

**OFF-BALANCE SHEET ACTIVITIES, BANK SIZE AND FINANCIAL PERFORMANCE
OF COMMERCIAL BANKS LISTED ON NAIROBI SECURITIES EXCHANGE IN
KENYA**

BY

JULIANA NDAVI

MASTER OF SCIENCE IN COMMERCE (FINANCE AND ACCOUNTING)

2025

**OFF-BALANCE SHEET ACTIVITIES, BANK SIZE AND FINANCIAL PERFORMANCE
OF COMMERCIAL BANKS LISTED ON NAIROBI SECURITIES EXCHANGE IN
KENYA**

BY

JULIANA NDAVI

**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE IN COMMERCE
(FINANCE AND ACCOUNTING) DEGREE IN THE SCHOOL OF BUSINESS AT KCA
UNIVERSITY**

DECEMBER 2025

DECLARATION

I declare that this dissertation is my original work and has not been previously submitted or published elsewhere for ward of degree. I also declare that this contains no material by other people except where due reference is made author duly acknowledged.

Student Name _____ Juliana Ndavi _____ Reg No. ____ 16/09129 _____

Sign _____ Date _____

I do hereby confirm that I have examined the dissertation of

JULIANA NDAVI

And have approved it for examination

Sign _____ Date _____

Dr. Peter Njuguna

Dissertation supervisor

KCA University

ACKNOWLEDGEMENT

I wish to express my heartfelt gratitude to Dr. Peter Njuguna, and Dr. Charles Githira for their invaluable guidance, encouragement, and insightful feedback throughout the development of this thesis. Their expertise and mentorship have been instrumental in shaping my research and academic growth.

My deepest appreciation goes to my husband, Rogers Nyaoro, for his unwavering love, patience, and support during this journey. To my beloved children, Miracle and Angel, thank you for your understanding and for being my greatest source of joy and inspiration.

I am also profoundly thankful to my mum and dad for their constant prayers, encouragement, and belief in me. Their love and sacrifices have been the foundation of my strength and perseverance.

Finally, I extend my gratitude to all those who, in one way or another, contributed to the successful completion of this work.

ABSTRACT

Kenyan commercial banks occupy a central position in the country's financial ecosystem, facilitating market guarantees, capital mobilization, and economic development through regulated and inclusive financial intermediation. Off-balance sheet activities, have been associated with financial performance in different contexts. Therefore, this study seeks to address the existing gap in empirical literature by investigating the manner in which off-balance sheet activities relate to commercial banks listed on NSE in Kenya. The specific objectives were; to find out the effect of trade finance, guarantees, and letters of credit on performance of publicly listed banks in Kenya, and to establish the moderating effect of bank size on the effects between off-balance sheet activities and the commercial banks listed on NSE in Kenya. The theories anchoring the study included; Resource-Based View, Capital Asset Pricing Model as well as the Signalling Theory in addition to the Concentration–Fragility Theory. In the research, causal research design was employed based on panel approach, The research targeted the 11 publicly listed banks in Kenya from the year 2015 to 2024 To facilitate systematic data gathering, a structured data extraction sheet was designed to capture the relevant variables from the secondary sources. Descriptive statistics were utilized to summarize the data, which was presented on frequency tables. Using a Dynamic Panel-Data regression model, at 5% significance level, a model was obtained to predict financial performance of the banks in terms of Off-balance sheet activities. The data was tested for diagnostic tests, which included normality as well as multicollinearity together with heteroscedasticity in addition to autocorrelation, stationary and Hausman Test. The research ethically conducted through adhering to the highest standards of academic integrity and ethical research practice. The study concludes that; trade finance plays a significant positive role the financial performance of commercial banks listed on the NSE, guarantees have a positive and significant effect on bank financial performance, , and letters of credit also positively affect bank financial performance, which confirms that these off-balance sheet instruments are valuable tools to enhance profitability and support banking operations. The study reveals that bank size has positive effects on financial performance independently though it does not play a moderating role on the OBS-performance link. Based on the findings, the research recommends that publicly listed commercial banks should; strategically expand their trade finance offerings, focus on tailoring guarantee products to match client needs, strengthen their letters of credit services, particularly for clients engaged in international trade or corporate financing, as LCs improve profitability and support liquidity management. Policy guidance could focus on providing frameworks that enable smaller banks to participate in OBS activities without disproportionate risk exposure.

Keywords: Commercial Banks, Financial Performance, Guarantees, Letters of Credit, Off-Balance Sheet Activities, Trade Finance

TABLE OF CONTENTS

DECLARATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
DEDICATION	vii
LIST OF TABLES	ix
LIST OF FIGURES	x
ACRONYMS AND ABBREVIATIONS	xi
OPERATIONAL DEFINITION OF TERMS	xiii
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background of the study	1
1.2 Problem Statement	13
1.3 Objectives the study	16
1.4 Research Hypothesis	16
1.5 Justification of the Study	17
1.6 Significance of the Study	18
1.7 Scope of the Study	19
CHAPTER TWO	21
LITERATURE REVIEW	21
2.1 Introduction	21
2.3 Empirical Review	31
2.4 Conceptual Framework	46
2.5 Operationalization of study variables	48
CHAPTER THREE	49
RESEARCH METHODOLOGY	49
3.1 Introduction	49
3.2 Research Design	49
3.3 Target Population	50
3.4 Data Collection Tool	50
3.5 Data Collection Procedures	51
3.6 Data Processing and Analysis	52
3.7 Diagnostic Tests	56
3.8 Ethical Considerations	60
CHAPTER FOUR	61
DATA ANALYSIS, FINDINGS AND DISCUSSIONS	61
4.1 Introduction	61
4.2 Response Rate	61
4.2 Descriptive Analysis	62
4.3 Dynamic Panel-Data (DPD) Regression Model	70
4.4 Discussions	95
CHAPTER FIVE	108
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	108
5.1 Introduction	108
5.2 Summary of Findings	108
5.3 Conclusions	110

5.4 Recommendations	112
REFERENCES.....	114
APPENDICES	124
Appendix I: Letter To Bankss.....	124
Appendix II: Data Collection Tool	125

DEDICATION

This work is dedicated to my loving husband, Rogers, whose unwavering support, patience, and encouragement have carried me through every step of this journey.

To my precious children, Miracle and Angel, you are my greatest inspiration and the reason I strive to be better each day.

And to my dear mum and dad, whose love, prayers, and sacrifices have shaped the person I am today this achievement is as much yours as it is mine.

LIST OF TABLES

TABLE 1 Operational Framework	48
TABLE 2 Target Population	50
TABLE 3 Decision Criteria for Moderation	55
TABLE 4 Analysis by Response Rate	62
TABLE 5 Descriptives for Off-Balance Sheet Activities and Financial Performance.....	63
TABLE 6 The Shapiro–Wilk W Test Results.....	71
TABLE 7 The Shapiro–Wilk W Test Results after Normalisation	73
TABLE 8 Results on Multicollinearity	74
TABLE 9 Results on Stationary Test.....	77
TABLE 10 Hausman Test Results	79
TABLE 11 Off-Balance Sheet Activities and Financial Performance Model.....	81
TABLE 12 Dynamic Panel-Data Estimation, Two-Step System GMM	84
TABLE 13 OBS and Financial Performance.....	88
TABLE 14 Moderating Effect of Bank Size on OBS and Financial Performance.....	91
TABLE 15 Moderating Effect in Presence of Control Variables	93

LIST OF FIGURES

FIGURE 1 Conceptual Framework	47
FIGURE 2 Moderating Effect.....	54

ACRONYMS AND ABBREVIATIONS

ADF	Augmented Dickey-Fuller
AR	Autocorrelation
BIC	Bayesian Information Criterion
CAPM	Capital Asset Pricing Model
CBK	Central Bank of Kenya
CSR	Corporate Social Responsibility
DMBs	Deposit Money Banks
DPD	Dynamic Panel-Data
ERC	Ethical Review Committee
EVA	Economic Value Added
FE	Fixed Effects
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
LCs	letters of credit
LLC	Levin-Lin-Chu
NACOSTI	National Commission for Science, Technology and Innovation
NIM	Net Interest Margin
NPL	Non-Performing Loans
OBS	Off-Balance Sheet
OBSAs	Off-Balance Sheet Activities
OLS	Ordinary Least Squares
RBV	Resource-Based View

RE	Random Effects
ROA	Return on Assets
ROE	Return on Equity
SMEs	small and medium-sized enterprises
U.S.	United States
VIF	Variance Inflation Factor
VRIN	Valuable, Rare, Inimitable, And Non-substitutable
WMP	Wealth Management Products

OPERATIONAL DEFINITION OF TERMS

Bank size is defined through a weighted composite index that considers total assets, customer deposits, ownership structure, and the number of deposit and loan accounts (Konya, 2018).

Financial performance is defined as an organization's ability to deliver exceptional financial services with maximum efficiency, achieving service excellence while preserving cost-effectiveness and long-term profitability (Duong et al., (2024).

Guarantees are financial obligations that a company or institution has made, but which do not appear directly on its balance sheet as liabilities (Saifi & Khouiled, 2024)

Letters of Credit are financial instruments issued by a bank on behalf of a customer (usually a buyer), guaranteeing payment to a seller if certain conditions are met, typically the delivery of goods or services as agreed in a contract (Alwi et al., 2022)

Off-balance sheet activities refer a bank activities or transactions that do not appear directly on the bank's balance sheet as assets or liabilities but represent contingent liabilities or potential future obligations (Saifi & Khouiled, 2024)

Trade finance refers to any obligations or promises to pay money, either now or in the future. These can be formal or informal and typically involve regular payments or a set amount due over time (Berrahal, 2025)

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

In practices, the financial performance concept takes central position in the operations and sustainability of commercial banks (Haruna & Garba, 2025; Smolina et al., 2025). It represents the ability of a bank to achieve sustainable profits as well as its ability to achieve long-term growth (Alslaibi et al., 2025). In the evolving financial world, with greater market uncertainty, the function of alternative income-producing activities is taking centre, with off-balance sheet (OBS) activities experiencing remarkable expansion as leading instruments for driving financial performance of commercial banks at large (Berrahal, 2025; Ahmed & Rozario, 2024). Consequently, modern commercial banks are integrating a range of sophisticated OBS instruments, including, loan commitments, guarantees, derivatives, and letters of credit, into financing operations and development policies (Dan et al., 2024). While not reflected in the balance sheet, these products are important financial exposures and revenue opportunities that can potentially radically impact a bank's risk profile, capital structure, and general financial health.

While global interest in OBS activities is rising, empirical exploration of their impact on financial performance in the Kenyan banking sector remains scarce. Although numerous studies have approached this relationship in different economic settings, consistent and definitive body of evidence has yet to be established for Kenya. This absence of local empirical findings identifies a significant knowledge gap with regard to how OBS activities contribute to bank profitability in developing financial systems. Globally, outcomes have varied and been context-dependent, reflecting the complexity of the relationship. For instance, Chen et al. (2023) established a positive and significant relationship between OBS activities and profitability for Chinese banks, which

suggests that these instruments can enhance performance when supported by strong institutional and regulatory frameworks. In contrast, Okonkwo and Ugochukwu (2022) found no discernible effect of OBS activities on financial performance in Nigerian banks, referring to possible structural or operational limitations in that market. Similarly, Yousif et al. (2023) demonstrated that in Middle Eastern markets, OBS activities were linked to increased risk exposure without yielding noticeable performance gains. These divergent empirical findings highlight the role played by contextual contingencies, such as regulatory settings, market development, and institutional capacity, in moderating the OBS activity-financial performance relationship. The Kenyan context therefore presents a compelling case for detailed investigation, not only to fill the existing knowledge void but also to produce policy-useful insights capable of informing banking strategy and regulatory policy in developing economies.

In East Africa, Mutua & Njuguna (2023) examined Kenyan banks but focused principally on derivatives and not other OBS instruments like loan commitments and guarantees. Their investigation did not also examine moderating factors like bank size, which could have a substantial effect on how institutions manage and benefit from OBS exposures. Similarly, Owino et al. (2022) identified a correlation between profitability and utilization of OBS but only in Tier 1 banks, excluding smaller banks in which OBS effects may be different. These empirical constraints underscore the need for a more varied and comprehensive observation on OBS operations and financial performance in a representative sample of commercial banks in Kenya. Moreover, the potential moderating role of bank size in that operations remain obscure despite its theoretically important.

The unique regulatory framework, financial system, and market environment of Kenya mean that part of the results of other regions may not be entirely generalizable. Secondly, existing

literature mostly overlooks the possibility that bank size can influence the way OBS activities affect financial performance, perhaps moderating the relationship's strength or direction (Asrori et al., 2024). These empirical gaps necessitate a rigorous, localized, and context-specific investigation into the manner that OBS activities relate to banks' financial performance, with particular emphasis on firm-level characteristics such as size. Addressing this critical research need, the present study explicitly examines the relationship between OBS activities and the financial performance of commercial banks listed on the Nairobi Securities Exchange (NSE) in Kenya. In addition, it interrogates the moderating role of bank size, thereby offering a more nuanced and comprehensive understanding of how organizational scale influences the financial implications of OBS activities in an emerging market context. This focused approach positions the study to make both theoretical and practical contributions to banking strategy and financial performance management in Kenya's evolving financial sector.

1.1.1 Financial performance

The cornerstone of business reality is financial performance, which enables decision-makers to define operational standards, align strategic objectives, and evaluate risk exposure (Alslaibi et al., 2025). Financial performance is defined as an organization's ability to deliver exceptional financial services with maximum efficiency, achieving service excellence while preserving cost-effectiveness and long-term profitability (Duong et al., (2024). In the banking industry, it represents a bank's capacity to turn a profit, run effectively, and build lasting value; it serves as an essential standard for regulatory oversight, investor confidence, and internal governance (Samara & Nassar, 2023; Kayed et al. (2025)

Globally, banking institutions are increasingly realizing that achieving their core goal, maximizing shareholder wealth, is inextricably related to maintaining outstanding financial

performance (Herlambang et al., 2020). Organizations are always pursuing a variety of initiatives aimed at improving the financial performance of their operations. (Nguyen et al., 2023) These efforts frequently include improving resource allocation, streamlining procedures, using sophisticated technology, decreasing operational inefficiencies, and implementing data-driven decision-making. Companies that focus on these areas hope to increase profitability, productivity, and competitiveness in a dynamic and challenging economic environment (Alslaibi et al., 2025).

Regionally, South Africa, widely recognized as the most advanced economy on the African continent, hosts a mature and highly regulated banking sector. Commercial banks in the country operate within a robust institutional and supervisory framework that emphasizes prudential standards, guarantees, and financial stability. Financial performance in the banking sector in South Africa is influenced by a powerful mix of macroeconomic drivers, including interest rate cycles, economic growth trajectories, and regulatory compliance expenses. Despite increasing competitive pressure from local and international players, South African banks have remained profitable, strategically agile, and operationally resilient, underscoring the institutional maturity and structural robustness of the industry.

On the contrary, Ethiopia's banking sector is comparatively underdeveloped, albeit fast developing. As indicated by Birhanu et al. (2021), structural bottlenecks, such as restrictive regulatory regimes, limited access to long-term capital, and underdeveloped financial infrastructure, continue to suppress profitability. Such a glaring contrast underscores the fundamental significance of institutional depth, regulatory flexibility, and market maturity in shaping financial performance across different banking environments. Nonetheless, the sector shows substantial promise, buoyed by sustained economic growth, demographic expansion, and increased financial inclusion efforts. Ongoing reforms and modernization initiatives are

progressively positioning Ethiopia's financial institutions for broader participation in regional and international markets.

In Kenya, the banking sector stands out for its dynamism, competitiveness, and rapid technological transformation. Pits financial performance is driven by a combination of structural and innovation-led factors. Prominent among these is the country's pioneering mobile banking ecosystem, which has revolutionized the delivery of financial services and significantly expanded access among previously underserved populations. Additionally, diaspora remittances continue to bolster foreign exchange reserves and liquidity, while a vibrant entrepreneurial landscape fuels consistent demand for credit and other financial products (Gitari et al., 2021). Kenyan banks have demonstrated exceptional resilience and strategic acumen, using advances in digital finance to expand product, enhance operating efficiency, and deepen customer ties. Beyond domestic markets, ambitious regional expansion efforts have established Kenyan banks as market leaders in the East and Central Africa region and solidified Kenya as a top regional financial hub.

Commercial bank profitability is stringently scrutinized through crucial profitability ratios such as Return on Assets (ROA), Return on Equity (ROE), Economic Value Added (EVA), and Net Interest Margin (NIM) (Smolina et al., 2023). These measures provide a comprehensive and multi-dimensional insight into institutional performance, reflecting operating efficiency as well as shareholders' value creation.

More specifically, ROA is an important measure of the effectiveness of a bank's manager, reflecting how effectively an institution uses its entire asset base to create net income. In turn, ROE measures the returns earned on shareholders' equity, thus being a core indicator for investors to evaluate the profitability and ability of their capital to create value (Ayieko & Aluoch, 2025).

Significantly, the variations between ROA and ROE are heavily dependent on variations in financial leverage, with ROE being heightened by the asset-to-equity relationship, hence providing a powerful instrument for financial structure, profitability, and hidden risk exposure analysis (Ngari, 2021). The interaction provides insight into how Kenyan banks strategically manipulate leverage and utilization of assets to ensure competitive performance within an increasingly dynamic financial landscape.

Muthoni et al. (2020) argue that while ROA is widely recognized as a foundational benchmark for profitability, ROE offers complementary insights that validate and enhance interpretations drawn from ROA. Consistent outperformance in both ratios is often reflective of sound financial management and strategic acumen. Furthermore, institutions that maintain positive earnings and employ prudent debt financing often exhibit higher ROE levels, underscoring the strategic role of leverage in enhancing equity returns. Despite the availability of multiple performance indicators, this study will adopt ROA in measuring performance. ROA is not only methodologically robust and easy to compute, but also facilitates meaningful comparisons across banks of varying sizes and capital structures. Its utility lies in its capacity to capture both financial performance and operational effectiveness in a single, interpretable measure.

1.1.2 Off Balance Sheet Activities

Off-balance sheet (OBS) activities represent significant areas of business for a bank, comprising transactions and commitments which, while not treated as direct assets or liabilities on the balance sheet, have significant financial implications. These do not appear as recorded assets or liabilities but nonetheless bear significant implications for banks' risk exposure, profitability, and capital adequacy (Saifi & Khouiled, 2024; Dan et al., 2024). OBS instruments directly influence a bank's asset allocation decisions, loan supply dynamics, and its role in the transmission mechanism of

monetary policy, especially through the lending channel (Dan et al., 2024). The growing reliance on OBS activities is partly motivated by regulatory arbitrage and tax avoidance, as banks strategically leverage these instruments to bypass capital and liquidity requirements without violating formal regulatory constraints (Fadli & Debbi, 2021). Additionally, they serve as a sophisticated risk management mechanism, enabling institutions to hedge against credit, interest rate, and foreign exchange volatility.

Globally, the magnitude and economic influence of OBS instruments have attracted substantial scholarly and policy attention. In the United States, for example, approximately 70% of loans to small and medium-sized enterprises (SMEs) are facilitated through OBS credit lines, of which nearly one-third (31%) are unsecured (Dan et al., 2024). The systemic importance of such exposures was underscored in 2010 when Citibank's OBS assets alone amounted to over \$960 billion, approximately 6% of the United States (U.S.) Gross Domestic Product (GDP) at the time (Teixeira, 2013). In China, the complexity of OBS operations is reflected in their diverse forms, including Wealth Management Products (WMPs) (Hachem & Song, 2016), entrusted loans (Chen et al., 2018), and securitization vehicles (Segura & Zeng, 2020). These instruments are closely integrated with the country's broader shadow banking system, creating intricate financial linkages that challenge traditional regulatory oversight (Zhang et al., 2020). The significance of OBS activities extends to emerging markets as well. In Bangladesh, where the banking sector grapples with high levels of nonperforming loans, capital inadequacy, and increasing regulatory scrutiny, understanding the role and risks of OBS exposures has become imperative for financial stability (Ahmed & Rozario, 2024).

Regionally within Africa, commercial banks have increasingly turned to OBS instruments such as loan commitments, performance guarantees, agency services, and securitizations to

supplement their lending capacity. These instruments not only allow banks to generate substantial fee-based income but also reduce dependence on traditional interest-driven revenues. In Ethiopia, for instance, OBS activities have steadily grown in response to competitive market dynamics and declining concentration ratios. Banks there have diversified their revenue sources through such instruments as part of a broader strategy to enhance financial resilience and profitability (Kasa, 2013). A growing body of empirical evidence underscores the increasing prominence of OBS activities within the operational and strategic frameworks of commercial banks, particularly in emerging markets. In a detailed analysis of the Nigerian banking sector, it was observed that several banks engaged in OBS transactions equivalent to approximately 46% of their gross loan portfolios (Uzoma et al., 2020). This heightened involvement correlated positively with improved profitability, yet it was accompanied by relatively low loan-loss provisioning, such as Zenith Bank's 15% provisioning rate, indicating a potential elevation in credit risk exposure.

In a broader continental context, Keffala (2024) conducted a statistical investigation which revealed that African financial institutions tend to employ OBS instruments, mainly guarantees and letters of credit, moderately. These banks generally exhibit satisfactory financial performance indicators and appear only marginally exposed to credit risk. However, the empirical results suggest that while OBS activities may intensify credit risk, this effect can be mitigated when such instruments are employed conservatively and with sound risk governance.

