

MACROECONOMIC VARIABLES AND FINANCIAL PERFORMANCE OF MICROFINANCE BANKS IN KENYA

John Maina Muriuki.

Postgraduate Student, Accounting and Finance Department, Kenyatta University, Kenya.

Dr. Charity Njoka.

Lecturer, Department of Accounting & Finance, School of Business, Economics and Tourism, Kenyatta University, Kenya.

©2026

International Academic Journal of Economics and Finance (IAJEF) | ISSN 2518-2366

Received: 23rd September 2026

Published: 9th October 2026

Full Length Research

Available Online at: https://iajournals.org/articles/iajef_v6_i1_114_132.pdf

Citation: Muriuki, J. M., Njoka, C. (2026). Macroeconomic variables and financial performance of microfinance banks in Kenya. *International Academic Journal of Economics and Finance*, 6(1), 114-132.

ABSTRACT

Microfinance banks play a vital role in promoting financial inclusion by providing financial services to low-income households and small businesses. However, their performance is vulnerable to macroeconomic factors, with inflation, high interest rates, and exchange-rate volatility contributing to declining profitability. Conversely, economic growth improves borrower incomes and strengthens MFB performance, while adequate capital buffers enhance resilience and sustainability. The empirical evidence on the magnitude of these effects and the role of capital adequacy remains limited in developing economies. This research examined and analysed the influence of inflation, GDP growth, interest rates, and exchange rates on financial performance measured using Return on Assets. The study utilized a quantitative research approach and employed a panel research design utilizing secondary data from licensed MFBs in Kenya over the study period. Data were analysed utilizing descriptive statistics, diagnostic tests, correlation analysis, and panel regression techniques. The results indicated that inflation had a statistically significant negative effect on financial performance ($\beta = -0.0286$, $p < 0.05$), while GDP growth had a positive and significant effect ($\beta = 0.0319$, $p < 0.05$). Interest rates were found to

adversely and significantly affect ROA ($\beta = -0.0417$, $p < 0.05$), and exchange rates also exhibited a significant adverse connection with financial performance ($\beta = -0.0138$, $p < 0.05$). The moderation analysis revealed that capital adequacy significantly moderates the connection between macroeconomic variables and financial performance. The interaction terms for inflation and capital adequacy ($\beta = 0.0168$, $p < 0.05$), GDP growth and capital adequacy ($\beta = 0.0193$, $p < 0.05$), interest rates and capital adequacy ($\beta = 0.0141$, $p < 0.05$), and exchange rates and capital adequacy ($\beta = 0.0117$, $p < 0.05$) were all positive and statistically significant, indicating that higher capital adequacy cushions microfinance banks against adverse macroeconomic shocks. Based on the findings, the study recommends the promotion of macroeconomic stability through prudent fiscal and monetary policies, strengthening capital adequacy regulations to ensure sufficient capital buffers, and enhancing institutional risk management practices within microfinance banks.

Key words: Capital Adequacy, Exchange Rate, Financial Performance, Gross Domestic Product, Inflation, Interest Rate

INTRODUCTION

The financial performance is a key indicator of institutional success and sustainability within the financial industry. An efficient and successful banking sector also serves as a boon to economic growth, financial stability and social development. When banks maintain good financial results, they can provide more credit to households and businesses which subsequently increases investment, employment and income. The World Bank (2023) suggests that access to well-capitalized and profitable financial institutions boosts productivity, as it finances small and medium enterprises (SMEs), which contribute over 60% of the world workforce and almost 40% of the world Gross Domestic Product (GDP)

Macroeconomic variables are external aspects that influence the business of financial institutions. They are macroeconomic indicators that impact the cost of capital, loan repayment capacity and financial services demand, which subsequently influences the performance of banks. Inflation, GDP growth, interest rates and exchange rates are the macroeconomic variables that are selected in this study. The choice of these variables was dictated by the consistent empirical evidence that they are the most imperative external factors in the success of banks (Kim and Lee, 2020; Sharma and Patel, 2022). Their presence is further supported by their direct and observable impact on the profitability of financial institutions in Kenya as witnessed in CBK supervision reports (CBK, 2024).

MFBs in Kenya are regulated by the Microfinance Act (2006) which specifies minimum capital adequacy to be imposed by the CBK. The recent literature focuses on the moderating impact of capital adequacy in the connection between macroeconomic variables and financial health. Sharma and Patel (2022) found that Indian small finance banks that had strong capital bases were able to cope with inflation and interest rate changes with insignificant incidents to profitability. Okoro and Chukwu (2020) found that Nigerian microfinance banks (MFBs) with high capital adequacy ratios were able to maintain their stability in times of exchange rate volatility. Wainaina and Muturi (2023) discovered in Kenya that strong capital MFBs experienced more stable ROAs during phases of poor performance of the economy. These findings substantiate the use of capital adequacy as a moderating variable in the study. It also serves as a cushion by reducing the adverse impacts of economic shocks on performance results. The sufficient capital also renders MFBs more robust, implying that they can suffer losses without compromising their business. It implies that it can modify the strength or weakness of the connection between the economy and financial outcomes as a whole.

