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**FINANCIAL RISK MANAGEMENT, BANK SIZE AND COMMERCIAL BANKS
PROFITABILITY IN KENYA**

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Financial Risk Management, Bank Size and Commercial Banks Profitability in Kenya

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Abstract:

Purpose of the Study: This study examined the effect of financial risk management on profitability of Kenyan commercial banks, incorporating bank size as a moderating variable. It focused on credit, liquidity, interest rate, and foreign exchange risks, addressing inconsistent empirical findings and persistent profitability challenges within Kenya's banking sector despite existing regulatory frameworks and oversight.

Methodology: A quantitative research design using panel data was applied, covering eleven commercial banks in

Kenya from 2018 to 2024. Secondary data were extracted from audited financial statements and analyzed using a random effects regression model. Interaction terms were included to test the moderating role of bank size on profitability relationships.

Findings: The findings revealed that credit risk management has a positive and statistically significant effect on profitability at the 10% level, indicating that improved handling of non-performing loans enhances returns. Bank size was also positively significant at the 5% level, suggesting that larger banks benefit from economies of scale and stronger financial performance. However, liquidity risk, interest rate risk, and foreign exchange risk showed no statistically significant influence on profitability. Additionally, bank size demonstrated limited moderating effects, with only a weak interaction observed in the relationship between credit risk and profitability, while other interactions remained insignificant.

Conclusion: The study concludes that effective credit risk management and increased bank size are key drivers of profitability in Kenyan commercial banks. Other financial risks have limited direct impact. Strengthening credit risk practices and supporting asset growth are essential strategies, while future research should incorporate broader variables and evolving financial sector dynamics.

Keywords: *Financial Risk Management, Bank Size, Profitability, Credit Risk, Liquidity Risk, and Foreign Exchange Risk.*

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1. INTRODUCTION

Financial institutions are crucial to functioning regarding a good monetary system and a nation because they act as an intermediary amongst surplus/deficit sectors of a nation, facilitating allocation of funds for development, productivity and national development (Mashamba & Chikutuma, 2023). However, to provide this important service, banks must be profitable and stable. Effective financial risk management is therefore regarded very important in commercial bank management. Controlling financial risks is one of the factors of concern in profitability matters. The Basel Committee which was introduced in stages to tackle ongoing issues in finance sector and improve the resilience of the financial system has really done a commendable job regarding financial risk management. One of their principle advises that financial institutions, including commercial banks, should develop risk management frameworks—overseen by their boards—that correspond to their specific risk exposures and are suited to the scale and complexity of their operations is very critical. Globally, financial risk mismanagement reminds us of the huge impact of the 2008 & 2007 global crisis; It had impact on all nations and monetary systems around the world. Many banks and other financial institutions went bankrupt, companies collapsed, hundreds of thousands of people lost their jobs, billions of dollars in bailouts were given to banks and other companies, and some governments failed to honor their payments to debtors (Wood & McConney, 2015). The impact of this crisis is still enough to encourage banks to pay more for management financial risks.

Another significant regional issue that triggered a financial turmoil in Africa was the collapse of banking sector in West Africa, with Nigeria at its core, during the period from 2008 to 2012 (Egboro, 2022). The crisis stemmed from widespread deficiencies in financial risk management across several banks, including unchecked credit expansion, overexposure to the oil and equity markets, and the absence of robust risk evaluation mechanisms. These weaknesses were compounded by governance failures, insider-related lending, and poor internal oversight systems. In response, the Central Bank of Nigeria intervened by injecting over \$4 billion to rescue ten financially distressed banks in an effort to safeguard the broader financial system (Lawrence, 2023). This intervention came amid declining public trust in banks, restricted access to credit for businesses, and broader economic instability. Additionally, the effects of the crisis spilled into neighbouring Economic Community of West African States (ECOWAS) countries—such as Ghana, Benin, and Sierra Leone—where Nigerian banks operated (Oshewolo et al., 2023). To manage the crisis and regain public trust, Nigeria set up the Asset Management Corporation of Nigeria to take over bad loans, although this put extra strain on Nigeria public finances. The crisis highlighted the urgent need for effective risk governance and tighter regulatory frameworks to ensure financial system resilience across the African continent. A study by Ugah (2020) supports this, it revealed that; monetary risks management such as liquidity, forex rate risks have good influence to Returns on assets of Access Bank Nigeria. Their findings suggested that commercial banks should adopt measures that prevent financial risks because it will have a positive impact on bank profits.

Locally, in year 2023 Equity Group Plc. reported that their Profit After Tax was Kes. 43.7 billion, which was a five per cent decrease in comparison to Kes. 46.1 billion for the year 2022 (Equity Group Holdings, 2023). The bank said that it was attributed to non-performing loan



(NPL) which rose to 11.7 percent in 2023 from 7.7 percent in 2022. Equity bank loan loss provisions saw a more than twofold increase to move to Kes. 32.8 billion in 2023 from Kes. 13.7 billion in 2022. The banks' NPL coverage ratio increased to 67.3 percent, with a higher cost of risk of 4.4 percent compared to the previous 2.4 percent in year 2022. Pointing that Non-performing loans reduce interest income and necessitate higher provisioning, thereby negatively and directly affecting profitability.