Beyond their traditional roles of deposit-taking and loan issuance, banks increasingly engage in OBS activities to enhance profitability and strategically manage balance sheet exposures (Dan et al., 2024). These financial strategies are designed to generate income or transfer risk without directly appearing on the bank's balance sheet, although they nonetheless create contingent liabilities or obligations (Saifi & Khouiled, 2024). Common OBS activity measures

include trade finance, performance guarantees, letters of credit, and financial derivative (Dan et al., 2024).

Trade finance, such as undrawn loan facilities, obligate banks to provide funding at a future date, typically contingent on the failure of a third party to fulfill contractual terms. In such cases, the bank assumes financial responsibility, creating a latent risk that is not immediately visible on its balance sheet (Berrahal, 2025; Ahmed & Rozario, 2024). These contracts often originate from agreements with external entities, forming legally binding obligations without a corresponding recorded liability.

Guarantees, particularly letters of guarantee, constitute the most prevalent category of OBS instruments. The bank provides a financial assurance to a third party that it will fulfill obligations in the event of a default by the client being guaranteed. These instruments are integral to commercial transactions, as they serve to reduce counterparty risk and foster trust in business dealings (Saifi & Khouiled, 2024; Kumar, 2020).

Letters of credit play a crucial role in international trade finance. Issued by a bank on behalf of an importer (buyer), they serve as a payment guarantee to the exporter (seller), conditional on the submission of specified shipping documents and adherence to agreed terms (Alwi et al., 2022). Typically, this transaction involves four key parties: the buyer, the seller, the issuing bank, and the advising bank. As Youssef (2019) notes, letters of credit provide an effective mechanism for ensuring timely payment, subject to the seller's compliance with all stipulated contractual conditions.

Although these OBS instruments are not formally recognized as liabilities on the financial statements of banks, they facilitate critical financial transactions, enhance revenue diversification, and serve as essential risk management tools. Accordingly, this study will operationalize OBS

activities using four core categories: commitments, guarantees, and letters of credit all of which represent key indicators of off-balance sheet involvement in contemporary banking.

1.1.2 Bank Size

Bank size, as delineated by the Central Bank of Kenya (CBK), is determined through a weighted composite index encompassing total assets, customer deposits, ownership structure, and the number of deposit and loan accounts (Konya, 2018). It serves as a pivotal indicator of a bank's overall financial strength, encapsulating the magnitude of its resources, institutional capacity, and operational sophistication (Alslaibi et al., 2025). Larger banks often have more diverse portfolios, stronger internal processes, and access to cutting-edge technologies, which all contribute to their capacity to pursue long-term strategic goals, manage risk, and adjust to volatile market situations (Sasidharan et al., 2023). Their size enables economies of scale, lowering per-unit costs while enhancing operating efficiency across multiple departments.

A bank's financial performance appears to increase as its size gets larger (Adewale et al., 2023). Adewale et al. (2023) stress that bank performance and size are proportionate, with larger institutions exhibiting more stability and profitability. Additionally, research like that conducted by Zoghلامي and Bouchemia (2021) shows a high positive link between bank size and financial outcomes, supporting this. Larger banks are able to retain a dominant market position and beat smaller competitors in terms of resilience and financial outcomes because of the strategic benefits that come with size, such as improved access to capital markets, superior brand recognition, and competitive pricing power.

Mores so, bank size is suitable moderating factor on the relationship between independent variables and financial (Chowdhury et al., 2024; Asrori et al., 2024; Gathogo, 2023; Kirimi ert al., 2022), Asrori et al. (2024) empirically examined how bank size influences the association between

financial risk and financial performance among Indonesian Islamic commercial banks. Furthermore, the study showed that bank size, as determined by total funding, functions as a moderating factor that might lessen the adverse consequences of specific financial risks. In particular, it was demonstrated that bigger banks are more robust to operational and financing risks because of their size, which allowed them to withstand shocks better and continue to function better under pressure. Gathogo (2023) explored how bank size moderates the relationship between key financial determinants and the financial performance of listed banks in Kenya. The study established that bank size significantly moderated these relationships. Larger banks were better positioned to capitalize on the benefits of strong capital adequacy and good asset quality. Additionally, they were more capable of offsetting the negative effects of high liquidity and operational inefficiencies. In essence, the findings suggested that larger banks possessed structural advantages that enabled them to better manage risk and convert financial fundamentals into superior performance outcomes.

Bank size is frequently measured in terms of market value, which is assessed using important financial metrics such total assets, revenue, and market capitalization (Adewale et al., 2023). These indicators give a thorough picture of the bank's operational scope and economic significance in the financial system. Nevertheless, the way that bank size is measured can differ from study to study based on the analytical focus. As an illustration, Lucky and Phil-Olumba (2020) point out that a wider range of operational metrics, such as the quantity of physical branches, personnel headcount, and total client deposits, are also commonly used to evaluate bank size. In addition to a bank's financial strength, these factors also show its infrastructure, human resources, and outreach capabilities.

1.1.4 Banks in Kenya

The banking industry is widely recognized as one of the most critical pillars of any economy due to the nature of its operations, which involve the mobilization of depositor funds and the strategic investment of shareholder capital (Ahmed & Rozario, 2024). Within this framework, commercial banks play a pivotal role as principal financial intermediaries. Through their core functions, such as deposit mobilization and credit creation, they contribute significantly to liquidity provision and the overall stability of financial markets (Youssef, 2024). Among the most essential functions of commercial banks is the collection of funds and their redistribution to borrowers, thereby facilitating economic activity and capital flow (Büyükoğlu et al., 2023).

Like any other profit-oriented enterprise, commercial banks seek to maximize returns by leveraging their intermediary role, primarily through interest income on loans and fees derived from financial services (Fathonah & Negoro, 2025). This intermediary function not only supports the banks' revenue generation but also enables the transformation of idle deposits into income-producing assets, positioning commercial banks as key apparatus of profitability within the wider banking ecosystem (Dang & Nguyen, 2022). Ultimately, the profitability of the banking sector has emerged as being of paramount importance to the national economy. A strong and profitable banking system is often associated with increased financial stability and resilience (Panditharathna & Kawshala, 2021).

Kenya's banking sector has long served as a cornerstone of the nation's economic development, acting as a catalyst for sustainable growth through the provision of accessible, inclusive, and increasingly innovative financial services (Ayieko & Aluoch, 2025). However, the sector now operates in a rapidly evolving environment shaped by global and domestic geopolitical shifts, environmental imperatives, and accelerated technological disruption. These multifaceted

pressures have compelled banks to rethink conventional business models and adopt more adaptive, forward-looking strategies. Despite these challenges, banks in Kenya remain central to the country's financial architecture, continuing to drive capital formation, economic empowerment, and social transformation (Kenya Bankers Association, 2019).

These institutions not only play a critical role in safeguarding financial stability and facilitating long-term investment but also serve as conduits for guarantees, governance, and inclusive ownership. By complying with rigorous disclosure standards and regulatory oversight, commercial banks contribute to market discipline and bolster investor trust. Furthermore, their public status enables broader capital participation from both institutional and retail investors, democratizing financial growth and expanding access to investment opportunities across socio-economic strata. Through equity financing, these banks enhance their capacity to extend credit, deepen market penetration, and scale operations into underbanked regions, thus reinforcing national financial inclusion and development efforts (Kenya Bankers Association, 2024).

1.2 Problem Statement

Over the last five years, the banking industry in Kenya has exhibited strong financial performance with pre-tax earnings increasing from about KSh 159.9 billion in 2019 to KSh 260.3 billion in 2024; more than 60% growth (Central Bank of Kenya [CBK], 2024). Notwithstanding such exemplary improvement, performance variations continue to characterize the industry. Tier I banks, which are the largest of them all, have grown even more powerful, controlling 76.97% of net worth, 75.6% of market share, and 89.3% of total pre-tax earnings as of 2024 (CBK, 2024). Tier II and Tier III banks, however, took approximately 10.2% and 0.5% of total earnings, respectively, while controlling more than 8% of the market in aggregate.

Based extant research, off-balance sheet activities have emerged as a major driver of bank performance, contributing heavily to profitability, operating efficiency, and capital adequacy (Acharya et al., 2019). Strategically structured, well-priced, and managed effectively, OBS activity enhances income diversification and efficient use of capital, driving return on equity (ROE) and reducing dependence on traditional interest-based revenue. These activities are favorable to bank profitability in general, particularly when supported by efficient credit risk management and operations, since they allow for income creation despite the lack of corresponding growth in asset size (Haque & Anwar, 2024).

Empirical evidence, however, suggests that most banks, especially emerging market banks or during financial crises, find it extremely challenging to manage OBS exposures efficiently. Poorly controlled or underpriced OBS commitments can turn into significant contingent liabilities at times of bad economics. The 2007–2008 global financial crisis is a case in point, when banks were compelled to bring enormous off-balance sheet obligations onto their books, leading to severe liquidity shortages and capital erosion (Brunnermeier, 2009). Similarly, Gao et al. (2021) observed that OBS activities have a tendency to grow rapidly and are often accompanied by higher risk-taking and exposure to finance.

Similarly, in the Kenyan banking sector, Macharia (2019) confirmed that credit risk resulting from off-balance sheet exposure was profoundly negative on financial performance, particularly when such exposures were made due to counterparty default or economic hardship. Wagner (2021) indicate that off-balance sheet exposures accounted for an average of 17.2% of total U.S. banking risk exposure This points to eroded earnings capacity which may lead to investor confidence, signalling heightened vulnerabilities in the sector's overall stability and profitability outlook. Off-balance sheet activities, have been associated with financial performance in different

contacts. Dan et al. (2024) further argue that OBS activities affect banks' credit expansion through shifts in liquidity positions, which, in turn, impairs the effectiveness of profitability strategies. So, given that commercial banks are the principal agents of credit creation, the prevalence of substantial OBS engagements may hamper their ability to maintain stable profitability (Simba et al., 2020).

Despite a growing body of scholarship, the profitability implications of OBS activities remain inconclusive, particularly within the context of emerging markets such as Kenya. Ahmed and Rozario (2024) found a positive impact of OBS on profitability in developed markets, indicating a contextual gap when applying these findings to developing economies like Kenya. Other studies, such as Fadli and Debai (2021), found no significant effect, suggesting a conceptual gap due to treating OBS activities as a single category. Additionally, research by Saifi and Khouiled (2024) and Büyükoğlu et al. (2024) identified negative effects of OBS on performance, adding to inconsistent evidence. Kumar (2020) highlighted the influence of bank size on managing OBS risks but many studies overlook this, pointing to a methodological gap.

Thus, most studies highlight significant contextual, conceptual, and methodological gaps in the current empirical literature. These divergent findings and unresolved research gaps, underscore the necessity of a distinct, context-specific inquiry the manner that OBS activities relates to performance in the Kenyan context. Therefore, this study filled the gaps in the extant empirical gap by examining the link between off-balance sheet activities and the financial performance of commercial banks listed on the Nairobi Securities Exchange in Kenya. The study further explicitly tested the moderating role of bank size in the Kenyan context. In doing so, it generated robust, evidence-based insights that can inform the strategic management of off-balance

sheet exposures, enhance institutional resilience, and offer practical guidance to comparable financial institutions across emerging markets.

1.3 Objectives the study

1.3.1 General objective

To assess the effects of off-balance sheet activities on financial performance of commercial banks listed on NSE in Kenya.

1.3.2 Specific Objectives

The specific objectives were;

1. To determine the effect of trade finance on financial performance of commercial banks listed on NSE in Kenya
2. To determine the effect of guarantees on financial performance of commercial banks listed on NSE in Kenya
3. To determine the effect of letters of credit on financial commercial banks listed on NSE in Kenya
4. To establish the moderating effect of bank size on the relationship between OBS on financial commercial banks listed on NSE in Kenya.

1.4 Research Hypothesis

The study tested the hypotheses:

H₀₁: Trade finance does not have significant effect on financial commercial banks listed on NSE in Kenya

H₀₂: Guarantees do not have significant effect on financial commercial banks listed on NSE in Kenya

H₀₃: Letters of credit do not have significant effect on financial commercial banks listed on NSE in Kenya

H₀₄: Bank size does not have a significantly moderating effect on the relationship between OBS on financial commercial banks listed on NSE in Kenya

1.5 Justification of the Study

The financial performance of commercial banks is important for Kenya's economic stability. Although Off-Balance Sheet Activities (OBSAs) are now a key feature of modern banking, there is no evidence of their impact on bank performance in Kenya. This study filled that gap by assessing the impacts of OBSAs on the performance of commercial banks and adding to the theoretical and practical value in the body of knowledge.

Theoretically, the research made a contribution to banking innovation and risk management literature. International research proves that OBSAs enhance profitability through non-interest income and capital efficiency (Haque & Anwar, 2024; Acharya et al., 2019), but they also heighten risk and reduce guarantees if poorly managed (Gao et al., 2021; Wagner, 2021). There were few studies, however, that have examined these effects in the Kenyan context, where regulatory and institutional settings vary. This research provides much-needed localized evidence.

Practically, the majority of Kenyan banks were expanding OBSAs without fully appreciating their implications and risks. Macharia (2019) confirmed that off-balance sheet credit exposures have negative impacts on bank performance, indicating an oversight gap. As the Central Bank of Kenya pushes for improved risk governance, this study offers timely evidence to guide decision-making.

Additionally, the impact OBSAs have on some of the key metrics like ROE and Return on Investment cannot be overemphasized. As such, this study was justified in its dual aim: to add to the literature on OBSAs in Kenya and help banks manage these exposures more effectively towards ensuring long-term stability and compliance.

1.6 Significance of the Study

The findings were poised to deliver substantial value to a broad spectrum of stakeholders, serving as a strategic compass for evidence-based decision-making, policy formulation, and institutional strengthening.

Kenyan Banks: These institutions will benefit directly from the study's insights into how OBS activities influence profitability. By understanding the empirical relationship between OBS exposures and performance outcomes, bank management could strengthen risk control mechanisms and make more informed strategic decisions aimed at improving profitability without undermining financial stability.

Regulators and Policymakers: Regulators such as the Central Bank of Kenya and other financial regulators would be well positioned to craft effective regulatory instruments that explicitly target the risks in OBS exposures. Empirical findings generated in this study could form a firm foundation for policy making that not just shields credit discipline and macroprudential stability but actively encourages responsible financial innovation.

Investors and Shareholders: The study would equip investors with a deeper understanding of banks' earnings drivers. With this knowledge, investors could make more informed assessments of bank risk profiles and profitability potential, improving capital allocation decisions.

Academicians and Scholars: The study contributed empirical data and analytical insights to the broader literature on banking profitability and risk management in emerging markets. Scholars focusing on financial intermediation, bank performance, or regulatory impacts would find this study a valuable reference point.

Future Researchers: This research offered a foundational dataset and methodological template that future analysts could adapt when exploring OBS-profitability dynamics in other emerging-market contexts. Its findings would help enrich the scholarly discourse on how OBS practices impact financial performance across diverse banking environments.

1.7 Scope of the Study

This study was focused on assessing effects of OBS activities on the profitability of banks in Kenya. It is specifically limited to commercial banks that were publicly traded, thereby excluding other financial institutions such as microfinance institutions, cooperative societies, and unlisted banks. The research concentrated on various forms of off-balance sheet activities, including commitments, letters of credit, and guarantees. Financial performance was assessed using standard financial performance indicators, primarily Return on Assets. The theories anchoring the study included; Resource-Based View, Capital Asset Pricing Model as well as the Signalling Theory in addition to the Concentration–Fragility Theory.

Geographically, the study was confined to Kenya, and therefore its findings would be relevant within the context of the Kenyan banking sector. Data was collected from secondary sources using researcher developed data collection tool. The study examined the period from 2016 to 2025; a timeframe deliberately selected due to the persistent challenges experienced by NSE-listed commercial banks since 2016. This period was particularly critical for analysing OBS

activities have influenced financial performance within a context of ongoing financial and regulatory pressures.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The prime aim of this chapter was to introduce a comprehensive review of the literature on financial performance, off-balance sheet (activities, and more. In order to establish a solid conceptual framework, it mapped out necessary concepts, theoretical perspectives, and empirical studies. The chapter also established the foundation of the contribution of the study by identifying the existing research gaps.

2.2.1 Resource-Based View

Originally advanced by Wernerfelt (1984) and then Barney (1991), the Resource-Based View (RBV), emphasizes that a firm's unique, valuable, rare, and inimitable resources drive sustained competitive advantage and financial performance. Later scholars like Eisenhardt and Martin (2000) expanded the theory by introducing dynamic capabilities, highlighting the importance of adapting and managing resources in changing environments. The RBV assumes that firms are heterogeneous in their resource endowments and that these resources are not perfectly mobile across firms, leading to differences in competitive advantage (Barney, 1991). It further assumes that resources must be valuable, rare, inimitable, and non-substitutable (VRIN criteria) to provide sustained competitive advantage (Barney, 1991; Peteraf, 1993). Additionally, RBV presumes that firms can develop dynamic capabilities to adapt and reconfigure resources in changing environments (Teece et al., 1997; Eisenhardt & Martin, 2000). Finally, it assumes that internal resources and capabilities are more critical than external market positioning for firm performance (Wernerfelt, 1984).

The RBV is a strategic management theory that has been increasingly applied in financial performance studies to explain why some firms or banks outperform others. At its core, RBV argues that organizations achieve sustainable competitive advantage and superior financial performance by acquiring and effectively utilizing valuable, rare, inimitable, and non-substitutable (VRIN) internal resources (Barney, 1991). In financial contexts, these resources may include financial capital, managerial capability, technological infrastructure, brand reputation, or proprietary processes. Recent empirical studies have demonstrated how RBV offers a robust framework for explaining financial outcomes in banking and related sectors. For instance, Asrori et al. (2024) used the RBV to examine how internal attributes such as bank size, capital adequacy, and operational efficiency influence financial performance among Islamic banks. Their findings revealed that larger banks, endowed with more strategic resources, were better positioned to mitigate financial risks and enhance profitability than their smaller counterparts. Similarly, Ahmed (2018), in a study of microfinance institutions in Kenya, found that internal resources such as firm size and governance structures significantly influenced long-term off-balance sheet activities. This aligns with RBV's core claim that internal strengths are critical to financial success, particularly in sectors prone to regulatory and market instability. The RBV framework also underpins studies examining the influence of stability and internal capacity on strategic pricing and risk management. For example, Rauf (2023) investigated how bank stability, an outcome of internal capital strength and governance, affects the pricing of off-balance sheet commitments. The study suggested that firms with stronger internal resources could command higher commitment fees, indicating the financial value attached to internal stability as a resource. As Chong et al. (2022) argue, these resources are becoming increasingly critical in influencing financial performance, especially within fintech and digital banking models. Firms that can effectively harness these

intangible assets gain a competitive edge by enhancing operational efficiency, improving customer service, and managing risk more effectively.

Its strengths are the capacity to tackle long-standing competitive advantage, diversity of companies, being relevant in all economic environments, and offering concrete strategic direction. Its greatest strength is that it centers its attention on firm-specific VRIN resources that are valuable, rare, inimitable, and non-substitutable, and these form the essence of sustaining long-term competitive advantage. Its internal orientation is responsible for explaining performance heterogeneity even for firms operating in similar environments. (Shaari et al., 2022; Owusu et al., 2023). RBV is also highly adaptable and thus can be used to examine institutions in emerging economies where the external environment may be volatile. In these environments, the focus of the theory on internal strengths gives practical lessons on handling regulatory and competitive issues (Nyanga & Muriithi, 2023). Further, RBV is being integrated with other supplementing theories such as the dynamic capabilities paradigm and the knowledge-based approach to allow researchers to analyze the path of firms' developing and reconfiguring their resources over time as a result of changes in the environment (Wei et al., 2022). RBV provides pragmatic guidance by highlighting that companies ought to invest in internal development (Karanja & Wanjiru, 2023).

The RBV has faced criticism for its lack of clear guidelines on how firms can systematically identify and develop valuable resources (Priem & Butler, 2001). Critics also argue that RBV is tautological, as it defines valuable resources by their ability to generate competitive advantage, which can lead to circular reasoning (Lippman & Rumelt, 2003). Furthermore, RBV often underemphasizes the role of external factors such as market dynamics, competition, and environmental changes, focusing predominantly on internal resources (Priem & Butler, 2001; Peteraf & Barney, 2003). Additionally, some scholars point out that RBV tends to overlook how

resources evolve over time, thus limiting its explanatory power in dynamic and rapidly changing industries (Eisenhardt & Martin, 2000). Finally, RBV's assumption of resource immobility and rarity has been questioned, especially in highly competitive markets where imitation and substitution are frequent (Foss & Knudsen, 2003).

Thus, Financial performance can be examined through the lens of Resource-Based View (RBV), which emphasizes internal capabilities such as OBS activities, as drivers of profitability. Off-balance sheet (OBS) activities such as trade finance, guarantees, and letters of credit represent critical resources and capabilities within the Resource-Based View (RBV) framework. These financial instruments enable banks to generate fee-based income without increasing on-balance sheet assets or liabilities, thereby optimizing capital utilization and managing risk exposure effectively. Trade finance facilitates both international and domestic trade by providing essential payment and credit solutions, which not only enhance customer relationships but also create additional revenue streams beyond traditional lending. Guarantees serve as commitments that ensure third parties fulfill their obligations, helping to mitigate risk while enhancing the bank's credibility and market positioning. Similarly, letters of credit offer payment assurances in trade transactions, supporting client operations, generating fee income, and strengthening the bank's service portfolio. These OBS activities are especially strategic resources that allow Kenyan banks to diversify income sources in an increasingly competitive and regulated environment.