Empirical evidence shows that MFBs play an imperative role in the economic system of Kenya. Mugambi and Wanyoike (2021) observed that MFBs have become highly significant in financing MSMEs that are significant in employment creation and economic diversification. Nonetheless, their economic performance is directly connected to the entire economic stability. The inflation

and the depreciation of their currencies have made it more difficult to repay loans and reduce their profits (KNBS, 2023; CBK, 2024). A study by Koech and Muturi (2023) revealed that despite these, MFBs whose capital base is high have continued to maintain high ROAs and ROEs, which underscores the role of high capitalization in promoting financial sustainability. The study focused on the licensed microfinance banks operating under the regulation of the CBK. This ensured reliability and comparability of data because such institutions publish audited financial statements, and are subject to frequent monitoring regarding compliance with prudential standards. Drawing its attention to MFBs, the research directly enhances comprehension of the interaction between macroeconomic dynamics and capital adequacy in affecting financial performance within Kenya's financial inclusion landscape.

Statement of the Problem

Financial performance of MFBs in Kenya has been very volatile over the past years irrespective of the significant role in promoting financial inclusion and SME lending. CBK supervision reports (2024) show that the sector has sustained losses before tax between the years 2020 and 2023, with Ksh 2.2billion in 2020 to Ksh 2.4billion in 2023. One of the indicators of profitability is the Return on Assets which had a negative figure during this period with a reduction of -3% in 2020 and -4% in 2023. Similarly, the Return on Investment (ROI), which depicts the general efficiency in terms of returns generated on invested resources, has consistently lagged behind sustainable levels, with an average of below 5% in the past five years. These trends include a reduction in efficiency, credit default risk, and sustainability in the MFB sector, which risks its capabilities of protecting the funds of depositors, funding SMEs, and maintaining financial inclusion benefits.

The available literature provided little information on the connection between declining financial health of MFBs and poor macroeconomic factors such as high inflation, fluctuating interest rates, slow growth in GDP, and the continuous depreciation of the Kenyan shilling. As an illustration, Wambua and Irungu (2023) analyzed the macroeconomic impacts on Kenyan financial institutions but generalised them in commercial banks and non-bank institutions without targeting regulated MFBs. Equally, Mugambi and Wanyoike (2021) examined commercial banks and Ndichu and Rambo (2022) non-deposit-taking MFIs without considering deposit-taking MFBs under the Microfinance Act. The study of Aluvale (2025) related the same but failed to include capital adequacy as a moderator, leaving the questions of how internal capital buffers can help MFBs to absorb external shocks to be addressed.

Kenya is likely to face severe consequences on its financial and economic stability in case these performance concerns are not addressed. The inability of MFBs to generate employment and alleviate poverty, deteriorate community confidence in the industry, and limit the access to credit by low-income households and SMEs can all be a result of poor financial performance in MFBs. As far as underperforming institutions increase systemic risks and undermine investor confidence, falling profitability also threatens stability of a larger financial system. Addressing the connection

between macroeconomic variables, capital adequacy, and financial performance is therefore critical for protecting depositors, supporting inclusive growth, and ensuring that MFBs remain viable players in Kenya's financial ecosystem.

Objectives of the Study

General Objective

The research general objective is to determine the effect of macroeconomic variables on the financial performance of MFBs in Kenya.

Specific Objectives

The study seeks to;

- i. Determine the effect of inflation on the financial performance of MFBs in Kenya.
- ii. Examine the effect of Gross Domestic Product on the financial performance of MFBs in Kenya.
- iii. Determine the effect of interest rates on the financial performance of MFBs in Kenya.
- iv. Assess the effect of exchange rates on the financial performance of MFBs in Kenya.
- v. Determine the moderating effect of capital adequacy on the connection between macroeconomic variables and the financial performance of MFBs in Kenya.

THEORETICAL REVIEW

Fisher Effect Theory

This theory was developed by Irving Fisher in 1930 and it provides that the nominal interest rates change to reflect the expected inflation and real interest rates. According to the theory, inflation leads to a rise in nominal rates that are linked to the protection of real returns to investors and lenders (Mishkin, 2019; Alam and Waheed, 2019). This suggestion applies to the banking sector since the inflation directly affects the price of borrowing and the profitability of a loan portfolio. The Fisher Effect has been improved and disputed over the years. Supporters argue that it remains highly relevant when understanding long-term interest rates in periods of inflation (Tan & Cheong, 2019; Mugambi and Wanyoike, 2021). However, according to critics, in emerging markets, the full alignment of interest rates to inflation is blocked by unresponsive monetary policies, political intervention, and financial market inefficiency (Kiptui, 2020; Wambua and Irungu, 2023). These arguments demonstrate the positive and negative aspects of the theory. It proves that it is a valuable framework, although its predictive power does not seem to be as powerful in volatile economies.

This research is based on the Fisher Effect that provides a direct relation between financial performance and inflation. Nominal interest rates, real interest rates and inflation expectations are things you need to know to understand how increasing consumer prices impair borrowers to repay loans and damage MFB profits. Its rational expectations and efficient markets assumptions are only partially satisfied in Kenya, which underscores the need to validate them empirically. Recent

reports have indicated that the theory is effective. Alam and Waheed (2019) demonstrated that it mattered to South Asian banks and Mugambi and Wanyoike (2021) demonstrated that the profitability of Kenyan banks was substantially impacted by inflation. It was also utilized by Wambua and Irungu (2023) to examine the impact of inflation on Kenyan banks. These studies confirm its use in this study as a framework to correlate inflation and the financial health of MFBs.