Despite the growing importance of financial risk management, existing empirical studies present mixed findings on its relationship with bank profitability. Many studies tend to focus on individual risk components in isolation, while others overlook the potential influence of bank-specific characteristics. In particular, limited attention has been given to the moderating role of bank size in shaping the effectiveness of risk management practices, especially within the context of emerging economies such as Kenya.

This study addresses this gap by examining the effect of financial risk management on the profitability of commercial banks in Kenya, while incorporating bank size as a moderating variable.

Managing Financial Risks

Laldas and Patel (2019) stated that risk is a gauge of how uncertain an investment's future is. It is measured according to a specific measurement at a specific time. Management of financial risks therefore involves identifying risks and managing risks in the best possible way. Commercial banks carry out management of financial risks using instruments of finance to manage their risks. According to CBK prudential guideline 2 (CBK/PG/02) all Kenyan banks are responsible for developing financial risk management plans to identify risks, develop risk assessment tools, and improve the management of risk policies, procedures and other measures that can monitor risk areas and report risks promptly. This study focused on Interest, Exchange rates, liquidity and credit risks management.

In the banking sector, interest rate risk refers to vulnerability of financial stability to unfavourable change in interest rates. Embracing this risk management is a common practice and can contribute to profitability and shareholder value in the banking industry. However, the bank's profitability and financial situation may be negatively impacted by interest rate changes. According to Serrano (2024), a commercial bank's profitability is affected by interest rates changes, arising from maturities and repricing timings of assets and liabilities not perfectly matching. Liquidity risk is defined as potential risk to capital and earnings due to a bank's inability to meet its short-term financial obligations without incurring a loss (Peykani et al., 2025). This risk emerges when the liquid assets held by the bank are insufficient to cover its liabilities. According to Otworko and Maina (2021), a commercial bank faces illiquidity when it cannot adequately cover the repayment of deposits and other liabilities. The current ratio, adequacy ratio, quick ratio, and operating cash flow ratio are important indicators of liquidity risk.

On the other hand, credit risk is the likelihood that an indebted person will not be able to pay the loan on time due or failure to make the required payment as scheduled thus affecting bank's earnings. Therefore, credit risk mismanagement can result in an event of financial turmoil and



even a bank crisis. This research examined effects of good management of credit risks in relation to profitability of Kenyan banks and used NPL coverage ratio as a measure.

Commercial Banks Profitability

Profitability serves as an indicator of a business's earnings in comparison to its costs. Banks' profitability is exceptionally imperative for the typical working of commerce within a genuine economy. Commercial banks effectively realize their profit by allocating funds to enterprises that produce and invest, thus contributing to economic growth. Kenya Commercial Bank's ROA in percentages was 2.76, 2.6, 1.7, 3.3, 3.7, and 2.9 percent in 2018, 2019, 2020, 2021, 2022, and 2023 respectively, which shows an inconsistent trend in profitability (Kenya Bankers Association, 2025). This raises questions such as "are there bank that sink into losses in different times while others remain profitable?" Most studies to date on the profitability of commercial banks have used various models of measure on impacts of different aspects that could be important to explain profitability. For example, Vithessonthi (2022) did a study investigating consequences of income determinants on Asian countries banks. This study found out that banks size, ROA, and debt to asset ratio were positively significant while Loan-to-Deposit Ratio had significant negative effects. They also revealed that Earning to Asset and Debt to Equity Ratio had no impact on profitability.

Profitability can be measured using several other financial indicators apart from return on asset, including return on equity (ROE), and net interest margin (NIM). Among them, ROA is widely used in empirical banking studies as it captures the efficiency with which a bank utilizes its total asset base to generate profits. Unlike ROE, ROA is less influenced by a bank's capital structure, making it a more reliable measure for comparing performance across banks of different sizes. In this study, profitability is measured using return on assets (ROA) as the dependent variable. It is modelled as a function of key financial risk indicators, including non-performing loan coverage, liquidity ratio, net interest margin, and exchange rate volatility, with bank size incorporated as a moderating variable.

Role of the Bank Size

Bank size has long been associated with banks' profitability. However, there is no consensus from past studies on the impact of changes in bank size (including total assets, bank capital and customer deposits) on profitability in the banking sector. In this study, bank size was used as a moderate variable. According to Bhandari (2023), moderating variables impacts on the direction and strength of interaction, incorporating one into a study enables a researcher to look beyond a straightforward relationship between two variables and obtain a more comprehensive understanding of the real world. It was therefore important to consider bank size in this study. Alex (2003) investigated the relationship between bank size and its financial performance. He found that banks with larger deposit bases, greater net asset values, and higher capital levels had stronger financial performance. The findings suggested that bank size positively contributed to profitability, possibly due to economies of scale and enhanced operational capacity. Joseph et al. (2022) Bank size significantly influenced performance, confirming its moderating role.



Statement of the Problem

According to CBK annual report (2018), Kenya as an economy has seen turbulent moments in the banking sector; banks have collapsed, with even some put under CBK receivership'. Amidst evolving regulatory frameworks and economic conditions in many countries, understanding interactions between financial risks management, bank size, and profitability becomes increasingly pertinent. According to National Commercial Bank of Africa (NCBA) investment research report of 2023, the Kenyan banking industry recorded a reduction in pre-tax profits from KES 187 billion recorded in September 2022 to KES 177.8 billion recorded in September 2023. The drop in profitability was attributable to an increase in expenses compared to increase in income because of increase in loan loss provisions highlighting importance of credit risk management.

