

**MACROECONOMIC FACTORS VOLATILITY, BANK SIZE AND
FINANCIAL PERFORMANCE OF TIER III BANKS IN KENYA**

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**A Thesis Submitted to the Graduate School in Partial Fulfilment of the
Requirements for the Award of Master Degree in Business Administration
(Finance) of Tharaka University**

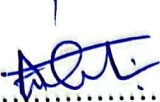
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DECLARATION AND RECOMMENDATION

Declaration

This thesis is my original work and has never been presented for the award of any diploma or conferment of any degree in any university or institution.

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Recommendation

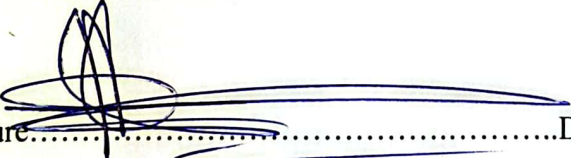
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DEDICATION

With the highest level of gratitude, I dedicate this thesis to my dear husband Peter Mutugi whose support, encouragement and sacrifice have always been the pillars in this academic journey. The patience, your trust in me, and continuous encouragement helped me have the power to keep on even during the hardest times.

I also dedicate it to my beloved children Ray, Lux and Tim. You are the reason am struggling to reach greater heights. It is my hope that this piece of work will truly be a testament to the fact that dreams are attainable through perseverance and hard work, and it will make you go in quest of excellence fearlessly and persistently.

I also transfer this commitment to my extended family, whose prayers, support, and faith in me have been a never-ending motivational factor.

Most importantly, I would like to dedicate this work to Almighty God whose grace, wisdom, and undying love have helped me through all the steps of the way.

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ABSTRACT

The unstable state of the global and regional macroeconomic conditions such as frequent financial shocks and unstable growth cycles and variable rates of GDP, interest rate, exchange rate and inflation rate, which disproportionately impacted the smaller banking institutions drove the study. Although the world has shown that the small banks are more vulnerable during the volatile times, the situation in the region and in Kenya in general shows that Tier III banks are the most vulnerable as they have smaller capital buffer, limited market coverage, and rely on unstable policy environments. This study discussed the impact of the volatility of macroeconomic factors on the financial performance of Tier III banks in Kenya during the years 2004 to 2024 and bank size was also added as the moderating variable. It was anchored by the Keynesian Economic Theory, Risk–Return Trade-off Theory, Intermediation Theory of Banking, and the Resource-Based View (RBV) Theory. The research design applied was a correlation, based on secondary data of the 22 tier II banks in Kenya. The analysis of data was performed through the multiple and moderated regression models on SPSS. The regression findings indicated that GDP volatility had a negative albeit insignificant effect on financial performance ($\beta = -0.00122$, $t = -0.881$, $p = 0.394$), whereas the interest rate volatility also had a negative but insignificant effect (-0.00311 , $t = -2.101$, $p = 0.056$). Financial performance was positively and statistically significantly related to exchange rate volatility (0.00109 , $t = 2.414$, $p = 0.031$) and inflation volatility (0.00513 , $t = 4.926$, $p = 0.0003$). The moderation model showed that the size of banks did not have a significant effect on these relations, so the asset base is not a sufficient buffer against macroeconomic volatility in smaller banks. The research faced theoretical limitations in the methods of incorporating macroeconomic volatility into the firm level banking theories; methodological limitations because of the correlational design and use of secondary data; contextual limitations because the study focused only on Tier III banks; and empirical limitations by the fact that the study did not find long period comparative studies in other similar developing economies. The research has added value to the discourse at the global, regional and local levels by providing an empirical understanding through 21 years on the effect that macroeconomic volatility has on the performance of small banks in emerging markets. It urges Tier III banks to embrace proactive risk management, diversify their sources of income and develop resilience by progressively increasing their capital base and policy makers to maintain steadiness in macroeconomic stability to protect the stability and competitiveness of the lower tier banks within the financial sector in Kenya.

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ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of Variance
APT	Arbitrage Pricing Model
CAPM	Capital Asset Pricing Model
CBK	Central Bank of Kenya
CBN	Central Bank of Nigeria
COVID-19	Corona Virus Disease 2019
CPI	Consumer Price Index
EMDEs	Emerging Markets and Developing Economies
EMH	Efficient Markets Hypothesis
EPS	Earning Per Share
GDP	Gross Domestic Product
IMF	International Monetary Fund
ISERC	Institutional Scientific and Ethics Review Committee
KBA	Kenya Bankers Association
KNBS	Kenya National Bureau of Statistics
NACOSTI	National Commission for Science, Technology & Innovation
NIM	Net Interest Margin
NSE	Nairobi Stock Exchange
RBV	Resource based View
ROA	Return on Assets
ROE	Return on Equity
SACCOs	Savings and Credit Cooperatives
SASRA	Sacco Societies Regulatory Authority
SMEs	Small and Medium Enterprises
SPSS	Statistical Package for Social Science

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The Global banking system is very important in the economic development as it helps in the financial intermediation, credit allocation and liquidity management. These functions are dependent on the factors influencing the banks' financial performance extensively. The banks' financial performance is a critical topic to comprehend the financial stability of a specific bank, and the overall economy (Ali & Puah, 2019).

According to the 9th Global Risk Management Survey, Tier III banks are at risk due to macroeconomic factors volatility due to the low level of capital and higher credit risk and financial burden of compliance with the regulations (Hida, 2025). This demonstrates the impacts of external economic shocks on the performance of banks especially in less robust regimes. Tier III banks, which are established in the emerging economies, have the key role of promoting financial inclusion as they cater for the needs of the under-served groups not being served by the larger banks.

They were however more influenced by the fluctuations of the global economy or macroeconomic factors volatility such as the GDP volatility, interest rates volatility, exchange rate volatility and inflation rate volatility. Since Tier III banks are primarily serving low-income groups, these pressures were likely to reduce their capital adequacy, which is a key indicator of financial performance (Oyetade & Muzindutsi, 2023). Financial development and resilience centre on the banks as they organize the savings, facilitate the trade, and enhance the economic growth (Mohapatra, 2020).

Inflation, increasing interest rates and inefficiencies within the South African economy have weakened the economy, individuals and small businesses, declining loan repayments and demand, which further aggravates the financial risks of banks (Nqobile, 2024).

The second major threat is the currency or exchange rate volatility as Adeoye, (2024) explains, the variations in exchange rates might lower the capital ratio of banks and their level of shock resistance. In response to this, the Central Bank of Nigeria has made the banks raise their capital so that they can absorb the depreciation and economic turmoil by March 2026. The regulation can oblige Tier III banks to increase equity,

merge with other banks or rethink licenses. It jeopardizes the financial stability since it lowers the true value of assets. The buying power of the depositors is also lowered by inflation and this leads to restriction of the liquidity. It is the Tier III banks that are at higher risks and have clients that are vulnerable to them, the risks are especially acute in such cases.

Kenya has three categories of banks based on their size, capital base and market coverage. Tier I include the biggest of institutions which have a national presence, Tier II includes mid-sized banks with moderate penetration of the market and Tier III includes small banks which tend to operate in either local or niche markets. According to the Banking Act (2010) in Kenya, all companies that practice banking would be a bank according to the definition of the Banking Act (2010). Tier III banks are in that dilemma as they have to serve the marginalized groups, but, at the same time, not only meet the requirements, but also ensure financial stability. Though they only hold a market share of 8.4 percent of the market as opposed to 75 percent of Tier I and 17 percent of Tier II, the Tier III banks are highly significant in microfinance and rural banking, where the larger banks do not target them (CBK, 2023; Waceke, 2024).

However, the smaller banks are more prone to macroeconomic factors volatility such as change in inflation, interest rates, GDP volatility, and exchange rates (Matara, 2024). In addition, they are growing in their cost-to-income ratios due to their high operating costs that do not correspond to their revenue (Wangui, 2019).

Their exposure to economic crisis is higher due to low financial base, and lack of diversification. The tier III banks may be directly impacted regarding the movement of interest rates since it determines the rates of borrowing as well as the rates of lending and bank profitability. Such macroeconomic changes can be very difficult to adapt to since they have limited resources (Wambua et al., 2025). Their operations are also severely hit by the exchange rate instability, with its impact on their activities and their financial performance being high (CBK, 2023).

1.1.1 Macroeconomic Factors Volatility

The volatility of the macroeconomic factors can be described as variation in the important aggregate indicators that are used to show the overall wellness and stability of an economy. These indicators are gross domestic product (GDP) volatility, interest rate volatility, exchange rate volatility and inflation rate volatility. The extent and sustainability of volatility of these variables depends on how predictable the economic results are, how stable the macroeconomic environment is, and what uncertainty will prevail in the market. The period of 2004-2024 was marked by significant changes in these indicators in Kenya because of domestic and external shocks, such as global financial crises, fiscal policy changes, currency depreciation, and the COVID-19 pandemic (CBK, 2022; World Bank, 2023).

This study dealt with the volatility of GDP, Interest rate, exchange rate and inflation rate. Volatility in GDP revealed frequent and unpredictable changes in economic activity, meaning that the economy was susceptible to economic shocks, including policy uncertainty and changes in global demand. (Ndungu et al, 2022).

The GDP growth in Kenya has had cyclic growth over the years with booms and downturns based on events like droughts, fiscal changes and political changes. To illustrate, there were notable declines in 2008, during the global financial crisis, and in 2020, during the pandemic that interfered with the domestic production and consumption trends (CBK, 2020; World Bank, 2023).

These changes in production indicated how vulnerable the Kenya economy is to the impact of both domestic and foreign shocks. Interest rate volatility measures the level of uncertainty in both the short-term or long-term interest rates in an economy. It portrays the attentiveness of the monetary policy, the liquidity conditions, and the inflation expectations. Abrupt changes in policies, inflationary pressures, or changes in market expectation can lead to volatile interest rates (Waitherero, 2021).

The policy environment in Kenya has been evolving significantly in the past 20 years, with interest rate caps (2016-2019) and fluctuating central bank policy positions in order to control inflation and stimulate growth (CBK, 2024). The effects of these changes have been periods of increased interbank market and Treasury bill volatility. The high rate of interest rate volatility raises uncertainty in the credit markets and makes

the planning of both borrowers and investors more complex, which is why predictable monetary policy frameworks are important (CBK, 2022).

Exchange rate volatility is the degree of changes observed in the currency value of a given country in relation to foreign currencies usually quantified by the standard deviation of the change in the exchange rate over a certain time interval. Trade balances, capital flows, commodity prices, and monetary policy choices affect the movement in exchange rate in open economies such as Kenya (World Bank, 2023). The Kenya shilling's exchange rate with the other currencies has suffered rapid fluctuations particularly with the US Dollar. During the time span of 2004-2024 and as a consequence of the variation of the external environment, the global prices of different commodities and demand of the foreign currency in the country was volatile (CBK, 2022). The shilling went through major depreciation including 2011, 2015 and 2022 because of rising current account deficits, external debt servicing pressures and international dollar strength.

The level of fluctuation of inflation in the entire price level of time is referred to as inflation volatility. A constant and moderate inflation is generally positive as it allows long term planning and economic growth. However, hyperinflation or unexpected adjustment of the level of inflation leads to the lack of confidence in the actual value of money, diminution in the purchasing power, and an augmentation in the complications of practicing monetary policy (Tibolola et al, 2024).

Both cost-push and demand-pull causes have been established to be the cause and effect of inflation in Kenya caused by shocks in food and fuel prices, the devaluation of currency and changes in the taxation policy. High inflation volatility such as the 2008 and 2022 commodity price surge have been a bane in the policy credibility and macroeconomic management (CBK, 2020; World Bank, 2023).

The Central Bank of Kenya has helped in keeping the inflation rate in the set range of between 2.5-7.5 percent, which in turn has helped contain inflation volatility despite the external factors of global supply, disruptions and exchange rate depreciation which have continued to push the prices upwards (CBK, 2024).

Therefore, macroeconomic factors volatility in Kenya indicates the economy's dynamic and changing character during the 2004-2024 periods. Proper macroeconomic

management such as proper fiscal policies, plausible monetary systems, and structural reforms is also essential in keeping volatility down and ensuring long-term economic stability (CBK, 2022; World Bank, 2023). This learning about these dynamics is a critical basis in the evaluation of the greater systemic risk to the Kenyan financial and economic systems.

1.1.2 Financial Performance

Financial performance demonstrates the capability of a bank to generate revenue and control its costs (and be profitable) and work effectively/efficiently and be sustainably. As Fuhmann (2022) realized, it is rated as a measure of profitability, as well as a broad parameter of resilience and viability in banking of the industry.

The usual measures of financial performance are; Return on assets (ROA), Return on equity (ROE), net interest margin (NIM) and ratios of efficiency. ROA calculates the efficiency of the use of the bank assets in the generation of profits and ROE represents a profit to shareholders. In particular, according to Saba (2024), NIM is especially significant because it can be considered as the difference between the received and paid interest in relation to the average earning assets of the bank.

The indicators are a key consideration to the regulators, investors and managerial posts of a bank and they give a clear estimate of the financial position and profitability, liquidity and solvency of a bank. In Kenya, differentiated performance has been occurring over the years within the third-largest level (Tier III) commercial banks (Gacanja, 2023).

Despite the fact that they do not possess much capital and their scale of operations is still low, other Tier III banks have already made good progress. In 2021, Mwaniki (2022) notes that the pre-tax profits of these banks went up by approximately 39 percent to KES 348 billion, which also underscores the significant role of the said banks with regard to financial inclusion promotion. Nevertheless, the ROA of Tier III banks was only 1.53, and their ROE was 4.83, which is significantly lower than the data of bigger banks. This disparity underscores the institutional challenges that smaller banks experience in their effort to increase profitability and efficiency. The net income/ total assets (ROA) ratio shows the ability of a bank to convert resources into profits.

Other macroeconomic parameters such as fluctuations in interest rates, rate of inflation, and currency exchange rates, and growth in the gross domestic product generated great effects on these performance indicators. To that extent, the present study used ROA being its primary variable to evaluate the financial performance.

1.1.3 Macroeconomic Factors Volatility and Financial Performance

This work was on the impact that the major macroeconomic factors of the effect of volatile GDP, volatile interest rate, volatile exchange rate and volatile inflation rate have on the Kenyan Tier III banks financial performance. These factors are highly potent to the banking environment and present distinct challenges which is primarily related to the tier III banks that are not endowed as a whole as compared to the bigger banks.

It is precisely the interest rates that allow the banks to be profitable and stable. The rates are quoted in the form of cost of money and charged as percentage and usually charged per year. Interest rates affect the decision of lending out the money (Waitherero, 2021). Interest rates determine the price of money. The adverse effect of increase in interests and its influence to the bank profits is as follows; Demand of loans lowers, there is a high charge and this amounts to loss of the profit. Increased lending rates may be a drag to growing the credit development by the smaller banks because they suppress the increase in the lending rates (Onyango & Kalunda, 2023). The low-rates on the other hand, stimulate more borrowings and investment and economic growth, until the point that benefits of the economy of the banks, especially those which have to rely on the interest income like tier III banks.