Liquidity Preference Theory

John Maynard Keynes postulated this theory in 1936. It assumes that the amount of money demanded and supplied dictates the interest rates, where people prefer cash, so that they can keep it as transactional, precautionary, and speculative reserves (Blanchard, 2018; Nzoka, 2020). The theory assumes that a rise in money demand without a corresponding rise in supply raises interest rates hence affecting the availability of credit and ultimately the financial performance. The theory has evolved in several aspects. Proponents argue that it still remains a useful model explaining how liquidity levels and monetary policy choices can impact the lending rates (Sharma and Patel, 2022; Mugambi and Wanyoike, 2021). Critics, though, admit that it does not give central banks enough credit on their capacity to directly influence rates by using policy instruments and that it does not indicate the complexity of globalized capital markets (Otieno, 2021; Kihara, 2022). These discussions demonstrate that the theory remains useful, though it is not applicable as well in modern financial systems.

The theory is used to analyze the interest rates as a determinant of financial performance in this study. Central Bank of Kenya monetary policy rate has a considerable impact on lending rates of MFBs, which further influences the risks of borrowing and repaying loans (Nzoka, 2020; Otieno, 2021). It is based on the assumption of rationality in investors and determination of interest rates by the supply of available money. Its principles rest on the fact that the uncertainty is tied to the changes in interest rates through speculative demand of money. The use of the theory is supported by recent research. Sharma and Patel (2022) found that liquidity conditions considerably contributed to the work of microfinance in India, and Mugambi and Wanyoike (2021) used it to demonstrate how the interest rates in Kenya banks impact their work. On the same note, Nzoka (2020) affirmed its applicability in explaining the lending behaviour in Kenya. These applications justify its use in this study.

Purchasing Power Parity Theory

This theory was postulated in 1918 by Gustav Cassel. It argues that the exchange rates move to balance the purchasing power of different currencies under inflation differentials that cause depreciation or appreciation (Rogoff, 2020; Rahman and Akter, 2021). This theory demonstrates the effects of fluctuation in the exchange rates to financial performance, as it becomes more costly to service debts in other currencies. PPP has been widely discussed. Proponents believed that it would stand the test of time and that exchange rates would align with relative price levels (Rogoff, 2020; Wainaina and Muturi, 2023). Opponents believe that speculative flows, capital flows, and

governmental interventions on exchange rates misprice the purchasing power parity (PPP) in the short run (Okoro and Chukwu, 2020; Moyo and Ngwenya, 2021). Despite these shortcomings, the theory remains significant in international financial research.

This theory applies to the current study since it encourages the integration of exchange rates as an element that affects financial performance. The continued devaluation of the shilling against the U.S. dollar in Kenya has made borrowing foreign currencies more expensive to MFBs, which directly reduced their returns (Wambua & Irungu, 2023). The theory assumes the presence of competitive markets and free trade with its two main concepts being the parity in relative prices and the equilibrium in real exchange rates. Its importance is supported by research. Rahman and Akter (2021) applied PPP to the case of Bangladeshi MFBs and have proven that currency depreciation reduced profitability. Wainaina and Muturi (2023) affirmed the appropriateness of PPP within the Kenyan banking industry, and Okoro and Chukwu (2020) showed inconclusive data in Nigeria, with short-term differences. Such applications confirm PPP as a powerful framework in this study.

Capital Adequacy Theory

The Capital Adequacy Theory is based on the efforts of Modigliani and Miller (1958) and strengthened by the Basel I, II, and III agreements. It emphasizes the significance of adequate capital buffer in protecting depositors, bank stability, and long-term profitability (Admati and Hellwig, 2019; Ngugi, 2020). According to the theory, the higher the capital adequacy ratios of a bank, the higher the ability of the bank to absorb the macroeconomic shocks and maintain stability. The theory has transformed over time. Proponents of strong capitalization propose that it lowers systemic risk, increasing confidence in financial institutions (Moyo and Ngwenya, 2021; Wainaina and Muturi, 2023). Critics believe that capital requirements, particularly in developing countries, reduce the growth in credit and reduce profitability (Ngugi, 2020; Wambua and Irungu, 2023). Such contradictory views attract us to the thin line that lies between profitability and resilience.

The theory was used in this study as the basis for capital adequacy as a moderating variable. It explains why some microfinance banks in Kenya fatten better than others to withstand the effects of inflation, rise in interest rates and currency depreciation. The fundamental assumptions of the theory are anchored on the notion that capital can cushion against losses and that risk absorption and wise regulation are significant. It is practical according to recent studies. Okoro and Chukwu (2020) were able to show that microfinance banks in Nigeria with a high level of capital were more resilient to macroeconomic shocks. The results of Moyo and Ngwenya (2021) were similar in Sub-Saharan Africa, but Wainaina and Muturi (2023) confirmed that capital adequacy increased resilience in Kenyan banks. The applications of Capital Adequacy Theory are justified in these studies in the research.

EMPIRICAL REVIEW

Wambua and Irungu (2023) examined how macroeconomic variables affect the financial health of Kenyan banking institutions, in particular, they assessed the influence of inflation rate, GDP, interest rates, and exchange rates on institutional profitability. The study focused on the Kenyan financial sector by targeting a population of 40 commercial banks and microfinance institutions that have been regulated by the CBK. Using descriptive correlational research design, the researchers used secondary data in the form of CBK annual reports of supervising the work of 5 years, and conducted multiple regression analysis. The study hypothesized that inflation affected financial success significantly, negatively, by raising the cost of operations and lowering the repayment abilities of customers, which resulted in a higher level of NPLs. However, the study failed to isolate the impact on regulated deposit-taking microfinance banks and this created a gap in context. This study bridges that gap by examining Kenya specifically the licensed MFBs.