While numerous researchers have looked at interactions between specific financial risks against bank performance, gaps persist in understanding how comprehensive financial risk management strategies influence profitability, especially in the context of bank size. For example, Skender and Agnesa (2023) evaluated how effective risk management significantly influenced financial performance. Meliza, Norraidah, and Hermilasari, (2024) concluded that liquidity risk management produce positive effects on profitability. Their result too demonstrated that capital ampleness proportion can be utilized to moderate interactions amongst liquidity risk together with the benefit'. Anne (2022) concluded that effective credit risk management positively influences bank profitability. Further, it revealed that prudent liquidity risk management also contributes positively to operational efficiency and overall productivity.

A review of previous studies saw that they have a unique way of selecting their variables and therefore financial risk management and commercial bank profitability is not a small discussion to be handled by a few scholars. This area of study has many variables that can be studied to come up with the best financial risks managements' strategies to help improve financial institutions' profitability. Therefore, financial risk management and commercial bank profitability being a very wide research topic, this study focused to investigate how financial risks management strategies embraced by Kenyan banks and how they influence profitability, considering bank size effects on moderation. By examining these dynamics, this study guides on importance of effective management of risk to enhance banks profitability, thereby contributing to their resilience and sustainability.

Objectives of the Study

The research objectives are categorized into general and specific objectives as discussed herein. The General Objective of the Study was to determine the effect of financial risks management on the profitability of the Kenyan commercial banks. The Specific Objectives of the Study were:

- (i) To determine the effect of credit risk management on the profitability of the Kenyan commercial banks.
- (ii) To evaluate the effect liquidity risk management on the profitability of Kenyan banks.
- (iii) To determine the effect of interest rate risks management on the profitability of Kenyan banks.



- (iv) To determine the impact of exchange rate risks management on the profitability of Kenyan banks.
- (v) To assess the moderating effects of bank size on the interaction between financial risks management and profitability of Kenyan banks.

Research Hypotheses

The research adopted null hypothesis as follows:

- H_{01} : Credit risks management has no appreciable impact on Kenyan banks' profits.
- H_{02} : Liquidity risks management has no appreciable impact on Kenyan banks' profits
- H_{03} : Interest rate risk doesn't affect significantly the profitability of Kenyan banks.
- H_{04} : Exchange rate risk doesn't affect significantly the profitability of Kenyan banks.

Scope of the Study

The subject was between financial risks management, bank size and profitability of Kenyan commercial banks. Geographical scope of population studied contained 38 authorized trading Kenyan banks. The research covered a period of seven years; 2018 - 2024 considering banking sector economic significance and increase of monetary volatility between 2018 and 2024. On significance of the periodic scope on Kenyan banking industry, the banking industry is considered very important in Kenya because it facilitates flow of funds, saving mobilization and financial intermediation. Therefore, efficient financial risks management is important for the stability of these institutions and understanding how it evolved between 2018 and 2024 can have a broader implication for economic resilience. On the other hand, the period between 2018 and 2024 witnessed global and economic events that significantly impacted commercial banks. These included COVID, disruption of supply chain, interest rates/exchange rate volatility and inflation. Thus, how commercial banks managed financial risks to remain stable during this period could highlight lessons for future crises. The theories that the study focused on were asymmetric information theory, liquidity preference theory, International Fisher effect theory and finally economies of scale theory

2.0 LITERATURE REVIEW

Theoretical Review

The study is guided by the Akerlof theory of asymmetric information (George, 1970), the liquidity preference theory (Keynes, 1936), International theory of the Fisher effect (Fisher, 1930), and theory of economies of scale (Smith, 1800).

Liquidity Preference Theory

Keynes (1936) came up with the Liquidity preference theory, which was based on the concept that investors demand high interest rates on long-term securities because of riskiness associated with holding them. Reason being, all things being constant, investors prefer cash and/or other highly liquid assets. Therefore, a more liquid investment usually reaches their full value more easily and quickly in the market. This theory states that interest rates on short-term stocks are lower because investors in the market cannot trade more than they must invest in



long-term or medium-term businesses. Critics of this theory contend that, it oversimplifies the complex nature of how individuals make decisions regarding their money. Thus, this theory fails to consider various factors that influence people's choices. Liquidity preference was crucial for this research as it elucidates basic factors that affect banks' asset holdings. Consumers avoid high-risk banks because they prefer quality products, and they do this by keeping cash in banks with high interest rates. Therefore, the more liquid a bank is, the better its profit and overall performance.

International Fisher Effect

Fisher (1930s) introduced the theory of Fisher's effect, which highlighted the difference between the nominal interest rate of a country and foreign countries should be equal to the difference between the country and the money of different countries. The Fisher's Effect states that real interest rates are the same in many countries because the exchange rate in financial markets is generally realized on a capital basis. Real interest rate parity means that the interest rates of countries with low interest rates should also be low. Fisher theory has been found to efficiently work in several research for example by Bonham (1991) when examining the correct cointegration tests of the long-run relationship between nominal interest rate and inflation while Zainal et al. (2021) found its validity between nominal interest and inflation in Islamic money market in Malaysia. The theory is relevant in the study since banks use local and foreign exchange rates to predict future exchange rates and apply appropriate foreign exchange risk management strategies to reduce negative exchange rate expectations, which affects profitability.