The drastically proposed tightening of the money policy without putting emphasis on inflation can be catastrophic (Sugiarto, 2023). Similarly, Wiku and Ayuningtyas (2021) stated that the most important are interest rates and inflation. These factors are relative to macroeconomic stability. The present inflation is poisonous to financial health, it encourages long term investment, but later it discourages it. The performance of banks was influenced in the long run.

1.1.4 Bank Size

Recent events within the Kenyan banking industry depicted the small banks to be especially crippled because of economic. According to the Kenya Bankers Association's (2023) report, the more the economy experienced circumstances of downturns, the more the number of additional concessions granted to borrowers was increasing.

The overall banking sector registered a phenomenal growth stage. However, the tier three banks were experiencing issues of asset quality and Approaches that lead to the operational efficiency predicaments that culminated into the problem of profitability. The smaller institutions faced an even greater exposure to macroeconomic volatility because they did not have numerous resources, and a large market share. There were many challenges in these institutions, including the limitations which were brought about by regulations. In addition, being a brutal competitor and a regular rival to Tier III banks in the comparative scale to larger banks, technological advances also have a significant influence on the overall financial performance of such institutions.

The smaller banks tended to struggle with complying with the complex regulatory requirements as well (Hintze, 2024). The natures were grounded on insufficient resources. The Tier III banks had weak risks mitigation potentials due to their small size and the absence of diversification.

1.1.5 Tier III Banks

The Kenya tier III banks are more concentrated on small and medium-sized firm (SMEs) and retail banking. Therefore, they are more vulnerable during an economic stagnation. These segments too are the first to feel the negative impact of weaker economic trends that directly affect their borrowing and repayment capacity as there is lowered consumer demand, decreased business revenues, and constrained credit markets (Oyetande & Muzindutsi, 2023).

Many SMEs are constantly encountering unresolved issues of poor access to cheap loans, inferiority of collateral and high-interest rates, which interfere with their access to finance. Because they basically serve these customers, tier III banks are more exposed to credit risk as profits as well as the robustness of the balance sheets are worn out as the number of loan defaults increases during downturns.

It is these disadvantages that render the banks more vulnerable in situations wherein their portfolio of loans is specialized in both SME lending and retail lending as the defaulting rate skyrockets in the context of any downturn (Oliwatosin et al, 2024). Besides these structural weaknesses, the changes in regulations have redefined the environment in the Kenyan banks.

One of the notable policy shifts has been the shift by the government to increase the minimum core capital requirements of the commercial banks. This was done to enhance financial stability, insulate the banks against external economic shocks and also secure depositors. A major challenge that is emanating with the policy is troubling the tier III banks. The sudden rise of capital requirements levels tends to incorporate the capital reinvestment of retained earnings, the new funding of the shareholders and/or the strategic mergers and acquisitions (CBK, 2024). Most of the small banks even cannot access more cash widely and, thus, it may be extremely hard to meet those requirements. Moreover, the strain of increasing core capital by the governmental bodies can make Tier III banks reconsider their present stance and business strategies (CBK, 2024). This requires others to diversify, merge or reconsolidate to ensure that they cushion themselves against taking risks in lending to SMEs and shift to less risky market segments should they not be able to comply to tighter requirements. It can be anticipated that such changes will make the Kenyan banking industry more stable and competitive overall (KBA, 2024).

They also signal the unstable state of Tier III banks that had been subjected to the cumulative effects of the current crisis, the risk of merging, the challenge of regulation requirements and macro-economic risks.

The Business Laws (Amendment) Act, 2024, which came into force in December 2024, required that the core capital be increased to KES 10 billion by 2029 with a gradual increase to KES 1 billion by 2024. By 2025, 2026, 2027, 2028 and finally, 2029, banks must increase their capital by KES 3 billion, KES 5 billion, KES 7 billion and KES 8 billion and KES 10 billion. Small banks will find it difficult in complying with this law as they might not be able to raise the required capital. As Githui et al. (2025) asserts, smaller banks in Kenya have responded to their peculiar threats on a growing number by implementing diverse turnaround strategies. They are severe cost-reduction, moves to enhance the efficiency in their operations, moves to diversify their income streams,

organizational restructuring, and adoption of technology-determined innovations in their service delivery. On paper, these measures may seem to be promising, but in reality they are not direct and economically efficient initiatives.

The attitudes of the institutions to the change and the inflexibility of the current models of banking also decelerate the pace of the change (CBK, 2024). The other challenge is the external front where there are high regulation requirements and giant expenses incurred in carrying out new improved technologies. Therefore, the list of Tier III finance institutions that are unable to find a profitable balance between innovation, strict regulation, and financial performance is long. (Wambua et al., 2024).

1.2 Statement of the Problem

Even after regulatory changes, digitization and enhanced risk management, Tier III banks in Kenya have been experiencing varied financial performance. The industry is also very susceptible to macroeconomic instability especially in the volatility of GDP growth, interest rate, exchange rate and inflation rate that increases uncertainty, limits credit growth and exposes smaller banks to liquidity and solvency risks. Although most studies acknowledge the role played by the macroeconomic factors in the performance of banks, they usually consider them as constant determinants but not active variables that change over time. This oversight creates a conceptual disjuncture particularly because smaller banks due to low asset bases and low diversification are more prone to macroeconomic shocks. In addition, the bank size moderating effect in dampening or conveying these shocks is under-researched. Macroeconomic volatility and institutional adaptability cannot be well-explained by the Keynesian Economic Theory, Risk-Return Tradeoff Theory, Intermediation Theory of Banking as well as the Resource-Based View (RBV). Keynesian theory tends to underestimate firm flexibility; risk-profit relationships but not moderating variables such as scale are explained by the Risk - Return Tradeoff; systemic shocks are not reflected by the Intermediation Theory; internal strengths but external risks are not reflected by the RBV. This highlights that there is a gap in theory in integrating macro-volatility and firm-level resilience. Kenyan evidence is not consistent: GDP growth has resulted to be positively, weakly or negatively related with profitability; interest rate and inflation volatility (price risk) have had gains and losses depending on the degree of volatility; and exchange rate changes have been found to increase returns and decrease returns. These contradictions demonstrate the lack of empirical evidence on how much the price risk can cause

fluctuations in other macroeconomic variables and the overall performance of Tier III banks. The research dilemma is, therefore, described by the poor comprehensive, intermittent comprehension of the effect of macroeconomic volatility together and individually on financial performance as well as whether bank size counteracts or enhances their effects. The aim of this study is thus to evaluate how the volatility of macroeconomic factors affects the financial performance of the Tier III banks in Kenya and a moderating variable is the bank size during the year 2004-2024.

1.3 Objectives of the Study

This section of the study entails the general objective of the study and the specific objectives.

1.3.1 General Objective

The purpose of this study was to assess macroeconomic factors volatility, bank size and the financial performance of Tier III banks in Kenya.

1.3.2 Specific Objectives

- i. To determine the effect of GDP volatility on the financial performance of Tier III banks in Kenya.
- ii. To evaluate how fluctuations in interest rates influence the financial performance of Tier III banks in Kenya.
- iii. To examine how exchange rate volatility on the financial performance of Tier III banks in Kenya.
- iv. To assess the extent to which inflation rate volatility affects the financial performance of Tier III banks in Kenya.
- v. To determine the moderating role of bank size in the relationship between systematic risk and the financial performance of Tier III banks in Kenya.

1.4 Research Hypotheses

H₀₁: GDP volatility has no significant effect on the financial performance of Tier III banks in Kenya.

H₀₂: Interest rate volatility has no significant effect on the financial performance of Tier III banks in Kenya.

H₀₃: Exchange rate volatility has no significant effect on the financial performance of Tier III banks in Kenya.

H₀₄: Inflation rate volatility has no significant effect on the financial performance of Tier III banks in Kenya.

H₀₅: Bank size does not have a significant moderating effect on the relationship between systematic risk and the financial performance of Tier III banks in Kenya.

1.5 Significance of the Study

The research is important because it contributes to the theories, conceptualization and scope in analysing the effects of macroeconomic factors volatility and bank size as a moderator in determining financial performance of Tier III banks in Kenya.

In theory, the research synthesized four mutually reinforcing models, including the Keynesian Economic Theory, the Risk-Return Tradeoff Theory, the Intermediation Theory of Banking and the Resource-Based View (RBV) to the explanation of how external economic volatility, as well as internal institutional capacity both influence financial performance.

Although the performance of most small banks had not been exclusively investigated before due to the large commercial banks consideration or the use of a single-theory approach, this study indicates that the performance of small banks can be effectively studied through a multi-theoretical approach. The study therefore bridges a gap in the literature by putting these world theories into a Kenyan context, the Tier III banking segment, on the role of internal resources and size in exacerbating the impacts of macroeconomic shocks.

The research fills the current disconnect by creating and empirically analysing a unified system that connects macroeconomic volatility, bank size, and financial performance to a twenty-one-year span (2004-2024). This study is full-fledged as compared to the previous studies that either looked at macroeconomic variables separately or overlooked the moderating power of bank size. This provides the conceptual void by providing a better insight into the dynamic channels of how economic conditions impact the profitability and stability of the small banks.

The research is a development of the previous work, in that it makes use of time series econometric models that reveal long-term trends and dynamism between variables. Having a bank size as a moderating variable adds a new aspect in the analysis and strict diagnostic tests including check of normality, autocorrelation, multicollinearity and Heteroscedasticity are used to guarantee the robustness and reliability of results. This

bridges the methodological gap commonly experienced in researches taking short-term or cross-sectional designs.

The study can be useful to policy makers, regulators and bank managers as it points out the macroeconomic parameters that have the strongest impact on financial performance when operating in different sizes. Such findings will facilitate the development of specific risk management policies, policy interventions, and institutional change to facilitate the resilience and sustainability of Tier III banks in the unstable Kenya economic context.

1.6 Scope of the Study

This study was assessing how systematic risk related with the Kenyan tier III banks financial performance. There were 22 Tier three banks as was noted in the Banking Supervision Report by the CBK (2023). The timeframe of analysis included 21 years between 2004 and 2024. This time represented both short term volatility and long-term trends, giving a clear image of how the systematic risk factors changed during that time and affected the stability and profitability of these banks.

It concentrated on changes in Gross Domestic Product (GDP), interest rate volatility, exchange rate movements, and inflation rate volatility. It also explored the impact that bank size, which was quantified by total assets, had on these risks in influencing performance, whether by decreasing or increasing exposure of the banks to economic shocks. Secondary data available in credible sources such as the CBK, The KNBS, and published financial statements of the sampled banks was used.

This study assumed a correlational research design based on quantitative methods to quantify both the strength and direction of the relationships between macroeconomic factors volatility and financial performance. The quantitative method enabled the findings to be objective, precise, consistent and statistically sound. The study added to empirical knowledge about tier three banks and was also useful to policy makers, investors, customers and management of tier three banks.

1.7 Limitations of the Study

In this work, the limitations were quite a few and should be considered when explaining the results. Four principal theories; the Keynesian Economic Theory, the Risk-Return Trade-off Theory, the Intermediation Theory of Banking, and the Resource-Based

View (RBV) Theory were the basis on which the study was anchored. Although these theories offered a reasonable analysis framework, some of their assumptions do not fully reflect the behavioural and institutional reality of Tier III banks in Kenya.

The Keynesian model assumes that the monetary policy and government measures can stabilize output and inflation, but in emerging economies like Kenya, market imperfections and policy lags will cause these to be skewed. In the same way, the Risk-Return Trade-off Theory presupposes rational pricing of risk and efficient market reaction that cannot be considered true in a market full of asymmetric information and liquidity constraints.

Another assumption that is made by the RBV and Intermediation theories is that there are optimal internal capabilities and effective credit intermediation which are not very necessary in the operational constraints of tier III banks in terms of capital and technology.

The research design adopted was the correlational research design that though appropriate in establishing how variables relate does not establish causality. Accordingly, the effect of direction of influence between financial performance and macroeconomic volatility could not be decisively established. The analysis of secondary data was conducted using the published financial reports of CBK, KNBS and published financial reports by the banks; therefore, the quality of data relied on the quality and consistency of institutional reporting. Moreover, the research was based on yearly data, which might have smoothed short-term changes which probably had more information on the impact of volatility.

Contextual limitations: The emphasis on small capital areas of Tier III banks, limited technological infrastructure, and restricted focus areas of the customers restricts the overall applicability of results to bigger Tier I and Tier II banks. It also focused on the macroeconomic environment in Kenya which could be very different compared to other economies in the region in relation to regulatory regimes, monetary policy frameworks and integration of the markets.

The empirical constraints came about due to the scope of macroeconomic variables. The analysis used only four macroeconomic factors although other external variables like fiscal policy shocks, political risk and global financial spillovers have not been

captured. Also, the moderating influence of bank size was estimated in terms of total assets alone which excluded other bank sizes such as the market share or bank network.

Although these are the limitations, the study contributes significantly to the knowledge of interaction between macroeconomic volatility and bank-specific features in affecting the financial performance. The limitations mentioned above provide a background to the further study to expand and improve the model with more generalized variables, inter-country data, and more sophisticated econometric techniques.

1.8 Assumptions of the study

To determine the effects of the systematic risk factors and bank size on the financial performance of Tier III banks in Kenya, this research was guided by some assumptions, which informed the use of the regression models.

The linear regression model was assumed to be a proper model of the association between the dependent variable (ROA) and the independent variables (GDP, interest rates, exchange rates and inflation). This meant that the impact of all the predictors on financial performance was linear and additive.

The study assumed that Return on Assets (ROA) was good and all-inclusive measure of the financial performance of Tier III banks in Kenya during the period under study. ROA gives the efficiency of how the management of a bank utilizes its total assets to make profit and consequently the bank performance as per its performance on its efficiency in operations and its overall financial position. It was assumed that the effect of the macroeconomic forces and the effect of changes in ROA was a suitable measurement moderating effect of bank size.

Tier III banks are lowly capital based, and diversification, which is likely to be low in such banks and exposes the banks to the external economic environments. Furthermore, all of the banks of the study are supposed to have adhered to the same accounting and reporting criteria and the values of the ROA 2004-2024 will be similar and sound.

One of the assumptions in the research is that the conditions of classical linear regression were met. They were the all-important assumptions of equal error variance, homoscedasticity (equal error variances) of the residuals and error terms, independence of error terms (autocorrelation of error terms is absent), and no multicollinearity

between predictors. Normality and correlation testing was carried out so as to make sure that the data satisfied these assumptions reasonably.

Measurement of variables was believed to be clear and the same throughout the study period (2004-2024). The macroeconomic variables like the GDP growth, inflation, and interest rates were acquired via plausible secondary sources and it was presumed that they were accurate and had no systemic errors. Bank-level measures like ROA and total assets have been assumed that are well reported by Tier III banks and regulating parties.

The research assumed that relationship stability was maintained across time, that is, the impact of systematic risk factors on the performance of banks did not essentially vary throughout the research period. This assumption allowed the time-series regression methods to be employed during the 21 years of study.