Wainaina and Muturi (2023) studied GDP Growth and Financial Health of MFIs in Kenya. The aim was ascertaining how the growth of GDP determined the profitability and stability of MFIs. The research was conducted on MFIs that were registered by the Association of Microfinance Institutions of Kenya (AMFI) and in the Kenyan market. Their research design was descriptive based on secondary data which comprised of audited financial statements of MFIs and economic reports issued by the KNBS. The analysis of data was performed utilizing multiple regression models. The results suggested that the time of GDP growth boosted the loan recovery rates and earnings among MFIs. Nonetheless, the research has lumped all MFIs together without differentiating between credit and regulated deposit taking MFBs, and therefore it has a contextual gap. Moreover, it failed to take into account the relationship of capital adequacy in changing the connection between GDP and financial success which this study explores.

Sharma and Patel (2022) looked at how the profitability of small finance banks in India is impacted by interest rate volatility. The research's aim was to ascertain the impact of changes in the lending rates on the financial health of regulated small finance banks- banks with structural similarity to the microfinance banks (MFBs) in Kenya. The research aimed at all the licensed small finance banks in India and employed a panel data research design with eight-year coverage based on the secondary information supplied by the reserve bank of India and audited bank reports. The panel regression analysis indicated a rise in interest rates increased the cost of financing, reduced net interest income, and adversely affected the ROA and ROE. Nevertheless, the research failed to discuss the moderator of capital adequacy, which presents a conceptual gap that this research aims to address by involving the buffering effect of capital strength in Kenyan MFBs.

Koech and Muturi (2023) examined how the Kenyan commercial banks were influenced by the macroeconomic determinants on their financial performance with the objective of assessing how the exchange rates among other macroeconomic factors influenced the profitability of the banks.

Their study concentrated on the whole population of commercial banks that were under the control of CBK thus placing it in the Kenyan financial sector. They utilized a descriptive research design to get secondary data in the form of CBK annual reports on supervision, World Bank database reports and audited financial reports. The data were analysed through multiple regression. The results indicated that the times when the Kenyan shillings were weakened against the US dollar were the times when the cost of fulfilling foreign currency liabilities was higher and the profitability ratios like ROA were lower. Nevertheless, there was no separation of the special exposure of microfinance banks or the moderating effect of capital adequacy, which creates a contextual and conceptual gap that this study aimed to address.

Wainaina and Muturi (2023) researched the impact of capital adequacy on financial health of MFBs in Kenya, and aimed at establishing the impact of capital strength on profitability. Their report was aimed at the Kenyan market and registered MFIs which were under the Association of Microfinance Institutions of Kenya (AMFI). They evaluated secondary data in the form of audited financial reports and CBK supervision reports in five years using descriptive correlation research design. Regression models were adopted to process the data. The results obtained showed that those institutions which had higher capital adequacy ratios registered greater ROA and less likely to be affected by liquidity distress. Nevertheless, their study has not considered the interaction of capital adequacy with the macroeconomic variables such as inflation and GDP to have an effect on financial health and this has introduced a conceptual gap that this study fills by testing capital adequacy as a moderating variable.

RESEARCH METHODOLOGY

This research adopted a descriptive research approach. A descriptive design emphasizes the provision of a precise definition of people, events, or situations (Saunders et al., 2019). It allows the researcher to outline the current phenomena and other connections between variables through a systematic data gathering process, without having to manipulate the research environment (Bell et al., 2019).

The research focused on the population of all currently licensed microfinance banks (MFBs) in Kenya, under regulatory oversight of the CBK as mandated by the Microfinance Act of 2006. As of 2024, 14 licensed MFBs are currently operating within Kenya (CBK, 2024), all of which are statutorily capital adequate and liquidated in order to meet liquidity requirements and publish regular audited financial reports. It is a controlled, documented group of financial institutions that provides optimal empirical setting to establish the effect of macroeconomic forces, such as inflation, GDP growth, interest rates, and exchange rates on financial performance and the way the association amid the variables is reduced by capital adequacy.

Considering the relatively small and clearly defined population under study, which consisted of only fourteen licensed MFBs in Kenya by 2024 (CBK, 2024), this study utilized a census sampling method. The concept of a census implied that all members of the population were included in the study, thereby minimizing sampling bias and enabling comprehensive examination of all units under investigation (Kumar, 2019).

The main research instrument in this study was secondary panel data, encompassing 2020-2024. The data sources were considered to be trustworthy, i.e., CBK supervisory reports, audited financial reports of licensed microfinance banks, and the macroeconomic indicators, accessed via KNBS data repositories. The choice of secondary panel data is well coordinated with the objectives of the study. Bell, Bryman, and Harley (2019) note that secondary data is particularly practical in financial studies since it is already frequently checked in terms of its reliability and adherence to the regulatory requirements and is thus more valid.

Descriptive Statistics

The nature of the dataset largely determines the interpretation and delivery of the empirical results and their reliability. Descriptive statistics were utilized in this respect to present the main characteristics of the variables of the study prior to the inferential analysis. These are the descriptive ones that are presented under the form where the number of observations, the mean, the standard deviation is provided and the values below and above each variable. This analysis was facilitated with balancing panel data obtained on the 14 licensed microfinance banks operating in Kenya during the year 2022-2024.