Asymmetric Information Theory

George A. (1970) floated the asymmetric information theory and explained a condition where one party in a transaction is more informed about the transaction than the other. It postulated the challenge in distinguishing a good debtor from bad one, which can lead to bad choices and ethical problems referred to as adverse selection. In other words, borrowers have a relative informational advantage. Whilst in moral hazards problems borrowers invest or spend money carelessly, they might not be acting prudently in the lender's eyes thus leaving the banks in a relatively disadvantaged position. The theory assumes efficient-markets hypothesis and that one party can take advantage of another due to asymmetric information. Critics of the theory argue that signal errors may affect information asymmetries, and that people lack information about traders participating in events where the information text asymmetries are vague or incorrectly stated. Management of Credit risks in a bank is very crucial to its profitability. Therefore, the understanding of asymmetric information theory applied in the study helped us understand credit risks management strategies by banks and the relationship with profitability.

Economies of Scale Theory

This concept was advanced by Adam Smith (1800) postulating that per unit cost reduces with increase in the scale of production. The theory of economies of scale most accurately describes the connection between bank profitability and size. A large bank can spread the risk of its loan portfolio by lending to multiple borrowers, thereby reducing the cost of overcoming information asymmetries. Thus, large banks always benefit from economies of scale. This



theory is very important because it helps banks achieve better results using this concept, for example, large banks will increasingly benefit from cost savings, Mclean (2014). Amadeo (1994) proposes the theory of economies of scale because large banks will receive large, low-cost deposits from many customers. However, this theory assumes a perfectly competitive market whereby isn't possible in today's real global financial markets due to regulation, information asymmetries, market power, and the systemic importance of financial stability.

Empirical Reviews

An empirical review of literature encompasses the evaluation of previous studies that are similar to the one being proposed about acquiring the knowledge of their conceptualization, methodologies, contextualization, findings, and conclusions. This allows reproaches to determine the gaps to be filled with this study (Kothari, 2012). The focus was on independent variables and dependent variable for review of financial risk management, bank size and how they affect commercial bank profitability.

Credit Risk and Bank Profitability

In the area of credit risk, studies report a negative relationship between non-performing loans (NPLs) and profitability, as increased loan defaults reduce interest income and necessitate higher provisioning as follows;

Hambolu et al., (2022) conducted a study to examine the effect of credit risk on the Nigerian deposit money banks' profitability. Their study determined the causation of potential credit risk indicators of Nigerian banks from 2008 to 2018 using panel data for analysis of eleven banks. It adopted an ex-post facto research design, with the findings showing that the ratio of NPL had a negative relationship with profitability. However, its focus was solely on credit risk, thereby limiting the scope for understanding how other risk factors interact to influence performance.

Arifaj and Baruti (2023) explored credit risk on the financial performance of banks across Balkan countries. The study aim was to examine the effect of credit risk on the profitability of financial institutions. Using quantitative panel data methodology, the results of secondary data collected from 2010 to 2022 showed that effective loan portfolio management plays a critical role in enhancing profitability, particularly through minimizing exposure to bad debts. The study employed panel data drawn from secondary sources in the region, which operates within a more advanced banking environment compared to Kenya.

In the Kenyan context, Gitari, Mohamed, and Huka (2021) studied on credit risk management regulations and the profitability of the listed commercial banks. To determine effect of credit risk on profitability, the study used a descriptive research design. The findings indicated positive influence of sound credit risk management practices on profitability. A critique to this study is that it is unclear whether the study focuses on the effect of CBK regulations themselves or banks internal compliance practices with those regulations which weakens conceptual clarity.

Juma et al., (2018) also assessed the relationship between financial risk and bank operations. The study employed an explanatory design using panel data (2010–2015) from 42 Kenyan



banks, analyzed through panel regression and validated with diagnostic tests under the Enterprise Risk Management theory. Their study showed negative correlation between return on assets and credit risk. However, their study were conducted in 2018, and given the rapid evolution of the financial sector, more recent analyses are necessary to capture current credit risk–profitability dynamics.

Liquidity Risk and Bank Profitability

With respect to liquidity risk, the empirical evidence remains inconclusive. Some studies found that higher liquidity improves profitability by enhancing a bank's ability to meet short-term obligations and avoid financial distress. In contrast, other studies argue that excessive liquidity leads to idle resources, thereby reducing income-generating opportunities and negatively affecting profitability. These conflicting findings suggest the existence of a trade-off between liquidity and returns as outlined below;

Zaharum et al. (2022) carried out research to look into the connection between Malaysian banks' profitability along with monetary risk management. Information was sourced from yearly financial statements from sampled banks. Liquidity was used as an indicator of independent change, while ROA was utilized as an indicator of banks' profitability. Their conclusion was that banks should manage cash flow appropriately as required to meet their obligations and do need to manage excessive liquidity as it will hurt revenue generation'. However, a major weakness of this study is the failure to account for bank size being a moderating variable since it plays a critical role in explaining variations in profitability among commercial banks. Larger banks typically benefit from diversified portfolios, easier access to capital markets, and economies of scale, whereas smaller banks experience operational constraints or liquidity pressures.