On the moderation analysis, it was assumed that the interaction effects between the bank size and the macroeconomic variables had been sufficiently modelled using the multiplicative terms that were developed. This assumption led to the evaluation of the presence of size modifying the degree of relationship or the orientation of relationship between systematic risks and financial performance.

1.9 Operational Definition of Terms

Exchange Rate Volatility	The exchange rate refers to the price of one country's currency expressed in terms of another. In simple terms, it is the amount at which one currency can be exchanged for another in the global market. Exchange rate volatility captures the degree of fluctuation or instability in a currency's value relative to another over a given period of time. Such fluctuations directly influence imports, exports, and foreign borrowing (Khan & Mollah, 2020). Exchange rate volatility affects the financial performance of Tier III banks in Kenya.
Financial Performance	The total ability of a bank to generate revenue and profitability whilst ensuring stability and efficiency of operations is called financial performance. It illustrates how efficiently a bank utilizes its resources to achieve expansion and economic stability. The measurement of financial performance commonly employs the metrics of the return on equity (ROE), return on assets (ROA), net interest margin (NIM), and efficiency ratios (CBK, 2023). This study used ROA.
GDP Volatility	Gross Domestic Product (GDP) is the summation of all goods and services produced in a country during a specified period usually in a quarter or annual basis. It is among the most significant pointers of the economic well-being and development of a country (KBA, 2023). The GDP volatility is the changes or instability in the GDP of a country over a period of time, i.e. the changes between its long run growth and the value of GDP of a country. When the GDP volatility is high, economic uncertainty and instability can be observed, but when the volatility is low, economic predictability and

constant growth patterns can be observed. The bank profitability can be promoted by robust GDP growth in the context of Tier III banks in Kenya due to the stimulated investment and the increase in credit demand due to the improvement in overall financial performance (Nguyen, 2023). However, unstable or volatile GDP growth can deter lending possibilities, raise risks of default and have negative impact on bank profitability and stability (Kung'u et al., 2023).

Interest Rate Volatility

Interest rate is the price of money. It is a percentage of principal, and is levied annually. Interest rate volatility shows the extent to which interest rates rise and fall at random intervals. There are drastic changes in interest rates that affect borrowers and lenders (Kumar & Rajesh, 2021). In the situation of the Tier III banks, there is a likelihood that increasing interest rates cause higher profitability as a consequence of higher interest income. They also can weaken the borrowing needs, but long-term and low rates or fluctuating ones can pinch the net interest margins (NIM).

Inflation Rate Volatility

Inflation is the consistent rise of the average level of prices of goods and services in an economy. Inflation rate volatility refers to how much the inflation rate swerves from its long-term average over time (Obamuyi, 2023). Inflation can be very volatile, and therefore, it brings unpredictability to the economy, undermines consumer buying power, and interferes with business planning. In the case of Tier III banks, the volatility of inflation can bring down financial performance by diminishing the true worth of assets, repayments in loans, and destabilizing economic activity.

Systematic Risk

This is the broad risk that is experienced in the entire financial industry. It affects large portions of the economy and is unavoidable even by diversification. In contrast to risk specific to the firm, systematic risks are external to a firm and affect every participant in the market (Sugiarto, 2023). In this study, four primary variables, which included the volatilities of exchange rate, interest rate, inflation rate, and GDP were used.

Return on Assets (ROA)

Return on Assets (ROA) is a financial ratio that is applied to establish the level at which a bank can generate profit out of its total assets. The calculation is done by dividing net income by total assets. ROA measures operational efficiency which is the degree to which the management can use resources to generate value (Furhmann, 2022). Financial performance was measured in this research through ROA.

Tier III Banks

Kenya Tier III banks are the smallest banks in terms of market share and capital base. These banks suffer more when it comes to macroeconomic factors volatility. SMEs in Kenya declined loans by approximately 13 percent in the two years preceding 2024, and this was majorly caused by the high costs of credit, and worsening business environment (Waceke, 2024). It was further observed by the Central Bank of Kenya that the Tier III banks had higher non-performing loan ratios compared to larger ones by the end of 2023, and this indicates their greater susceptibility to macroeconomic shocks (CBK, 2024)

CHAPTER TWO

LITERATURE REVIEW

2.1 Empirical Review

This section appraised previous studies related to this topic. It was also important because it unveiled the existing empirical and methodological gaps.

2.1.1 GDP and Commercial Bank Financial Performance

Gross Domestic Product, according to Mwangi et al. (2024), refers to the aggregate monetary value of everything produced within a country's boundary within a year or within a quarter. It indicates economic performance and is also used to gauge a country's economic growth.

The greater the GDP the better the economy does. A lot of research has been done about the financial performance of the stock markets, Commercial Banks, and the financial markets in general was affected by GDP. The studies have failed to note the fact that banks belong to different tiers depending on how large they are.

The banks within the various tiers face unique challenges, deal in different market niches, and thus behave in unique ways to systematic risks. Mwangi et al. (2024) in their paper assessing the impact of GDP on commercial Banks' financial performance in Kenya focused on 37 commercial Banks in Kenya operating in 2013 to 2022 using secondary data. They used descriptive and inferential statistics to analyse the data. The research found that GDP growth significantly and positively impacted the ROA.

That study focused on all the banks in Kenya which may not picture the exact impact of GDP fluctuations on the performance of tier three Banks. Tier one and two Banks are not affected by GDP fluctuations to the same extent as tier three Banks. The reason is the big banks have multiple revenue streams compared to smaller banks. It was thus imperative that the current research on tier three Banks in Kenya be done considering that each bank has unique challenges based on its size.

Mutai and Mutai (2022) studied how financial innovation moderated the effect of GDP per capita and financial performance of Kenyan commercial Banks. Their study concentrated on secondary data from 2011 to 2020.

The population of their study was the 42 commercial banks supervised by the CBK. They used a cross-sectional descriptive survey design on the secondary panel data they extracted from the individual institutions' financial reports while data on macroeconomic factors was obtained from both CBK and KNBS. ROA was used to measure financial performance. The study found a significant positive relationship ($b=0.594$, $t=2.939$, $p=0.022$) between ROA and GDP per capita.

Their study dealt with all the licensed banks. It therefore assumed that GDP's effect on banks financial performance of was the same no matter their size. This may not be giving a clear picture because banks in tier one and two have better economic downturns shock absorbers compared to tier three banks. This raised the need for a study that could be more specific to the small Banks.

Another research paper published in the Journal of Banking Management by Chen (2020) titled "Dynamic Markets and Banking Resilience" identified the correlation between GDP growth and Banks' financial performance. The aim of their study was to examine how unexpected changes in GDP affect banks' financial flexibility in dynamic markets.

The study compared Banks' financial data from different regions with different growth rates prevailing in developing and a developed economy. Following the evaluation of Banks' capabilities to resist economic changes in financial indicators like capital adequacy, liquidity, and asset quality, the study indicated that banks in more stable GDP growth regions exhibited greater financial resilience, whereas Banks in dynamic markets suffered from greater instability.

The study hypothesized that GDP growth of a developed economy could keep pace with that of a developing economy. This could not be used to conclude the same for tier III banks of a developing economy like Kenya. In the same way, GDP growth had poor correlation with Bank profitability.

According to Ghurstskaia (2018), who researched GDP and bank profitability correlation in the case of Georgia, GDP had a poor correlation with bank profitability. That research applied data from 2003 to 2017. It applied Return on Assets to gauge financial performance. The research methodology was correlation analysis. The study having been done in Georgia, whose prevailing economic environment is not as

Kenya's. It also excluded tier III banks. This created a demand of this study that shall focused specifically on tier III Banks. It also pertained to data gathered in 2003-2017. This study analysed more recent data (2004-2024)

2.1.2 Interest Rate Volatility and Commercial Bank Financial Performance

Tiblola et al. (2024) in their study on the influence monetary policy has on financial performance of manufacturing firms in Indonesia maintained that a hike in interest rates makes borrowing a costlier proposition for companies, thereby directly affecting net earnings and asset and capital consumption efficiency. These were quantitative research scholars.

They used the multiple regression analysis to determine and measure the monetary policy variables and performance of the Indonesian manufacturing companies in terms of finances. In their research study, a rise in the benchmark of Bank Indonesia negatively affected ROA and ROE. It demonstrated that the greater the firm in debt, the greater the interest payable thereby decreasing its net earnings. The study suggested that growth in the interest rates had a high direct effect on the Indonesian manufacturing firms' financial performance.

Their study's result was however not usable to conclude the same for the performance of the tier three commercial Banks as it was focusing on manufacturing firms. Moreover, since the Study was about Indonesia, one was required to do a research that deals with Kenyan Tier Three Commercial banks.

In their study of Pakistan banks, Ahmed et al. (2018) found that interest rates change was negatively impacting the profitability of banks. To measure financial performance, they used ROA, ROE, and EPS. The annual data of 20 banks that were in Pakistan from years 2007 to 2014 was used. Correlation and Regression analysis were used by the study to conclude. It focused on Pakistan whose economic status is not similar to Kenya's.

The study also did not separate big banks from small banks yet they suffer different challenges and are resilient to systematic risk in a different way because of their difference in size. This study concentrated on tier three banks of Kenya.

Onyango and Kalunda (2023) studied on how interest rate risk affected the Kenyan investment banks' financial performance. They used primary as well as secondary data in the analysis of 16 investment Banks in Kenya. In their study, they followed mixed method design and applied Quantitative data was collected by means of data collection sheets to calculate financial ratios using the individual banks' financial statements between the years 2011 and 2019. Thematic of the qualitative data of interviewees who were managers of the investment banks, the exchange and the Regulator using the interview guide tool. Descriptive and inferential analysis, showed that interest rate risk among Kenyan investment banks had low, significant impacts which were positive on the Kenyan investment banks' financial performance.

There was evidence that a one standard deviation improvement in interest rate, led to improvement in debt to-equity ratio, to a 28 percent increase in return on assets. This research focused on the Kenyan investment banks whose activities differ from those of the commercial Banks more precisely the tier three banks. It was thus imperative that this work be done primarily on the Kenyan tier III banks to obtain a clear view on how changes in interest rate affected the performance of the aforesaid small Banks.

Waitherero (2021) researched on how the value of the firm was affected by of interest rate volatility concentrating DT SACCOs in Kenya. It employed secondary data from all 164 DT SACCOs that are authorized by SASRA. A total of 115 DT SACCOs was sampled using stratified sampling method. Her research found out that interest rate risk significantly influenced the firm value within deposit taking SACCOs in Kenya. The research which was about DT SACCOS could not be depended upon in explaining how changes in interest rate affected the financial performance of tier three banks in Kenya. In order to give a comprehensive understanding, interest rate risk impact ought to have been examined with the moderation influence of bank size kept in mind.

Recently, the CBK lowered the core interest rate to 10.75%, the fourth reduction in a row to support lending and economic growth. The Cash Reserve Requirement was also decreased to 3.25%. It was aimed to reduce the cost of funding and stimulate lending by these measures. In the case of Tier III banks, the impact of such policy change relates directly to their capacity to lend and remain profitable, highlighting the importance of local, Kenya-specific research on interest rate impacts.

2.1.3 Exchange Rate Volatility and Commercial Bank Financial Performance

The other noteworthy consideration is the volatility of exchange rates, which is the fluctuation of the value of currency that generates uncertainty for financial institutions.

Kolawole et al. (2021) in their study on exchange rates changes and production effectiveness in Nigeria concluded that currency instability impacted the productivity and profitability negatively. By use of the ARDL model they found that exchange rate volatility had a long-run negative correlation with manufacturing capacity as well as output. The paper Nonetheless, the results cannot be directly applied to the Kenyan banking industry, supporting that research specific to Tier III banks needed to be done.

Igatanyi (2024) selected cross-listed firms in Nairobi Securities Exchange in the period between 2018 and 2022. There was a weak and insignificant correlation between the movement of exchange rates and profitability. The research however observed that the exchange rate movements had the ability to affect revenues, costs and cash flows, which eventually shaped performance. It was carried out on large cross-listed companies, not on banks, so its assumptions not necessarily be directly applicable to Tier III institutions.

Banda et al. (2024) examined the influence of exchange rates changes on financial performance in Zambia's energy sector. Based on five years of audited financial statistics of Copper Belt Energy. Corporation Plc, they implemented regression analysis and realized that kwacha devaluation dramatically lowered levels of financial performance.

Also appreciation of the currency enhanced performance. Although applicable, this research focused on the utility companies, which are operating in Zambia. In Kenyan tier three banks, the structures are different.

The article by Mustafa (2021) investigated how the real exchange rate and real interest rates affected the financial performance of Islamic banks in Jordan using data from 2005 to 2019. The research indicated that rises in the real exchange rates decreased investment, deposits and bank profitability (ROA, ROE, and returns on share). Nevertheless, since the Islamic banking follows Sharia laws, which forbid the interest (riba), its financial processes are very different as compared to Kenyan commercial banks. This limited the applicability of the results to Tier III banks. Based on those

revelations, it was appropriate to say that exchange rate volatility could disorder businesses, cut down on earnings, and spoil profitability. Yet, due to differences in industries, countries, and banking models, previous studies are unable to adequately describe how Kenyan tier III banks experience these effects. Therefore, this study was justified as it sought to fill the knowledge gap with tier III bank-specific and updated data.

2.1.4 Effect of Inflation Rate Volatility on Commercial Bank Financial Performance

It refers to the persistent rise in the general price level of goods and services over time, typically quantified by such indicators as Consumer Price Index (CPI). It is influenced through the changes in cost of production, the shock in price of commodities, and unbalancing between demand and supply (Bank Indonesia, 2023). Liu (2024) explored the connection between the dynamics of inflation and the financial market performance in South America between 2000 and 2023. The study used regression methods and it established that inflation rate and the performance of financial markets had a positive relationship. However, since it was done in South America, which is a more developed economy and it is about financial markets, the results could not be directly generalized to the tier III banks of Kenya.

Iqbal et al. (2021) examined the influence of inflation rate on Pakistanian bank's profitability. Through the use of secondary data spanning 2000–2016. They established that inflation had a major effect on bank performance indicators such as ROA and ROE. Despite this, the data dates and the differences in country context limited its relevance to contemporary Kenya. On the same note, Tiblola et al. (2024) explored how inflation affected the manufacturing firms in Indonesia's financial performance between 2015 and 2023. Their findings had ambivalent effects: inflation raised input prices and decreased profitability of the firms. These results, though insightful, reflected on manufacturing dynamics rather than the banking sector.

Agu et al. (2024) determined how inflation affected the profitability of 222 firms in Nigeria. They discovered that 54.1% of company's experience moderate or heavy profit deterioration because of inflation volatility. Umeh (2023) also evaluated the effects of inflation on the Nigerian banks and the result indicated that inflation rate in the long-term undermined profitability as it raised operating expenses. These studies were

carried out in bigger contexts and they do not isolate smaller banks like tier III institutions. In the case of tier III banks in Kenya, the inflationary pressures were of particular concern since they tended to affect lending activity, deposit mobilization, and operational costs more severely than larger banks. It was therefore necessary to have context-specific research on how inflation volatility affects these smaller institutions.