2.2.2 Signalling theory

Michael Spence (1973) initially established the Signalling Theory in the context of labour market signalling, explaining the way individuals communicate their skills to employers through their educational credentials. The theory has now been extended to financial markets by academics like Ross (1977), who demonstrated how businesses use financial decisions like capital structure to

convey signals about their quality. By demonstrating how businesses employ financing decisions to lessen information asymmetry between insiders and external investors, Myers and Majluf (1984) extended the application of Signalling Theory to corporate finance. A thorough assessment of Signalling Theory across disciplines was given by Connelly et al. (2011), who emphasised how it helps to reduce uncertainty by communicating reliable information through observable actions or decisions. Signalling Theory is now a crucial paradigm for comprehending communication and information asymmetry in economics and finance because to their pioneering efforts.

Premised on signalling theory, there is an information gap whenever one side is presumed to know more than the other (Spence, 1973). To reduce this uncertainty, the knowledgeable party provides signals, actions, or cues that communicate their genuine quality (Ross, 1977). These signals must be costly or difficult to forge in order to be considered legitimate, ensuring that only genuine, high-calibre senders use them (Spence, 1973; Connelly et al., 2011). It is considered that the receivers are rational beings who use these signals to change their opinions, which in turn influences their decisions (Connelly et al., 2011). Despite knowledge asymmetry, a balance is eventually reached where accurate interpretation and truthful signalling contribute to increased market efficiency (Connelly et al., 2011).

Scholars have paid close attention to the use of Signalling Theory in the context of loan obligations and credit lines (Spence, 1973; Connelly et al., 2011). According to empirical data, a company's choice to acquire and actively use these financial instruments is an unspoken indicator of its underlying creditworthiness and expected future performance (Diamond, 1984; Myers & Majluf, 1984). Studies in the banking and finance industry have used Signalling Theory to analyse financial instruments such as credit lines, guarantees, and letters of credit, which are seen as indicators of a bank's stability and soundness. For instance, an empirical study on the National

Bank of Iraq by Youssef (2019) revealed that capital adequacy was impacted by off-balance sheet instruments like letters of credit. Stakeholders saw their presence as an indicator of the bank's underlying risk exposure and financial strength as well as a service offering. Businesses with higher credit quality typically have easier access to greater credit facilities on better terms, which helps them tell market participants about their lower risk profile (Ross, 1977; Healy & Palepu, 2001). This signalling system frequently causes noticeable market reactions, impacting stock price volatility, which is generally correlated with changes in the performance of earnings (Eckbo & Masulis, 1992; Goyal & Santa-Clara, 2003).

One of the core strengths of Signaling Theory lies in its ability to explain how firms influence stakeholder perceptions, including investors, regulators, and customers, through deliberate disclosures and behaviors (Yasar et al., 2020). Another key strength of Signaling Theory is its emphasis on strategic behavior. Banks engage in signaling not only to reveal their current financial health but also to influence market expectations and mitigate perceived risks. This makes the theory highly relevant for understanding the use of off-balance sheet (OBS) activities, such as guarantees, trade finance instruments, and letters of credit, which may not be fully transparent to outsiders unless deliberately disclosed (Costa et al., 2022). As such, their effective use and disclosure can serve as positive signals to the market, potentially enhancing investor confidence and improving financial performance indicators like share prices, return on equity (ROE), or cost of capital.

Despite its widespread use in disciplines including economics, finance, and strategic management, signalling theory has drawbacks and detractors. The theory's fundamental premise is that both signal senders and recipients act rationally. Critics counter that in reality, this presumption isn't always accurate. Inaccurate information, emotional influences, and cognitive

biases can skew how signals are sent or received by decision-makers (Connelly et al., 2011). The reliability of signals can also be diminished by their ambiguity or deliberate manipulation (Ross, 1977; Bergh et al., 2014). Furthermore, not all businesses can afford expensive signals, which could put smaller but superior organisations at a disadvantage (Spence, 2002). Additionally, the theory is thought to be overly straightforward for intricate, dynamic markets and might not be universally applicable in various institutional or cultural situations (Zhang & Wiersema, 2009). These criticisms emphasise the necessity of using Signalling Theory cautiously and being conscious of its limitations in real-world situations.

For commercial banks listed on the Nairobi Securities Exchange (NSE), Signaling Theory provides a critical framework for analysing how trade influence perceived and actual performance. In Kenya's banking sector, where stakeholders may have limited access to granular risk data, well-managed OBS exposures, if clearly communicated, can serve as signals of strong internal controls, liquidity management, and strategic positioning. Conversely, poor disclosure or misuse of OBS activities may send negative signals, increase perceived risk and possibly harm financial outcomes. Additionally, Signaling Theory is particularly useful in emerging markets, where regulatory frameworks may be evolving, and formal financial disclosures may not fully capture the scope of a firm's operations. The theory underscores the importance of non-financial and voluntary disclosures, which are often used by firms in such environments to differentiate themselves and attract investment (Mahmud, Ding, & Hasan, 2021). In this way, the strategic disclosure and signaling of OBS activities could offer Kenyan banks a competitive advantage within the local and regional financial markets.

2.2.4 Concentration–Fragility Theory

Concentration–Fragility Theory argues that when wealth, power, or productivity is concentrated in a few sectors, regions, or actors, systems become more vulnerable to disruption. While concentration can increase efficiency in the short term, it also reduces resilience (Beck, et al., 2006). A failure in one of these key areas can lead to cascading effects across the entire system. This idea applies across economic, political, and technological domains. Homer-Dixon et al. (2015) describe how highly interconnected global systems are prone to “synchronous failures” when critical nodes fail, due to tight coupling and reduced redundancy. Similarly, Taleb (2012) argues that systems built for efficiency, especially those that centralize functions, are fragile and ill-prepared for unpredictable shocks. In economic modelling, Acemoglu et al. (2012) show how shocks in concentrated economic networks can propagate widely, amplifying their impact on the broader system.

Concentration–Fragility Theory helps explain why larger banks may be more vulnerable to shocks despite their apparent strength, and how this affects the relationship between who owns the bank and how well it performs (Boyd & Runkle, 1993). According to the theory, larger banks often exhibit high concentration of resources, power, or market influence (Demirgüç-Kunt & Detragiache, 2002). While this concentration can bring benefits such as economies of scale and broader market access, it also increases systemic risk and fragility (Homer-Dixon et al., 2015; Taleb, 2012). In this context, bank size moderates the OBS–performance relationship by either amplifying or dampening the effects of ownership characteristics. In a large state-owned bank, concentration may lead to bureaucratic inefficiencies or political interference, magnifying negative effects on performance (Beck et al., 2006). Fragility is increased because problems in a large bank can cascade into the wider financial system. Similarly, Acemoglu et al. (2012) show that shocks

in large, concentrated entities propagate more widely through the system, meaning that the consequences of poor performance in large banks are more severe. Smaller banks, being less concentrated, may be more flexible and less systemically risky, which can buffer the influence of ownership on performance. Thus, from a Concentration–Fragility perspective, poor governance in a large bank can lead to disproportionate negative impacts on performance due to the fragility introduced by scale (Acemoglu et al., 2012). Concentration–Fragility Theory suggests that as banks grow in size, they become more fragile due to concentrated operations and systemic importance.

Concentration–Fragility Theory's value is in illuminating the role played by bank size, market structure, and institutional context in determining when OBS activities are beneficial and when they enhance fragility. One of its benefits is that it explains why bank size matters: concentrated markets have larger banks with superior resources, capitalization, income diversification, risk management sophistication, and scale economies that are able to absorb negative shocks and are therefore less susceptible if they manage OBS exposures prudently. Theory therefore bridges concentration, size, and risk in a way that works for OBS activities: OBS exposures (i.e., guarantees, trade finance, letters of credit) give rise to off-balance sheet opportunities and risks, and banks with larger size/concentration are in a better position to absorb or contain such risks. Thus, Concentration–Fragility allows for the prediction of the way OBS affects performance to differ by bank size: large, more concentrated banks can convert OBS activities into higher performance (as long as risk is managed), whereas small or less diversified banks can suffer from fragility due to OBS risk. There is some recent evidence to support this. For example, a regression analysis of the East African Community (EAC), spanning Kenya, finds that high concentration with low competition is associated with greater financial stability as well as

reduced probabilities of bank default risk once bank-specific and macroeconomic variables are held constant. This supports the concentration-stability argument, one strand of Concentration–Fragility Theory. Still another Kenyan study, "The Role of Banking Concentration on Financial Stability" (Atellu et al., 2021), finds that higher concentration can increase risks (fragility), particularly by raising charges for services and credit risk in less competitive environments. These mixed findings indicate that the "fragility" dimension of the theory does hold, at least in cases with lax regulatory oversight or where bank size permits risky behavior under implicit guarantees.

Relevance to research on OBS and performance in Kenya is thus high: OBS activities generate exposure and risk that are typically off the main financial statements and less transparent to stakeholders. According to the Concentration–Fragility approach, it would be expected that larger, better-capitalized and concentrated banks (Tier I) would be better positioned to manage OBS exposures in a more efficient manner, transforming them into fee income and sources of competitive advantage, whereas smaller banks may have costs (monitoring, risk, regulatory capital) that make OBS activities more vulnerable for them. Besides, the theory forecasted that institutional and regulatory controls (competition policy, legal environment, supervision) should mediate concentration's relationship with OBS in its effect on financial performance.

While Concentration–Fragility Theory offers valuable insights into the systemic risks associated with economic concentration, it has attracted a number of important critiques that challenge its assumptions and implications. Critics such as Haldane and May (2011) argue that systemic risk is notoriously difficult to identify or quantify in advance. This makes it hard to determine what level of concentration is actually dangerous, or whether observed outcomes validate the theory. Often, fragility is diagnosed only in retrospect, after a crisis has already occurred, making the theory appear more like a post-hoc explanation than a predictive framework.

Additionally, the theory is sometimes critiqued for neglecting the role of institutions and governance in shaping outcomes. Dani Rodrik (2011) emphasizes that the dangers of concentration are not universal but heavily mediated by the institutional context. Breznitz and Murphree (2011) have argued that the theory lacks the sector-specific nuance needed to make meaningful distinctions.

2.3 Empirical Review

Empirical studies examining OBS as well as financial performance have become increasingly relevant. Several studies have focused on how OBS impact the financial performance. This study conducted a comprehensive review of relevant past research, which was deemed instrumental in advancing the current investigation, categorized under the key themes of commitments, guarantees, letters of credit, and bank size.

2.3.1 Trade finance and Financial Performance

Off-balance sheet (OBS) trade finance instruments once considered peripheral to core banking activities, now play a vital role in shaping bank profitability, risk exposure, pricing strategies, and competitive dynamics. A growing body of empirical research has explored these dimensions, yet significant conceptual, methodological, and contextual gaps remain. A closer examination of global, regional, and Kenyan studies highlights both the contributions and limitations of existing literature, providing a compelling case for further research, particularly in underexplored markets like Kenya.

Globally, Ahmed and Rozario (2024) offered evidence from Bangladesh showing that OBS activities have a significant positive impact on bank profitability without increasing balance sheet risk. However, their study was confined to Bangladeshi commercial banks, limiting its generalizability and failing to explore broader risk-performance relationships across different

markets. Wu et al. (2024) extended the conversation by examining how OBS instruments influence the transmission of monetary policy through the bank lending channel. While their findings added value at a macroeconomic level, they did not address the direct implications of OBS exposure on bank profitability, reflecting a conceptual gap in linking financial instruments to performance outcomes.

In a long-term analysis, Haq et al. (2022) investigated the effects of OBS loan commitments on bank risk-taking across G7 economies over two decades. They found that larger OBS exposures were associated with lower aggregate and idiosyncratic risk, but higher tail risk. Despite the methodological robustness of this study, it stopped short of connecting these risk dynamics to profitability indicators such as return on assets (ROA) or return on equity (ROE), thereby presenting a gap in understanding how risk translates into performance. A different angle was taken by Widyatini and Sasmita (2025), who explored the relationship between OBS financing and market power in Indonesian banks. Their findings showed a negative association, indicating that greater reliance on undrawn commitments might constrain a bank's ability to influence pricing. Yet, while insightful from a competitive strategy perspective, the study did not address core financial performance, leaving a conceptual void.

Rauf (2023) examined the pricing of loan commitments, revealing that firms tend to pay higher commitment fees to more stable banks with strong capital buffers. This relationship was particularly strong among firms with volatile earnings and higher short-term liabilities. Though this study shed light on pricing behavior and credit risk valuation, it did not connect these factors to overall bank performance, underscoring another conceptual limitation. Complementing these studies, Yogesh (2022) conducted a systematic literature review focusing on the role of OBS activities in bank performance and stability. The review found that private banks outperformed

public ones in generating income from OBS activities and managing associated risks, with contingent liabilities positively correlated with total income. However, the use of secondary data sources and broad generalizations left key empirical and contextual questions unanswered, especially in the African context.

Regionally, in Ethiopia, Tefera (2020) explored the role of OBS commitments in private banks using both qualitative and quantitative methods. The study found that while OBS commitments enhanced revenue they had negative effects on liquidity and capital adequacy, and their relationships with credit risk and ROE were statistically insignificant. The study was limited by its basic statistical methods, absence of an integrated risk framework, and narrow geographic scope, highlighting conceptual, methodological, and contextual gaps. In Nigeria, Osakwe, Ifunanya, and Nonso (2024) investigated the relationship between non-performing loans (NPLs) and financial performance, specifically ROA, in two banks over a 15-year period. They found a significant negative relationship, suggesting that poor loan quality undermines profitability. However, the study did not differentiate between types of OBS instruments and was limited in scope, focusing on only two banks. Similarly, Tomi, Emmanuel, and Adeyinka (2020) found that NPLs had a negative effect on bank performance in Nigeria. While their findings reinforced the link between credit quality and profitability, the study failed to account for the distinct role of OBS instruments, revealing a conceptual oversight.

In the Kenyan context, several studies have explored the impact of non-interest income and off-balance sheet exposures on bank performance, though often indirectly. Emongor (2022) analysed the relationship between non-interest income components—such as fees, commissions, and foreign exchange trading, and insolvency risk. It was found that these income streams significantly reduced insolvency risk, particularly in larger banks. However, the study did not

focus specifically on trade finance-related OBS instruments, limiting its conceptual relevance. Moraa (2022) examined OBS risks, identifying variations in credit risk across banks and a weak negative relationship between market risk and performance. Yet, the analysis lacked granularity regarding specific OBS instruments and omitted consideration of moderating variables such as capital adequacy or governance.

Simba et al. (2020) also explored OBS risks. Although the study confirmed the critical role of credit risk management, it did not differentiate between types of OBS exposures, reducing its explanatory power. Focusing on microfinance banks, Ahmed (2018) found a negative and insignificant relationship between OBS financing and off-balance sheet activities. However, firm size and capital adequacy were positively and significantly associated with sustainability, suggesting that internal bank characteristics play a more decisive role than OBS exposure. The study's focus on microfinance institutions limited its generalizability.

Two studies directly addressed trade finance. Ndung'u (2020) evaluated the impact of trade finance on financial performance in Kenya's tier 1 banks over an 11-year period. He found strong positive relationships between trade finance revenue and profitability, reinforcing the importance of these instruments. However, the study did not consider how factors like capital strength or regulatory environments might influence this relationship. Similarly, Kahuthu (2016) showed that commissions and foreign exchange income had the highest positive correlation with bank performance. Despite these findings, the study did not incorporate potential moderating variables, such as bank size or risk management capacity, limiting its conceptual depth.

Taken together, these studies illustrate the multifaceted role of OBS trade finance instruments in shaping bank risk profiles, pricing strategies, and market behavior. However, they also reveal persistent gaps. Most notably, few studies directly link specific OBS instruments—

such as loan commitments and guarantees, to key financial performance indicators like ROA, ROE, or credit risk. Many investigations focus on risk or pricing in isolation, neglecting the integrated effect of OBS activities on bank profitability. In addition, important moderating variables, such as capital adequacy, governance structures, and regulatory environments—are often overlooked. Methodologically, several studies rely on descriptive or cross-sectional designs, limiting their ability to establish causal relationships or track dynamic changes over time.

These gaps underscore the need for Kenya-specific, theory-driven, and methodologically robust research that examines how OBS trade finance instruments affect core financial outcomes. Such research would be particularly valuable in addressing the complex interactions between risk, performance, and regulation in a dynamic and evolving financial system.

2.3.2 Guarantees and Financial Performance

Guarantees have emerged as significant components of modern banking. While they offer potential benefits like improved credit access and enhanced short-term profitability, they also pose complex risks to financial stability and performance. This section presents a synthesized review of empirical studies grouped into global, regional (Africa), and local (Kenyan) contexts, highlighting key findings, methodological strengths, and gaps that justify further research.

Globally, extensive research has examined the implications of guarantees and OBS instruments on firm and bank performance. For instance, Mayordomo et al. (2021) explored how increased capital requirements affected Spanish banks' use of guarantees. Their difference-in-differences analysis showed that banks increasingly relied on personal guarantees to mitigate credit risk, but this constrained borrowing firms' investment capacity, negatively impacting long-term performance.

In China, Ramos Meza et al. (2021) used panel data from 350 firms to demonstrate that access to guaranteed credit significantly improved firm performance. Firms with strong corporate social responsibility (CSR) profiles benefited even more, indicating that institutional traits shape how guarantees are utilized. However, the exclusive focus on Chinese firms limits generalizability. From a risk-pricing perspective, Calcagnini et al. (2014) analyzed over half a million Italian firm-bank relationships, finding that collateral-backed loans attracted lower interest rates, especially during financial downturns, while personal guarantees mainly improved credit access for riskier firms. Similarly, Gumulessa et al. (2022), studying partial credit guarantees in Ethiopia's agricultural sector, found these schemes improved access to credit (financial additionality) but failed to significantly alter loan terms or reach a broader borrower base due to structural limitations.

In the African context, a growing body of research has examined the implications of OBS activities on bank risk and performance. Achugamonu et al. (2016), using financial data from Nigerian deposit money banks between 2004 and 2014, observed that higher OBS engagement was associated with improved short-term profitability, though it also increased vulnerability to financial shocks. Their findings underscored the need for stronger regulatory oversight. Focusing on earnings quality, Mohammed and Abibakar (2019) found that while related-party transactions improved earnings guarantees in Nigerian banks, bankers' acceptances (an OBS item) negatively impacted earnings quality, though the relationship was statistically insignificant. This suggests that not all OBS instruments affect bank reporting in the same way.

Addressing credit risk directly, Keffala (2024) employed dynamic panel analysis using data from 24 African banks and established that OBS activities increase credit risk exposure, although moderate use could be beneficial. Meanwhile, Eyo et al. (2020), in their study of Nigeria's

Agricultural Credit Guarantee Scheme, noted that while credit guarantees supported agricultural output, their performance was hindered by macroeconomic instability.

Theoretically, Fabio and Calo (2015) framed guarantees as financial options, arguing they are valuable in imperfect markets. However, the study lacked empirical testing, revealing a methodological gap. Regional studies consistently point to the dual nature of guarantees, offering short-term financial benefits but contributing to increased risk in unstable environments. Methodologically, several rely on basic statistics, and conceptually, few explore moderating factors like regulation or firm characteristics.

In Kenya, several empirical studies have addressed the role of OBS instruments and trade finance in bank performance, although significant gaps remain. Ahmed (2018) assessed 13 microfinance banks and found that OBS financing had a negative but statistically insignificant relationship with off-balance sheet activities. Larger institutions showed better sustainability, emphasizing the role of firm size.

Ndung'u (2020), analyzing Tier 1 banks between 2008 and 2018, reported strong positive relationships between trade finance income (fees, commissions, forex trading) and financial performance. While insightful, the study excluded smaller banks, limiting generalizability. Orubia et al. (2025), focusing on listed commercial banks, confirmed the positive impact of letters of credit and bank guarantees on profitability. However, their cross-sectional design limited insights into long-term trends or the impact of external shocks. Similarly, Nyokabi (2018) found that forex trading positively influenced bank performance, though results were highly volatile, pointing to regulatory concerns. Policy-focused research by Karumba and Wafula (2012) emphasized Kenya's over-reliance on collateral lending and advocated for broader use of credit risk mitigation tools like guarantees. Yet, their study lacked empirical evaluation of these tools' performance impacts.

Local studies collectively affirm that OBS activities, especially trade finance instruments, can enhance bank performance. However, benefits appear concentrated in larger, better-capitalized banks, while microfinance institutions struggle to convert OBS exposure into sustained financial health. Methodologically, many rely on descriptive or cross-sectional designs, with limited use of dynamic or causal models. Conceptually, few integrate risk mitigation instruments with macroeconomic or institutional variables.