Putri et al. (2025) in Indonesia evaluated the impact of cash movement efficiency and bank profitability using secondary data. They concluded that management of risk has 1% significance level beneficial impact on profitability. However, the study failed to include a moderating variable to test whether the relationship between liquidity and profitability changes are influenced by the size of the bank.

Odongo and Irungu (2023) analyzed the effect of capital adequacy on the financial performance of South Sudan banks using explanatory research design with regression on secondary panel data. Capital adequacy had positive effects on financial success. This means that an upsurge on liquidity adequacy meant an upsurge in financial success of banks in South Sudan. The research pointed out that too much of liquidity lowers profitability. This is because riskier assets are associated with higher returns unlike highly liquid assets which are associated with lower returns. However, this research ignores other financial risk factors and macroeconomic and institutional realities of South Sudan.

Abuga et al. (2023) analyzed liquidity capabilities and financial performance of Kenyan banks, in order to assess the impact of liquidity capacity on financial performance. The study used explanatory research design. According to their findings, liquidity gap has beneficial impact to the operating profit (ROA). Also, the income gap has little impact on the equity capital since ROA is not good when the money supply is expanding. Anchoring this study on Anticipated



Income Theory and Liquidity Preference Theory seems very suitable, as both theories address liquidity behavior and bank performance expectations. Nevertheless, their study did not fully explain how each theory specifically relates to the observed variables; for instance, how liquidity preference theory informs the behavior of banks under funding stress.

Interest rate Risk and Banks' Profitability

Net interest margin (NIM) has consistently been identified as a key determinant of bank profitability, given its role in measuring the efficiency of financial intermediation. Empirical studies generally report a positive relationship between NIM and profitability. On the other hand, the impact of exchange rate volatility on bank performance is less clear, with some studies indicating a negative effect due to increased uncertainty, while others find insignificant relationships, particularly in less internationally exposed banking system.

Wamalwa (2020) evaluated impacts of interest rate risk on of Kenyan banks' profitability by taking banks within county of Kakamega as an example. This project consisted of nine banks licensed and authorized to conduct banking business in the county. The findings underscored the importance of proactive interest rate risk strategies in stabilizing earnings and promoting sustainable profitability within the banking sector. Weaknesses of this study is that, it used primary and secondary data, but it is unclear how the questionnaire responses (primary data) were integrated with the financial performance data (secondary data). This lack of clarity makes replication difficult.

Bank Size and Bank Profitability

Regarding bank size, empirical evidence suggests that larger banks tend to exhibit higher profitability due to economies of scale, diversification benefits, and improved access to financial resources. However, some studies highlight the possibility of diminishing returns associated with increased size. Importantly, limited empirical attention has been given to the moderating role of bank size in the relationship between financial risk management and profitability, particularly in emerging market contexts such as Kenya as below.

Ongore and Kusa (2023) looked at how the size of banks affects how well Kenyan banks perform financially. The research uses auxiliary information accessed from CBK and KENBS websites between 2015-2019. Deposits from consumers, firm's capital plus total amount of money saved have a beneficial connection accompanying the bank's return on equity. Furthermore, the results obtained from this study reflected that size of banks have positive influence to ROA. Weakness identified is that Modern Portfolio Theory was not well suited to explaining firm-level profitability or bank size. This theory is more relevant to investment diversification, not firm-level structure.

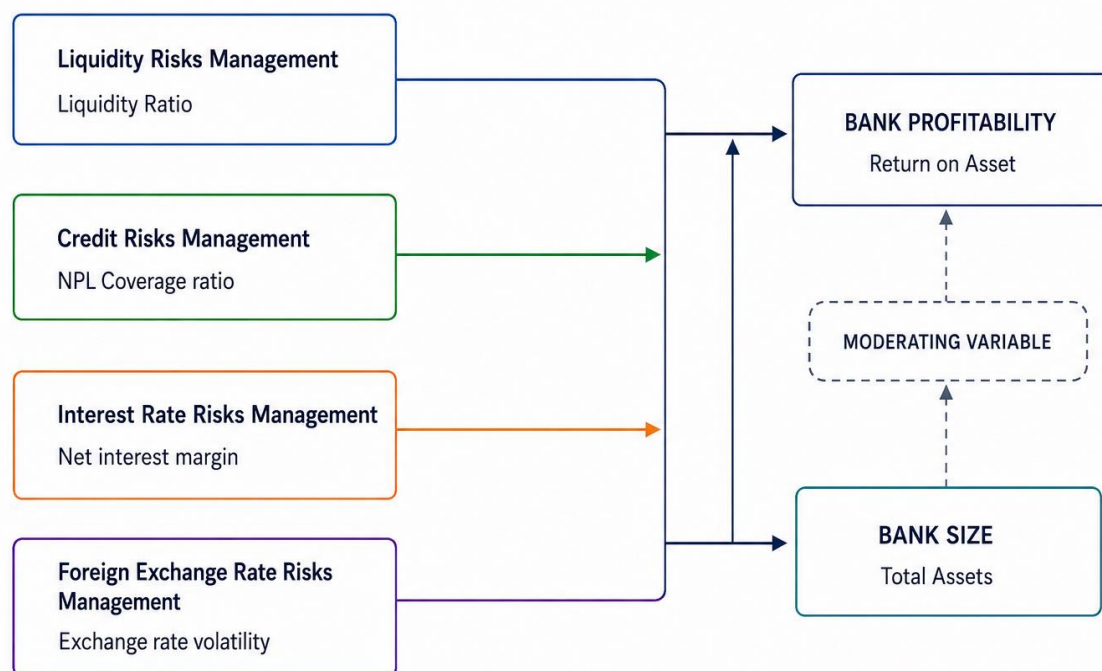
Foray and Bein (2025) analyzed the interaction among liquidity, interest rate, and performance of Nigerian banks, focusing on the moderating influence of the size of bank. It used an ex post facto research design, in analyzing data from twelve listed commercial banks in the Nigerian Stock Exchange. It also used macroeconomic indicators obtained from the WDI database from 2011 to 2020. Their analysis revealed that interest rates negatively affect bank performance, whereas loan interest rates and the loan-to-deposits ratio positively influence it. Although bank size was negatively associated with loans and deposits it strengthened the relationship between interest rate risk management and bank performance.