2.1.5 Moderating Effect of Bank Size on the Association Between Systematic Risk and Commercial Bank Financial Performance

Alfadhli et al. (2021) investigated the role of bank size in determining financial performance in Kuwait, measuring size using total assets and performance using ROA and ROE. They examined 10 banks in the period 2008 to 2018. They found that bank size and profitability related negatively which was insignificant, but shareholders' equity and profitability had a positive relationship between which was significant. These results, while valuable, are limited by the older dataset and the Kuwaiti context, making them less directly relevant to Kenya.

Appah and Tebepah (2021) studied on how financial performance of Nigerian deposit money banks was affected by bank size between 2010 and 2019. They used regression analysis on data from 10 sampled banks. That study concluded that the relationship was positive and significant. However, these findings reflect the Nigerian financial system, which differs structurally from Kenya's, and do not specifically address smaller Tier III banks.

Research suggests that large banks are more resilient to macroeconomic volatility due to greater asset bases, stronger capital buffers, and diversified operations. Smaller banks on the other hand often struggle to withstand the same shocks. It was therefore crucial for the present study to assess how bank size would moderate how macroeconomic volatility and tier III banks financial performance related.

Table 1

Summary of Research Gaps and Focus of the Study

Author	Year	The Study's focus	Findings	Research Gaps	Focus of This Study
Mwangi et al.	2024	Examined how GDP affected the commercial banks' financial performance of in Kenya.	GDP volatility positively and significantly influences the ROA of commercial banks.	Concentrated primarily on large commercial banks (Tier I) in Kenya and applied a descriptive research design. This limited its ability to capture dynamic relationships across bank categories.	The present study focused on Tier III banks in Kenya and applies a correlation research design. This offered deeper understandings into how GDP fluctuations influenced smaller banks whose resilience mechanisms differs from larger institutions.
Mutai & Mutai	2022	Investigated the moderation of financial innovation on financial performance of banks in Kenya and GDP.	Recognized a significant relationship between financial performance and GDP per capita, with financial innovation playing a moderating role.	The study cantered mainly on Tier I banks and relied on descriptive research design, thus overlooking the distinct vulnerabilities of smaller banks.	Emphasized on tier III banks in Kenya, capturing how GDP impacts their performance. Unlike larger banks, small banks face sharper shocks from macroeconomic movements due to limited capital buffers.

Onyango & Kalunda	2023	Examined the impact of interest rate risk on the financial performance of investment banks in Kenya.	Found that interest rate risk has a low but significant positive influence on ROA of investment banks.	The study assumed that all banks absorb systematic risks at the same magnitude, which is not accurate. It also focused on investment banks, using a mixed-methods approach.	This study isolated the distinct effect interest rate fluctuations had on tier III banks in Kenya in 2004-2024. A correlation design was employed to reflect how small banks' performance was more responsive to volatility in interest rates compared to larger institutions.
Tiblola et al.	2024	Investigated the impact of monetary policy on Indonesian manufacturing firms' financial performance.	Revealed that increases in benchmark interest rates adversely affect ROA and ROE of manufacturing companies.	It concentrated on the Indonesian manufacturing sector, making generalization to the Kenyan banking sector limited.	This study contextualized the effect of monetary policy within the Kenyan Tier III banking sector, highlighting the unique risks faced by small banks in volatile interest environments.
Waitherero & Igatanyi	2021	Studied the influence of interest rate risk on firm value in SACCOs.	Found that interest rate risk has a significant influence on the value of SACCOs.	The research was limited to SACCOs and did not focus on banks.	This study applied the analysis to Tier III banks in Kenya, providing evidence on how interest rate risk affected smaller financial institutions.

Waitherero	2024	Scrutinized how financial performance of firms listed on the NSE was affected by exchange rate risk.	Concluded that the financial performance of listed firms is significantly affected by exchange rate changes	The study concentrated on listed firms rather than banks, limiting its sectoral scope.	This study focused on Tier III banks in Kenya, where exchange rate fluctuations directly affected profitability due to reliance on imported inputs and forex-denominated liabilities.
Kolawole	2021	Evaluated the effect of exchange rate risk in Nigeria's manufacturing sector.	Concluded that exchange rate volatility negatively influences the financial performance of Nigerian manufacturers.	The study was sector-specific (manufacturing) and did not account for financial institutions	This study focused on tier III banks in Kenya, providing a sector-specific analysis of exchange rate risk on financial institutions.
Banda et al.	2024	Examined how exchange rate movements on the financial performance of power utility firms in Zambia.	Appreciated that exchange rate volatility significantly affect performance of Zambian power companies.	The study was industry-specific (power utilities) and geographically different from Kenya.	The present study adapted this to Kenya, with focus on Tier III banks, analysing how exchange rate instability shaped financial outcomes in the banking sector.

Mustafa & Bader	2021	Studied the effect of real exchange rate and real interest rate on the Jordanian Islamic banks performance.	Found that both real exchange rates and real interest rates affect bank performance negatively.	The study focused on Islamic banks under “sharia” law, which operate under unique financial principles.	This study applied the analysis to Kenyan tier III banks, which face conventional market risks but with limited shock absorbers compared to larger banks.
Liu	2024	Investigated the impact of inflation dynamics on financial markets in South America.	Established a negative correlation between inflation and financial market performance.	The study generalized across South American markets and did not focus on small banks.	This study specifically examined Kenyan tier III banks, emphasizing how inflation erodes profitability of small banks more severely than large banks.
Iqbal et al.	2021	Explored the financial performance of Pakistani banks with inflation as a key factor.	Found that inflation and profitability had a significant relationship.	The study used old data and did not differentiate the varying resilience between small and large banks.	More current data was used (2004–2024) and incorporated bank size as a moderating factor to show how inflation uniquely affected smaller Kenyan banks.

Agu et al.	2024	Assessed the effect of inflation on business profitability and accounting practices in Nigeria.	Found that inflation generally reduces profitability of businesses.	The research was broad, covering businesses in general rather than banks specifically.	This study narrowed the focus to Tier III banks in Kenya, where inflation directly threatens profitability due to limited capacity to pass on increased costs to customers.
Umeh	2023	Investigated the effect of inflation on corporate profitability in Nigeria's banking sector.	Found that inflation has a long-term negative effect on bank profitability.	The study was broad on Nigeria's banking sector and did not factor in bank size as a moderating element.	This study was specific to small Tier III banks in Kenya and includes bank size as a moderating variable.
Alfadhli et al.	2021	Studied the effect of bank size on financial performance of Kuwaiti banks.	Realized that bank asset size has an inverse relationship with profitability.	It was conducted in Kuwait under different economic conditions compared to Kenya.	This study incorporated bank size as a moderating factor when analyzing systematic risk in the Kenyan Tier III banking context, where small banks are more vulnerable.
Appah & Tebepah	2021	Examined the strength of bank size on the performance of Nigerian deposit money banks.	Found a significant relationship which was positive between bank size and ROA.	The research used old data and focused on larger banks, overlooking the vulnerabilities of Kenyan tier III banks	More current data was used (2010–2024) and incorporated bank size as a moderating factor.

2.2 Theoretical Framework

The study was anchored by the arbitrage Pricing Theory, Efficient Markets Hypothesis, Keynesian economics theory and the Resource based view Theory.

2.2.1 Keynesian Economic Theory

According to the Keynesian Economic Theory by John Maynard Keynes (1936), aggregate demand fluctuations play a major role in determining the amount of economic output and employment.

In this context, macroeconomic stability greatly contributes to the performance of financial institutions, where changes in GDP have a direct impact on the lending activity of banks, the mobilization of deposits as well as returns on investments. In times of economic growth, a rise in the level of income and the extent of business will increase the profitability of the banks whereas recessions will cause less credit demand and more risks of default.

The Kenyan scenario is quite close to the Keynesian model because the economic growth was cyclical due to the fiscal policy, the agricultural sector, and the external trade (CBK, 2023). In the case of Tier III banks, the localization of their operations and limited capital base result in a greater effect of the GDP variation on the performance compared to that of Tier I banks. Thus, the theory offers the conceptual base of connection between the volatility of the GDP and Tier III banks' financial performance.

2.2.2 Risk–Return Trade-off Theory

This is because being exposed to more risk increases the level of expected returns and this is explained in The Risk-Return Trade-off Theory based on the works of Markowitz (1952) and Sharpe (1964). The reward of taking on different types of risk in the banking industry is profitability; the most prominent risk being the interest rate, inflation, and exchange rate volatility. There is uncertainty in lending, foreign exchange, and investment decisions due to high macroeconomic instability either positively (risk premiums) or negatively (losses and loss of margins). Inflation and exchange rates volatility is a major obstacle to the stable performance of tier III banks, as such institutions do not necessarily have advanced hedging practices or diversified portfolios (Ngugi, 2022). The Risk- Return Trade-off Theory therefore is well suited to the association between exposure to macroeconomic risk and financial performance in the context of systematic risks.

2.2.3 Intermediation Theory of Banking

Intermediation Theory This theory is a work of Gurley and Shaw (1960) and later perfected by Diamond and Dybvig (1983) which assumes that banks provide an intermediary between the units that are in a state of surplus and deficit economically. They turn short term deposits into long term loans and make profit based on the margin of interest whilst taking the risks of liquidity and credit. Interest rate volatility has a direct impact on this intermediation process, which modifies lending rates, the cost of borrowing as well as profit margins. The Kenya banking industry has had the tier III banks being especially vulnerable to changes in net interest margins caused by changes in the interest rate environment, such as the interest rate capping period (2016-2019) and the subsequent liberalization (KBA, 2023). The Intermediation Theory therefore justifies the interest rate movements as part of systematic risk in determining the bank profitability by narrow wing or widening the gap between the lending and the borrowing rates.

2.2.4. Resource-Based View (RBV) Theory

The theory of Resource-Based View (RBV) that was developed by Barney (1991) is based on the idea that companies could do better when they have valuable, rare, imitable and non-substitutable resources. In the banking sector, these resources comprise financial resources, technology, people and organizational potential that facilitate efficient risk management and work efficiency. The economic conceptualization, in this study, incorporates the bank size, which is a moderating variable based on RBV, which is the total asset. Banks with greater sizes are able to take advantage of economies of scale, technological capacity, and diversified sources of revenue in order to absorb systematic shocks and small banks have limitations that increase their susceptibility to macroeconomic volatility. This is understandable within the heterogeneous performance that is evident in the different levels of banking in Kenya (CBK, 2024). Thus, the RBV Theory gives a theoretical rationale to analyse the moderating effect of the bank size on the relationship existing between the systematic risk factors and the financial performance.

2.3 Conceptual Framework

Macroeconomic Factors Volatility

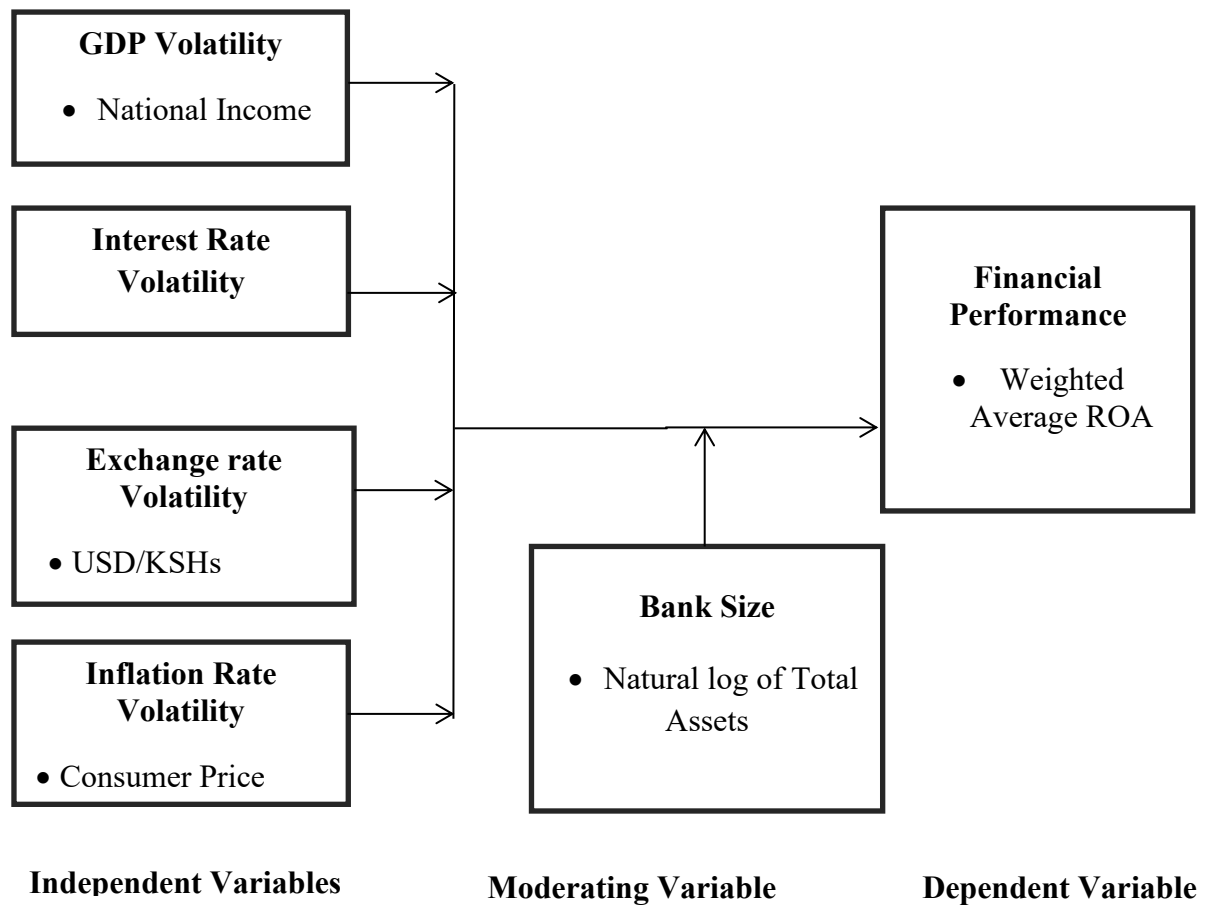


Figure 1: Conceptual Framework

A conceptual framework serves as a structured visual guide that outlines the key variables involved in a research study and illustrates the relationships among them. It normally includes variables such as; independent dependent variables.

The use of moderating variables may also refer to the term of intervening variables depending on the extent and the design of the research. The factors that the researcher monitors so as to understand their influence on a given outcome are called independent variables (Abbott & McKinney, 2013). In this study, macroeconomic volatility was the independent variable and was thus determined in four broad dimensions; fluctuations in GDP, changes in interest rates, volatility in exchange rates, and movements in inflation.

These are the risks of the wider economic environment where the tier three banks have to operate. Those risks were supposed to make a tremendous effect on performance outcomes. Financial performance was the dependent variable measured using ROA. ROA is an effective indicator of performance and is largely appreciated because it shows the banks' efficiency in how it uses its resources. Also, the study introduced a moderating variable; bank size.