Table 1 Descriptive Statistics

Construct	Obs	Mean	Std. Dev.	Min	Max
Financial Performance (ROA)	70	-0.0248	0.0316	-0.089	0.0425
Inflation (%)	70	6.48	2.31	2.14	9.23
GDP Growth (%)	70	4.12	2.07	-0.34	7.59
Interest Rates (%)	70	12.86	1.94	8.75	17.25
Exchange Rates (KES/USD)	70	134.72	11.38	102.35	158.94
Capital Adequacy (%)	70	18.45	4.92	10.21	32.67

Source: Author (2026)

Return on Assets (ROA) showed a negative average of -0.0248. This implies that microfinance banks in Kenya were on average running into a loss in the study period. The lowest ROA of -0.0890 also validates the fact that not all institutions performed profitably, and the maximum of 0.0425 suggests that some banks were able to make some modest profits. Standard deviation (0.0316) is quite large, and it denotes high variation in the performance by institutions and across time. The findings are aligned with the reports of Central Bank of Kenya supervision that record a

continued loss in the microfinance banking industry, especially after the COVID-19 pandemic and ensuing macroeconomic turmoil.

The average inflation stood at 6.48 percent with the lowest figure of 2.14 percent and the highest of 9.23 percent. The reported variability shown by the standard deviation of 2.31 suggests that the price levels were not unstable throughout the study period. These inflationary pressures should have contributed to higher operational expenses and reduced the repayment ability of borrowers, thus putting a adverse pressure on the profitability of microfinance banks. This variance highlights inflation as one of the macroeconomic variables that affect financial performance.

GDP growth was recorded at an average of 4.12 percent with a reflection of moderate growth in the economy over the study period. Nevertheless, the lowest point of -0.34 percent indicates times of contracting economy, whereas top point with 7.59 percent indicates times of robust recovery. The variation of 2.07 implies the changes in the economic activity, especially in the COVID-19 shock and the post-pandemic recovery. These changes in the economic growth are vital to microfinance banks, most clients of which are small businesses and low-income households that tend to respond to economic fluctuations.

The interest rates were observed to have a mean of 12.86 percent ranging between 8.75 and 17.25 percent. The standard deviation of 1.94 shows that there have been significant fluctuations in lending rates within the period of study, which signify changes in monetary policy by the CBK. Increases in interest rates make borrowing more expensive to clients and can raise the incidences of defaults, with decreases reducing interest margins. The variability that was noted implies that the interest rate fluctuations were of great challenge to the profitability and lending activities of the microfinance banks throughout the research period.

The mean exchange rate was KES 134.72 per USD with a variance of KES 102.35 to KES 158.94. The standard deviation 11.38 is quite high indicating the strong depreciation of Kenyan shilling as per the study period. This volatility in exchange rates enhances the expense of servicing foreign contracted liabilities and imported operational input that can have a detrimentally substantial impact on financial success. The exposure of the MFBs to external currency shocks is highlighted by the wide range experienced in the exchange rates.

The mean of capital adequacy was 18.45 percent, exceeding the regulatory requirement of the CBK. Nevertheless, the lowest figure of 10.21 percent indicates that there are banks in microfinance that were close to regulating this risk and the highest of 32.67 percent shows that some banks had robust capital levels. The 4.92 standard deviation also indicates the existing differences in the capital strength of the institutions. This difference justifies the addition of capital adequacy as a moderating variable to the research in that deviations in capital buffers are expected to interfere with the impact of macroeconomic shocks on the financial success.

Normality Test

Normality of residuals is a key assumption of regression analysis because it enhances the validity of hypothesis test and confidence intervals. To check the residuals, the study employed the Jarque-Bera (JB) test of normality.

Table 2 Normality Test Results

Test	Statistic	Value
Jarque-Bera (JB)	χ^2	1.96
Probability (Prob > χ^2)	p-value	0.375

H₀: Residuals are normally distributed

Source: Research Data (2026)

Table 2 shows a test = 1.96, p = 0.375 in the Jarque-Berra test. The null hypothesis stating that the residues are normally distributed is not rejected since its p-value surpasses the significance level of 0.05. This means that the residuals would be normally distributed. The fact that the normality assumption has been satisfied implies that the regression coefficients and other statistical conclusions derived are correct, including the t-tests and the confidence intervals. This implies that there is no uncertainty about the implications of regression outputs.

Regression Analysis

The random effects model was identified as the best estimation method based on the Hausman model specification test. Preference was given on the random effects estimator, which gives efficient and consistent estimates, and allows within-bank and between-bank variations. The findings of the random effects panel regression are exhibited in Table 3.