Across global, regional, and local contexts, financial guarantees have demonstrated significant but varied impacts on credit access, profitability, and risk. While some studies confirm their positive influence on performance, others reveal concerns related to risk exposure, firm flexibility, and sustainability. The literature reveals several important gaps. First, there is a contextual limitation, as much of the existing research focuses heavily on developed markets or single African countries such as Nigeria and Ethiopia. This narrow focus restricts the ability to generalize findings to other contexts, notably Kenya. Second, a methodological gap is evident, with many studies relying primarily on basic statistical techniques. These methods often fall short of capturing dynamic or longitudinal causal relationships, which are critical for understanding how off-balance sheet (OBS) activities evolve and affect outcomes over time. Third, on a conceptual level, there is limited differentiation among the various types of OBS instruments, alongside insufficient examination of important moderating variables like capital adequacy, governance structures, or the strength of regulatory frameworks. These gaps highlight the pressing need for research that is specific to Kenya, driven by robust theoretical frameworks, and employs sophisticated, methodologically sound approaches. Such studies should particularly focus on how OBS activities, especially trade finance instruments such as guarantees and commitments, affect key performance indicators like return on assets (ROA), return on equity (ROE), and credit risk

longitudinally. Addressing these gaps would offer significant contributions both to academic literature and to the practical management of banks.

2.3.3 Letters of Credit and Financial Performance

Letters of credit (LCs) and other OBS activities have been widely studied globally for their impact on banks' financial performance and risk profiles, yet several significant research gaps remain. For example, Youssef (2019) found that increased OBS exposure, particularly through LCs, negatively affects capital adequacy in the National Bank of Iraq. However, its limitation to a single bank and its use of simple linear regression without robustness checks, restricting the generalizability and methodological rigor of its findings.

Similarly, Alwi et al. (2022) examined the challenges Islamic banks in Malaysia face when applying LCs within Shariah-compliant frameworks, highlighting complex legal and structural issues. Despite offering valuable insights, the study's small qualitative sample and country-specific focus limit broader applicability, particularly across different jurisdictions. Ding and Zeller (2017) conducted a comparative legal analysis of fraud exception provisions under the Uniform Customs and Practice for Documentary Credits, revealing ambiguities in China's regulations that could hinder effective application. While informative from a legal perspective, this study lacked empirical assessment of financial or trade impacts, exposing conceptual and methodological limitations.

Regionally, studies across Africa also underscore important findings but reveal contextual and conceptual gaps. Keffala (2024) analyzed OBS activities across 24 African banks and found moderate use of LCs and guarantees to be associated with increased credit risk, although a threshold effect suggested that moderate OBS use could mitigate credit risk growth. However, by aggregating data from diverse countries with varying regulatory frameworks, the study masked

important country-specific differences. It also concentrated primarily on credit risk without fully exploring the broader financial performance implications of OBS activities. Afolabi et al. (2021) highlighted the negative impact of rising non-performing loans on Nigerian banks' performance and pointed to trade finance tools like LCs as indirectly relevant. Yet, the study focused on credit risk rather than trade finance directly and relied heavily on secondary data with limited exploration of causal mechanisms, narrowing its conceptual and methodological scope. Lawrence et al. (2020) similarly demonstrated the influence of credit risk factors on South African commercial banks' performance but did not specifically examine LCs, indicating a conceptual gap and limiting the applicability of their findings to trade finance. In Morocco, Savon (2025) showed that high levels of non-performing loans reduce credit availability, signaling a need for improved credit and trade finance management, but did not directly analyze LCs. Badrane and Bamousse (2025) emphasized the positive role of innovative financial instruments on business performance in Morocco; however, their exploratory design and indirect focus on trade finance limit broader conclusions about LCs' effectiveness.

In Kenya, empirical studies affirm a generally positive association between trade finance instruments, including letters of credit, and bank financial performance, yet they are marked by several limitations. Orubia et al. (2025) found strong positive correlations between LCs, bank guarantees, and the financial performance. Nonetheless, their study was limited to listed banks, potentially overlooking the broader banking sector, and its cross-sectional design constrained causal inference. Kahuthu (2016) also identified a positive relationship between trade finance income and bank performance but did not isolate the specific impact of LCs and employed descriptive methods lacking depth and longitudinal insight. Nyokabi (2018) investigated the effects of foreign exchange trading on bank performance, which, while relevant, did not directly

relate to LCs, limiting conceptual relevance. Karumba and Wafula (2012) highlighted the Kenyan banking sector's heavy reliance on collateral-based lending and underutilization of alternative credit risk mitigation tools, such as credit derivatives often linked with trade finance, but did not explicitly connect these instruments to bank performance. Nthenge (2013) and later Nthenge and Ringera (2017) focused on Family Bank Limited, demonstrating positive effects of trade finance products and specifically LCs on financial performance. However, these studies were confined to a single institution and mainly descriptive in nature, limiting generalizability and lacking advanced quantitative or longitudinal analyses. Dalal (2018) showed that credit reference bureaus improve credit risk assessment in Kenyan banks, which is complementary to trade finance, but did not directly link this to broader financial performance, relying instead on self-reported data without causal testing.

The reviewed literature reveals persistent methodological gaps, including reliance on cross-sectional and descriptive designs with insufficient use of multi-variable, longitudinal, or causal research methods. Contextually, many studies are constrained to specific banks, countries, or segments of the banking sector, limiting their broader applicability. Conceptually, there remains a fragmented understanding of how legal, operational, regulatory, and financial dimensions of letters of credit integrate and influence bank performance. These gaps highlight the need for future research employing robust mixed-methods approaches, broader and comparative geographic scopes, and incorporating moderating factors such as bank size, liquidity, and risk management frameworks to better capture the role and impact of letters of credit within Kenya's, and the broader region's, financial ecosystems.

2.3.4 Bank Size and Financial Performance

The application of bank size as a moderating variable on financial performance has become more appealing, particularly in light of shifting market conditions, regulatory changes, and increased risk exposure. Globally, Asrori et al. (2024) established that larger Islamic banks were more resilient to financial risks, and bank size proved to be a buffer of specific significance. Notwithstanding this, the relatively concentrated regional focus of the sample and lack of control for other determinants like regulation or governance limits the external validity of its conclusion. Similarly, Elsas and Florysiak (2021) established a non-linear association in European banks, where profitability was positively associated with size only up to a point, after which returns deteriorated, hinting at potential diseconomies of scale.

In the case of Iraq, Al-Tae and Ahmad (2020) discovered that larger banks were able to better use capital adequacy to maximize profitability, but did not explore mechanisms why. Meanwhile, Nguyen and Tran (2020) determined that Vietnam's larger banks were more susceptible to credit risk, which drained their profitability when asset quality decreased, which means that at times size enhances vulnerabilities. In Bangladesh, Chowdhury et al. (2024) demonstrated that bank size inversely moderated the effects of diversification on stability, perhaps because of managerial complexity or slower responsiveness. But the single-country scope of their study prevents generalizability and the very causes of such a reduced effect are not yet extensively explored.

Regionally, in Nigeria, Austin (2025) demonstrated that aspects of bank size, assets, deposits, and capital had a positive effect on performance, even though larger loan portfolios negatively affected ROA. Adewale et al. (2023) indicated that both size and age positively impacted financial performance but did not account for possible confounding factors like market

share or efficiency. Hassan et al. (2023) indicated that size moderated financial controls in mixed directions: positive with deposit rates but negative with loan-to-deposit ratios, which implies context-dependent effects. Yahaya et al. (2022) in a Sub-Saharan African study reported that the smaller banks had a tendency to perform better than the larger ones, thereby suggesting that excess scale might reduce agility. Institutional-level results were not available in the research. Similarly, Mutarindwa et al. (2021) linked size and efficiency in African banking and found that private and listed banks performed more effectively, but internal operating dynamics were under researched.

In Kenya, studies paint an equally mixed scenario. Chibole et al. (2022) found no moderating effect of size on the performance and financial distress relationship. Gathogo (2023) showed that size was a positive moderator of relationships between performance, asset quality, and capital adequacy, implying that size reinforces resilience. The research did not include more nuanced causal channels in its consideration. Conversely, Kirimi et al. (2022) determined that in line with an increase in banks, the effectiveness of financial health in improving ROA and net interest margin declined, suggesting inefficiencies at scale. Leaving off-balance items out also limited scope.

Emongor (2022) confirmed that larger Kenyan banks were able to use non-interest income more readily to translate into lower insolvency risk, pointing out size as a strategic advantage in leveraging income diversity. Nevertheless, the study did not control for differences in risk management strategy. Similarly, Ngware et al. (2020) showed size enhanced returns on portfolio diversification relief on ROA and ROE but did not investigate how size is intertwined with risk exposure or governance structure.

These studies point to the advantage and disadvantage of bank size. While with bigger institutions will reflect better performance and solidity, they will also be less efficient, less

adaptable, or suffer from decreasing returns. The results outline major conceptual and methodological gaps, foremost among them the lack of integrated theories specifying when and why size enhances or hurts performance, thin cross-country data points, and weak examination of how bank-specific features like governance, organization, or OBS exposure mediate size.

2.3.5 Summary and Knowledge Gaps

Literature reviewed shows that even though there are numerous studies that have examined OBS activities and financial performance, some gaps remain that make this current study justified. Empirically, existing literature emphasizes the not-so-straightforward nature of OBS instruments such as loan commitments, guarantees, and letters of credit, and how they tend to affect financial outcomes in various ways. While some studies (Ahmed & Rozario, 2024; Achugamonu et al., 2016; Orubia et al., 2025) have achieved a positive correlation between profitability and trade finance, others (Rauf, 2023; Wu et al., 2024; Widyatini & Sasmita, 2025) were also interested in their macroeconomic effects, such as monetary policy transmission and pricing, but not measuring firm-level financial performance directly. Similarly, the literature relating to guarantees and letters of credit provides mixed findings: while some studies detected positive contributions to firm performance (Ramos Meza et al., 2021), others reported risk exposure and procedural constraints (Mayordomo et al., 2021; Mohammed & Abibakar, 2019; Keffala, 2024; Youssef, 2019).

In terms of bank size, findings are also inconclusive. Asrori et al. (2024) and Gathogo (2023) find that larger banks have economies of scale and risk mitigation, positioning them to better take advantage of OBS business. Others (Chowdhury et al., 2024; Kirimi et al., 2022), however, posit that bank size dilutes such benefits, possibly due to bureaucratic inefficiency or less agility. Conceptually, some researchers (e.g., Wu et al., 2024; Keffala, 2024) have not placed direct focus on OBS activity and profitability but emphasized policy or risk factors instead.

Additionally, causal relationships between single OBS instruments and financial performance remain yet to be investigated as indicated in the works of Rauf (2023) and Widyatini and Sasmita (2025), who omitted mechanisms through which OBS policies influence core financial indicators.

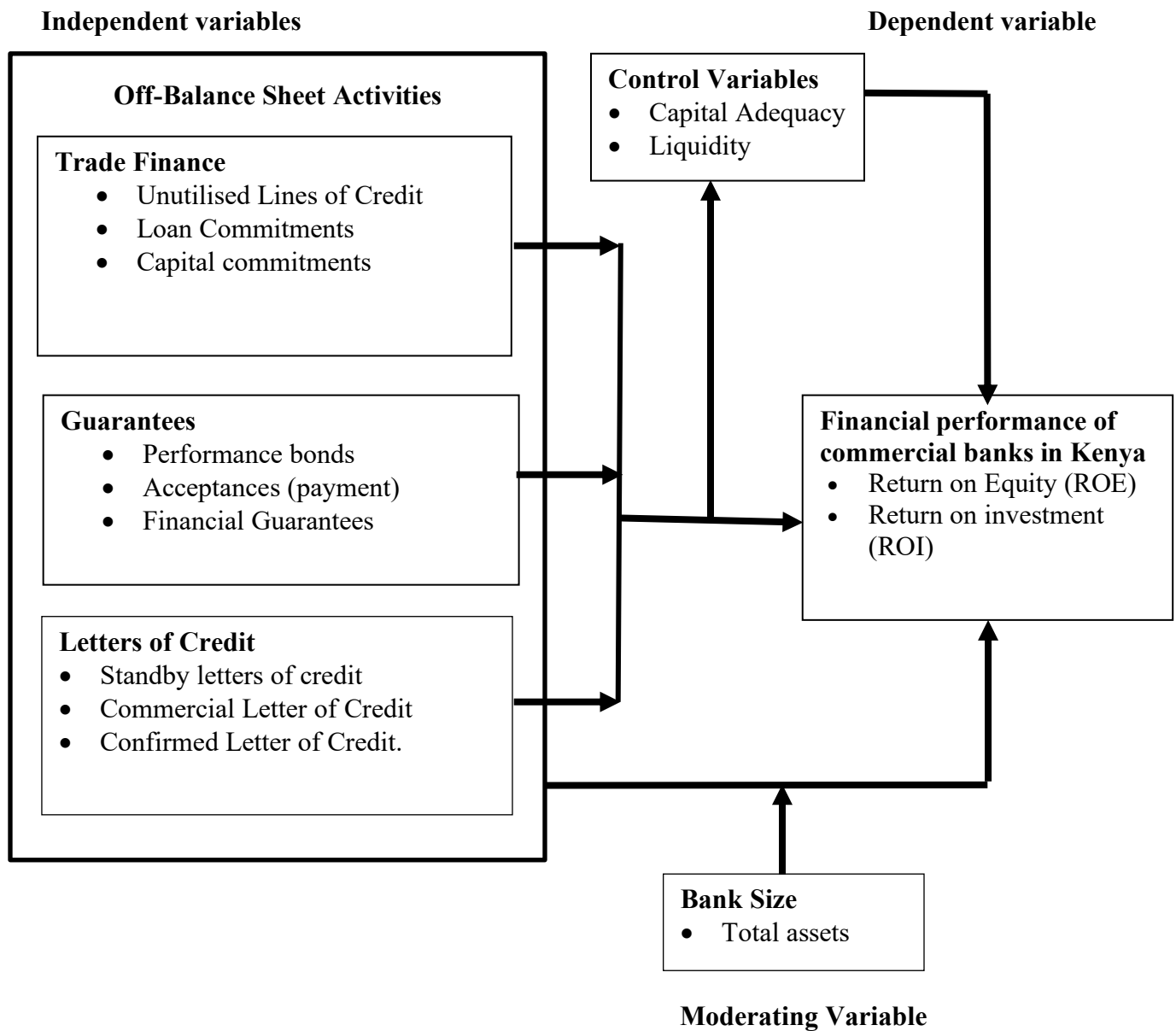
Contextually, much of the existing research has been conducted within stand-alone national settings, Nigeria, Kenya, or Bangladesh, and limited generalizability of results across heterogeneous regulatory and market settings. Methodologically, many studies (including Mohammed & Abibakar, 2019; Youssef, 2019) employed descriptive or cross-sectional regression models, with weaker attention devoted to dynamic modelling, endogeneity, or strong causal inference. Some others employed purposive or restricted samples, or neglected control variables pertinent to their explanation, and so weakened the explanatory power of their findings. Moreover, notable theoretical gaps persisted, chief among them the absence of a robust, multidimensional model that systematically accounts for the moderating influence of bank size on the relationship between OBS activities and financial performance. This gap extended across prevailing frameworks in corporate governance, market structure, and risk management strategies, underscoring the need for more integrative and contextually grounded theoretical approaches. As a response to such gaps, the current study performs a country-specific, performance-oriented, and theory-based analysis of the relationship between off-balance sheet activities and the financial performance of commercial banks in Kenya. By inserting the moderating role of bank size and grounding the analysis within robust theoretical frameworks such as the Resource-Based View, Signaling Theory, and Concentration–Fragility Theory, the study aims to offer deeper insights into the strategic and financial outcomes of OBS participation in an emerging market context.

2.4 Conceptual Framework

Among, the banks in Kenya, the most significant OBS activities can be summarised as trade finance, guarantees, and letters of credit. However, the relationship between and financial performance of Commercial banks could be moderated by bank size. So, in this study, a conceptual framework was developed, proposing that the trade finance, guarantees, and letters of credit affect financial commercial banks listed on NSE in Kenya. In that case; trade finance, guarantees, and letters of credit were conceptualized as the independent variables (IVs), which were expected to influence or drive changes in profitability of banks in Kenya, the dependent variable (DV) as shown in Figure 1. Meanwhile bank size was considered as moderator.

.

FIGURE 1
Conceptual Framework



2.5 Operationalization of study variables

TABLE 1

Operational Framework

Commercial banks listed on NSE in Kenya	Dependent Variable	Ln (ROE, ROI)	Ratio Scale	Descriptive Multiple regression analysis
Trade finance	Independent Variable	Ln ((Unutilised Lines of Credit +Loan Commitments + Capital commitments	Ratio Scale	Descriptive Multiple regression analysis
Guarantees	Independent Variable	Ln (Performance bonds +Acceptances (payment) +Financial)	Ratio Scale	Descriptive Multiple regression analysis
Letters of Credit	Independent Variable	Ln(Standby letters of credit + Commercial Letter of Credit + Confirmed Letter of Credit)	Ratio Scale	Descriptive Multiple regression analysis
Bank size	Moderating Variable	Ln(Total assets)	Ratio Scale	Descriptive Multiple regression analysis

Source: Researcher (2025)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Within this chapter, the procedures and methods followed in conducting the research and achieving the stated objectives were elaborately described. The chapter detailed research design, target population, sampling techniques, data collection methods, data analysis techniques, model specification, diagnostic tests, and ethical issues. The research design employed was strictly developed to ensure analytical rigor, methodological transparency, and replicability, as well as being squarely located within mainstream empirical research traditions in the finance and banking fields.

3.2 Research Design

In scholarly works, research design serves as the architectural blueprint of a study, systematically linking the research objectives to the methods of data collection, analysis, and interpretation. It ensures methodological coherence, enabling researchers to draw valid, reliable, and meaningful inferences that address the underlying research questions. This study adopted longitudinal panel design. A longitudinal panel design was utilized, where panel data for the same commercial banks were collected over different time periods in order to experiment with the influence of changes in key variables on performance outcomes. The design featured both cross-sectional and time-series dimensions, which allowed for differences between banks as well as within each bank over time to be examined. It was best suited for the investigation of dynamic relationships and the establishment of causal relationships with control over time-invariant unobserved bank-specific characteristics.

The design supported analytical methods such as Fixed Effects, Random Effects, and Dynamic Panel Data (DPD) models, which have been derived from longitudinal panel designs for the observation of individual and time effects. Regarding the study on off-balance sheet activities and commercial banks' performance in Kenya, the longitudinal panel research design was appropriate in this case as it enabled proper analysis of how variations in off-balance sheet activities across several years influenced bank performance while controlling for institutional heterogeneity and time effects. Using panel data, the study captured both cross-sectional variation across banks and time trends within individual banks, thereby complementing the strength and richness of empirical analysis

3.3 Target Population

According to Mugenda and Mugenda (2015), a population constitutes any clearly defined group of individuals, events, or objects that a researcher seeks to examine and from which conclusions are drawn. In this study, the target population comprised the 11 commercial banks listed on the NSE in Kenya that had been continuously operational between 2015 and 2024, as presented in Table 2. This clearly defined population provided a robust foundation for rigorous empirical analysis.

TABLE 2
Target Population

Banks	No	Sample size
Publicly Listed Commercial Banks	11	11

Source: Central Bank of Kenya (2024)

3.4 Data Collection Tool

The study exclusively utilized secondary panel data encompassing licensed commercial banks in Kenya for the period 2015–2024. The data was sourced from the Central Bank of Kenya, the

regulatory authority overseeing the banking sector, alongside audited annual financial statements of commercial banks and CBK supervisory reports.

Panel data was deemed particularly suitable for this study as it integrates both cross-sectional and time-series dimensions, enabling the examination of variations across banks and over time. This methodological strength provided a more comprehensive and dynamic dataset compared to purely cross-sectional analyses, thereby enhancing the validity and robustness of the findings.

To ensure consistency and precision in data collection, a structured data extraction sheet was meticulously developed to capture key variables from the secondary sources. The primary variables of interest included off-balance sheet activities, financial performance indicators, and bank size, forming the empirical backbone of the analysis. More precisely, the sheet was used to collect performance of commercial banks listed on NSE in Kenya items (Return on Equity and Return on Investment) in addition to; trade finance instruments (unutilised lines of credit, loan commitments and capital commitments), guarantees (including performance bonds, acceptances as payment, and financial guarantees), and letters of credit (comprising standby letters of credit, commercial letter of credit). Other items in the tool included; capital adequacy and liquidity as control variables as well as bank size) total assets). The data were obtained from the notes in the intergraded annual financial reports from CBK (in the contingent liabilities and commitments section)

3.5 Data Collection Procedures

The study utilized document review and structured data extraction templates as the main instruments of data collection. Specifically, the information was obtained from published audited annual financial statements of commercial banks, supervision reports and statistical bulletins

prepared by the Central Bank of Kenya, as well as other publicly available regulatory publications covering the study period 2015–2024.

To ensure consistency and accuracy in recording the required variables, a structured data extraction sheet was developed. This tool guided the systematic capture of data relating to off-balance sheet activities, bank performance, and bank size. The reliance on audited and regulatory data enhanced the accuracy, reliability, and credibility of the information collected while also improving comparability across banks and over time.

3.6 Data Processing and Analysis

The quantitative method was used in the data analysis to give descriptive statistics that was a simple method of producing the most useful statistics. Descriptive statistics will be utilized to summarize the data. The data was then displayed in tables and charts. This included means, standard deviation, minimum, maximum, percentages and frequencies.