According to Abbott and McKinney (2013), a moderating variable can magnify, diminish or modify the independent and dependent variables relationship. The size of the bank was measured by tier III banks total assets in this research. Banks with bigger asset bases were more resilient to absorb systematic shocks. By adding a moderator of bank size, the research took into consideration the fact that the connection between the two elements could be different.

Table 2: Operationalization of Study Variables

<i>Variable</i>	<i>Type</i>	<i>Operational Definition</i>	<i>Measurement</i>
GDP Fluctuations	Independent	Annual % change in GDP or GDP growth rate	Std, deviation of GDP
Interest rate Changes	Independent	Average annual lending interest rate (CBK rate or Treasury bill rate)	Std. deviation of interest rate
Exchange Rate Volatility	Independent	Standard deviation of monthly exchange rate (KES/USD) changes over a year	Std. deviation of exchange rate
Inflation Rate Volatility	Independent	Annual average inflation rate (%) reported by KNBS	Std. deviation of inflation
Bank Size	Moderator	Log of total assets of the bank (or total assets in billions)	Weighted average ROA
Financial Performance	Dependent	Return on Assets (ROA)	Net earnings /Total Assets

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Location of the Study

This study focused on Tier Three banks in Kenya, all of which are currently licensed and operational under the regulatory framework of the CBK. The country lies on latitude 1° South of the equator and longitude 37° East, with borders shared with South Sudan and Ethiopia to the north, Uganda to the west, Tanzania to the south, and Somalia together with the Indian Ocean to the east.

Nairobi, the capital city, serves as the political, administrative, and financial headquarters of the country and is home to the CBK and most bank headquarters. Other urban centers such as Nakuru, Eldoret, Mombasa, Kisumu, Nyeri, and Meru also host significant banking operations. These locations provide critical financial services to individuals, businesses, and SMEs, which form the primary clientele of Tier Three banks (KBA, 2023)

The decision to focus on Kenya stem from its unique financial landscape. Kenya has a fast-evolving banking sector, where small and medium-sized banks are very important in deepening financial inclusion. Tier III banks provide banking services to market segments often underserved by larger institutions. However, their limited asset bases make them more vulnerable to systematic risks such as macroeconomic shocks, volatility in exchange and interest rates, and inflationary pressures. Thus, studying these banks within the Kenyan context provided a meaningful opportunity to generate evidence that could advise both policy and management practices in the financial sector.

3.2 Research Design

A research design is essentially the blueprint that guides how a study is conducted. It provides the system of a balanced alignment of data collection, measurement, and analysis to address the study dilemma. According to Orodho (2003), research design is the ground which ensures validity, accuracy, and reliability of research results.

A correlational research design used when exploring the relationship among a number of variables without manipulating them was done. It specifically allowed for the tests about the association between ROA and Systematic risk. It facilitated the examination of naturally occurring variables over time without requiring artificial experimental controls. It also enabled the strength and direction analysis of the relationships among

the variables. It provided a foundation for predictive modelling by recognizing patterns that could inform decision-making in the banking sector. By using this design, the study reflected real-world conditions under which Tier Three banks operate, thereby enhancing the relevance and applicability of the results.

3.3 Population of the Study

The population of a study refers to the total group of individuals, institutions, or phenomena about which the researcher draws conclusions (Casteel & Bridier, 2021). Sekaran (2000) describes it as the entire set of cases that meet the specified criteria of interest, while Willie (2024) emphasizes that the population forms the foundation upon which valid generalizations can be drawn.

This study targeted 22 Tier Three banks in Kenya as per the CBK in its annual supervision reports. These banks are distinguished by their relatively small asset bases compared to Tier One and Tier Two banks. They mainly serve small businesses, individual customers, and underserved communities, their small size renders them more sensitive to fluctuations in macroeconomic conditions.

The Kenyan tier III banks were chosen because they up the largest part of the banking sector's most susceptible to macroeconomic instability and structural inefficiency. As indicated by CBK (2023), Tier III banks include small financial institutions having smaller asset bases, having fewer capital buffer, and having limited access to both interbank and international markets. Such features contribute to their sensitivity to changes in major macroeconomic factors volatility like GDP, interest rates, and exchange rates as well as inflation rate in comparison to their counterparts in Tier I and II.

In Keynesian economics terms, Tier III banks are more directly influenced by changes in macro level policy, which can be tight monetary policy or fiscal stimulus, since their clients and lending business are directly dependent on domestic consumption and investment in small enterprises, which are responsive to alterations in aggregate demand and liquidity. As a result, the macroeconomic volatility spreads to their balance sheets and profitability faster and stronger.

The Risk Return Trade-off Theory goes a step further to explain why attention should be paid since smaller banks are generally prone to greater amounts of systematic and unsystematic risk since they cannot diversify and access to hedging instruments is limited. This suggests that Tier III banks will present more significant trade-offs between the anticipated returns and exposure to economic shocks, which will serve those best to explore the relationship between risk volatility and the performance outcomes.

Also according to the Intermediation Theory of Banking, Tier III institutions become vital in financial intermediation to the small businesses and low-income individuals whose channel to the financial system is very sensitive to interest rates variations and also to credit limitation and inflationary pressures. These factors are volatile and as such, may have a direct impact on the intermediation process efficiency and therefore the overall performance of such banks. Lastly, Resource-based View (RBV) gives a justification at the micro-level.

Tier III banks are normally run with a minimal of resources, both financial and technological, and on their own resources as well as management effectiveness and market local knowledge. This qualifies them as an apt environment in analysing the role played by internal strength or weaknesses in the moderating effects of external macroeconomic shocks on performance. Moreover, it can be empirically demonstrated that Tier III banks located in Kenya have demonstrated sustained performance imbalances despite being subjected to the same regulatory and macroeconomic environments as other levels (CBK, 2023; KNBS, 2024).

Since they have higher rates of merger, acquisition or even closure points to structural weaknesses that should be given special attention. The nature of the interaction between macroeconomic volatility and bank-specific variables including size, risk exposures, and resource capabilities is therefore significant in the development of policy and the strategic management of small financial institutions in the Kenya banking environment to increase the sustainability of micro financial institutions.

3.4 Sampling Procedure and Sample Size

Sampling is the selecting a smaller group from a larger population to represent it (Cooper & Schindler, 2009). When the population is relatively small and easily accessible, it is often more practical to do a census. There are only 22 tier three banks in Kenya, so this study adopted a census approach, including all 22 banks. As Kothari (2011) notes, using a census enhances the accuracy and the results are reliable because it eliminates sampling error and ensures the data is a reflection of the entire population under study. Consequently, the “sample” for this research is equal to the population, encompassing all 22 Tier Three banks in Kenya.

3.5 Data Collection and Instrumentation

Only secondary data was used. According to Kothari (2004), secondary information refers to information collected by other institutions. The contents contained in the articles can be applied elsewhere beyond the scope of the present study as well. The journals, books, government and organization records are some of the secondary data sources.

The point of reliability was the reason why secondary data was selected in this research, as the data provided by these is reliable. It is duly vetted because it is by reputable institutions which are; the CBK, KNBS, IMF and World Bank. They are acceptable, economical and effective. Primary data would have been on the other hand very costly, time-intensive and could not be easily obtained.

Specific variables that were gathered comprised Financial Performance The ROA of Tier III banks, Volatility of macroeconomic factors, the volatility of the GDP, interest rate, exchange rate and inflation rate and bank Size total assets per bank natural logarithms of Assets.

Well-structured data extraction sheets were used in order to guarantee the systematic data collection. The tool assisted in the clear arrangement of variables, minimizing errors, and being consistent in registering of information. Only secondary data was used.

3.6 Data Analysis and Presentation

The analysis was performed through the systematization and interpretation of the information to reveal meaningful insights (Nyaga & Omwenga, 2016). This entailed editing, coding and applying. adequate statistical procedures needed to allow justified and right conclusions (Kothari 2004). The analysis of data used the SPSS version 29.0 and Microsoft excel in this study.

The potential of these tools is so much in summarizing the data by descriptive statistics and testing relationships or testing hypotheses using inferential statistics. In the present instance, the study employed them to comprehensively analyze the data and determine trends. Aspects that must be identified as well as conclusion that must be drawn were made. It displays the results in the tables. It has formats that are effective. This was examined in two ways; Descriptive Statistics, these characterized the primitive properties of by the terms of measures of central tendency (mean), mode) and measures of dispersion (standard deviation).

Descriptive statistics that were employed. This was done to provide a general overview of data, trends, variability, and underlying patterns of the study variables and Inferential Statistics. Regression analysis is a very effective statistical method as Mugenda and Mugenda (2013) describes because it assists in determining whether a set of independent variables can be of considerable influence in predicting changes in the variable of interest. The regression results were presented in tables for clarity. In addition, the analysis included tests for statistical significance to determine whether the observed relationships were meaningful or occurred by chance.

3.7 Model Specification

The study used the following regression models:

Model 1:

Bivariates – Showing the effect of single systematic risk factors on financial performance

$$Y_{it} = \beta_0 + \beta_1 X_{1t} + \varepsilon$$

$$Y_{it} = \beta_0 + \beta_2 X_{2t} + \varepsilon$$

$$Y_{it} = \beta_0 + \beta_3 X_{3t} + \varepsilon$$

$$Y_{it} = \beta_0 + \beta_4 X_{4t} + \varepsilon$$

Model 2: Multivariate–Showing direct influence of macroeconomic factors volatility on financial performance

This model tested how GDP volatility, Interest Rate volatility, Exchange Rate volatility, and Inflation rate volatility affect financial performance (FP) of Tier III banks.

$$Y_{it} = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \varepsilon$$

Y_{it} = Dependent variable - Financial Performance

β_0 is a constant, intercept of the equation

β_1 - β_4 = Independent variables regression coefficient

X_{1t} =GDP in time t

X_{2t} =Interest Rate in time t

X_{3t} =Exchange Rate in time t

X_{4t} =Inflation in time t

ε =Error Term

Model 3

Moderation Model (Bank Size as a Moderator)

$$FP = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 M + \beta_6 (X_{1t} \cdot M) + \beta_7 (X_{2t} \cdot M) + \beta_8 (X_{3t} \cdot M) + \beta_9 (X_{4t} \cdot M) + \varepsilon$$

M = Bank Size (Moderator)

$\beta_1, \beta_2, \beta_3, \beta_4$ used to show how systematic risk factors influence Financial Performance (FP) directly.

β_5 : Measures the direct effect of Bank Size (M) on FP.

$\beta_6, \beta_7, \beta_8, \beta_9$: Represent the interaction effects.

3.8 Diagnostic Tests

Diagnostic tests were conducted to verify whether the model assumptions were met, thereby minimizing potential biases. Multicollinearity test, normality test, autocorrelation test, and heteroscedasticity test were done.

3.8.1 Multicollinearity Test

Regression analysis assumed that there is no multicollinearity among the independent variables (Shrestha, 2020). Multicollinearity could cause large forecasting error and complicate the relative importance of individual variables in the model (Bayman & Dexter, 2021). Variance inflation factor and tolerance was used to test for multicollinearity. VIF was used because it provides a clear numerical measure of how

much the discrepancy of a regression coefficient is inflated due to multicollinearity (Bayman & Dexter, 2021). When the VIF is greater than 10 and tolerance level is less than 0.1 then, multicollinearity is present (Shrestha, 2020).

3.8.2 Normality Testing

Normality testing is a key step in quantitative research because it helps determine whether the data come from a population that follows a normal distribution (Chukwudozie et al., 2024). In most statistical analyses, we start with the assumption, or null hypothesis, that the data are normally distributed. The alternative hypothesis, on the other hand, poses that the data deviate from normality (Khatun, 2021).

Testing for normality is important because many statistical techniques, such as regression analysis, rely on this assumption. If the remainders are not which can reduce normally distributed, it could the dependability of the indicate results that the (Khatun, 2021). Normality was assessed using SPSS version 29.0. model, The Shapiro-Wilk test, which is effective especially on smaller samples of up to 2000 observations, and the KolmogorovSmirnov (K S) tests were done. A p-value of less than 0.05 in either test indicated that the data, was not normally distributed. Once the two tests proved that the data was normal, regression analysis commenced with much more confidence.

3.8.3 Autocorrelation

Autocorrelation arises when residuals are not independent. Autocorrelation may also bias the estimates of the model, resulting in unreliable findings and, in effect, may lead to misleading conclusions about the relationships between variables (Okunlola et al., 2021). In this study, Durbin-Watson (DW) test was employed to identify autocorrelation as it is an accepted test. In case the test found autocorrelation, the null hypothesis of the non-correlation of errors could be rejected (Okunlola et al., 2021). These results indicated that the Durbin Watson statistic for the models ranged from 2.097 to 2.506. This implied absence of autocorrelation in the models.

3.8.4 Heteroscedasticity

Heteroscedasticity is a condition whereby the variance of the residuals of a regression model is. not constant. Throughout all the observations it was constant. Higher or lower variance of the residuals may be in contrast to equal spread. This usually happens when

significant variables are omitted and when a model does not model structural change. Heteroscedasticity can lower the efficiency of regression estimates and cause hypothesis testing to be less reliable. This has been identified by Horvath and Trapani (2022) as the reason why close to 70 percent of the people do not like or do not prefer to talk about the topic. In this study, Q-Q plots tested heteroscedasticity (Kumar, 2023). When the points are near to straight diagonal line, then it means that there is a constant variance. Any substantial deviations of the line would imply heteroscedasticity and the assumption could be rejected.

3.9 Ethical Considerations

This study strictly followed ethical standards as outlined by the University, NACOSTI, and the Institutional Scientific and Ethics Review Committee (ISERC). Before data collection begun, the research protocol was reviewed by ISERC to confirm compliance with key ethical principles, including confidentiality, data integrity, and responsible reporting.

Institutionally approved sources provided publicly available secondary data, hence there was no need to seek individual consent. Data was obtained from credible and reliable institutions such as CBK, KNBS, audited financial statements of Tier III banks, as well as international databases like IMF and those of the World Bank

To ensure confidentiality and data security, all datasets used to be stored in encrypted, password-protected files accessible only to the researcher. ISERC used to also confirm that the use of this data is ethically sound, which includes proper citation of sources, safeguarding sensitive financial information, and avoiding any form of data misrepresentation.

Also an official introduction letter from the University and a research permit from NACOSTI was obtained. These measures guaranteed compliance with both institutional and national research requirements. By observing these procedures, upheld academic integrity while also protecting public trust in the research process.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter involved the analysis of data gathered to establish how the financial performance of Tier III banks in Kenya is effected by macroeconomic factors volatility with the possible moderating factor being the scale of banks. Descriptive statistics gave a summary of the trends and characteristics of the systematic risk variables, bank size, and ROA, Correlation results, diagnostic results, and the results of regression analysis indicated how the systematic risk factors affected financial performance. The effect of bank size in moderating the relationship between macroeconomic factors volatility and ROA was analyzed.