Table 3 Random Effects Regression Results

Variable	Coefficient	Std. Error	z-statistic	P > z	95% Confidence Interval
Inflation	-0.0286	0.0094	-3.04	0.002	-0.0471 – -0.0101
GDP Growth	0.0319	0.0126	2.53	0.011	0.0072 – 0.0566
Interest Rates	-0.0417	0.0153	-2.73	0.006	-0.0717 – -0.0117
Exchange Rates	-0.0138	0.0059	-2.34	0.019	-0.0254 – -0.0022
R-squared = 0.721 Adjusted R-squared = 0.663					

Source: Research Data (2026)

Using the estimated coefficients from the regression results, the empirical model can be rewritten as: $FP_{it} = \beta_0 - 0.0286INF_{it} + 0.0319GDP_{it} - 0.0417INT_{it} - 0.0138EXCH_{it} + \varepsilon_{it}$ (i)

Random effects panel regression findings as exhibited in Table 4.9 indicate that macroeconomic factors are major in elucidating differences in financial performance of MFBs in Kenya. The model

has a considerable explanatory power with the value of the R-squared of 0.721 suggesting that nearly 72.1 percent of the variation in Return on Assets (ROA) can be jointly attributed to inflation, GDP growth, interest rates, and exchange rates. The adjusted R-squared of 0.663 also reaffirms that the model is strong once the number of explanatory variables have been controlled, indicating that the macroeconomic variables used are highly relevant to explain how microfinance banks perform.

Financial performance is adversely and statistically significantly correlated with inflation. This result suggests that the rise of the overall price level negatively impacts the profitability of microfinance banks. Economically, inflation increases operating and administrative expenses, decreases the real disposable income of borrowers, and compromises the repayment ability, which contribute to higher credit risk and decreases the quality of the loan portfolio. The negative effects of inflation on ROA highlight the susceptibility of microfinance institutions to macroeconomic shocks, especially due to the consideration of the low-income households and small businesses that are most susceptible to price dispensation.

GDP indicates a favourable and statistically significant impact on financial health, which means that a better economic situation leads to an improved profitability of the MFBs. Growth in the economy leads to an improvement in business, more people are able to spend and repay debts, thus enhancing assets and interest revenue. This finding underscores the cyclical aspects of the performance of microfinance banks and indicates that a steady economic growth provides an enabling environment to profitability due to higher credit demand and low default rates.

The negative, statistically significant impact of interest rates on financial health is identified. The increase in interest rates raises the cost of borrowing by microfinance clients, stifles loan demand, and raises the risk of default because debt servicing has become a heavy burden. Moreover, the interest rates can rise, which raise the funding will cost of microfinance banks and decrease interest margins. The negative coefficient thus portrays the bifurcated pressure created by interest rate increases on both asset and liability side of the balance sheets of microfinance banks.

There is also a negative and statistically significant correlation between exchange rates and financial performance, suggesting that lowering the value of the Kenyan shilling is likely to have a negative impact on profitability of microfinance banks. Exchange rate volatility may raise operating expenses of borrowers who utilize imported inputs, decrease business profitability, and increase default risk. In addition, macroeconomic uncertainty generated by exchange rate instability can depress investment and credit demand with an additional limiting financial performance. The significance of this finding is that the exchange rate shocks are indirectly but significantly passed on to the microfinance institutions through the economy.

This constant is statistically significant and positive, which indicates that there is baseline profitability even when macroeconomic effects are not included. This suggests that there are firm-specific variables, including the efficacy of managers, diversification of products, corporate governance, and risk management systems, but these variables also increase the financial performance and yet are not directly represented in the model.

Table 4 Moderating Effect of Capital Adequacy

Financial Performance	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]
Inflation	-0.0314	0.0102	-3.08	0.003	-0.0516
GDP Growth	0.0287	0.0119	2.41	0.018	0.0051
Interest Rates	-0.0396	0.0148	-2.68	0.009	-0.0689
Exchange Rates	-0.0129	0.0056	-2.3	0.023	-0.0241
Capital Adequacy	0.2145	0.0926	2.32	0.022	0.0314
Inflation × Capital Adequacy	0.0168	0.0064	2.63	0.01	0.0041
GDP Growth × Capital Adequacy	0.0193	0.0072	2.68	0.009	0.0051
Interest Rates × Capital Adequacy	0.0141	0.0059	2.39	0.019	0.0024
Exchange Rates × Capital Adequacy	0.0117	0.0048	2.44	0.017	0.0022
_cons	0.1762	0.0287	6.14	0	0.1194

Using the regression coefficients provided in the table, the estimated moderated regression model is:

$$FP_{it} = 0.1762 - 0.0314INF_{it} + 0.0287GDP_{it} - 0.0396INT_{it} - 0.0129EXCH_{it} + 0.2145CA_{it} + 0.0168(INF_{it} \times CA_{it}) + 0.0193(GDP_{it} \times CA_{it}) + 0.0141(INT_{it} \times CA_{it}) + 0.0117(EXCH_{it} \times CA_{it}) + \varepsilon_{it}$$

.....(ii)

According to Table 4.10, capital adequacy is a dominant moderating factor in the connection between macroeconomic variables and financial performance of the MFBs in Kenya. The interaction terms between capital adequacy and the macroeconomic variables (inflation, GDP growth, interest rates, and exchange rates) are not statistically significant at 5 percent.

The positive coefficients of the interaction terms indicate that an increase in the levels of capital adequacy reduces the negative effects of the adverse macroeconomic conditions and enhances the positive effects of the favourable ones on the financial performance. Specifically, capital endowed MFBs are in a stronger position to absorb the inflation pressures, rise in interest rates and change in the exchange rates and thereby reduced the impact of macroeconomic shocks on profitability. Similarly, capital adequacy supplements the favourable impact of GDP growth on financial health by allowing institutions to lend more and continue with business during economic boom. The

results substantiate that capital adequacy is a shock absorbing element, which enhances an institutional resilience and stabilizes the financial performance amid volatile macroeconomic environment. Thus, we reject the null hypothesis of no moderating effect of capital adequacy.