The study established relationship between bank Off-balance sheet activities and commercial banks listed on NSE in Kenya using a Dynamic Panel-Data (DPD) regression model, at 5% significance level. The DPD regression model, a statistical technique, was used to analyse panel data where the current value of the dependent variable depended on its past values.

Dynamic Panel-Data (DPD) models account for past values of the dependent variable by including lagged terms, which introduces endogeneity. Traditional Fixed Effects and Random Effects models were not suitable in this case, as the lagged dependent variable becomes correlated with the error term, leading to biased estimates. DPD models solved this using instrumental variables. The analytical model was;

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + U_{it} \dots\dots\dots 3.1$$

Where:

Y_{it} = Commercial banks listed on NSE in Kenya for bank i at time t

β_0 is the constant term (intercept).

$\beta_1, \dots, \beta_3$ are the coefficients of the IVs of the study; trade finance, guarantees, and letters of credit respectively

X_{1it} = Trade finance for bank i at time t

X_{2it} = Guarantees for bank i at time t

X_{3it} = Letters of credit for bank i at time t

U_{it} = error term

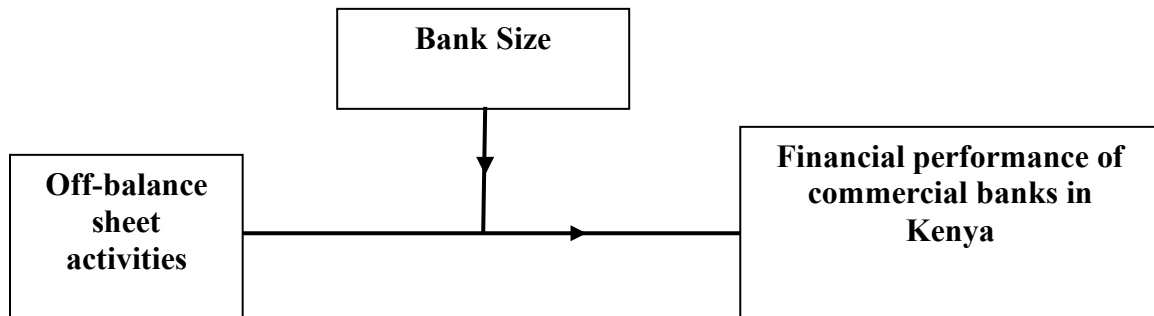
i = commercial banks in Kenya

t = time period (between 2015 and 2024)

The present study investigated the moderating role of bank size in shaping the relationship between OBS activities and the financial performance of commercial banks listed on the NSE in Kenya (Hayes, 2022). Bank size was conceptualized as a pivotal moderating variable, capable of influencing both the intensity and direction of the association between the endogenous variable, financial performance, and the exogenous variable, OBS activities. This moderating effect emerges from the interaction between the predictor, which explained variance in the outcome, and a tertiary variable that conditions the nature of this relationship. Figure 2 provides a visual representation of this interaction, illustrating how variations in bank size modulated the impact of OBS activities on the financial performance of banks.

FIGURE 2

Moderating Effect



Source: Author (2025)

The preliminary step was critical in demonstrating statistical evidence that in fact there was a relationship between the predictor variable and outcome variable that can be moderated. To fail to do this would have rendered it unnecessary to go to the last stage of moderation assessment.

This used the equation

$$Y_{it} = \beta_0 + \beta_4 X_{4it} + U_{it} \dots\dots\dots 3.2$$

Performing moderation analysis necessitated that the Off-balance sheet activities parameter (β_5) would have been statistically significant in moving to the next level of analysis.

The study then analysed for moderating effect

$$Y_{it} = \beta_0 + \beta_4 X_{4it} + \beta_5 X_{5it} + \beta_7 (X_4 * X_5)_{it} + U_{it} \dots\dots\dots 3.3$$

Y_{it} = Commercial banks listed on NSE in Kenya for bank i at time t,

X_{4it} = Composite index of Off-balance sheet activities for bank i at time t

X_{5it} = Bank size for bank i at time t

$(X_4 * X_{5it})$ = Interaction effect between Off-balance sheet activities (IV) and Bank size for bank i at time t

β_0 is a constant (value of performance when each OBS activities and Bank size is zero).

U_{it} = error term

Concerning the interaction term in Equation 3.3, the moderating influence was assessed through the regression coefficient β_7 . In the context of the current study, if β_7 was found to be statistically distinct from zero, it signified a substantial moderating effect on the relationship between the commercial banks listed on NSE in Kenya. The coefficient β_7 in Equation 3.3 thus encapsulated both the magnitude and direction of this moderating influence, offering insights into how the interplay between the variables was shaped by the identified moderating factors.

Should β_7 demonstrated statistical significance, the commercial banks listed on NSE in Kenya was treated as the dependent variable in a multiple regression model. In this model, the Off-balance sheet activities, bank size, and the interaction term served as the independent predictors, thereby elucidating the complex relationships and their combined influence on commercial banks listed on NSE in Kenya.

TABLE 3
Decision Criteria for Moderation

Model 3.2	Model 3.3	Conclusion
$B_4, p > 0.05$	-	No overall effect to moderate
$B_4, p \leq 0.05$	$B_5, p > 0.05$	Moderating variable is an explanatory variable
$B_4, p \leq 0.05$	$B_5, p \leq 0.05$	Moderating variable has a moderating effect

Source: Field Data (2025)

The commercial banks listed on NSE in Kenya, as well as the Off-balance sheet activities, was anticipated to exhibit considerable variability across the continuum of the moderator variable, should a moderating effect be identified.

Including control variables in the regression equation was essential for isolating the effect of OBS, the main independent variable (IV) on the commercial banks listed on NSE in Kenya, the dependent variable (DV) by accounting for other factors that could influence that outcome. Controls absorbed the variation in performance of banks in Kenya explained by other known factors, so it was better to estimate the pure relationship between OBS, bank size, and performance. In this study Control variables included capital adequacy and liquidity. So, the equation was;

$$Y = \beta_0 + \beta_4 X_4 + \beta_5 X_5 + \beta_7 (X_4 * X_5) + \beta_8 \text{Capital Adequacy} + \beta_7 \text{Liquidity} + U_{it} \dots\dots\dots 3.4$$

3.7 Diagnostic Tests

Diagnostic tests were run to test for normality, heteroscedasticity, multicollinearity and autocorrelation. Tests for normality are complementary to graphical inspection of normality that graphed the scores in the sample against a normally distributed sample of scores with the same mean and standard deviation. Other tests included the Hausman Test and tests for Stationarity. In case the test was significant, the distribution was not normal i.e., with constant mean of 0 and variance of 1. The Shapiro-Wilk test was employed to assess the normality of residuals. A p-value greater than 0.05 indicated that the residuals did not significantly deviate from a normal distribution, thus satisfying the assumption of asymptotic normality. Conversely, a p-value less than or equal to 0.05 suggested a violation of the normality assumption.

3.7.1 Multicollinearity

The term Multicollinearity defines the existence of perfect linear relationship among one or more IVs in the regression model. When independent variables are multi collinear, there is an

overlapping or sharing of predictive power. Thus, when multicollinearity is perfect, the regression coefficients of the independent variables are indeterminate and their standard errors are unmeasurable. The multicollinearity converts significant variables into insignificant variables by increasing p-value since high p-value lowers the t-statistics value. Hence, the panel regression results with multicollinearity will show significant variables as insignificant variables. The problem of multicollinearity was solved by dropping highly correlated variables. The results then provided more significant variables than before. This was due to the fact that if IVs were highly correlated with one another, they convey the same information. Hence, the problem of multicollinearity reduces the predictive ability of the separate IVs.

3.7.2 Autocorrelation

Autocorrelation refers to the correlation of a variable with its own past values, typically encountered in time series regression models. When residuals from a regression are autocorrelated, it violates the assumption of independence, which can lead to inefficient estimates and misleading inferences. Autocorrelation will be detected using the Durbin-Watson test. The test statistic ranges from 0 to 4, with a value near 2 suggesting no autocorrelation. Values less than 2 indicate positive autocorrelation, while values greater than 2 suggest negative autocorrelation (Durbin & Watson, 1950).

3.7.3 Heteroscedasticity

Homoscedasticity is one of the basic assumptions of the linear regression model. This assumption holds that the probability distribution of the disturbance term is the same for all observations. Homoscedasticity assumes that the variance of the error terms remains constant across all levels of the explanatory variables. A violation of this assumption, whereby the error variances differ, constitutes heteroscedasticity, a condition that can compromise the reliability of standard errors

and hypothesis testing in regression analysis. To diagnose the presence of heteroscedasticity, this study applied the Breusch-Pagan test. Under this test, a p-value less than 0.05 at the 95% confidence level indicated a statistically significant presence of heteroscedasticity. Conversely, a p-value greater than 0.05 suggested that the data did not exhibit heteroscedasticity, thereby validating the assumption of constant variance.

3.7.4 Stationarity

Stationarity is a key assumption in many time series analyses. A stationary time series has constant mean, variance, and autocovariance over time. Non-stationary data can lead to spurious regression results, making it essential to test for stationarity before conducting further analysis. In time series analysis, stationarity implies that a time series has constant mean, variance, and autocovariance over time. Non-stationary data can lead to spurious regression results. The Augmented Dickey-Fuller (ADF) Test was used to test for a unit root in a univariate time series. The null hypothesis posits that the time series was non-stationary (has a unit root), while the alternative indicates stationarity (Dickey & Fuller, 1979). In ADF Test, it tested the null hypothesis that a unit root is present (i.e., the series is non-stationary). If the null is rejected, the series is considered stationary.

3.7.5 Hausman test

The Hausman test is a statistical procedure used in panel data analysis to determine whether a fixed effects model or a random effects model is more appropriate. It assessed whether the unique errors (i.e., the individual effects) are correlated with the regressors. The null hypothesis assumes that the random effects model is appropriate (no correlation), while the alternative suggests that the fixed effects model is more suitable (Hausman, 1978). A significant test result implies that the fixed effects model should be used to avoid bias.

It will test whether the unique errors (u_i) are correlated with the regressors.

Null hypothesis (H_0): Random effects model is appropriate (i.e., no correlation between the individual effects and the regressors).

Alternative hypothesis (H_1): Fixed effects model is preferred (i.e., correlation exists).

If the test yields a statistically significant result, the fixed effects model should be used

3.7.6 Lag Selection Criteria

In dynamic panel data modeling, the choice of the number of lags used is critical in order to effectively capture the influence of historical values on the current outcome. This is particularly true in banking studies, where previous performance in finance and OBS activities such as trade finance, guarantees, and letters of credit may have a lagged effect on profitability.

In an effort to determine the optimal lags, the study relied on Bayesian Information Criterion (BIC). The criteria will help balance model fit against complexity, with the best model being the one that comes with the lowest selected criterion. Besides statistical diagnostic, theoretical and industry-specific considerations should also guide lag choice. For instance, banking might need consideration for regulatory lags or financial cycles that can take one or more lag periods.

In such estimators as the Generalized Method of Moments (GMM), the Arellano-Bond estimator, for instance, used in dynamic panel estimation, lagged variables themselves serve as instruments. Too many lags will, however, lead to instrument proliferation that made the model invalid. To address this, testing for model adequacy using diagnostic tests such as the Arellano-Bond test for serial correlation of order one and two (AR(1) and AR(2)), and the Sargan or Hansen tests for over-identifying restrictions, is used. In a well-specified GMM model, first-order autocorrelation (AR(1)) should be expected to be seen, and second-order autocorrelation (AR(2))

should not be seen. successful lag choice involves a wise blend of statistical demands, theory, and test diagnostic to yield stable, valid, and policy-relevant dynamic panel models in finance studies.

3.8 Ethical Considerations

The research ensured that the study was carried out in an ethical manner, adhering to the highest standards of academic integrity and ethical research practice. Since the research relies exclusively on secondary data, there are no direct interactions with human participants.

Academic integrity was upheld by acknowledging all data sources, including Central Bank of Kenya reports and published financial statements of commercial banks, through proper citation and referencing to avoid plagiarism. Confidentiality was maintained by treating bank-specific financial information with strict care, and the analysis and reporting was conducted at aggregated levels to prevent disclosure of sensitive details of individual institutions.

The study also observed regulatory compliance. Prior to commencement, ethical approval was sought from KCA University's Ethical Review Committee (ERC), and a research permit was obtained from the National Commission for Science, Technology and Innovation (NACOSTI). Guarantees will further be ensured by maintaining objectivity and avoiding misrepresentation of findings or manipulation of data. The study guaranteed that information provided by the banks is fully protected while upholding the principles of ethical scholarship.

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter presents the analysis and interpretation of the data collected to investigate the relationship between bank off-balance sheet activities and the performance of commercial banks listed on the Nairobi Securities Exchange (NSE) in Kenya. The study adopted a quantitative research approach, using descriptive statistics to provide a clear and concise summary of the data. Key measures, including means, standard deviations, minimum and maximum values, frequencies, and percentages, are presented in tables and charts to illustrate the patterns and characteristics of the dataset. To examine the dynamic nature of bank performance, the study employed a Dynamic Panel-Data (DPD) regression model at a 5% significance level. Furthermore, the study investigates the moderating effect of bank size, exploring whether the impact of off-balance sheet activities on bank performance varies according to the scale of the bank. This adds depth to the analysis by highlighting how bank characteristics influence the relationship under study. The chapter is organized to first present the descriptive statistics, followed by the results of the Dynamic Panel-Data regression analysis, including tests for model assumptions, and concludes with a detailed interpretation of the findings in light of the study's objectives and hypotheses. This structure provides a comprehensive understanding of the data and its implications for commercial banking performance in Kenya.

4.2 Response Rate

The study collected data for the research from the 11 publicly listed commercial banks in Kenya over the period 2015–2024. The data was obtained from the Central Bank of Kenya (CBK), which was the regulatory body responsible for the banking industry, as well as from published audited

annual financial statements of commercial banks and CBK supervisory reports. However, results from Bank of Rwanda (BK) Group PLC lacked sufficient record for the key data. Accordingly, this study omitted all the record for that bank to remain with record from 10 banks as captured in Table 4.

TABLE 4
Analysis by Response Rate

Indicator	Frequency	Percent
Sample Size	11	100.00%
Responded	10	90.91%
Not Responded	1	

Source: Research data (2025)

The results in table 4 show that that response rate was 90.91% and according to Mugenda and Mugenda (2003), a response rate of above 49% and not exceeding 60% is adequate, while response rate of above 60% and not exceeding 69 is good and a response rate above 69% is very high. Mugenda and Mugenda (2003) posit that a response rate exceeding 69%, (rated as very high) would produce accurate results. Accordingly, a response rate of 90.91% which was well above 69% would evidently produce credible results since it was very high. Although the response rate was very good at 80.00%, the failure of 20% to respond was not explained.

4.2 Descriptive Analysis

The study presented the analysed data through well-structured frequency tables accompanied by clear and detailed narrative explanations, offering meaningful insights into the major concepts under investigation. The data analysis was guided by the study objectives, with descriptive statistics computed to provide a comprehensive summary of both the independent variables (IVs) and the dependent variable (DV). These descriptive measures offer an overview of the distribution

and characteristics of the data, laying a strong foundation for further inferential analysis. The results of these descriptive statistics are systematically presented in this section to enhance clarity, coherence, and ease of interpretation. The descriptive statistics presented in Table 5 provide a summary of the central tendencies and dispersion of the key variables employed in this study.

TABLE 5

Descriptives for Off-Balance Sheet Activities and Financial Performance

variable	n	Mean	SD	Min	Max
Performance	100	17.62	6.55	0.30	30
Trade Finance (Kshs. Million)	100	50510.50	110630.10	42	694930.00
Guarantees (Kshs. Million)	100	35253.72	62199.11	0	506267.00
Letters of credit (Kshs. Million)	100	41746.40	76329.34	0	581569.00
Bank size (Kshs. Million)	100	449947.70	323059.50	52900	1821435.00
Capital Adequacy	100	19.03	9.99	5.3	59.90
Liquidity	100	43.64	16.13	8	73.70

Source: Research data (2025)

All variables recorded 100 valid observations, indicating a balanced dataset across the variables analysed. This is essential because balanced panels improve the efficiency of estimation procedures and facilitate the use of advanced econometric techniques such as system Generalized Method of Moments (GMM).

The descriptive statistics indicate notable heterogeneity in the scale and structure of financial operations among the sampled institutions. High variability in trade finance, guarantees, letters of credit, and bank size reflects uneven engagement in financial activities, likely linked to institutional capacity and market positioning. Meanwhile, relatively stable capital adequacy and liquidity ratios suggest regulatory alignment across the sector. These variations are expected to

play a significant role in explaining institutional performance dynamics, warranting the use of dynamic panel data techniques such as system GMM in subsequent analyses

4.2.1 Performance of commercial banks listed on NSE in Kenya.

The study first evaluated the financial performance of commercial banks listed on NSE in Kenya, which was a ratio. The results of the descriptive statistics indicate that the mean financial performance of commercial banks listed on the NSE was 17.62, with a standard deviation of 6.55, a minimum value of 0.30, and a maximum value of 30.00. This implies that, on average, the listed commercial banks demonstrated moderately high levels of financial performance during the study period. The relatively low standard deviation compared to the mean suggests that performance levels among most banks are fairly concentrated around the average, indicating moderate variability across institutions.

However, the minimum value of 0.30 reflects that some banks recorded significantly low financial performance levels, possibly due to operational inefficiencies, market challenges, or periods of weak profitability. Conversely, the maximum value of 30.00 indicates the presence of banks with exceptionally strong financial performance, likely reflecting effective strategic management, diversified income streams, or stronger market positioning.

This variation in financial performance outcomes underscores the heterogeneity within Kenya's banking sector, where some institutions exhibit strong financial resilience and competitive advantage, while others face operational or structural weaknesses. Such disparities may be attributed to differences in institutional size, resource capacity, strategic investment choices, and levels of engagement in off-balance sheet activities. The findings highlight that while the sector demonstrates generally robust performance, significant financial performance gaps exist among individual banks listed on the NSE.

4.2.2 Trade Finance and Financial Performance

The study assessed the first objective to determine the effect of trade finance on financial commercial banks listed on NSE in Kenya. The analysis of trade finance instruments for financial commercial banks listed on the NSE in Kenya reveals substantial heterogeneity in their utilization and distribution. The mean value of trade finance transactions was Kshs. 50,510.50 million, indicating that, on average, commercial banks facilitated considerable volumes of trade-related financial activities over the period under review. However, the relatively large standard deviation of Kshs. 110,630.10 million demonstrates a high degree of variability around this mean, suggesting that trade finance transactions varied significantly across different banks and time periods.

This variability is further emphasized by the observed range, which spans from a minimum of Kshs. 42.00million to a maximum of Kshs. 694,930.00 million. Such a broad spread indicates the coexistence of both very small and exceptionally large trade finance transactions. These disparities may be attributed to structural differences among banking institutions, where some banks primarily serve those with lower transaction volumes, while others are engaged in large-scale international trade financing activities.

Moreover, the presence of such large fluctuations may also reflect underlying economic dynamics, including market cycles, liquidity conditions, and variations in external trade flows over time. Periods of heightened economic activity or increased global trade volumes could result in spikes in trade finance transactions, whereas economic slowdowns may correspond with reduced activity. This wide dispersion is critical, as it highlights the differentiated role of trade finance in supporting banking performance, depending on the scale of operations and market positioning of each institution. It also underscores the importance of trade finance as a strategic instrument for enhancing financial intermediation and facilitating economic growth in Kenya's banking sector

4.2.3 Guarantees and Financial Performance

The study assessed the second objective to determine the effect of guarantees on financial commercial banks listed on NSE in Kenya. The analysis of guarantee instruments among financial commercial banks listed on the NSE in Kenya indicates substantial variation in their utilization across institutions and periods. Guarantees recorded a mean value of Kshs. 35,253.72 million, reflecting the average volume of guarantee-related activities facilitated by the banks. The standard deviation of Kshs. 62,199.11 million points to a high degree of variability, though slightly lower than the variability observed in trade finance transactions.

The range of guarantee activities, spanning from NIL to Kshs. 506,267.00 million, highlights the uneven distribution of guarantees across the sample. While some banks or time periods recorded no guarantee activity, other institutions engaged in very substantial guarantee transactions, suggesting that the use of guarantees is not uniform across the sector. This distribution likely reflects differences in bank size, market focus, and the complexity of client transactions. Banks with larger operational capacity or specialized in corporate and international banking may engage more heavily in guarantee activities, whereas smaller banks or those focused on retail banking may participate less.

These findings underscore that guarantee instruments play a differentiated role in supporting financial performance among NSE-listed banks. The concentration of guarantee usage among certain banks or periods may indicate that guarantees are particularly influential in enhancing the financial outcomes of institutions involved in larger or more complex transactions. Consequently, understanding the variability and deployment of guarantees is essential for assessing their overall impact on bank performance and the strategic management of off-balance sheet activities in Kenya's banking sector

4.2.4 Letters of credit and Financial Performance

The study assessed the third objective; to determine the effect of letters of credit on financial commercial banks listed on NSE in Kenya. The analysis of Letters of Credit (LCs) among financial commercial banks listed on the NSE in Kenya reveals significant variation in their usage and distribution. The mean value of LCs was Ksh 41,746.40 million, indicating that, on average, banks engaged in a considerable volume of LC transactions. However, the standard deviation of Kshs. 76,329.34 million points to a high level of variability, suggesting that transaction values differ widely across banks and over time.