4.2 Descriptive Statistics

The descriptive statistics were computed so as to provide the overview of data used in the study (2004-2024). These variables were the volatilities of inflation rate, GDP, exchange rates, interest rates, and financial performance (ROA). The moderating variable bank size was also discussed. The findings of a summary of descriptive statistics are as shown Table 3 below.

Table 3
Descriptive Statistics of the study variables (2004-2024)

Variable	Mean	Std. Dev.	Skewness	Kurtosis	Count
Total Assets	298,941.28	199,650.35	0.36	-0.95	21
GDP Volatility	4.90	1.66	-1.33	2.37	21
Interest Rate Volatility	9.46	2.54	1.95	5.77	21
Exchange Rate Volatility	94.36	20.57	0.65	-0.03	21
Inflation rate Volatility	8.54	4.43	1.25	0.52	21
ROA	0.0111	0.0087	-0.28	-1.16	21

4.2.1 GDP Volatility

The volatility of GDP shows the movement in a country's economic growth over a period. The GDP had mean of 4.90 percent and a 1.66 standard deviation which means that the changes in Kenyan economy were fairly moderate when comparing the years 2004 to 2024. The skewness of -1.33 implied that the rates of less-than-average growth in GDP were prevalent, whereas the kurtosis of 2.37 implied that the distribution was a little leptokurtic, i.e. with occasional sharp deviations like the contraction in 2020 caused by COVID-19. These statistics corresponded to the results presented by Mwangi et al. (2024), who found that the increase in GDP had a positive impact on the performance of banks, but when the economy shrinks, the profitability is diminished. In the case of Tier III banks, this kind of volatility is especially difficult as they have a weaker resilience than larger banks and hence cannot absorb systemic shocks.

4.2.2 Interest Rate Volatility

The mean interest rate was 9.46 with standard deviation of 2.54 indicating a wide variation in the study period. The skewness of 1.95 showed that the skew of the interest rates was very strong meaning, there were higher rises in the interest rates than decreases. The kurtosis of 5.77 was evidence of a leptokurtic distribution, and indicated extreme interest rate shocks, e.g., the 18-percent spurt in 2011. These findings align with Kipyego and Wandera (2019), who reported that, at higher rates of the interest rate, volatility increases the risk of default, which is more than the advantages of higher lending rates. Tier III banks happen to depend very much on interest income, therefore this volatility directly reduces their profitability.

4.2.3 Exchange Rate Volatility

The mean exchange rate was 94.36 KES/USD and standard deviation was 20.57 and this was evident that it was highly volatile over those years. A skewness of 0.65 had a moderate positive skew, which implied that currency depreciations were more common than currency appreciations. The kurtosis of -0.03 indicated a close to normal distribution but the depreciations like increasing to 139.7 in 2023 point to major long term weakening of the shilling. The results can be aligned with Njagi (2022), who specified that ROA was adversely affected by exchange rate volatility particularly in small banks with little forex activities. The Banks in the tier III category are particularly susceptible because they do not have strong hedging systems as bigger banks do.

4.2.4 Inflation Rate Volatility

The mean of inflation volatility was 8.54 and standard deviation was 4.43 with significant variation over the period. The skew value of 1.25 also indicated that the occurrences of higher than average inflation were more common. The Kurtosis of 0.52 implied slight leptokurtic distribution implying that there were occasional high pressures of inflation, including the peak pressure of 18.93% in 2011. As Ndungu et al. (2022) have emphasized, inflation increases credit risk because it reduces the ability to repay, especially by households and SMEs, which represent the majority of Tier III banks customers.

4.2.5 Bank size

The bank size is volatile. The mean of the bank size in terms of total assets was 298,941 million KES with the standard deviation of 199,650, and it revealed wide differences in the bank size of Tier III banks. The skewness value of 0.36 showed that the skew was a slight positive skew so that a few banks had far higher asset bases than other banks. The value of kurtosis (-0.95) was platykurtic and the size outliers were fewer.

4.3 Correlation Analysis

The analysis of correlation was done to establish the nature and strength of the relationships between the Macroeconomic Variables Volatility (GDP, interest rate, exchange rate, inflation) and financial performance (ROA) of the Tier III banks in Kenya. Correlation coefficients that lie between -1 to +1 are used to show the level of movement of variables. An increase in the values of the variables is indicated by positive values which reveal presence of correlation whereas negative values mean that the increase in the values of one variable is linked to decrease in the other. Table 4 summarizes the results.

Table 4
Correlation Matrix of Study Variables

	GDP V.	Interest V.	Exchange V.	Inflation V.	ROA
GDP V.	1				
Interest V.	0.052	1			
Exchange V.	-0.030	0.179	1		
Inflation V.	-0.146	0.475	-0.434	1	
ROA	0.183	0.191	-0.638	0.355	1

4.3.1 Gross Domestic Product (GDP) Volatility and ROA

According to the research, GDP Volatility and ROA had a weak positive association ($r = 0.183$). This implies that Tier III banks will gain some financial performance improvement with the growth of the Kenyan economy, but the impact is not significant. According to the Keynesian Economic Theory, economic recessions boost aggregate demand, investment, and lending by businesses which consequently increases the profitability of banks. An improved GDP growth is more likely to result in higher deposits and borrowing which enhances the bank income.

This theoretical anticipation aligns with the positive relationship that has been observed. The discovery is also aligning with the Risk Return Trade-off Theory that states that the greater the economic growth, the more the temptation of calculated risks by the banks for them to gain higher returns. When the economy is on a boom, the Tier III banks can increase their loan book to take advantage of the new opportunities and their returns grow, although at a moderate level, due to the risk factors. The finding empirically supports Mwangi et al. (2024), who found GDP growth having a positive effect on the profitability of Kenyan commercial banks.

Nonetheless, the correlation coefficient in the current study is low, suggesting that Tier III banks do not gain as much as larger banks, could be because of their fewer resources and limited market share. This observation is based on the Resource-Based View (RBV) understanding that firm specific resources, in terms of capital base, technology, and management capacity, can dictate how an organization can utilize the macroeconomic opportunities.

4.3.2 Interest Rate Volatility and ROA

The interest rate and ROA had a weak positive correlation ($r = 0.191$). It means that the moderate increase in lending rates has a slight positive effect on profitability due to increased interest income. The relationship is however not strong since the sudden increase in the rate might result in loan defaults and liquidity strains particularly among smaller banks. The Keynesian Economic Theory explains that interest rate increase generally suppresses investment and borrowing thereby slowing down the economy. But in the case of banks, an increase in the short-term rates can increase the income of the lending process. The positive result here was weak which indicates that there is some counterbalance between these two contradictory effects.

The Intermediation Theory of Banking also explains the finding considering that banks are intermediaries who convert deposits to productive loans. Interest rates intermediation margin are directly influenced by changes in interest rates. With Tier III banks, there are small increases in profitability that come with increases in the rate that enhance lending margins, but too much volatility destroys intermediation efficiency.

It is also aligning with Wanjohi (2022), who discovered inconsistent impacts of interest rate variation on the profitability of Kenyan banks. The result also corresponds to the Risk Return Trade-off Theory, which shows higher rates enable higher returns and at the same time the greater the exposure of a credit and interest-rate risk.

4.3.3 Exchange Rate Volatility and ROA

A high negative correlation between the exchange rate and ROA ($r = -0.638$) was revealed, denoting that a weak shilling value has a significant negative effect on the financial performance of Tier III banks in Kenya. In the Keynesian model, the depreciation of currency increases the cost of imports, inflationary pressure, and disrupts the trade, which further decreases the revenue with which borrowers will pay the debt and the overall monetary stability of banks.

This relationship is further explained by the Intermediation Theory of Banking: exchange rates change drastically, banks become uncertain about the foreign-currency transactions and costs of dealing with the external obligations increase, undermining their role in intermediation. This aligns with Njagi (2022), who found that the exchange-rate volatility has a negative impact on the profitability of Kenyan banks. Risk-wise, the Tier III banks are risk-averse as they have lower capital buffers;

therefore, when the exchange-rate risk is high, and the compensation is low in terms of returns, their profitability is reduced.

Besides, in terms of the Resource-Based View, their exposure to currency movements is further increased by the lack of hedging instruments and poor foreign-exchange management skills.

4.3.4 Inflation Rate Volatility and ROA

The inflation and ROA had a moderate positive correlation ($r = 0.355$). This implies that the Tier III banks could obtain short-term profits as a result of reviewing interest and lending rates upwards during inflationary periods, but long-term stability could be affected by long-term inflation. The Keynesian Economic Theory suggests that moderate inflation will encourage borrowing and spending when the movements in wages and prices are balanced. Therefore, moderate inflation can boost the profits of banks as it will increase credit.

This is explained by the Risk Return Trade-off Theory which describes a scenario in which banks take advantage of the benefits of inflation in the short-run to achieve greater returns with having to deal with the risks that come because of including the rise in the cost of running business and defaults. Based on the Intermediation Theory of Banking, inflation influences the difference between deposit and lending rates; banks with Tier III that respond swiftly can safeguard or enhance the intermediation margins.

In the meantime, the Resource-Based View stresses the fact that inflationary conditions can be converted into the profit opportunity by banks with superior financial management systems and flexible pricing mechanisms. These results agree with the findings of Ndung'u et al. (2022), who determined that inflation has negative and positive influences based on the history of banks and portfolio constructions. The moderate positive correlation, in this case, indicates that Tier III banks gain slightly during the inflation due to interest-income changes but have difficulties related to the growth of operation costs and the rise of default risks.

To make sure these interrelationships did not bias the regression estimates, the VIF was also tested. All VIFs were below the critical value of 10, which proved that no significant multicollinearity was implied in the correlation matrix and was well considered by the regression.

4.4 Diagnostic Results

The study tested the assumptions of linear regression model before analysis. Diagnostic tests aid in confirming the nature of the data and in identifying the model that is appropriate for research so as to ascertain that the regression results are consistent, objective and effective. Normality, multicollinearity, heteroscedasticity and autocorrelation diagnostic tests were done to determine if the assumptions of ordinary least square hold. The tests were carried out to ensure that all the basic assumptions of linear regression model were met.

4.4.1 Normality Test

Parametric tests and regression analysis undertake that residuals are normally distributed (Safitri, 2024). A normally distributed residual aids a researcher in being accurate and making dependable conclusions (Saitri, 2021). The tests of normality include Shapiro-Wilk test, Kolmogorov-Smirnov test and Anderson-Darling test. To check for normality Shapiro Wilk was utilized (Park, 2022). It is advisable to apply the Shapiro Wilk test on observations equal or below 50. Using Shapiro wilk test residual is considered normally distributed if the statistic of the test is higher than 0.05 (Park, 2022). P-values less than 0.05 signify that the data distribution, in this case, model residuals, is significantly different from a normal distribution. If the p-values are greater than 0.05, the null hypothesis under the test is accepted, and hence the normality assumption holds. The test results are as shown in Table 5.

Table 5
Normality Test for Regression Variables

	Tests of Normality		
	Statistic	Shapiro-Wilk ^a df	Sig.
GDP	.147	21	.070
Interest Rates	.170	21	.058
Exchange Rates	.371	21	.086
Inflation Rates	.149	21	.053
Bank Size	.143	21	.062

a. Lilliefors Significance Correction

Table 5 shows that all significance levels for volatilities of GDP, interest rates, exchange rates, inflation rates, and bank size were 0.05 or above therefore we concluded that the residuals were normally distributed. Level of significance that is

above 0.05, indicates normally distributed residuals. Therefore, data on residuals were considered to be used to conduct the further analysis as the residual was normal.

4.4.2 Multicollinearity Test

Regression analysis presupposes that the independent variables do not have any multicollinearity (Shrestha, 2020). Multicollinearity may bring about a massive forecasting error and may not be easily evaluated by the comparative significance of the separate variables to the model (Bayman and Dexter, 2021). Variance inflation factor and tolerance was used to test multicollinearity. VIF was used because it is a clear numerical indication of the magnitude to which a regression coefficient is inflated as a result of multicollinearity (Bayman and Dexter, 2021). When the VIF is greater than 10 and tolerance level is less than 0.1 then, there is presence of multicollinearity (Shrestha, 2020).

Table 6
Multicollinearity Test for study variables

Model	Coefficients	
	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
GDP	.929	1.077
Interest Rate	.561	1.782
Exchange Rate	.639	1.566
Inflation Rate	.465	2.152
Bank Size	.636	1.572
a. Dependent Variable: ROA		

Based on table 6 results, the values of VIF were less than 10 and tolerance level was >0.1 therefore, multicollinearity was absent and there was no bias in the model.

4.4.3 Heteroscedasticity Test

Regression analysis presupposes that data is homoscedastic (Rehan, 2023). Heteroscedasticity is a non-observance of the assumption of a linear regression model according to which the variance of a mistake is a constant. The non-constancy of the variance implies that the error of the estimates will be biased and inconsistent that will render the testing of the hypothesis unreliable (Rehan, 2023). The heteroscedasticity tests are Breusch Pagan test, White test and Q-Q plots. This study employed Q-Q plot to establish whether the variance of the residual was constant since it is most appropriate in the demonstration of the spread of residual. In case the widths of the

observed constructs increase or decrease when the widths of the residuals increase or decrease, then there is heteroscedasticity. The results were displayed in Figure 2

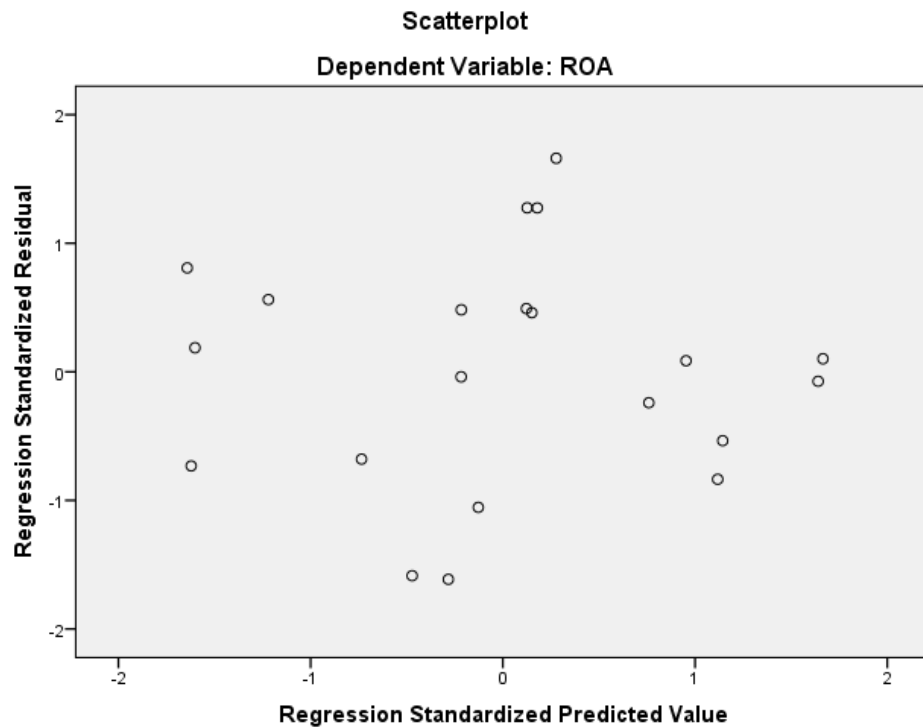


Figure 2. Heteroscedasticity Test

The results in Figure 2 indicated no specific pattern. The plot did not show a fan or cone shape. Therefore, it was an indication of absence of heteroskedasticity. This implied that the variances of firm performance were stable across different levels of exchange rates, inflation rates GDP, Interest rates, and bank size therefore the hypothesis testing would be reliable.