Conclusions of the Study

The research concludes that macroeconomic factors play a critical role in defining financial performance of MFBs in Kenya. The factual facts reveal that financial performance is highly sensitive to the change in macroeconomic environment which testifies to the fact that the microfinance institutions operate within a broader economic system whose stability is among the pillars of their sustainability. Therefore, microfinance banks are not insulated against macroeconomic shock despite the fact that they are involved in small scale and local financial intermediation.

Specifically, the research finds that inflation has a statistically significant, adverse effect on the operational financial performance of MFBs. Inflation increases operation and consumption costs to borrower's comparative to real incomes, leading to higher risk of default and consequent reduced profitability. This observation underscores the vulnerability of microfinance institutions to unremitting inflationary pressures and justifies the importance of price stability in determinism of the welfare and success of the microfinance sector.

The study also finds out that GDP growth affects the financial performance positively indicating that the microfinance banks are in a favourable economic climate. Economic growth also enhances the income capacity of the borrowers, increases the repayment behaviour of the borrowers and promotes the financial service demands. This observation has confirmed the hypothesis that the profitability of the microfinance banks is pro-cyclical and closely linked with the overall welfare in the economy.

On the other hand, interest rates and exchange rates were found to affect financial performance significantly at a negative level. High rate of interest discourages credit demand and increases the repayment burden of the microfinance clients and devaluing the exchange rate causes macroeconomic uncertainty and indirectly affects the financial capacity of the borrowers. The implications of these findings are that the external economic shocks in addition to domestic monetary environment can be extremely harmful to the financial stability of microfinance banks.

Notably, the research finds that capital adequacy plays a major moderating role in the connection between macroeconomic factors and financial performance. Microfinance banks with high capital structure are in a better position to withstand negative macroeconomic shocks and sustain normal operations during politically challenging times. Capital buffers promote institutional resilience, distribution of financial fragility, and allow microfinance banks to continue lending and to be profitable even in poor economic environment.

Recommendations of the Study

Empirical-based research findings suggest a holistic plan to boost the financial performance and financial stability of MFBs in Kenya by effectively interfering with macroeconomic factors and institutional endowments. These results suggested that macroeconomic factors are significant determinants of profitability and that capital sufficiency is a significant moderator in the negative shock absorption. This implies that sustainable performance in the microfinance sector cannot be realized through the isolated institutional actions, but the collective macroeconomic, regulatory and administrative actions that can complement one another in resilience and stability.

Policy-wise, the research strongly promotes macroeconomic stability as one of the gateways to establish the sustainability of microfinance institutions. It was found that constant inflation, high interest rate and exchange rate turmoil significantly impaired financial success by increasing the cost of financial operations, reducing the real income of borrowers and increasing credit risk. Regular macroeconomic policies ensure predictability in lending and investment decision-making, improved loan repayment behaviour, and financial market uncertainty. Therefore, there is the necessity to encourage an empowering environment, by instituting regular fiscal sanity, realistic monetary policy structures within which microfinance banks can still thrive as part of their financial inclusion mandate.

The study also recommends that the process of making monetary decisions should be undertaken with clear situational awareness of the realities of the operations of microfinance banks. Their high reliance on interest revenues, combined with the low-income households and micro-enterprises they cater to, would result in lending behaviour responding disproportionately and make their portfolios worse in case of sudden or massive changes in policy rates. Sluggish, transparent, and well-announced adjustments in monetary policy would allow microfinance institutions enough time to repricing their setups, handle the cost of capital, and reshuffle risks without impacting their financial results or being unable to lend to vulnerable borrowers.

In addition, the study recommends the improvement of capital adequacy regulation and control of microfinance banks. The findings specifically point in one direction of recognising that the capital adequacy is an influential variable as a way of moderating the impact of any macroeconomic fluctuations on financial performance and therefore its consideration in the financial performance as a major shock-absorbing mechanism. The regulators should therefore not only ensure that they impose minimum capital requirements but also convince the microfinance banks to have capital buffers that are pegged on regulatory levels. The policies that would provide the institutional resilience, depositor protection, and foster the long-run financial stability of the sector include conducive policies, safe excessive dividend pay-outs, recapitalization in good time, even retained earnings.

Practically and managerially, the research indicates that the management of the microfinance banks ought to improve the internal risk management, the governing body and controls so as to endure the macroeconomic volatility. Better credit appraisal framework, continuous examinations of the loan portfolios and periodic stress tests based on macroeconomic developments could help the institutions predict and address the arising risks. Enhanced asset-liability management practices will also assist the microfinance banks to better contend with interest rate risk, liquidity variance, and funding variability, hence safeguard the profitability amid economic duress.

Finally, the study recommends that the government should be devoted to scaling-up the policies that will enable inclusive and broader economic growth. Since the effects on the GDP growth were found to have positive influences on financial health, the actions that support the initiatives to strengthen MSMEs by improving access to markets, developing infrastructure, capacity-building, and good regulatory conditions- will indirectly impact on the profitability of the microfinance banks by increasing the stability of the revenues of the borrowers and their credit quality. These policies are not only strengthening the performance of microfinance institutions but their developmental contribution towards financial inclusion, poverty alleviation and economic transformation in Kenya.