The observed range, extending from NIL to Kshs. 581,569.00 million, further highlights this variability. The presence of zero values indicates that some banks or specific periods did not engage in LC transactions at all, possibly due to limited involvement in international trade or lower demand for documentary credits. Conversely, the maximum value demonstrates that certain banks handled extremely large LC transactions, likely reflecting their engagement in substantial international trade activities or corporate financing arrangements.

The high standard deviation relative to the mean suggests that the distribution of LCs is positively skewed, with a few high-value transactions pulling the mean upward. This skewness reflects the fact that while most banks conduct moderate LC transactions, a minority engage in very large-scale operations, potentially having a greater influence on financial performance.

Overall, these findings underscore that Letters of Credit are unevenly distributed across NSE-listed banks, with their usage concentrated among institutions engaged in larger or more complex transactions. This variability highlights the strategic role of LCs in facilitating trade finance and contributing to the financial performance of commercial banks. Understanding the

distribution and magnitude of LC transactions is therefore critical for assessing their impact on bank profitability, liquidity management, and risk exposure within Kenya's banking sector.

4.2.5 Bank Size and Financial Performance

The study assessed the fourth objective; to establish the moderating role of bank size of the effect of OBS on financial commercial banks listed on NSE in Kenya. The bank size variable recorded the largest numerical values among all the variables analysed, reflecting the substantial differences in the scale and capacity of commercial banks listed on the NSE in Kenya. The mean value of bank size was Kshs. 449,947.70 million, with a standard deviation of Kshs. 323,059.50 million, and a range extending from Kshs. 52,900.00 million to Kshs. 1,821,435.00 million. This wide spread indicates significant heterogeneity in the asset bases, operational scale, and financial capacity of the sampled institutions.

The observed variation suggests that larger banks naturally engage in higher-value financial transactions, manage larger portfolios, and have greater capacity to leverage off-balance sheet instruments, whereas smaller banks operate within a more constrained scale, potentially limiting their engagement in such activities. This structural heterogeneity is a critical factor that may affect financial performance outcomes, influencing both profitability and risk management.

Given its potential moderating and confounding effects on the relationship between off-balance sheet activities and financial performance, bank size was included as a control variable in the subsequent Dynamic Panel-Data regression models. By accounting for differences in scale, the analysis ensures that the estimated effects of trade finance, guarantees, and letters of credit are not biased by disparities in institutional capacity, thereby providing more reliable insights into the determinants of performance among NSE-listed commercial banks.

4.2.6 Control Variables and Financial Performance

The analysis of the financial soundness indicators shows notable differences in the distribution of capital adequacy and liquidity ratios, which are critical measures of financial stability and resilience in the banking sector. Capital Adequacy recorded a mean value of 19.03, indicating that, on average, the institutions maintained capital levels well above the minimum regulatory requirements typically set to ensure solvency and protect depositors. The standard deviation of 9.99 reflects a considerable degree of variation among institutions or across time, suggesting that while some maintained relatively moderate capital buffers, others exhibited significantly higher ratios. The range of values, from 5.30 to 59.90, highlights this disparity, with some observations indicating minimum compliance levels and others showing very strong capitalization. This variability can be interpreted as an indication of diverse capital management strategies, risk appetites, and operational scales across the sample. Institutions with higher capital adequacy ratios are likely adopting conservative financial strategies, positioning themselves to absorb potential shocks, while those with lower ratios may be operating closer to regulatory thresholds.

Similarly, Liquidity displayed a mean of 43.64 with a standard deviation of 16.13, suggesting moderate to high dispersion in liquidity positions. The range of 8.00 to 73.70 indicates that while some entities had minimal liquidity buffers, others held significantly large liquid asset positions relative to their obligations. A wide range in liquidity ratios often reflects differences in liquidity management practices, market positioning, or operational structures. Institutions with higher liquidity ratios may be prioritizing stability and risk mitigation, ensuring they can meet short-term obligations comfortably. Conversely, lower ratios may suggest a more aggressive asset allocation strategy, possibly aimed at maximizing returns through less liquid but higher-yielding investments.

The substantial variation in both capital adequacy and liquidity ratios underscores heterogeneity in financial resilience across institutions. Higher ratios signal strong balance sheet positions and an enhanced ability to absorb financial shocks, which is particularly critical in volatile economic environments. Conversely, lower ratios may indicate vulnerability to liquidity stress or solvency pressures if adverse conditions arise. From a policy perspective, this distribution suggests the importance of robust regulatory oversight and risk-based supervision, ensuring that institutions with lower buffers do not pose systemic risks.

These findings are crucial because capital adequacy and liquidity are key determinants of institutional stability, influencing confidence levels among depositors, investors, and regulators. A well-capitalized and liquid financial sector is better positioned to support economic activity, withstand shocks, and maintain financial intermediation even during periods of stress. The moderate variability in these financial ratios suggests that most institutions maintain relatively stable capital adequacy and liquidity levels, likely in response to regulatory requirements. However, the presence of extreme values, such as the minimum capital adequacy of 5.3%, also indicates that a few institutions may be operating close to or below optimal prudential levels. These variations are important for interpreting the stability and financial health of the institutions under study, and they may influence performance outcomes in subsequent econometric analyses.

4.3 Dynamic Panel-Data (DPD) Regression Model

To examine the dynamic nature of bank performance, the study employed a Dynamic Panel-Data (DPD) regression model at a 5% significance level. This model is particularly suited for panel data where the current value of the dependent variable depends on its past values. By including lagged terms of bank performance, the model accounts for persistence over time and captures the temporal dynamics inherent in financial institutions. Traditional panel models, such as Fixed Effects or

Random Effects, are not suitable in this context because the inclusion of lagged dependent variables introduces endogeneity, which can bias the estimates. The DPD model addresses this challenge through the use of instrumental variables, ensuring that the results are consistent and reliable.

4.3.1 Diagnostic Tests

. Before conducting the regression analysis, a series of diagnostic tests were carried out to ensure the validity and reliability of the model estimates. These tests are essential for confirming that the underlying assumptions of panel data regression are not violated, thereby enhancing the credibility and accuracy of the findings. Specifically, tests were performed to examine normality, multicollinearity, autocorrelation, heteroskedasticity, Stationarity and Hausmann Test.

The test for normality complemented graphical inspections by comparing the distribution of sample scores against a normally distributed set of scores with the same mean and standard deviation. This provided both visual and statistical confirmation of whether the residuals followed a normal distribution. The results obtained from The Shapiro–Wilk W test were captured in Table 6.

TABLE 6
The Shapiro–Wilk W Test Results

Variable	Obs	W	V	z	Prob>z
Financial Performance	100	0.9657	2.8320	2.3090	0.0105
Trade Finance	100	0.4701	43.7480	8.3820	0.0000
Guarantees	100	0.4744	43.3990	8.3640	0.0000
Letters of credit	100	0.4860	42.4370	8.3150	0.0000
Bank size	100	0.8325	13.8310	5.8280	0.0000
Capital Adequacy	100	0.6068	32.4660	7.7200	0.0000
Liquidity	100	0.9764	1.9500	1.4810	0.0693

Source: Research data (2025)

The Shapiro–Wilk W test for normality results presented indicate that most of the original variables do not satisfy the assumption of normal distribution, as reflected by their low W values and p-values below the 0.05 significance level. This means the null hypothesis of normality is rejected for nearly all variables except one. Specifically, the variable original financial performance shows a W statistic of 0.9657 and a p-value of 0.0105, indicating a statistically significant deviation from normality. Similarly, original trade finance ($W = 0.4701$, $p = 0.0000$), original guarantees ($W = 0.4744$, $p = 0.0000$), and original letters of credit ($W = 0.4860$, $p = 0.0000$) all exhibit very low W values and extremely small p-values. These results clearly indicate that the distributions of these variables are not normal. In addition, original bank size ($W = 0.8325$, $p = 0.0000$) and original capital adequacy ($W = 0.6068$, $p = 0.0000$) also show significant departures from normality, as confirmed by their very low W values and high z statistics.

However, original liquidity stands out with a W statistic of 0.9764 and a p-value of 0.0693, which is above the 0.05 significance level. This implies that the null hypothesis of normality cannot be rejected for liquidity, suggesting that its distribution is approximately normal. These results demonstrate that most of the original variables are not normally distributed, with the exception of liquidity. This finding implies that data transformation techniques (such as logarithmic, square root, or Box–Cox transformations) or non-parametric statistical approaches may be necessary to correct for non-normality before applying parametric models such as regression analysis. Ensuring normality is particularly important to improve model accuracy and the validity of statistical inference

The results from moderated data were captured in Table 7

TABLE 7**The Shapiro–Wilk W Test Results after Normalisation**

Variable	Obs	W	V	z	Prob>z
Performance	100	0.9894	0.8750	-0.2950	0.6160
Trade Finance	100	0.9806	1.6010	1.0440	0.1482
Guarantees	100	0.9899	0.8330	-0.4060	0.6578
Letters of credit	100	0.9974	0.2120	-3.4440	0.9997
Bank Size	100	0.9868	1.0860	0.1840	0.4271
Capital Adequacy	100	0.9759	1.9930	1.5300	0.0631
Liquidity	100	0.9843	1.2940	0.5710	0.2839

Source: Research data (2025)

The results of the Shapiro–Wilk W test for normality indicate that none of the variables in the study significantly deviate from a normal distribution. This conclusion is based on the fact that all the p-values are greater than the 0.05 significance level, meaning the null hypothesis of normality cannot be rejected for any of the variables.

Specifically, the variable financial performance recorded a p-value of 0.6160, while Trade finance had a p-value of 0.1482, and guarantees had a p-value of 0.6578. These values are well above the threshold, indicating that their distributions are consistent with normality. Similarly, letters of credit recorded the highest p-value of 0.9997, strongly suggesting a normal distribution. Bank size with 0.4271 and liquidity having 0.2839, further confirm normal distribution patterns. Finally, capital adequacy recorded a p-value of 0.0631, which, although closer to the 0.05 cutoff, still does not indicate any significant departure from normality.

Overall, the findings confirm that all the variables meet the assumption of normality, which is a crucial requirement for many parametric statistical techniques, including regression analysis. This supports the appropriateness of using such methods in subsequent analyses. Nonetheless, it is advisable to complement these statistical results with graphical assessments such as Q–Q plots or histograms to visually confirm the normality of the distributions.

In this study, the Variance Inflation Factor (VIF) was used to assess multicollinearity among the independent variables, including trade finance, guarantees, letters of credit, liquidity, capital adequacy, and bank size. The VIF measures how much the variance of an estimated regression coefficient increases due to multicollinearity. A VIF value greater than 10 is often considered indicative of high multicollinearity, while values close to 1 suggest minimal correlation between predictors.

TABLE 8
Results on Multicollinearity

Variable	VIF	1/VIF
Guarantees	1.27	0.784819
Trade Finance	1.21	0.823315
Bank Size	1.13	0.884873
Letters of Credit	1.07	0.930834
Mean VIF	1.17	

Source: Research data (2025)

The Variance Inflation Factor (VIF) results indicate that multicollinearity is not a concern among the independent variables in this regression model. VIF values measure the extent to which a predictor is correlated with other predictors, with higher values suggesting greater multicollinearity. Generally, a VIF close to 1 indicates no correlation, values between 1 and 5 indicate moderate correlation, and values above 10 suggest serious multicollinearity.

In this model, all variables have VIF values near 1: Guarantees (1.27), Trade Finance (1.21), Bank Size (1.13), and LC (1.07). Their corresponding tolerance values (1/VIF) are high, ranging from 0.78 to 0.93, indicating that each variable provides largely independent information.

The mean VIF of 1.17 confirms that, on average, there is minimal correlation among the predictors. This implies that the regression coefficients are reliable, and no corrective measures are needed to address multicollinearity in this model.

The Autocorrelation results were

Durbin-Watson d-statistic (original) = 1.89

The Durbin-Watson statistic for the regression model is 1.89. This statistic is used to detect the presence of autocorrelation in the residuals, which occurs when the errors of a regression model are correlated with each other. Autocorrelation can violate the assumption of independent errors and potentially bias the regression results. The Durbin-Watson statistic ranges from 0 to 4, where a value around 2 indicates no autocorrelation, values below 2 suggest positive autocorrelation, and values above 2 indicate negative autocorrelation.

In this case, the value of 1.89 is very close to 2, suggesting that there is no significant autocorrelation in the residuals. This implies that the errors are approximately independent, and the regression results can be considered reliable with respect to the assumption of independent residuals.

The Breusch-Pagan/Cook-Weisberg test is used to detect heteroskedasticity in a regression model, which occurs when the variance of the residuals is not constant across levels of the independent variables. Heteroskedasticity can violate one of the key assumptions of ordinary least squares (OLS) regression, potentially leading to inefficient estimates and biased standard errors.

The results were;

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of financial performance

chi2(1) = 1.34

Prob > chi2 = 0.2479

The null hypothesis (H_0) of the test is that the residuals have constant variance (homoskedasticity), while the alternative hypothesis is that the residuals' variance changes with the fitted values.

In this case, the test statistic is $\chi^2(1) = 1.34$ with a corresponding p-value of 0.2479. Since the p-value is greater than the conventional significance level of 0.05, we fail to reject the null hypothesis. This indicates that there is no evidence of heteroskedasticity in the model. The residuals can be considered to have constant variance, and the regression results are reliable with respect to this assumption.

To ensure the validity of the regression analysis, this study employed unit root tests to assess the stationarity of all panel variables, including financial performance, trade finance, guarantees, letters of credit, liquidity, capital adequacy, and bank size. Specifically, the Levin-Lin-Chu (LLC) **test** was applied, which is widely used in panel data settings to determine whether the panels contain unit roots or are stationary.

TABLE 9**Results on Stationary Test**

Levin-Lin-Chu unit-root test for			
Ho: Panels contain unit roots		Number of panels = 10	
Ha: Panels are stationary		Number of periods = 10	
AR parameter: Common		Asymptotics: N/T -> 0	
Panel means: Included			
Time trend: Not included			
ADF regressions: 1 lag			
LR variance: Bartlett kernel, 6.00 lags average (chosen by LLC)			
Variable		Statistic	p-value
Performance	Unadjusted t	-11.252	
	Adjusted t*	-7.5522	0.0000
Trade Finance	Unadjusted t	-8.0627	
	Adjusted t*	-3.8597	0.0001
Guarantees	Unadjusted t	-9.1245	
	Adjusted t*	-5.2739	0.0000
Letters of Credit	Unadjusted t	-10.6923	
	Adjusted t*	-6.1400	0.0000
Bank Size	Unadjusted t	-13.1077	
	Adjusted t*	-10.7750	0.0000
Capital Adequacy	Unadjusted t	-9.5319	
	Adjusted t*	-5.2856	0.0000
Liquidity	Unadjusted t	-8.5889	
	Adjusted t*	-3.0189	0.0013

Source: Research data (2025)

The Levin-Lin-Chu (LLC) unit-root tests were conducted for multiple panel variables to assess whether they are stationary or contain unit roots. The null hypothesis (Ho) in each test is that the panel contains a unit root (non-stationary), while the alternative hypothesis (Ha) is that the panel is stationary. The tests were performed with one lag, panel means included, and without a time trend.

For all variables, including Performance, Guarantees, LC, Trade Finance, Bank Size, Liquidity, Capital Adequacy, the adjusted t statistics are highly negative* and the corresponding

p-values are all 0.001 or smaller. For example, Performance has an adjusted t of -7.5522 with a p-value of 0.0000, and Bank Size has an adjusted t of -10.7750 with a p-value of 0.0000.

Since the p-values for all tests are well below the conventional significance level of 0.05, we reject the null hypothesis in each case. This indicates that all the panel variables are stationary, meaning their statistical properties such as mean and variance do not change over time. Stationarity is essential in panel data analysis because it ensures that regression results are reliable and not affected by spurious trends in the data.

In summary, the LLC tests confirm that all the variables in the panel dataset are stationary, making them suitable for further econometric analysis without the need for differencing or transformation to achieve stationarity.

In addition, the Hausman test was conducted to determine the most appropriate model between Fixed Effects and Random Effects, ensuring that the estimation approach aligned with the data structure. Furthermore, stationarity tests were performed to establish whether the panel variables were stable over time, a critical requirement for valid and consistent parameter estimation in dynamic models. These diagnostic tests provided a robust foundation for the subsequent Dynamic Panel-Data regression analysis, ensuring that the model assumptions were adequately satisfied and the results were statistically sound.

TABLE 10**Hausman Test Results**

	---- Coefficients ----			
	(b) FE	(B) RE	(b-B) Difference	$\sqrt{\text{diag}(V_b - V_B)}$ S.E.
Trade Finance	0.5699	0.5565	0.0134	0.0160
Guarantees	0.1808	0.1833	-0.0025	0.0142
Letters of credit	0.2533	0.2624	-0.0091	0.0153
Bank Size	0.5017	0.4857	0.0161	0.0164
Capital Adequacy	0.0170	0.0158	0.0012	0.0049
Liquidity	-0.0349	-0.0333	-0.0016	0.0082
b = consistent under Ho and Ha; obtained from xtreg				
B = inconsistent under Ha, efficient under Ho; obtained from xtreg				
Test: Ho: difference in coefficients not systematic				
$\chi^2(6) = (b-B)'[(V_b - V_B)^{-1}](b-B)$				
1.35				
Prob>chi2 = 0.9686				

Source: Research data (2025)

The Hausman test is used to determine whether a fixed effects (FE) or random effects (RE) model is more appropriate for panel data analysis. The null hypothesis (Ho) assumes that the random effects model is consistent and efficient, meaning the RE estimator is valid and there is no correlation between the regressors and the unobserved individual effects. The alternative hypothesis (Ha) assumes that the fixed effects model is consistent, while the RE estimator is inconsistent due to such correlation.

In the results, the coefficients for the FE and RE models are very similar across all variables, with minor differences (b-B) ranging from -0.0091 to 0.0161. The Hausman test statistic is $\chi^2(6) = 1.35$ with a p-value of 0.9686.

Since the p-value is much greater than 0.05, we fail to reject the null hypothesis. This indicates that there is no systematic difference between the FE and RE coefficients, suggesting that the random effects model is appropriate. In other words, there is no evidence of correlation

between the regressors and the unobserved individual effects, and the RE model can be used as it is both consistent and efficient. The Hausman test supports the use of a random effects model for this panel data, as the differences between FE and RE estimates are not statistically significant.

4.3.2 DPD Model

This section presents the results of the DPD regression analysis, which was employed to examine the relationship between off-balance sheet activities and the financial performance of commercial banks listed on the NSE in Kenya. In addition to examining the direct effects of off-balance sheet activities, the analysis also considers the moderating role of bank size, allowing the study to assess whether the impact of these activities on financial performance varies according to the scale of operations. The results are presented in a systematic manner, beginning with the overall model fit and diagnostic checks, followed by the interpretation of coefficients, significance levels, and their implications for commercial banking performance in Kenya.

The study was guided analytical model;

$Y = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + e$ in equation. (3.1) to obtain Table 11 results

TABLE 11

Off-Balance Sheet Activities and Financial Performance Model

Dynamic panel-data estimation, two-step system GMM						
Group variable: b_id				Number of obs = 100		
Time variable : year				Number of groups = 10		
Number of instruments = 31				Obs per group: min = 10		
Wald chi2(3) = 73.54				avg = 10.00		
Prob > chi2 = 0.000				max = 10		
Corrected						
Performance	Coef.	Std. Err.	z	P> z	[95% Conf.	Interval]
Trade Finance	0.5059	0.1209	4.180	0.0000	0.2689	0.7429
Guarantees.	0.2739	0.0623	4.400	0.0000	0.1518	0.3960
Letter of Credit	0.1650	0.0796	2.070	0.0380	0.0090	0.3209
cons	0.0043	0.0077	0.560	0.5780	-0.0109	0.0195
Arellano-Bond test for AR(1) in first differences: z = -2.43				Pr > z = 0.015		
Arellano-Bond test for AR(2) in first differences: z = -0.77				Pr > z = 0.444		
Sargan test of overid. restrictions: chi2(27) = 44.57				Prob > chi2 = 0.018		
(Not robust, but not weakened by many instruments.)						
Hansen test of overid. restrictions: chi2(27) = 7.94				Prob > chi2 = 1.000		
(Robust, but weakened by many instruments.)						
Difference-in-Hansen tests of exogeneity of instrument subsets:						
GMM instruments for levels						
Hansen test excluding group: chi2(21) = 6.58				Prob > chi2 = 0.999		
Difference (null H = exogenous): chi2(6) = 1.36				Prob > chi2 = 0.969		
gmm(Performance, lag(4 .))						
Hansen test excluding group: chi2(0) = 0.00				Prob > chi2 = .		
Difference (null H = exogenous): chi2(27) = 7.94				Prob > chi2 = 1.000		
iv(Guarantees Letter of Credit Trade Finance)						
Hansen test excluding group: chi2(24) = 8.50				Prob > chi2 = 0.998		
Difference (null H = exogenous): chi2(3) = -0.56				Prob > chi2 = 1.000		
Source: Research data (2025)						

The results of the dynamic panel-data estimation using the two-step system GMM approach provide robust evidence on the relationship between guarantees, letters of credit, trade finance, and firm performance. The Wald chi-square statistic of 73.54 with a p-value of 0.000 indicates that the explanatory variables are jointly significant, meaning that the model as a whole

explains a significant portion of the variation in financial performance. This confirms that the selected financial instruments are relevant predictors of performance outcomes.