Gini and Benneth (2025) studied how of bank size impacted the financial performance of deposit money banks in Nigeria using panel data from 2012–2021. The study also examined how internal control mechanisms influence both bank size and performance. From the findings, total savings, agents, and customer deposits factors associated with bank size jointly contributed to improvements in financial efficiency. The gap identified in this study was that the operationalization of internal control adequacy was not fully explained — specifically, what components or proxies were used (e.g., internal audit ratio, internal control index?).

Conceptual Framework

The conceptual framework below represented the hypothesis interaction between financial risks management, bank size and profitability of Kenyan commercial banks. The conceptual model of the interactions of the variables and ideological framework was represented in the diagram below.



Independent Variables

Dependent Variable

Figure 1: Conceptual Framework

Source: Researcher, 2026

3.0 RESEARCH METHODOLOGY

Research Philosophy

This study was guided by the positivist research philosophy. It postulates that reality is objective and is best examined through empirical evidence derived from observable and measurable data. This approach was appropriate for quantitative analysis involving hypothesis



testing, as it emphasized empirical evidence gathered from secondary data on Kenyan commercial banks.

Research Design

A research design is the entire plan that guides the research work on how to go about answering its research questions (Sileyew, 2019). It contains hypothesis, data sources, limitations and ethical issues to be observed. The current study used a panel data analysis, focusing of 11 commercial banks in Kenya. This data covered seven-years spanning 2018 to 2024. This method helped track changes over time and find out how financial risk management practices affect profitability. It also considered the size of the banks when looking at these relationships.

Empirical Model

The Direct Effect Model

The panel data used for this research specified a panel regression model with a random effect as the best model. It used ROA as the endogenous variable to represent bank profitability. The four independent variables representing financial risk management were liquidity, credit, foreign exchange risks interest rate, and bank size, which was a moderating variable. The panel data regression model was used and specified as follows:

$$ROA_{it} = \beta_0 + \beta_1 NPL_{it} + \beta_2 LIQ_{it} + \beta_3 NIM_{it} + \beta_4 EXVOL_{it} + \beta_5 BS_{it} + \varepsilon_{it} \dots \dots \dots \text{(Equation 3.1)},$$

where, ROA represents Return on Assets, NPL represents non-performing loans, LIQ is Liquidity, NIM is net interest margin, EXVOL is exchange rate volatility, and BS is Bank size. β_0 is the model's intercept and β_i for $i=1,2,3,4, 5$ are models' unknown coefficients, and ε_{it} is random error term. The subscript i is individual bank, and t represents time in years for the respective individual banks's observations of the variables.

Test for the Bank Size as a Moderating Variable

To test for moderating effect, the study employed an interaction term between ROA, and each financial risk variable determine the moderating effect of bank size on bank's profitability. To test this, the study specified Equation (3.2) for analysis as below.

$$ROA_{it} = \beta_{10} + \beta_{11} NPL_{it} + \beta_{12} LIQ_{it} + \beta_{13} NIM_{it} + \beta_{14} EXVOL_{it} + \beta_{15} BS_{it} + \beta_{16} (NPL_{it} \times BS_{it}) + \beta_{17} (LIQ_{it} \times BS_{it}) + \beta_{18} (NIM_{it} \times BS_{it}) + \beta_{19} (EXVOL_{it} \times BS_{it}) + \varepsilon_{it1} \dots \dots \dots \text{(Equation 3.2)},$$

where, BS is the bank size, β_{10} is the model's intercept, β_i for $i=11, 12, 13,,19$, are the model's unknown coefficients.

Operationalization and Measurement of Study Variables

Table 1: Operationalization and Measurement of Study Variables

Variables		Operation	Measurements	Scales	Outcome



Profitability	Dependent	Ability of firm to generate financial returns. measured by ROA	ROA	Ratio	Positive/negative
Credit risk management	Independent	It is the risk associated with borrowers being unable to meet contractual debt obligations as stipulated in the lending agreement	NPL coverage ratio	Ratio	Positive/negative
Liquidity risk management	Independent	Liquidity risk is a risk associated with bank's failure to meet its short-term financial obligations.	Liquidity ratio	Ratio	Positive/negative
Interest rate risk management	Independent	This is the risk associated with chances of loss because of interest changes in interest rates.	NIM ratio	Ratio	Positive/negative
Exchange rate risk management	Independent	This is the possibility that an investment will lose value because of currency exchange	Exchange rate volatility Ratio	Ratio	Positive/negative
Bank Size	Moderator	Total amount of assets owned by the bank	Logs of Totals assets	Ratio	Positive/negative

Source: Researcher (2026)

Target Population

The study used all 38 licensed Kenya commercial banks operating between 2018 and 2024 in Kenya.

