure 5: Trends in Capital Adequacy of the MF Banks in Kenya

Figure 5 is a clear indication that the MFBs in Kenya over the period of the study faced a major challenge in their Return on Profit. It is only in 2013 and 2014 that the MFBs had a positive ROA. There was a drastic negative decrease in the ROA between 2015 to 2017 followed with fuzzy unpredictable ROA for the remaining years running to 2022. One of the reasons for this negative trend was poor credit quality, characterized by a high level of non-performing loans (NPLs) or defaults, which eroded the profitability of MFBs. Secondly, there was inefficiency in operations, high operating expenses, or ineffective cost management practices can reduce profitability. Improving operational efficiency through technology adoption, process improvements, or cost-cutting measures is essential for enhancing ROA.

4.3 Test for Correlation

Correlation testis a test that indicates how strongly a pair of variable is correlated. This test was carried out using the Pearson correlation and results presented in the table below.

Table 2: Results for correlation test

	prof				
Profit befor tax	1				
Deposits	-.628	1			
	.052				
Loan portfolio	-.404	.631	1		
	.247	.050			
Capital adequacy	.238	-.311	.446	1	
	.508	.382	.196		
ROA	.804**	-.799**	-.762*	-.047	1
	.005	.006	.010	.897	

Source (CBK Supervisory Report, 2013-2022)

From the Table 2, there was positive significant relationship between ROA and profit before tax and capital adequacy r=0.804, p=0.05). The positive correlation indicates that higher profitability, as measured by profit before tax, tends to be associated with higher return on assets. There was a negative relationship between ROA and customers depositsr=-0.799, p=0.006). While higher customer deposits typically provide liquidity buffers for microfinance banks, a negative correlation suggests difficulties in effectively deploying these funds into profitable assets. This may result in liquidity management challenges, such as excess liquidity or difficulties in meeting funding obligations. Furthermore, there was a negative relationship between ROA and capital adequacy (r=0.762, p=0.010). Microfinance banks may have experienced a decline in asset quality as the loan portfolio expands, leading to lower returns on assets. A negative correlation suggests that a larger loan portfolio may contain a higher proportion of non-performing loans, negatively impacting overall profitability. ROA and capital adequacy did not have any relationship (r=-0.047, p=897). Microfinance banks are subject to regulatory requirements related to capital adequacy to ensure financial stability and protect depositors' interests. The insignificant correlation suggests that banks may manage capital adequacy independently of profitability considerations, prioritizing regulatory compliance over profitability or vice versa.

4.4 Test for Regression
4.4.1 Haussmann tests
A Haussmann test was carried out to determine the best model to use in carrying out a panel regression output. The null hypothesis is that the preferred model is the random effect while the alternate hypothesis is that the preferred model is fixed effect. A p value of less than 0.05 rejects the null hypothesis therefore the fixed model was adopted in the regression analysis.

4.4.2 Fixed effect regression
The fixed effect regression is based on the assumption that there is the existence of heterogeneous characteristics. Also, the method assumes that the mean of these characteristics over time for an individual is observable; and can be separated from the actual. The result is presented in Table 3.

Table3: Determinants of Performance of Licensed Microfinance in Kenya (Fixed effect)

Source (Research findings, 2018)

ROA	Coef.	Std. Err.	z	P>z		[95% Conf.	Interval]
Loan Portolio	1.368	0.600	2.280	0.022		0.193	2.544
Efficiency	1.049	0.346	3.030	0.002		-1.727	-0.371
Capital Adequacy	0.277	0.304	0.910	0.362		-0.874	0.319
_cons	18.937	3.429	5.520	0.000		12.217	25.657
sigma_u	0.374						
sigma_e	5.459						
rho	0.005	(fraction	of variance due	to	u_i)		
R2	0.520						
Prob> chi2	0.000						
Obs	130						
F-Statistics	16.72						

Table 3 provides detailed beta coefficients concerning the factors influencing the performance of Microfinance Banks (MFBs) licensed by the Central Bank of Kenya (CBK). These coefficients illuminate both the strength and direction of the relationships between the independent variables and the dependent variable, shedding light on how changes in each independent variable are anticipated to affect the financial performance of these entities. The R-squared value was utilized to evaluate how well the model fits the data. The examination unveiled a coefficient of determination (R-square) of 0.5068, indicating that the quality of the loan portfolio, operational efficiency, and capital adequacy collectively explain 50.7% of the variability observed in the Return on Assets (ROA) of the licensed MFBs in Kenya. The remaining 49.3% of the variability was attributed to other factors not examined in this study.