The estimated coefficients further reveal important insights. Guarantees exhibit a coefficient of 0.2739 with a standard error of 0.0623, which is statistically significant at the 1% level. This suggests that a one-unit increase in guarantees is associated with a 0.274 increase in firm performance, holding other factors constant. Similarly, letters of credit have a coefficient of 0.1650 with a standard error of 0.0796 and a p-value of 0.038, indicating a positive and statistically significant relationship with performance at the 5% level. Trade finance shows the largest effect, with a coefficient of 0.5059 and a standard error of 0.1209, significant at the 1% level, suggesting that increasing trade finance leads to a 0.506 increase in firm performance. The constant term is not statistically significant, indicating no significant baseline performance when the explanatory variables are zero. Overall, these results demonstrate that trade-related financial instruments contribute positively and significantly to firm performance.

To assess model validity, several diagnostic tests were conducted. The Arellano–Bond test for serial correlation shows a z-value of -2.43 with a p-value of 0.015 for AR(1), indicating the expected presence of first-order serial correlation in the differenced residuals. More importantly, the AR(2) test reports a z-value of -0.77 and a p-value of 0.444, showing no evidence of second-order serial correlation. This outcome satisfies a key assumption of the system GMM estimator and suggests that the model’s instruments are appropriately specified.

Instrument validity was further evaluated using the Sargan and Hansen tests of overidentifying restrictions. The Sargan test yielded a chi-square statistic of 44.57 with a p-value of 0.018, which is statistically significant and may indicate potential problems with instrument validity. However, this test is not robust to heteroskedasticity and therefore should not be relied

on exclusively. The Hansen test, which is robust, reports a chi-square statistic of 7.94 with a p-value of 1.000, indicating that the null hypothesis of instrument validity cannot be rejected. This confirms that the instruments are valid and uncorrelated with the error term. The difference-in-Hansen tests also support this conclusion, with all p-values above 0.05, indicating that the subsets of instruments used in the model are exogenous and properly specified.

While the number of instruments (31) exceeds the number of groups (10), which may raise some concerns about instrument proliferation, the results of the Hansen test suggest that this does not compromise the validity of the estimation. Nevertheless, careful management of instruments through collapsing or lag limitation may be appropriate in future estimations to further strengthen model efficiency.

The findings show that guarantees, letters of credit, and trade finance all have significant and positive effects on firm performance. The model is statistically significant and well-specified, with no evidence of second-order autocorrelation and valid instruments as confirmed by the Hansen and difference-in-Hansen tests. These results underscore the critical role of trade-related financial instruments in enhancing firm performance, providing empirical support for their continued use in strengthening financial capacity and competitiveness in the market.

The study however, reduced the number of instruments to improve the model validity, which yielded Table 12.

TABLE 12

Dynamic Panel-Data Estimation, Two-Step System GMM

Group variable: b_id				Number of obs = 100		
Time variable : year				Number of groups = 10		
Number of instruments = 15				Obs per group: min = 10		
Wald chi2(3) = 240.62				avg = 10.00		
Prob > chi2 = 0.000				max = 10		
Corrected						
performance	Coef.	Std. Err.	z	P> z	[95% Conf.	Interval]
Trade Finance	0.5079	0.0792	6.41	0.0000	0.3527	0.6631
Guarantees	0.2877	0.0366	7.87	0.0000	0.2161	0.3594
Letters of Credit	0.1705	0.0528	3.23	0.0010	0.0671	0.2739
_cons	0.00318	0.00493	0.65	0.5180	-0.0065	0.0128
Instruments for first differences equation						
Standard						
D.(Guarantees Letters of Credit Trade Finance)						
GMM-type (missing=0, separate instruments for each period unless collapsed)						
L(6/7). Financial Performance						
Instruments for levels equation						
Standard						
Guarantees Letters of Credit Trade Finance						
_cons						
GMM-type (missing=0, separate instruments for each period unless collapsed)						
DL5.Fperformance						
Arellano-Bond test for AR(1) in first differences: z = -2.45				Pr > z = 0.014		
Arellano-Bond test for AR(2) in first differences: z = -0.78				Pr > z = 0.435		
Sargan test of overid. restrictions: chi2(11) = 13.14				Prob > chi2 = 0.284		
(Not robust, but not weakened by many instruments.)						
Hansen test of overid. restrictions: chi2(11) = 4.99				Prob > chi2 = 0.932		
(Robust, but weakened by many instruments.)						
Difference-in-Hansen tests of exogeneity of instrument subsets:						
GMM instruments for levels						
Hansen test excluding group: chi2(7) = 4.77				Prob > chi2 = 0.688		
Difference (null H = exogenous): chi2(4) = 0.22				Prob > chi2 = 0.994		
gmm(Performance, lag(6 7))						
Hansen test excluding group: chi2(0) = 0.00				Prob > chi2 = .		
Difference (null H = exogenous): chi2(11) = 4.99				Prob > chi2 = 0.932		
iv(Guarantees Letter of credit Trade Finance)						
Hansen test excluding group: chi2(8) = 4.06				Prob > chi2 = 0.852		
Difference (null H = exogenous): chi2(3) = 0.93				Prob > chi2 = 0.819		

Source: Research data (2025)

The results from the two-step system GMM estimation provide clear and statistically robust evidence regarding the effect of trade finance, guarantees, and letters of credit on the financial performance of commercial banks listed on Nairobi Securities Exchange (NSE) in Kenya.

4.3.2.1 Hypothesis testing

These results directly inform the testing of the study hypotheses:

H₀₁: Trade finance does not have a significant effect on financial performance of commercial banks listed on NSE in Kenya

H₀₂: Guarantees do not have a significant effect on financial performance of commercial banks listed on NSE in Kenya

H₀₃: Letters of credit do not have a significant effect on financial performance of commercial banks listed on NSE in Kenya

Testing Effect of Trade Finance (H₀₁): The coefficient estimate for trade finance is 0.5079, with a standard error of 0.0792 and a z-value of 6.41. The p-value associated with this coefficient is 0.000, which is highly significant at the 1% level ($p < 0.01$). This indicates that trade finance has a positive and statistically significant impact on financial performance. In practical terms, a one-unit increase in trade finance is associated with a 0.508 increase in financial performance, holding other factors constant. Consequently, the null hypothesis H₀₁ is rejected, and the alternative hypothesis is accepted. This suggests that trade finance is a key driver of improved financial performance for banks listed on the NSE.

Testing Effect of Guarantees (H₀₂): The coefficient for guarantees is 0.2877, with a standard error of 0.0366 and a z-value of 7.87. The corresponding p-value is 0.000, which is also significant at the 1% level. This reveals a strong positive and significant relationship between guarantees and financial performance. A one-unit increase in guarantees leads to an estimated

0.288 increase in financial performance, holding other variables constant. Therefore, the null hypothesis H_{02} is rejected, implying that guarantees have a significant positive effect on bank financial performance.

Testing Effect of Letters of Credit (H_{03}): For letters of credit, the coefficient is 0.1705, with a standard error of 0.0528 and a z-value of 3.23. The p-value is 0.001, which is significant at the 1% level. This indicates that letters of credit also have a positive and significant effect on financial performance. Specifically, a one-unit increase in letters of credit is associated with a 0.171 improvement in financial performance. Therefore, the null hypothesis H_{03} is rejected, confirming the significance of letters of credit as a factor influencing bank performance.

4.3.2.2 Diagnostic Tests and Model Validity

The Arellano-Bond test for autocorrelation indicates the presence of first-order serial correlation (AR(1) $p = 0.014$), which is expected in first-differenced equations, and the absence of second-order autocorrelation (AR(2) $p = 0.435$). This confirms the validity of the moment conditions and the correct specification of the dynamic panel model.

The Sargan test ($p = 0.284$) and the Hansen test ($p = 0.932$) both suggest that the instruments used are valid and not correlated with the error term. The Hansen p-value being close to 1 indicates that the model is not overfitted, and the instruments are strong and appropriate. Moreover, the difference-in-Hansen tests further confirm the exogeneity of the instrument subsets, supporting the robustness of the GMM estimation results.

Based on the coefficient estimates and their statistical significance, as well as the results of the diagnostic tests, the study rejects all three null hypotheses (H_{01} , H_{02} , and H_{03}). The findings reveal that trade finance, guarantees, and letters of credit all have positive and statistically significant effects on the financial performance of commercial banks listed on the NSE.

This implies that trade finance mechanisms, including trade finance facilities, guarantees, and letters of credit, play a critical role in enhancing the profitability and financial health of banks. Strategically leveraging these instruments can therefore contribute to improved liquidity, and capital adequacy, ultimately strengthening the banking sector's performance and resilience.

4.3.2.3 Moderating Effects

The study first obtained composite OBS index for purpose of providing a rigorous empirically dependable measure of off-balance sheet activities. This was derived from the natural logarithms of; Trade Finance + Guarantees and Letters of Credit. That is;

$$\text{OBS activities} = (\ln (\text{Trade Finance}) + \ln (\text{Guarantees}) + \ln (\text{Letters of Credit})) / 3 \dots\dots\dots$$

3.5

The study assessed relationship between the predictor variable and outcome variable that could be moderated based on

$$Y = \beta_0 + \beta_4 X_{4tt} + \epsilon \text{ in equation 3.2}$$

This produced Table 13.

TABLE 13

OBS and Financial Performance

Group variable: b_id	Number of obs = 100					
Time variable : year	Number of groups = 10					
Number of instruments = 13	Obs per group: min = 10					
Wald chi2(1) = 138.15	avg = 10.00					
Prob > chi2 = 0.000	max = 10					
Performance	Coef.	Std. Err.	z	P> z	[95% Conf.	Interval]
OBS	1.3208	0.1608	8.22	0.0000	1.0057	1.6359
_cons	-0.0032	0.0049	-0.66	0.5120	-0.0127	0.0063
Instruments for first differences equation						
Standard						
D.OBS						
GMM-type (missing=0, separate instruments for each period unless collapsed)						
L(6/7). Financial performance						
Instruments for levels equation						
Standard						
OBS						
_cons						
GMM-type (missing=0, separate instruments for each period unless collapsed)						
DL5.Fperformance						
Arellano-Bond test for AR(1) in first differences: z = -1.64				Pr > z = 0.101		
Arellano-Bond test for AR(2) in first differences: z = 0.21				Pr > z = 0.834		
Sargan test of overid. restrictions: chi2(11) = 11.20				Prob > chi2 = 0.426		
(Not robust, but not weakened by many instruments.)						
Hansen test of overid. restrictions: chi2(11) = 9.30				Prob > chi2 = 0.594		
(Robust, but weakened by many instruments.)						
Difference-in-Hansen tests of exogeneity of instrument subsets:						
GMM instruments for levels						
Hansen test excluding group: chi2(7) = 8.77				Prob > chi2 = 0.269		
Difference (null H = exogenous): chi2(4) = 0.53				Prob > chi2 = 0.971		
GMM(Performance, lag(6 7))						
Hansen test excluding group: chi2(0) = 0.00				Prob > chi2 = .		
Difference (null H = exogenous): chi2(11) = 9.30				Prob > chi2 = 0.594		
iv(OBS)						
Hansen test excluding group: chi2(10) = 9.67				Prob > chi2 = 0.470		
Difference (null H = exogenous): chi2(1) = -0.37				Prob > chi2 = 1.000		
Source: Research data (2025)						

The results from the two-step system GMM dynamic panel data estimation provide clear insights into the relationship between the observed variable (OBS) and the financial performance of commercial banks. The model was estimated using a balanced panel of 10 banks observed over a period of 10 years, resulting in a total of 100 observations. The number of instruments used was 13, and the Wald Chi-square statistic of 138.15 with a p-value of 0.000 indicates that the model is overall statistically significant, confirming that the explanatory variable included in the model contributes meaningfully to explaining variations in financial performance.

The coefficient estimate for OBS is 1.3208, with a standard error of 0.1608 and a z-value of 8.22. The associated p-value is 0.000, which is statistically significant at the 1% level. This positive and highly significant coefficient implies that a one-unit increase in OBS is associated with a 1.321 unit increase in financial performance, holding other factors constant. In practical terms, OBS has a strong and direct positive effect on financial performance. The constant term is -0.0032, with a p-value of 0.512, indicating that it is not statistically significant.

The Arellano–Bond test for first-order autocorrelation (AR(1)) yielded a z-value of -1.64 and a p-value of 0.101. Since the p-value is above the conventional 0.05 threshold, the null hypothesis of no first-order autocorrelation cannot be rejected, indicating that the model does not suffer from problematic serial correlation at the first order. Similarly, the AR(2) test produced a z-value of 0.21 with a p-value of 0.834, further confirming the absence of second-order serial correlation in the error terms. The lack of AR(2) correlation supports the validity of the instruments and the correct specification of the dynamic panel model.

The Sargan test of overidentifying restrictions produced a Chi-square statistic of 11.20 with a p-value of 0.426. This suggests that the null hypothesis that the instruments are valid cannot be rejected, meaning the instruments are not correlated with the error term. Similarly, the Hansen test

gave a Chi-square statistic of 9.30 with a p-value of 0.594. This result further confirms the validity and robustness of the instruments used in the estimation, indicating that the model is not overfitted and the instruments are strong and appropriate.

The difference-in-Hansen tests further support this conclusion. For the GMM instruments for levels, the difference test returned a Chi-square of 0.53 with a p-value of 0.971, which strongly suggests that the instruments are exogenous. The difference test for the iv(OBS) also indicates exogeneity of the instruments, confirming the internal consistency and credibility of the estimation strategy.

The results show that OBS has a strong and statistically significant positive impact on the financial performance of commercial banks. The absence of serial correlation and the validity of the instruments confirm that the estimated model is well specified and the results are reliable. These findings underscore the importance of OBS as a key determinant of financial performance, with implications for strategic decision-making within the banking sector.

Guided by $Y = \beta_0 + \beta_4 X_{4tt} + \beta_5 X_{5tt} + \beta_7 (X_4 * X_5)_{tt} + \varepsilon$ in equation 3, The study introduced the moderating variable and interaction term to produced Table 14.

TABLE 14**Moderating Effect of Bank Size on OBS and Financial Performance**

Arellano-Bond dynamic panel-data estimation					Number of obs = 70	
Group variable: b_id					Number of groups = 10	
Time variable: year					Obs per group: min = 7	
					avg = 7	
					max = 7	
Number of instruments = 39					Wald chi2(5) = 907.37	
					Prob > chi2 =	
					0.0000	
Two-step results						
Performance	Coef.	Std. Err.	z	P> z	[95% Conf.	Interval]
Performance						
L1.	-0.3256672	0.164311	-1.98	0.047	-0.64771	-0.00362
L2.	-0.158662	0.159773	-0.99	0.321	-0.47181	0.154488
OBS	0.9791964	0.282096	3.47	0.001	0.426299	1.532094
Bank Size	0.0402415	0.062018	0.65	0.516	-0.08131	0.161794
interaction	6.896989	4.339949	1.59	0.112	-1.60916	15.40313
cons	-0.0061285	0.005481	-1.12	0.264	-0.01687	0.004614

Source: Research data (2025)

The results of the Arellano-Bond dynamic panel-data estimation provide empirical evidence regarding the relationship between off-balance sheet activities (OBS) and the financial performance of commercial banks listed on the Nairobi Securities Exchange (NSE), with a particular focus on the potential moderating effect of bank size. This analysis was guided by the hypothesis that bank size does not significantly moderate the effect of OBS on financial performance (H_{04}).

The estimation output indicates that the Wald chi-square statistic is 907.37, with a p-value of 0.0000, demonstrating that the overall model is statistically significant at the 1% level. This confirms that the explanatory variables collectively account for a significant portion of the variation in financial performance across the banks included in the panel.

Examining the individual coefficients, the lagged dependent variable (L1) has a coefficient of -0.3257 with a p-value of 0.047 , indicating statistical significance at the 5% level. The negative and significant coefficient suggests the presence of negative persistence in financial performance, implying that past performance exerts a slight downward influence on current performance.

The coefficient for off-balance sheet activities (OBS) is 0.9792 , with a standard error of 0.2821 and a p-value of 0.001 . This positive and statistically significant coefficient at the 1% level indicates that increased engagement in OBS has a strong and positive effect on the financial performance of NSE-listed commercial banks. In contrast, the coefficient for bank size is 0.0402 with a p-value of 0.516 , which is not statistically significant. This suggests that bank size, when considered independently, does not have a meaningful direct effect on financial performance.

The key test of the hypothesis lies in the interaction term between OBS and bank size, which has a coefficient of 6.8970 and a p-value of 0.112 . Although the coefficient is positive, it is not statistically significant at the conventional 5% level. This finding indicates that bank size does not significantly moderate the relationship between off-balance sheet activities and financial performance. Consequently, the null hypothesis (H04) cannot be rejected, and it is concluded that bank size does not play a statistically significant moderating role in this context.

The analysis demonstrates that OBS has a strong, positive, and significant effect on financial performance, while bank size alone does not exert a significant direct influence. Furthermore, the interaction between bank size and OBS is not significant, indicating that the moderating effect of bank size is not supported by the data. Overall, while the model is statistically significant and effectively explains variations in bank performance, the moderation of bank size does not emerge as a key determinant of performance among commercial banks listed on the NSE in Kenya.

Guided by $Y = \beta_0 + \beta_4 X_4 + \beta_5 X_5 + \beta_7 (X_4 * X_5) + \beta_8 \text{Liquidity} + \beta_7 \text{Capital Adequacy} + \varepsilon$ in equation 3.4, the study analysed the moderating in the presence of the control variable. This yielded Table 15.

TABLE 15
Moderating Effect in Presence of Control Variables

Arellano-Bond dynamic panel-data estimation				Number of obs = 70		
Group variable: b_id				Number of groups = 10		
Time variable: year				Obs per group: min = 7		
				avg = 7		
				max = 7		
Number of instruments = 41				Wald chi2(7) = 853.67		
				Prob > chi2 = 0.0000		
Two-step results						
Performance	Coef.	Std. Err.	z	P> z	[95% Conf.	Interval]
Performance						
L1.	0.0275	0.7257	0.04	0.970	-1.3947	1.4498
L2.	-0.1507	0.1872	-0.8	0.421	-0.5177	0.2163
OBS	1.6148	0.6277	2.57	0.010	0.3846	2.8450
Bank Size	0.2701	0.1142	2.36	0.018	0.0462	0.4940
interaction	-25.5643	16.0794	-1.59	0.112	-57.0794	5.9508
Capital Adequacy	-0.0484	0.0336	-1.44	0.150	-0.1143	0.0175
Liquidity	0.0679	0.0637	1.07	0.286	-0.0569	0.1927
cons	0.0249	0.0171	1.46	0.144	-0.0085	0.0584

Source: Research data (2025)

The results of the Arellano-Bond dynamic panel-data estimation provide useful insights into the moderating role of bank size on the relationship between off-balance sheet activities (OBS) and financial performance of commercial banks listed on the Nairobi Securities Exchange. This analysis is guided by the hypothesis:

H₀₄: Bank size does not have a significantly moderating effect on the relationship between OBS on financial commercial banks listed on NSE in Kenya.

The model results indicate a Wald chi-square statistic of 853.67 with a p-value of 0.0000, showing that the overall model is statistically significant at the 1% level. This confirms that the explanatory variables collectively account for a significant proportion of the variation in financial performance across the banks in the panel.

Examining the individual coefficients, the first lag of financial performance (L1) has a coefficient of 0.0275 with a p-value of 0.970, which is statistically insignificant. Similarly, the second lag (L2) has a coefficient of -0.1507 with a p-value of 0.421, which is also not significant. These findings suggest that past financial performance, whether in the immediate previous period or two periods prior, does not exert a statistically significant influence on current financial performance in this model.

In contrast, the coefficient for off-balance sheet activities (OBS) is 1.6148, with a standard error of 0.6277 and a p-value of 0.010, indicating statistical significance at the 5% level. This positive and significant relationship implies that greater engagement in off-balance sheet activities enhances the financial performance of commercial banks. Similarly, bank size has a coefficient of 0.2701 with a p-value of 0.018, showing a positive and significant direct effect on financial performance at the 5% level. This result suggests that larger banks tend to experience better financial outcomes, possibly due to economies of scale, greater diversification, and more resource capacity.

The critical element in testing the hypothesis lies in the interaction term between OBS and bank size, which has a coefficient of -25.5643 with a p-value of 0.112. Although the coefficient is negative, it is not statistically significant at the conventional 5% level ($p > 0.05$). This means that bank size does not significantly moderate the relationship between off-balance sheet activities and financial performance. While both OBS and bank size independently show positive and

significant effects, their interaction does not produce a significant moderating influence on financial outcomes.

The control variables, liquidity and capital adequacy, do not show significant effects. Liquidity has a coefficient of 0.0679 ($p = 0.286$), and capital adequacy has a coefficient of -0.0484 ($p = 0.150$), indicating that neither factor exerts a statistically significant impact on financial performance in this specification.

Based on these findings, the null hypothesis (H_{04}) cannot be rejected. This leads to the conclusion that bank size does not have a statistically significant moderating effect on the relationship between off-balance sheet activities and financial performance of commercial banks listed on the NSE.