Sample Strategy

Sampling is defined as a statistical process involving choosing a representative sample from a population. Sampling method is important in ensuring validity and reliability of research findings. A purposive sampling was employed whereby 11 banks, with comprehensive



financial data covering all study variables across the period under review were selected. This sampling method ensured data quality and consistency for panel regression.

Data Collection Instruments

Data consists of facts, opinions, and statistics that are collected for analysis (Saunders, Lewis, and Thornhill, 2015). Secondary data is used when researchers have limited time and resources (Johnston, 2014). Therefore, in this study, a structured data extraction template was seen most suitable for gathering secondary data from the financial statements.

Data Collection Procedures

Quantitative data was used in this study. It was extracted financial reports of banks from 2018 to 2024. The study used data extraction form in appendix I to collect it.

Data Analysis method

Data analysis involves looking at, organizing, changing, and creating models from data to find key information, make decisions, or back up ideas with real evidence (David, 2022). A strong analysis and presentation of data for research should include several key components that systematically organize the findings, interpret the results and communicate insights clearly. This study used descriptive as well as inferential statistics for data analysis. For the descriptive statistics, they gave results for the total number of observations, minimum, mean, standard deviation, and maximum of the data. All inferential statistics data was obtained from a panel regression analysis for models specified in Equations (3.1) and (3.2) using the Random Effect Model.

4.0 RESULTS AND DISCUSSIONS

Descriptive Statistics

This is the foundation of quantitative research analysis as it attempts to provide a summary of the dataset characteristic. It provides the summary statistics such as measures of central tendency, dispersion and data distribution of the factors to the research.

Table 2: Summary of Descriptive Statistics

Names of study Variables	Observations	Mean	Standard Deviation	Minimum	Maximum
NPL coverage Ratio	77	0.5698	0.1786	0.12	0.99
Liquidity Ratio	77	0.4898	0.1951	0.2	1.0
NIM	77	0.0732	0.0224	0.03	0.16
Exchange rate volatility	77	0.0854	0.0863	0.0	0.25
Log of total Asset	77	0.1288	0.0474	0.03	0.25



ROA	77	0.0364	0.0242	-0.003	0.13
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Source: Research Data (2026)

The results showed that, NPL coverage ratio mean was approximately 0.5670, indicating moderate credit risk coverage among banks. Liquidity ratio displayed variation across banks, with some maintaining high levels of short-term asset cover. Net interest margin remained stable, reflecting the core earnings from interest-based activities. Exchange volatility ratio fluctuated modestly, pointing to moderate forex risk. Finally, the profitability metric, (ROA), showed some variation over the years, though largely consistent across institutions.

Correlation Findings

The correlation tests were conducted, and the results are shown below.

Table 3 Correlation Analysis Results

NPL Coverage Ratio	1.0000						
Liquidity Ratio	0.2316		1.0000				
Net Interest Margin	0.0867		-0.2908	1.0000			
Exchange Volatility Ratio	0.0796		0.0984	-0.0813	1.0000		
Log of Total Asset	-0.1518		0.0728	-0.2895	-0.1219	1.0000	-
Return on Asset	0.2535		0.2413	0.2391	0.1347	-0.3499	1.0000

Source: Research Data (2025)

The correlation analysis finding showed a weak linear association between all the exogenous variables and the endogenous variable. The Strongest correlation observed with the NPL coverage ratio at 25% followed by a negative correlation with the log of total asset at -35%. The liquidity ratio and net interest margin each showed a correlation of approximately 24%, while the exchange rate volatility ratio had the weakest association at 13%. Meaning that as



the bank covers more of its non-performing loans (NPLs), profitability (ROA) tends to increase slightly, as the bank size increases, ROA tends to increase, more liquidity (ability to meet short-term obligations) slightly improves ROA, higher net interest income and exchange rate were weakly associated with profitability.

Regression Findings.

The results of the regression analysis for Equation 3.1 and 3.2 are as below

4.3.1 Random Effects Regression Results (Without Moderation)

Table 4 Random Effects Regression Results

Variables	coefficient	Std.Err	T-stat	P-value	Lower CI	Upper CI
Constant	-0.0122	0.0151	-0.8033	0.4244	-0.0423	0.0180
NPL coverage Ratio	0.0276	0.0141	1.9550	0.0545	-0.0005	0.055
Liquidity Ratio	0.0307	0.0170	1.8118	0.0742	0.0031	0.0646
NIM	0.1309	0.1135	1.1537	0.2525	-0.0953	0.3571
Exchange Volatility Ratio	0.0281	0.0240	1.1743	0.2441	-0.0196	0.0759

Source: Research Data

Among the predictors, only the NPL coverage meaningful at the 10% indicating a tangible influence on profitability. The remaining variables—liquidity ratio, net interest margin, and exchange rate volatility ratio—were not statistically significant at either the 5% or 10% thresholds, suggesting that they did not exert a strong effect on bank profitability.