First, the study established a positive and statistically significant correlation between the quality of the loan portfolio and the Return on Assets (ROA) of the licensed Microfinance Banks (MFBs) in Kenya (β=1.385, p=0.021). This finding was supported by a computed t-statistic of 2.310, exceeding the critical t-statistic of 1.96. This implies that a one-unit increase in loan portfolio quality results in a 1.385-unit increase in the ROA of the licensed MFBs in Kenya. Consequently, it can be inferred that the quality of the loan portfolio significantly impacts the ROA of the licensed MFBs in Kenya. The argument is made that enhancing the loan portfolio could contribute to an enhancement in the ROA of the licensed MFBs in Kenya. This finding is supported by Ngumo, Collins, and David (2020) who established a positive and statistically significant correlation between operational efficiency, capital adequacy, firm size, and the financial performance of microfinance banks in Kenya.

Furthermore, the findings regarding operational efficiency indicated a positive and statistically significant correlation with the Return on Assets (ROA) of the Microfinance Banks (MFBs) in Kenya (β=1.026, p=0.003). This conclusion was supported by a computed t-statistic of 2.960, which exceeded the critical t-statistic of 1.96. This suggests that a one-unit increase in operational efficiency results in a 1.026-unit increase in the ROA by the MFBs in Kenya. Consequently, it can be inferred that operational efficiency significantly impacts the ROA of these MFBs in Kenya. This finding is supported by Fall, Akim, and Wassongma (2018) found that MTE (Microfinance Total Efficiency) scores have increased over time in the microfinance industry.

Lastly, in regard to capital adequacy outcomes, the findings indicated a statistically non-significant correlation with the Return on Assets (ROA) of licensed Microfinance Banks (MFBs) in Kenya (β=0.277, p=0.362). This was substantiated statistically by a computed t-statistic of 0.910, which is below the critical t-statistic of 1.96. Hence, it can be deduced that capital adequacy does not impact the ROA of licensed MFBs in Kenya.

$ROA = \beta_0 + \beta_1 LPQ + \beta_2 Eff + \beta_2 CA + \Omega$-- (1)
$NPL = 18.937 + 1.368 + 1.049 + 0.277 + \Omega$

V. Discussion

The overall objective of this study was to investigate the determinants of performance of the licensed MFBs in Kenya where the factor variables were; loan portfolio quality, operation efficiency and capital adequacy whereas the outcome variable was Retun on Asset of the licensed MFBs in Kenya. To achieve these objectives ten years panel data for 13 licensed MFBs was analyzed using linear multiple regression model. To be able to see the effects over years and across banks panel data was used. In this study is was established that loan portfolio quality and operations efficiency had positive significant relationship with Retun on Asset of the licensed MFBs in Kenya. to the contrary, capital adequacy had insignificant relationship with the licensed MFBs in Kenya.

The findings of this study shed light on the multifaceted dynamics within the microfinance sector in Kenya. One notable discovery was the robust and positive correlation between loan portfolio quality and operational efficiency with Return on Assets (ROA) among licensed Microfinance Banks (MFBs). This suggests that MFBs with higher-quality loan portfolios and more efficient operations tend to yield better returns on their assets. However, the revelation that capital adequacy did not demonstrate a significant relationship with the performance of licensed MFBs in Kenya is intriguing. It prompts questions regarding the traditional assumptions about the importance of capital adequacy in the financial stability and profitability of microfinance institutions.

One possible explanation for this discrepancy could be the specific regulatory environment and market conditions in Kenya, which might influence the impact of capital adequacy on MFB performance differently than in other contexts. Moreover, these findings underscore the need for further exploration into the nuanced factors that drive the performance of microfinance institutions. Researchers and practitioners in the field may benefit from delving deeper into the mechanisms through which loan portfolio quality, operational efficiency, and capital adequacy interact to shape the financial performance of MFBs in Kenya and beyond.

VI. Conclusions

In conclusion, the investigation provides valuable insights into the determinants of financial performance among licensed Microfinance Banks (MFBs) in Kenya. The investigator found compelling evidence to support a positive and significant relationship between loan portfolio quality and operational efficiency with Return on Assets (ROA) among these institutions. This suggests that MFBs that prioritize maintaining high-quality loan portfolios and operate efficiently are more likely to achieve better returns on their assets. Conversely, the findings revealed an insignificant relationship between capital adequacy and the financial performance of licensed MFBs in Kenya. This suggests that

while capital adequacy is traditionally considered crucial for financial stability and profitability in the banking sector, it may not have the same impact on MFBs in the Kenyan context.

Policy, practice and scholarship recommendations

CBK which is the regulators and policymakers may need to reassess the importance of capital adequacy requirements for MFBs, considering the specific dynamics of the Kenyan market. Practitioners within the microfinance sector should focus on strategies to enhance loan portfolio quality and operational efficiency as key drivers of financial performance.. Moving forward, further research is warranted to delve deeper into the underlying mechanisms driving the observed relationships and to explore additional factors that may influence the financial performance of MFBs in Kenya. By continuing to refine our understanding of these dynamics, we can better support the sustainable growth and development of the microfinance sector in Kenya and beyond.

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