4.4.5 Autocorrelation Test

Autocorrelation is where the observations of the residuals of a regression model are not independent but instead take a sequence over time. That is, the error in one period is associated with the error in the other period. Considering the case where the profitability of banks (ROA) in a given year is highly dependent on the mistakes made in the preceding year, then autocorrelation has been established. This means that t-statistics and F-tests are invalid because of the occurrence of autocorrelation. This raises the possibility of making inaccurate inferences of having meaningful relationships that are not. The research involved the Durbin-Watson (DW) test whereby: A Value close to 2 would imply no autocorrelation, A Value close to 0 would imply positive

autocorrelation, A Value close to 4 would imply negative autocorrelation. The table 7 below shows the results.

Table 7
Durbin Watson Statistics

Model	DW Statistic	Status
GDP	2.307	Absence of autocorrelation
Interest Rate	2.501	Absence of autocorrelation
Exchange Rate	2.504	Absence of autocorrelation
Inflation Rate	2.273	Absence of autocorrelation
Bank Size	2.097	Absence of autocorrelation
Overall model	2.506	Absence of autocorrelation

From the results, the DW statistic for the models ranged from 2.097 to 2.506. The values were between 2 and 2.5, implying absence of autocorrelation in the models.

4.5 Regression Analysis

The regression was performed to examine the effect of macroeconomic factors volatility which were; GDP, interest rate, exchange rate, and inflation rate on the financial performance of Tier III banks in Kenya, which is in terms of Return on Assets (ROA). The analysis involved three parts such as the model summary, ANOVA test to determine the overall model significance, and the regression coefficients of each individual predictor.

4.5.1 Model Summary

The model summary was created to test the explanatory power of the regression model. This gave the correlation coefficient (R), the coefficient of determination (R^2), the adjusted R^2 and the standard error of the estimate, a combination of which showed the extent that independent variables could explain the variation ROA. Table 8 provides the results.

Table 8
Model Summary (Goodness of Fit)

Model	R	R^2	Adjusted R^2	Std. Error of Estimate	N
1	0.847	0.718	0.631	0.00566	18

Table 8 shows that, the correlation coefficient (R) was 0.847. This revealed a strong positive correlation between a combination of macroeconomic factors volatility (GDP, interest rate, exchange rate, and inflation) and financial performance (ROA). The coefficient of determination (R^2) was 0.718 and this indicated that about 71.8 percent of the change in ROA was explained by the predictors that were being used in the model.

This indicated a relatively large explanatory power, which demonstrated that systematic risk factors were the important determinants of the profitability of Tier III banks. The adjusted R^2 which corrects the predictors and the sample size was 0.631. It was an indication that with the model complexities being taken into consideration, the model explained about 63.1 percent of the variation in ROA.

The marginal reduction in the value of R to adjusted R meant that the predictors employed were not noteworthy but only enhancing the model explanatory power. The estimate's standard error was also relatively small 0.00566, indicating that the values were model predicted were close to the actual values of ROA. This increased the validity of the model findings. The model had a sample size of 18, so it showed not only statistical strength but also practical importance, which supported the importance of systematic risk factors in determining financial performance in Tier III banks in Kenya.

4.5.2 ANOVA (Overall Significance of the Model)

To check the general importance of the regression model, the Analysis of Variance (ANOVA) test was being conducted. The ANOVA split the total variance in a dependent variable (ROA) into the amount of variation attributed to independent variables (systematic risk factors: interest rate, exchange rate, GDP, and inflation) and the amount of variation attributed to other factors (residual error). A comparison between the two sources of variation yielded evidence by F-statistic; whether the overall model was better than a model that has no predictors in predicting financial performance. The ANOVA test results are shown in table 9.

Table 9
ANOVA (Overall Significance of the Model)

Source	Df	SS	MS	F	Sig. (p-value)
Regression	4	0.00105933	0.00026483	8.27520	0.00151
Residual	13	0.00041604	0.00003200		
Total	17	0.00147537			

According to the ANOVA outcomes, the regression model was significant. The F-statistic was 8.275 and p-value was 0.0015. The p-value was less than the 0.05 value, so we rejected the null hypothesis that the model is not explanatory. This implied that the aggregate effect of GDP, interest rate, exchange rate, and inflation on the financial performance (ROA) of Tier III banks in Kenya was large.

4.5.3 Regression Coefficients of Systematic Risk Factors on ROA

For the impact of macroeconomic factors volatility on the Kenyan tier III banks' financial performance to be determined, a multiple regression analysis was done with Return on Assets (ROA) being the dependent variable. The predictors were the volatilities of GDP, interest rate, exchange rate and inflation rate. The findings were indicated in Table 10

Table 10
Regression Coefficients of Systematic Risk Factors on ROA

Predictor	Coefficient (β)	Std. Error	t-Stat	p-value	95% Lower	CI 95% Upper
Intercept	-0.00035	0.00370	-0.094	0.927	-0.00834	0.00765
GDP	-0.00122	0.00139	-0.881	0.394	-0.00422	0.00177
Interest Rate	-0.00311	0.00148	-2.101	0.056	-0.00630	0.000088
Exchange Rate	0.00109	0.00045	2.414	0.031	0.000115	0.00207

The regression findings showed that the intercept was 0.00035, which was non-statistically significant ($p = 0.927$). This implied that the minimum ROA was not below zero significantly, given that all the macroeconomic factors volatility remained constant. That is, macroeconomic factors volatility was required to explain the variation in financial performance, and the intercept on its own had nothing to explain the profitability of Tier III banks.

4.5.3.1 Regression Results for GDP Volatility and Financial Performance (ROA)

Results of the regression showed that the coefficient of GDP did not have an effect (- 0.00122, $p = 0.394$). This meant that GDP was not a significant indicator of economic growth on Tier III banks in Kenya financial performance.

Though the economic boom periods are traditionally characterized by the enhancement of business activity and increased demand of financial services, the weak correlation recommended that the smaller banks were not significantly positively affected by the gaping economic growth. This may be elaborated by the fact that Tier III banks have a small market share, are segmented into niches and are highly competed by other large banks who seize economic opportunities better.

Therefore, the null hypothesis (H_{01}), indicating that there was no significant impact of GDP on financial performance was not rejected. This conclusion underscored the fact that for Tier III banks, as a result of macroeconomic growth, profitability could not be pushed without internal capacity and market penetration.

4.5.3.2 Regression Results for Interest Rate Volatility and Financial Performance (ROA)

The analysis indicated that the interest rate had negative coefficient ($= -0.00311$) and it was insignificant slightly at the 10 percent level ($= 0.056$). This meant that as interest rates rose the financial performance of Tier III banks declined. Increased rates deterred borrowing, raised the price of credit, and the risk of loan defaults especially among the customers of the banks who usually included small businesses and the poor.

Despite the fact that banks might increase interest earnings due to increased lending rates in the short term, the effects of defaults and loan uptake would not be felt in the long term, undermining profitability.

It is based on this that the null hypothesis (H_{02}), which passed as interest rates not having a significant influence on the financial performance, was nullified at the significance level of 10 percent. This was in line with Njagi (2022) who observed that volatility in interest rates posed serious risks to smaller banks particularly those with concentrated loan portfolios which exposed them more to credit shocks than larger financial entities.

4.5.3.3 Regression Results for Exchange Rate Volatility and Financial Performance (ROA)

According to the regression results, financial performance was positively and statistically significantly influenced by the exchange rate volatility, and the coefficient of 0.00109 and the p-value of 0.031 were positive and significant.

This observation meant that a decrease in the value of the Kenyan shilling against the major currencies positively affected the ROA of the Tier III banks. It could be because these banks received foreign exchange profits via remittance services, forex trading services and lending facilities in foreign currencies. In that regard, exchange rate volatilities, risky as they may be, offered potential profitability where banks were able to take advantage of such volatility.

Accordingly, the null hypothesis (H03) that exchange rates had no significant influence on the financial performance was rejected. This observation aligned with the results presented by Ndungu et al. (2022), who established that exchange rate volatility was a vital factor that determined the outcomes of banking through its exposure of institutions to risks as well as opportunities depending on their relationship in the foreign exchange market.

4.5.3.4 Regression Results for Inflation Rate Volatility and Financial Performance (ROA)

Regression analysis revealed that inflation had a significant effect on the financial performance with a coefficient of $\beta = 0.00513$ and $p\text{-value} = 0.0003$. This meant that the effectiveness of the high inflation was linked with the high profitability of the Tier III banks. This could be because banks realigned their lending rates to meet the inflationary pressures hence protecting their profit margins regardless of the increased costs.

Thus, it seemed that inflation was rather acting like an opportunity than a threat as long as banks could reprice loans, and other assets in time. It was based on this that the null hypothesis (H04) that inflation rate volatility did not have a statistically significant effect on financial performance was rejected. These findings were similar to those of Chukwudozie et al. (2024), who established that banks tended to be benefited by inflation when they were able to be more effective in transferring increasing costs to borrowers by increasing lending rates.

4.6 Moderated Regression Results

4.6.1 Model Summary

Table 11 gives the model summary results of the moderated regression models. The following results demonstrate the magnitude to which the difference in financial performance in terms of ROA was explained by bank size, when interacted with factors of systematic risk. Table 11 below shows the results.

Table 11
Model Summary (Moderated Regression Models)

Model	R	R ²	Adjusted R ²	Std. Error of Estimate
GDP Volatility $\times$ Size	0.105	0.011	-0.102	0.00985
Interest Volatility $\times$ Size	0.285	0.081	-0.042	0.00942
Exchange Volatility $\times$ Size	0.090	0.008	-0.106	0.00988
Inflation Volatility $\times$ Size	0.395	0.156	0.013	0.00902

The findings made it evident that the moderation model explanatory powers were in most cases weak. The interaction values of GDP, interest rate, and exchange rate were very low (1.1%, 8.1 and 0.8 respectively). However, inflation exhibited a relatively greater explanatory power which was 15.6%. Nonetheless, adjusted R² of inflation (0.013) was very small, this meant that the general model had little enhancement after the addition of size as a moderator.

4.6.2 ANOVA

The ANOVA findings challenged the statistical importance of the models because they were tried with evaluating whether the addition of interaction terms improved the performance of the models significantly. The results of the ANOVA of the moderated regression models are in Table 12.

Table 12
ANOVA Results for Moderated Regression Models (2004–2024)

Model	Source	df	SS	MS	F	Sig. (p)
GDP V. $\times$ Size	Regression	3	0.000012	0.000004	0.087	0.933
	Residual	17	0.000788	0.000046		
	Total	20	0.000800			
Interest V. $\times$ Size	Regression	3	0.000063	0.000021	0.721	0.486
	Residual	17	0.000494	0.000029		
	Total	20	0.000557			
Exchange V. $\times$ Size	Regression	3	0.000011	0.000004	0.086	0.933
	Residual	17	0.000791	0.000047		
	Total	20	0.000802			
Inflation V. $\times$ Size	Regression	3	0.000121	0.000040	1.746	0.109
	Residual	17	0.000389	0.000023		
	Total	20	0.000510			

All the moderated models were used with three predictors the main effect of the macroeconomic variable, the main effect of bank size and the interaction term between the two. These three predictors are thus reflected in the regression degrees of freedom ($df = 3$), whereas the residual degrees of freedom ($df = 17$) are the number of observations that is left out when the estimated values have been taken into consideration considering the total of the sample (21 years). The total degrees of freedom ($df = 20$) brings out the overall number of observations minus one, which fits the data structure in the study.

The findings have showed that moderation models of the volatilities of GDP, interest rates and exchange rates were not significantly weighty with the p-values way above the 0.05 cut-off point. In comparison with the other models, the inflation volatility-size interaction though not significant at the 5 percent level ($F = 1.746$, $p = 0.109$) was more significant. This indicated a potential, but weak, bank size moderating effect on the inflation performance correlation.

4.6.3 Coefficients

Although the model summary and ANOVA findings helped in getting an insight into overall explanatory power and statistical significance of the moderated regression models, it was also significant to look into contribution of individual predictors and the

interaction terms. The table of coefficients indicates the estimated regression coefficients, standard errors, t-statistics, and the significance values of the volatilities of exchange rate, GDP, interest rate, and inflation with the moderation of the bank size. The findings allow evaluating the direct effects of the systematic risk factors, the independent impacts of the bank size, and the moderating impacts of the interaction terms on the tier III banks financial performance. Table 13 indicates the coefficients of the moderated regression models, indicating the impact of the key predictors, bank size, and their interaction terms on financial performance

Table 12
Coefficients (Moderated Regression Models).

Variable	B	Std. Error	T	Sig. (p)	Interpretation
GDP Volatility $\times$ Size					
Constant	0.012	0.006	2.048	0.056	Base ROA
GDP Volatility	0.0003	0.002	0.127	0.901	Not significant
Size	-0.1212	0.068	-1.784	0.102	Negative, borderline
GDP Volatility $\times$ Size	0.0005	0.005	0.087	0.933	No moderation
Interest Volatility $\times$ Size					
Constant	0.011	0.005	2.200	0.041	Base ROA
Interest Volatility	-0.0005	0.002	-0.277	0.787	Not significant
Size	-0.118	0.071	-1.662	0.116	Negative, borderline
Interest Volatility $\times$ Size	0.0052	0.007	0.721	0.486	No moderation
Exchange Volatility $\times$ Size					
Constant	0.012	0.006	2.036	0.057	Base ROA
Exchange Volatility	-0.0003	0.001	-0.644	0.533	Not significant
Size	-0.120	0.068	-1.772	0.104	Negative, borderline
Exchange Volatility $\times$ Size	0.000057	0.001	0.086	0.933	No moderation
Inflation Volatility $\times$ Size					
Constant	0.010	0.005	2.055	0.055	Base ROA
Inflation Volatility	-0.0013	0.001	-1.393	0.191	Not significant
Size	-0.122	0.067	-1.819	0.097	Negative, marginal
Inflation Volatility $\times$ Size	0.0084	0.005	1.746	0.109	Weak positive moderation

The coefficient showed that the bank size had a negative effect in all the models, though borderline significant. This implied that bigger Tier III banks were more likely to have a lower profitability relative to smaller banks perhaps as a result of diseconomies of scale or higher operation cost. In the case of interaction terms, all the volatilities of GDP, Interest, Exchange terms $GDP \times Size$, $Interest \times Size$, and $Exchange \times Size$ showed no significant moderation and this meant that the bank size did not alter the effect of these macroeconomic factors on financial performance. Nevertheless, the moderation effect of Inflation Volatility $\times$ Size was rather weak positive ($= 0.0084$, $p = 0.109$).