REFERENCES

- Baltagi, B. H. (2021). *Econometric analysis of panel data* (6th ed.). Wiley.
- Bell, E., Bryman, A., & Harley, B. (2019). *Business research methods* (5th ed.). Oxford University Press.
- Blanchard, O., & Johnson, D. (2022). *Macroeconomics* (8th ed.). Pearson.
- Bozkurt, O., & Yildirim, M. (2020). GDP growth and microfinance institutions' financial performance in Europe. *Journal of Finance & Banking Studies*.
- Brealey, R. A., Myers, S. C., & Allen, F. (2022). *Principles of corporate finance* (14th ed.). McGraw-Hill Education.
- Cassel, G. (1922). *The theory of social economy*. T. Fisher Unwin.
- Central Bank of Kenya. (2024). *Microfinance bank supervision report 2024*. Author.
- Cheshire, J., & Waiganjo, E. (2019). Effect of inflation on banks financing the energy sector in Kenya. *Journal of Finance & Banking Studies*.
- Cooper, D. R., & Schindler, P. S. (2007). *Business research methods* (9th ed.). McGraw-Hill.
- Creswell, J. W. (2006). *Research design: Qualitative, quantitative, and mixed methods approach* (2nd ed.). Sage.
- Diamond, D. W., & Dybvig, P. H. (1983). Bank runs, deposit insurance, and liquidity. *Journal of Political Economy*, 91(3), 401–419.

- Friedman, M. (1956). The quantity theory of money: A restatement. In M. Friedman (Ed.), *Studies in the quantity theory of money* (pp. 3–21). University of Chicago Press.
- Gitman, L. J., Juchau, R., & Flanagan, J. (2021). *Principles of managerial finance* (8th ed.). Pearson.
- Gujarati, D. N., & Porter, D. C. (2020). *Basic econometrics* (6th ed.). McGraw-Hill Education.
- Gurley, J. G., & Shaw, E. S. (1960). *Money in a theory of finance*. Brookings Institution.
- Koech, J., & Muturi, W. (2023). Macroeconomic determinants and financial performance of commercial banks in Kenya. *Journal of Finance & Banking Studies*.
- Kombo, D. K., & Tromp, D. L. (2009). *Proposal and thesis writing: An introduction*. Pauline Publications Africa.
- Kumar, R. (2019). *Research methodology: A step-by-step guide for beginners* (5th ed.). Sage Publications.
- Lee, J., Kim, Y., & Park, S. (2020). Economic growth and bank profitability across OECD economies. *Journal of Finance & Banking Studies*.
- Mankiw, N. G. (2020). *Principles of economics* (9th ed.). Cengage Learning.
- Marshall, A. (1890). *Principles of economics*. Macmillan.
- Mishkin, F. S., & Eakins, S. G. (2020). *Financial markets and institutions* (9th ed.). Pearson.
- Moyo, S., & Ngwenya, T. (2021). Capital strength and profitability of African banks under macroeconomic volatility. *Journal of Finance & Banking Studies*.
- Mugambi, A., & Wanyoike, D. (2021). Macroeconomic factors and financial performance of commercial banks in Kenya. *Journal of Finance & Banking Studies*.
- Nelson, M., Mwangi, S., & Omollo, J. (2021). Economic resilience and bank stability in East Africa. *African Journal of Economic Review*, 9(1), 45–62.
- Ngulube, P. (2019). Macroeconomic determinants of bank performance in Zimbabwe. *Journal of Finance & Banking Studies*.
- Okoro, C., & Chukwu, E. (2020). GDP and financial stability of microfinance banks in Nigeria. *Journal of Finance & Banking Studies*.
- Pandey, I. M. (2019). *Financial management* (12th ed.). Vikas Publishing.
- Rahman, M., & Akter, T. (2021). GDP growth and profitability of microfinance banks in Bangladesh. *Journal of Finance & Banking Studies*.
- Rose, P. S., & Hudgins, S. C. (2021). *Bank management & financial services* (10th ed.). McGraw-Hill.
- Samuelson, P. A., & Nordhaus, W. D. (2019). *Economics* (20th ed.). McGraw-Hill Education.

- Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson.
- Sekaran, U., & Bougie, R. (2011). *Research methods for business: A skill-building approach* (6th ed.). Wiley.
- Sharma, R., & Patel, S. (2022). Interest rate volatility and performance of small finance banks in India. *Journal of Finance & Banking Studies*.
- Tan, L., & Cheong, C. (2019). Exchange rate exposure and bank profitability in Southeast Asia. *Journal of Finance & Banking Studies*.
- United Nations Conference on Trade and Development. (2021). *World investment report 2021: Investing in sustainable recovery*. United Nations.
- Verbeek, M. (2012). *A guide to modern econometrics* (4th ed.). Wiley.
- Verbeek, M. (2017). *A guide to modern econometrics* (5th ed.). Wiley.
- Wainaina, P., & Muturi, W. (2023). Capital adequacy and financial performance of microfinance institutions in Kenya. *Journal of Finance & Banking Studies*.
- Wambua, G., & Irungu, P. (2023). Effect of macroeconomic factors on the financial performance of financial institutions in Kenya. *Journal of Finance & Banking Studies*.
- Wooldridge, J. M. (2020). *Introductory econometrics: A modern approach* (7th ed.). Cengage Learning.
- World Bank. (2023). *World development indicators 2023*. World Bank Publications.