Random Effects Model Results (With Bank Size- Equation 3.2)

Bank size as a moderator as specified in Equation (3.2) showed that it was statistically significant at the 5% level. Its coefficient was 0.012, suggesting the tendency for larger banks to have higher profitability. The significance of NPL remained at 10%, confirming its negative influence on profitability. This implies that bank size is a moderating variable of financial risks and profitability.

Hypothesis Testing

The five hypotheses regarding the relationship between various aspects of financial risk management and profitability and included the moderating role of bank size were as follows:



The first hypothesis (H_{01}), which stated that credit risk management had no significant effect on profitability, was rejected at the 10 percent level ($p = 0.0545$). The coefficient implied that better credit risk management is associated with higher profitability. NPL coverage remained significant even when bank size was included as a moderating variable. The second hypothesis (H_{02}), which proposed that liquidity risk management has no significant effect on profitability, was not rejected since its p-value was above 10 percent level. This indicated that changes in liquidity levels do not significantly influence ROA. Including bank size in the model did not change this outcome, showing no moderating effect. Similarly, the third hypothesis (H_{03}), was also not rejected because net interest margin showed no significant relationship with profitability, and bank size did not alter this relationship either. The fourth hypothesis (H_{04}), concerning exchange rate risk management measured by exchange rate volatility, was likewise not rejected, indicating that exchange rate fluctuations do not significantly impact profitability, and bank size again had no moderating influence. However, the fifth hypothesis (H_{05}), which tested whether bank size affects profitability, was rejected at the 5 percent level. Bank size had a positively significant effect on bank's profitability, likely due to economies of scale. Although bank size had a strong direct effect, it does not significantly moderate the influence of the individual risk factors on profitability—except for a weak interaction with NPL coverage, where the positive effect remained stable.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The Summary of Study Findings.

The study set out to find how different financial risks of exchange rate, liquidity, credit, and interest rate risks, affect the profitability of commercial banks in Kenya. It also examined whether bank size moderates these relationships. The conclusions drawn from the correlation and regression analyses are presented below, based on each hypothesis.

Hypothesis H_{01} : credit risk management does not significantly influence profitability. Credit risk measured by NPL coverage ratio showed a positive correlation with profitability indicating that better credit risk control is associated with higher profitability. Regression analysis reinforced this observation, with a positive coefficient.

Hypothesis H_{02} : Liquidity risks did not significantly affect bank profitability. Liquidity was measured using the liquidity ratio. The correlation results showed a slight positive relationship with profitability, but this effect was weak. Thus, the null hypothesis was not rejected, hence implying that variations in liquidity management were insignificant on bank profitability.

Hypothesis H_{03} : There is a non-significant effect of interest rate risk management on the commercial bank's profitability. This was tested using the net interest margin as a proxy. A moderate positive relationship was observed in the correlation analysis, hinting that banks with higher net interest margins may achieve better returns. But the on-output regression did not show significance even at 10 percent level, thus the third null hypothesis was not rejected.

Hypothesis H_{04} : Exchange rate risk management does not significantly affect profitability. Exchange rate volatility served as the indicator for this type of risk. The correlation analysis revealed a negative relationship with profitability, implying that greater exchange rate fluctuations may harm bank performance. Despite this, regression analysis showed no statistically significant effect ($p > 0.10$).



Lastly, the moderating role of bank size was statistically significant. This suggested that larger banks compared to smaller banks are more profitable. Additionally, the interaction between bank size and credit risk management revealed a strengthening effect, implying that the benefits of managing credit risk are more pronounced in bigger banks, likely due to their operational scale and enhanced capacity to absorb shocks.

Conclusion

From the statistical evidence of the data analysis in relation to its objectives and corresponding hypotheses, the study drew its conclusions as follows: Credit risk management positively influences bank profitability. In contrast, liquidity risk management showed only a modest positive association with profitability, which was not significant at 10 percent level, and thus the null hypothesis (H_{02}) could not be rejected. Similarly, interest rate risk management exhibited insignificant positive effect on profitability. Lastly, there was a negative association between exchange rate risk management and profitability, implying that higher foreign exchange risk may reduce returns; however, this effect was not significant at any of 1, 5 or 10 percent level. Hence, the null hypothesis (H_{04}) was not rejected.

Larger banks appear to leverage better infrastructure, advanced risk management systems, and economies of scale, enabling them to benefit more from sound credit risk practices. Overall, the study concludes that while credit risk management significantly contributes to bank profitability, other financial risk management practices of liquidity, interest rate, and exchange rate had no direct impact. Bank size emerged as a critical factor, both directly enhancing profitability and moderating the effectiveness of credit risk management.

Policy Recommendations

Credit risk management practices need to be strengthened by commercial banks, particularly focusing on reducing NPL through better borrower assessment and monitoring. They are also encouraged to expand and grow assets, as larger banks exhibit stronger profitability resilience. On the regulators' side, like CBK, they should introduce guidelines that support efficient risk management, especially tailored to smaller and mid-sized banks. Bank should also encourage innovation in risk modeling and data analytics to better capture and respond to the volatility of interest and exchange rates effects.

Suggested Areas for Further Research

Future studies should consider including more banks and expanding the time horizon to improve explanatory power. Investigate the dynamic effects of macroeconomic factors (e.g., inflation, GDP growth) as control variables and apply qualitative methods (e.g., interviews with risk managers) to explore organizational factors influencing risk responses. Finally, examine how digital transformation and fintech integration impacts risk management effectiveness and profitability.

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