The Tier III banks were better placed to eliminate the inflationary pressures but the effect was statistically insignificant at the 5 percent level; however, the direction of the effect indicated that the larger Tier III banks were placed at a better position to withstand the inflationary pressures. This strength possibly was due to higher capital bases, improved loan repricing abilities and more diversified revenue bases.

The moderated regression investigation proved that bank size did not moderate the relationship that existed between the volatilities of GDP, exchange rate, and interest rate with financial performance of Tier III banks in Kenya. However, inflation showed a weak positive moderating effect which implies that comparatively bigger Tier III banks were a little bit more resilient during times of inflation in comparison with smaller banks.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of Findings

This study examined the effect of macroeconomic factors' volatility on the Tier III banks in Kenya financial performance for the period 2004–2024. The Moderation of bank size was also examined. The study was guided by four key theoretical frameworks; the Keynesian Economic Theory, the Risk–Return Trade-off Theory, the Intermediation Theory of Banking, and the Resource-Based View (RBV) Theory. Together, these theories provided a multidimensional perspective explaining how fluctuations in macroeconomic variables and internal bank capacities influence financial performance under volatile economic conditions.

It used a quantitative correlational research design that employed the time series econometric analysis to the secondary data that was- collected from the CBK's Bank Supervision Reports, KNBS, and the Kenya Bankers Association (KBA). Financial performance being the dependent variable was quantified by Return on Assets (ROA); the independent variables were the volatilities of GDP, interest rate, exchange rate, and inflation rate whereas bank size as a moderating variable was quantified by total assets.

Normality, autocorrelation, heteroscedasticity, and multicollinearity tests were conducted to test the model and confirm that it met regression assumptions (Khatun, 2021). The descriptive analysis showed that Tier III banks had moderately but imbalanced performances in ROA during the 21-year period and with significant fluctuations, which were coincidental with cases of economic and policy shocks. The mean ROA was 2.74, which is a low level of profitability compared to industry standards.

The growth of GDP was 4.9, the average interest rate was 9.46, the average exchange rate was 94.36/USD, and the average level of inflation was 6.12. These tendencies were also the demonstration of the general economic unpredictability recorded in CBK (2024) and KBA (2023) reports, where the instability in the sector is ascribed to frequent macroeconomic shocks, policy ambiguity and international economic setbacks.

From the multiple regression analysis, it was evident that the association among macroeconomic volatility is statistically significant in explaining the difference in ROA amongst the Tier III banks in Kenya. Nonetheless, there were differentiated effects of individual variables: The impact of volatility in GDP on ROA was found to be negative and statistically insignificant ($= 0.00122$; $p = 0.394$), meaning that the temporary growth of the economy did not have a direct effect on profitability.

Interest rate volatility effect on ROA was negative and marginally significant ($= -0.003111$; $p = 0.056$), implying that lending rate volatility affected interest margins and deterred credit growth (Ndung'u et al., 2022). The exchange rate volatility revealed a positive and significant correlation with ROA ($= 0.00109$; $p = 0.031$) and banks with effective foreign exchange management strategies enjoyed moderate movements of the currency (Wachira, 2023).

The volatility of inflation had a strong positive significant impact on ROA ($= 0.00513$; $p = 0.0003$) indicating that the moderate inflation can contribute to higher nominal returns due to wider interest spreads as expected in Keynesian postulations (McConnell, 2009).

The moderating variable was bank size, which demonstrated an insignificant effect of interaction indicating that the larger the asset base, the less likely that it would protect banks against macroeconomic shocks unless it was accompanied by strong internal capabilities (Appah & Tebepah, 2021; Waithira et al., 2022). The results are supported by theoretical predictions. The Keynesian Economic Theory was supported by the positive relationship that was seen to exist between controlled inflation and bank profitability where moderate inflation is likely to encourage lending and increase income.

The Risk-Return Tradeoff Theory was proved in the substantial influence of exchange rate, which emphasizes the fact that the banks which are ready to take calculated risk exposure on the foreign market received higher returns (Nguyen, 2023; Keshtgar et al., 2020). The Intermediation Theory of Banking was confirmed by the negative impact of the interest rate volatility, which misaligns the credit intermediation efficiency and profitability (Ndiritu et al., 2024).

The Resource-Based View (RBV) Theory was partially confirmed as the insignificant moderating effect of bank size highlighted that strategic internal capabilities in the form of sound risk management systems, human capital and technological infrastructure play a more significant role in resilience than size itself.

The research established that macroeconomic volatility has a strong influence on Tier III banks' financial performance in Kenya, but it is also not uniform with all indicators implying a different level of influence. The findings suggest that performance of Tier III banks is inclined by external macroeconomic factors as well as structural facility and that economic environment stability in combination with better institutional capacity is a prerequisite to sustainable profitability and competitiveness in the banking sector of Kenya.

5.2 Conclusion of the Study

In conclusion, macroeconomic factors' volatility exerts a substantial yet differentiated impact on the financial performance of Tier III banks in Kenya according to this study. GDP and interest rate fluctuations negatively affect profitability, while exchange rate and inflation volatilities enhance returns when managed efficiently.

From a Keynesian perspective, controlled inflation stimulates economic activity and credit expansion, thus supporting profitability. The Risk–Return Trade-off Theory is reinforced by evidence that banks taking on certain systematic risks, such as exchange rate exposure, may earn higher returns if those risks are well-managed.

The Intermediation Theory of Banking is validated by the observation that banks' profitability depends on their ability to transform deposits into credit efficiently amidst fluctuating macroeconomic variables. Resource-Based View Theory underscores that internal competencies particularly in risk management, technological adaptation, and operational efficiency—are essential for sustaining performance during economic volatility.

Theoretically, the study advances an integrated perspective linking macroeconomic instability with firm-level adaptive capacity. Methodologically, it extends analysis over a 21-year horizon, enabling long-term insights rarely captured in similar Kenyan studies. Empirically, it contributes evidence specific to Tier III banks, a segment typically underrepresented in financial research.

However, the study faced several limitations. Conceptually, it did not incorporate behavioural finance aspects that could explain management reactions to uncertainty. Methodologically, the correlational design limits causal inference, and reliance on secondary data may involve measurement or reporting inconsistencies. Contextually, focusing on Tier III banks restricts generalizability to tier I and II banks with more diversified operations. Nonetheless, these limitations open way for future research that could deepen understanding of macro-financial linkages.

5.3 Recommendations of the Study

From the limitations of this research, a number of recommendations are offered to enhance future studies as well as policy interventions regarding macroeconomic factors volatility, bank size as well as financial performance of Tier III banks in Kenya.

The refinement and contextualization at the theoretical level

In the future, the theoretical models will benefit by being refined and contextualized on operational and institutional realities of the developing financial systems. The Keynesian model could be combined with contemporary macro-financial connections which would explain the policy lags and structural hardships peculiar to the banking sector of Kenya.

In the same vein, the Risk-Return Trade-off and Intermediation Theories, which are applied to small banks, should be modified to reflect the impacts of information asymmetry, credit rationing, and liquidity constraints inherent to small banks. The Resource-Based View (RBV) might also be enhanced by the scholars by adding the impact of digital capabilities, risk culture, and management competencies as the sources of sustained advantage in the changing conditions.

Improvements in Methodology to Causal Inference.

The correlational design fails to determine causality and thus, any future study using a correlational design should use more sophisticated econometric or longitudinal designs (e.g., vector autoregressive, VAR, models, panel data regression or Granger causality test). Such methods would assist in determining the strength as well as the direction of the relationship between macroeconomic volatility and financial performance. The inclusion of data every quarterly or monthly would also help influence short-term variation that are often smoothed by annual data and would result in more accurate policy implications

Expanding the Spectrum of Variables.

Subsequent studies would need to expand the macroeconomic factors to include other variables than the volatilities of GDP, interest rate, exchange rate, and inflation rate. Other macroeconomic variables like fiscal policy shocks, political risk indices, credit supply measures, and variables of global financial contagion ought to be included in order to have a clearer picture on the determinant variables of financial performance. Additionally, the inclusion of bank-specific data (capital adequacy, management efficiency, technological innovation, etc.) would help to have a more detailed picture of internal resilience.

Improved Bank Size and Performance Measurement.

To have a more accurate moderating influence of the bank size, subsequent research ought to use multidimensional indicators like the market share, branch network, customer base, and digital outreach besides the total assets. On the same note, the financial performance might be evaluated through a compound index comprising of Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM) which would give a more comprehensive view of the profitability.

Comparative and Regional Expansion.

As this research only involved Tier III banks in Kenya, a future study should be conducted on cross country or region comparative studies. Looking at other similar institutions in East Africa or Sub-Saharan Africa would be useful to establish whether the relationships are context-specific or generalizable. This would also enable the policymakers to compare the resilience of Kenya's banking industry in a wider regional and economic framework.

Policy and Practical Implications.

The Central Bank of Kenya and other regulators are supposed to come up with differentiated macro prudential policies that incorporate the differentiation of Tier III banks. These are a wide range of capital adequacy frameworks, specific liquidity support schemes, and capacity-building initiatives to increase risk management and digital preparedness. These interventions would go a long way in alleviating the negative impact of systematic risk factors and enhance financial stability in the small-bank segment.

5.4 Suggestions for Further Research

Based on the limitations and findings of the given study, the following areas should be a consideration in future research:

The explanation of the volatility-performance relationship by use of Behavioural Finance and Institutional Theories should be incorporated in future research to assess the relationships between managerial attitudes, quality of governance and institutional frameworks. Methodological Enhancement: There is room to use panel data methods (e.g., GMM, VAR, SEM) and volatility models (e.g., GARCH models) in future research to better reflect the dynamism of the short-run and the causality between causes and effects.

Future studies may analyse the contexts of each component within the entire circumference of the completed structure. The volatility performance nexus would be made clearer by comparative analysis across Tier I, II and III banks, or East African countries, on whether the scale of the market or regional policy structure influences the volatility performance nexus.

Studies to come may also improve conceptual model by incorporating policy uncertainty, credit risk and financial innovation as mediating or moderating factors. ROE, NIM, or Cost-to-Income Ratio should also be used in measuring profitability to give multidimensional views.

It suggests future Case studies that would be in-depth and that would look into the aspects of how Tier III banks respond strategically to macroeconomic shocks such as through innovation, restructuring, or mergers and the effectiveness of the policies in stabilizing smaller financial institutions

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APPENDICES

APPENDIX I: List of Tier III Banks in Kenya

1. ABC African Banking Corporation Ltd.
2. Access Bank (Kenya) PLC
3. Bank of Africa Ltd.
4. CIB Kenya Bank Ltd
5. Consolidated Bank of Kenya Limited
6. Credit Bank PLC
7. Development Bank of Kenya Ltd
8. DIB Bank Kenya Ltd
9. Guaranty Trust Bank (Kenya) Limited
10. Guardian Bank Limited
11. Gulf African Limited Bank
12. Habib Bank AG Zurich
13. HFC Limited
14. Kingdom Bank Ltd
15. Middle East Bank (K) Ltd
16. M-Oriental Bank Kenya Ltd
17. Paramount Bank Ltd
18. Premier Bank Kenya Ltd
19. Sidian Bank Ltd
20. Spire Bank Limited
21. UBA Kenya Bank Ltd
22. Victoria Commercial Bank Plc

APPENDIX II: Data Collection Sheet

YEAR	GDP	INTEREST RATE	EXCHANGE RATE	INFLATION RATE	TOTAL ASSETS	PROFIT
2010						
2011						
2012						
2013						
2014						
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						

APPENDIX III: Institutional Scientific and Ethics Review Committee letter



THARAKA UNIVERSITY

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INSTITUTIONAL SCIENTIFIC AND ETHICS REVIEW COMMITTEE

8th August 2025.

REF: TUNISERC/NSEC/ M063
Dear, Martha Nyambura Mutugi

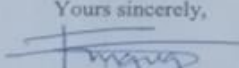
RE: Systematic Risk, Bank Size and Financial Performance of Tier III Banks in Kenya.

This is to inform you that *Tharaka University ISERC* has reviewed and approved your above research proposal. Your application approval number is *ISERC04023*. The approval period is *8th August 2025– 8th August 2026*.

This approval is subject to compliance with the following requirements;

- i. Only approved documents including (informed consents, study instruments, MTA) will be used
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by *Tharaka University ISERC*.
- iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to *Tharaka University ISERC* within 72 hours of notification
- iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to *Tharaka University ISERC* within 72 hours
- v. Clearance for export of biological specimens must be obtained from relevant institutions.
- vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vii. Submission of an executive summary report within 90 days upon completion of the study to *Tharaka University ISERC*.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI)
<https://research-portal.nacosti.go.ke> and also obtain other clearances needed.

Yours sincerely,

Dr. Fidelis Ngugi
Chair, ISERC Tharaka University



THARAKA UNIVERSITY
ETHICS COMMITTEE
08 AUG 2025
CHAIRPERSON
P.O BOX 193-60215, MARIMANTU

APPENDIX IV: Board of Post Graduate Studies letter

THARAKA P.O BOX 193-60215, MARIMANTI, KENYA	 The logo features an eagle with spread wings perched on a banner that reads "Education for Freedom". The words "THARAKA UNIVERSITY" are written in a circle above the eagle.	UNIVERSITY Website: https://tharaka.ac.ke Social Media: tharakauni Email: info@tharaka.ac.ke Phone : +254745 838 353
OFFICE OF THE DIRECTOR BOARD OF POSTGRADUATE STUDIES		
REF: TUN/BPGS/PL/08/25		8 th August 2025.
TO WHOM IT MAY CONCERN		
Dear Sir/Madam,		
RE: MARTHA NYAMBURA MUTUGI ADMISSION NUMBER CMT11/10089/23		
Ms. Martha Nyambura Mutugi is a postgraduate student at Tharaka University undertaking a Master Business Administration Degree . The student has completed her coursework and is expected to proceed for collection of data after successfully defending her proposal at faculty level. The title of the study is <i>"Systematic Risk, Bank Size and Financial Performance of Tier III Banks in Kenya."</i>		
Any assistance accorded to her will be highly appreciated.		
Thank you in advance.		
Yours faithfully,		
  The stamp is rectangular with a double border. Inside, it reads "THARAKA UNIVERSITY" at the top, "DIRECTOR BOARD OF POSTGRADUATE STUDIES" in the middle, and "08 AUG 2025" in red ink below that. At the bottom, it says "P.O. BOX 193-60215 MARIMANTI, KENYA".		
Dr. Ambrose Vengi, Ph.D. Director, Board of Postgraduate Studies.		

APPENDIX V: NACOSTI Research License

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 312168	Date of Issue: 15/September/2025
RESEARCH LICENSE	
	
This is to Certify that Ms. MARTHA MUTUGI NYAMBURA of Tharaka University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Tharaka-Nithi on the topic: SYSTEMATIC RISK, BANK SIZE AND FINANCIAL PERFORMANCE OF TIER III BANKS IN KENYA for the period ending: 15/September/2026.	
License No: NACOSTI/P/25/4179603	
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