The results indicate that while both OBS and bank size have strong and significant direct effects on financial performance, their interaction is not statistically significant, and therefore, moderation is not supported. The overall model is robust and significant, but the moderating effect of bank size is not a determining factor in explaining the influence of OBS on financial performance. This suggests that other structural or operational factors may play a more critical role in shaping this relationship.

4.4 Discussions

The high standard deviations and wide ranges across all three instruments, trade finance, guarantees, and letters of credit, demonstrate that their utilization is uneven and highly dispersed. This pattern could be attributed to several factors, including differences in the scale of operations, access to financial instruments, sectoral concentration, or strategic financial management choices by firms. It may also reflect the heterogeneity of market

participants, where some entities rely heavily on structured trade finance mechanisms, while others operate with minimal or no engagement in such instruments.

The large standard deviations relative to their means indicate substantial variability in the use of these financial instruments. This implies that while some institutions actively engage in large-scale trade financing activities, others are involved at minimal levels, or in some cases, not at all, as evidenced by the minimum value of zero for guarantees and letters of credit. Such heterogeneity is often typical in the financial sector, where differences in institutional size, market share, and strategic focus influence the adoption of trade financing instruments

The high dispersion in Trade Finance, Guarantees, Letters of Credit, and Bank Size indicates heterogeneous institutional capacities and strategies across the sample. This suggests that a one-size-fits-all policy approach may not be effective for improving financial performance across institutions of varying sizes. Instead, tailored financial and regulatory interventions may be necessary. Conversely, the relatively stable financial performance and ratio indicators reflect underlying regulatory uniformity or standardized reporting frameworks that ensure a level of prudential compliance across the sector. This stability provides a robust foundation for applying dynamic panel regression models since the variability in financial indicators can be linked to performance dynamics over time. Furthermore, the presence of zero values in some financial instruments underscores that some institutions do not actively engage in trade-related financing, which may affect their growth potential or performance competitiveness compared to their more active counterparts.

4.4.1 Trade finance and Off-balance sheet activities

The findings of this study reveal that trade finance has a positive and significant impact on the financial performance of the commercial banks that are listed on the NSE, with a coefficient of 0.5079, which is significant at 1% level. This result implies that banks with high levels of active trade finance engagement, utilizing financing products such as letters of credit, guarantees, and other trade finance instruments, tend to be more profitable relative to banks with low levels of trade finance activity.

The heterogeneity of trade finance flows, from low- to high-value trades, embodies the diverse operational capacities, market positions, and client bases of commercial banks. Larger banks or those that are more embedded in the network of global trade have more capacity to strategically utilize trade finance instruments and, in the process, enhance their performance, while smaller banks with reduced international exposure gain relatively fewer benefits. The improved performance impact of trade finance is also consistent with the perspective that trade finance is both a revenue-generating mechanism and a strategic enabler of the finance intermediation. The banks can diversify the income source through fees, commission, and foreign exchange earnings, while improving the liquidity management. This dual feature highlights the centrality of trade finance as a working strategic tool fostering growth and competitiveness in banking.

Empirical evidence strongly supports this observation. Ndung'u (2020) observed that trade finance revenue not only increased the profitability of Kenya's Tier 1 banks conspicuously but reinforced the current study's observation of a significantly higher positive impact. Similarly, Kahuthu (2016) documented foreign exchange and commission income, issues directly related to trade finance, as the most positively correlated issues with bank performance. At the regional level, Tefera (2020) established that off-balance sheet instruments such as trade finance products boosted

revenues in private banks in Ethiopia while their effects on liquidity and risk exposure varied with institutions. At the global level, Ahmed and Rozario (2024) proved that OBS operations, including trade finance, boosted bank profitability in Bangladesh without boosting balance sheet risk, reflecting the Kenyan setting as observed in this study. Together, these works confirm that trade finance is a driver of income and strategic tool, at least for banks with much operational capabilities or that participate actively in international markets. In the context of signaling theory, the findings can be interpreted to demonstrate how banks utilize trade finance as a signal of their financial wellness, operational competence, and market position. Signaling theory is based on the premise that firms provide signals to external stakeholders in order to reduce information asymmetry (Spence, 1973). For banks, making a proactive effort in trade finance conveys to customers, investors, and counterparties that the bank possesses the financial capacity, expertise, and risk management capabilities required to handle complex transactions. For instance, the ability to provide extension of letters of credit or guarantees signals trust and credibility, enhancing client confidence and attracting high-end corporate or foreign clients. The signaling effect not only supports new business acquisition but also strengthens the bank's market position, which indirectly contributes to financial performance.

Moreover, heterogeneity in trade finance amounts emphasizes the way signalling operates differently: large banks can send stronger, more credible signals due to size, global reach, and resource endowment, while smaller banks emit weaker signals and thereby harvest relatively lower performance returns for similar OBS activities. Thus, trade finance is a profit-making vehicle at an operational level and a signalling tool at a strategic level, demonstrating how banks use such instruments not only for short-term gains but to send signals of institutional strength and credibility to the marketplace. The study highlights that trade finance contributes significantly positively

towards financial performance in the NSE-listed banks, with larger or internationally active banks achieving the most from it. From a signalling point of view, trade finance is a consistent demonstration of bank ability and creditworthiness, encouraging customer confidence, market share expansion, and profitably increasing profitability. Domestic, regional, and international empirical evidence supports this perception, locating trade finance squarely as an essential operating and signalling device in banking.

4.4.3 Guarantees and Off-balance sheet activities

The findings of this study reveal that guarantees have a significantly positive contribution to the financial performance of listed commercial banks on the NSE, with a coefficient of 0.2877 and 1% level statistical significance. This indicates that banks with significant engagement in guarantee-based transactions, such as letters of credit, standby guarantees, and performance bonds, are expected to have higher profitability. Guarantees are strategic off-balance sheet instruments that earn additional revenue, leverage financial intermediation, and increase customer confidence through risk mitigation. The paper also shows extensive heterogeneity in the utilization of guarantees by banks,. This shows large banks or banks dealing with complex corporate or international transactions utilize guarantees more, whereas smaller banks utilize them less, demonstrating differences in operations capacity, market orientation, and client sophistication.

The above evidence is supported by empirical evidence from both local and regional levels. In Kenya, Orubia et al. (2025) testified that bank guarantees and letters of credit positively impacted profitability among listed commercial banks, considering in line with the above finding that guarantees are a significant determinant of financial performance. Similarly, Ndung'u (2020) also had strong positive correlations between trade

finance revenue, including guarantee-related fees, and the performance of Tier 1 banks, while Nyokabi (2018) found that foreign exchange and guarantee-linked revenues contributed positively to performance although, in the instance, with their associated volatility, in line with heterogeneity found in the banks in the current research. Regionally, Tefera (2020) demonstrated that off-balance sheet obligations, like guarantees, deepened profit in Ethiopian private banks, albeit their liquidity effect varied with institution size. Gumulessa et al. (2022) also demonstrated that partial credit guarantees improved access to finance in Ethiopia's agri-sector, although there were structural constraints that restricted broader impact. Achugamonu et al. (2016) in Nigeria found that increased off-balance sheet engagement enhanced short-term profitability simultaneously while increasing vulnerability to financial shocks, demonstrating that while guarantees may enhance performance, they involve connected risks exposed to macroeconomic stability and institution capacity. Global research findings validate these results. Calcagnini et al. (2014) found that collateral-backed loans and guarantees reduced credit risk and increased access to finance, particularly for riskier firms, which aligns with the current study's finding that guarantees reduce counterparty risk while maximizing bank performance. Ramos Meza et al. (2021) also depicted the manner in which guaranteed credit significantly improves firm performance, especially under strong institutional governance, suggesting that the positive effects of guarantees are heightened in well-governed and well-managed environments.

Theoretically, guarantees can be best defined as financial options that provide risk mitigation under conditions of imperfect markets (Fabio & Calo, 2015). This theory is empirically tested in this study by showing that guarantees reduce not only perceived credit risk but also generate observable financial performance improvements. Heterogeneity in

the sample of observed banks implies that structural characteristics such as size, ability to operate, and market specialty qualify the guarantee effect, identifying contextual factors as significant when measuring the performance of off-balance sheet products.

The findings validate that guarantees are an OBS instrument of strategic worth, which enhances the profitability of NSE-listed banks. There is greatest benefit for large, well-capitalized banks and minimal benefit for small banks, reflecting uneven distribution and application of guarantee-based business. Local, regional, and international empirical evidence informs these results, highlighting not only guarantees' revenue potential but also the need to manage connected risks carefully. Overall, the study underscores the central role played by guarantees in banking operations and substantiates the strategic role of off-balance sheet transactions in enhancing financial performance in the Kenyan economy.

4.4.4 Letters of credit and Off-balance sheet activities

The study finds that LCs have a significant and positive correlation with financial performance for listed commercial banks in the NSE, with a coefficient value of 0.1705 and statistical significance at 1% level. Specifically, a one-unit increase in LC transactions is seen to be associated with a 0.171 boost in financial performance after controlling for other factors. This goes on to show that banks engaging actively in LC-based trade finance, which facilitates international trade and corporate funding, are probably going to be more profitable. Significant heterogeneity in the use of LCs by banks is also found by the study. The high standard deviation of 76,329.34 indicates variability in transaction values between banks and over time, a demonstration of positively skewed distribution where a few banks with extremely large transactions disproportionately influence overall performance. Presence of zero values also indicates that there are some banks,

perhaps small or less active in international trade, who do not utilize LCs or do so to a very small extent.

Therefore, in conclusion, these results highlight that LCs are instrumental off-balance sheet instruments, enhancing revenue generation, liquidity management, and risk avoidance, particularly with bigger banks or institutions dealing with sophisticated trade transactions. Empirical evidence is in agreement with these results both on a local and regional scale. In Kenya, there were positive relationships between LCs, bank guarantees, and NSE-listed banks' profitability, as described by Orubia et al. (2025), in accordance with the present study's observation that LC usage greatly enhances bank profitability. Similarly, Kahuthu (2016) reported a positive relationship between trade finance income and bank performance, while Nthenge (2013) and Nthenge and Ringera (2017) put special focus on the positive influence of LC transactions on Family Bank Limited's performance. Foreign exchange and trade income positively influencing financial performance were noted by Nyokabi (2018), a finding which corroborates the observation of the present study in terms of heterogeneity of LC influence across institutions. While applicable, most of these local studies employed cross-sectional or descriptive approaches and were limited to listed banks or a single bank, precluding causality and generalizability.

Tefera (2020) demonstrated that off-balance sheet exposures, like LCs, increased revenue for Ethiopian private banks, while effects on liquidity varied based on the size and level of operations of banks. Gumulessa et al. (2022) also determined that partial credit guarantees and trade finance instruments deepened finance availability in Ethiopia's agricultural sector but were constrained by structural and institutional barriers from having broader impacts. In Nigeria, Keffala (2024) showed that moderate use of OBS, including LCs and guarantees, could be used to mitigate credit risk while exposure that was excess increased vulnerability, uncovering the two-

edged impact of trade finance instruments on bank performance. Afolabi et al. (2021) and Lawrence et al. (2020) also underlined that credit risk and NPLs influence profitability in African banks and thereby indirectly attest to the importance of efficient LC management as a means of lowering default risk.

International literature provides additional evidence and insight. Youssef (2019) showed that greater LC-based OBS exposure can have a negative effect on capital adequacy of Iraq's banking sector, highlighting the need for cautious risk management. Alwi et al. (2022) and Ding and Zeller (2017) experimented with structural, legal, and regulatory aspects of applying LCs in Islamic and Chinese banking environments, showing that governance structures and operational systems affect the efficiency of LC transactions. Calcagnini et al. (2014) and Ramos Meza et al. (2021) also established in a similar manner that guarantees and trade finance instruments increase credit access as well as firm performance in other nations, confirming the positive effect of LCs shown in this study.

Theoretically, LCs are to some extent money instruments that decrease counterparty risk and credit and act as risk-reducing strategies within imperfect markets. This theoretical perspective is supported by the empirical findings of the present study, which prove that LC-based OBS activities not only facilitate trade finance but also generate measurable financial performance benefits for banks. The investigation's finding of heterogeneity reveals that bank-specific features such as size, operating capacity, and market orientation allow the benefits of LCs to vary, validating the case for considering institutional characteristics when assessing strategic value for these instruments.

The study establishes that letters of credit are a critical and strategically valuable off-balance sheet instrument for Kenyan NSE-listed banks. These benefit most from the large banks

or banks engaged in massive international or corporate business, while small banks exhibit low activity and advantages. Local, regional, and international empirical evidence confirms these findings, attributing the revenue-generating, risk-minimizing, and performance-enhancing abilities of LCs, and substantiating the necessity of judicious management and contextual modification of such tools to ensure long-term financial performance.

4.4.5 Bank size and Off-balance sheet activities

The findings from the study show that bank size has no significant mediation role in the OBS and financial performance relationship among commercial banks quoted on the NSE. The Arellano-Bond dynamic panel-data estimation reveals that while OBS participation and bank size, in themselves, have positive and significant effects on financial performance, their interaction term is statistically insignificant with a coefficient of -25.5643 and a p-value of 0.112 . This implies that the positive effect of OBS on profitability does not significantly depend upon the size of the bank, suggesting that other structural or operating variables may have a greater impact on the process through which OBS activities are transformed into profitability. Consequently, the null hypothesis (H_{04}) that bank size does not play an important moderating role in the effect of OBS on performance cannot be rejected.

The study also suggests that bank size is a major positive influence on financial performance controlling for the rest of the variables. Larger banks are likely to achieve better financial performance as a result of economies of scale, greater diversification of revenue sources, better capacity to leverage OBS instruments, and the ability to handle larger portfolios at low cost. In contrast, lags of past financial performance were not statistically significant and therefore indicate that past performance does not properly forecast current outcomes for this sample.

Descriptive analysis further indicates gross heterogeneity in size of banks among the NSE-listed institutions. This wide range belies significant variations in assets, operating capacity, and relative strength, implying that larger banks are better suited to engage in high-value financial transactions, including OBS instruments like trade finance, guarantees, and letters of credit. It would be possible for smaller banks, with their small scale of operations, to do little or no leveraging of OBS activities to the maximum extent, and thus their scope for enhancing revenues would be limited. Financial health indicators analysis also indicates institutional heterogeneity. Capital adequacy ratios at 19.03 were way above the regulatory minimum, however, spread widely between a low of 5.3% and a high of 59.9%, reflecting risk management, capitalization, and solvency tactics of a variety. Similarly, liquidity ratios showing various means of fulfilling short-term commitments and operating flexibility. These variations imply that institutions of a certain type are concerned with safe balance sheet management, whereas others seek riskier avenues aimed at optimizing returns. Size heterogeneity, as well as liquidity and capital positions, necessitates the application of structural and operational characteristics in the analysis of financial performance impacts of OBS activities.

Empirical local and international evidence offers complementing information. Internationally, Asrori et al. (2024) found that Islamic banks of larger size were more resilient to financial shocks, which suggests that size has a role as a shock absorber. Regional and national evidence, however, indicates diverse effects. Elsas and Florysiak (2021) established a non-linear relationship in the European banks' case, where size raised profitability only up to a point beyond which returns declined, representing potential diseconomies of scale. Al-Tae and Ahmad (2020) noted that larger Iraqi banks used capital adequacy more efficiently to maximize profitability, while Nguyen and Tran (2020) established that in Vietnam, larger banks were more exposed to

credit risk, which would reduce returns. Chowdhury et al. (2024) found that size negated the effects of diversification towards stability in Bangladesh and suggested managerial complexity or slower responsiveness as potential boundaries.

Studies in Africa also reflect mixed findings. Austin (2025) and Adewale et al. (2023) in Nigeria revealed that bank size positively influenced performance, though larger loan portfolios sometimes lowered returns on assets (ROA). Hassan et al. (2023) highlighted context-dependent effects, where size positively affected deposit rates but negatively affected loan-to-deposit ratios. Yahaya et al. (2022) believed that small banks would outperform large banks due to greater agility, and Mutarindwa et al. (2021) indicated that private and listed banks performed better, though internal operating dynamics were less well investigated.

The remaining studies present similarly mixed results. Chibole et al. (2022) did not find any moderating effect of bank size on the financial distress-performance relationship. Gathogo (2023) added that size positively underpinned resilience in asset quality and capital adequacy, whereas Kirimi et al. (2022) registered declining efficiency with larger banks, which showed that scale might curtail operational effectiveness. Emongor (2022) noted that the larger banks can utilize non-interest income to minimize risk of insolvency, but Ngware et al. (2020) were highlighting size benefits in portfolio diversification, albeit not taking into account fully interactions with risk exposure or governance. Together, these studies point to the ambidexterity of bank size: while larger banks may enjoy more financial strength, diversification benefits, and greater OBS participation, they may lose from decreased agility, managerial sophistication, or diminishing marginal contributions.

The current study contributes to this existing body of literature by empirically testing the moderating effect of bank size on OBS activities and demonstrating that, at least in the Kenyan

context, size does not significantly affect the OBS-financial performance relationship. This outcome highlights the need for more sensitive theoretical frameworks and empirical analyses that consider not only the size of banks but also governance structures, regulatory environments, and operational strategies when determining the effect of OBS instruments on profitability. Further, the study points out the existence of other institutional factors, besides size, which are likely to play a more significant role in explaining the financial performance of off-balance sheet activities and outlines areas for future research into banking performance and risk management.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a concise overview of the study's key findings, draws conclusions based on the results, and offers recommendations. It includes a summary of how the research objectives were met, conclusions about the impact of institutional governance on off-balance sheet activities, and practical policy suggestions. Additionally, it highlights areas for future research to address gaps and expand understanding.

5.2 Summary of Findings

The preceding discussion and analysis, this section is a synthesis of the research findings, increasingly focused on the goals of the study. Each goal is addressed to define its singular effect regarding institutional governance and off-balance sheet activities.

5.2.1 Findings on Trade finance and Financial Performance of

Findings on trade finance reveal that it significantly contributes to the financial performance of commercial banks quoted on the NSE. Trade finance activities vary substantially across institutions, owing to differences in operating scale, market focus, and domestic and international trade financing involvement. Banks that actively participate in trade-related business are more likely to report more solid financial performances, which suggest the strategic value of trade finance in enhancing profitability, liquidity management, and bank performance overall. The heterogeneity in trade finance usage mirrors its core function as a financial intermediation tool, with larger or more extensive banks benefiting more from such activities.

5.2.2 Findings on Guarantees and Financial Performance

Guarantee instruments positively affect the profitability of NSE-listed commercial banks. Their application is asymmetric over time and banks, which means that guarantees are used more comprehensively by some institutions, particularly those dealing in larger capacities or taking part in complex corporate transactions. The pattern of using guarantee activities means that such instruments have a heterogeneous contribution to bank performance, credit facilitation, and counterparty risk mitigation. Understanding the use of guarantees is therefore essential for evaluating their impact on the financial performance and strategic positioning of Kenyan banks.

5.2.3 Findings on Letters of credit and Financial Performance

Letters of credit have a positive and significant impact on the financial performance of commercial banks. Their usage is very varied across institutions and over time, with some banks doing little, and others a vast amount, particularly in international trading environments. This varied usage reflects differences in market activity, client orientation, and size of operation. Letters of credit represent a vital vehicle for facilitating trade, managing transactional risk, and allowing profitability, and thus represent a vital component of off-balance sheet operations that underpin bank performance.

5.2.4 Moderating Effects of Bank size on Off-balance sheet activities and Financial Performance

The results indicate that the overall model is significant statistically, confirming that the explanatory variables together describe a large percentage of variance in financial performance in commercial banks listed on the NSE. Off-balance sheet activities (OBS) and bank size both exert direct, positive, and significant impacts on financial performance, indicating that banks with a higher degree of OBS or larger size banks have improved financial outcomes. However, past

financial performance, as indicated by the lagged variables, has no significant influence on current performance, and interaction between OBS and bank size is not statistically significant. This means that the size of the bank does not have any moderating influence on the OBS and financial performance relationship, whereby the financial advantage of OBS is achieved irrespective of the size of the institution.

Analysis of control variables further points towards extreme heterogeneity in the stability of finance across banks. Liquidity and capital adequacy, although crucial for institutional stability, do not show any significant influence towards financial performance in this study. However, the notable variance in these ratios reflects differences in risk management strategies, size of operations, and funding positions of the banks covered in the sample. Large banks have a natural propensity to deal with large-value transactions and are more able to exploit OBS, while small banks fall within narrower sizes. In summary, the results identify OBS and bank size as most important in driving financial performance, with capital adequacy and liquidity acting to index the structural and operational heterogeneity most likely to shape resilience and stability within Kenya's banking sector.

5.3 Conclusions

The study concludes that trade finance plays a significant positive role in influencing the financial performance of commercial banks listed on the NSE. Banks with active engagement in trade finance are able to utilize these instruments to achieve higher financial performance. The study also concludes significant differences in the use of trade finance by the banks, based on the differences in the size of operations, market focus, and level of engagement in domestic and international trade activities. This stresses the strategic position of trade finance as a key driver of bank performance in Kenya.

Guarantees have a positive and significant effect on bank financial performance, which indicates their strategic role of supporting bank operations. The asymmetric application between institutions suggests that banks that have greater scale of operations or international focus benefit more from guarantees. This calls for tailored application of guarantees in enhancing financial performance

Letters of credit also positively affect bank financial performance, which confirms that these off-balance sheet instruments are valuable tools to enhance profitability and support banking operations. The asymmetric distribution and high variability of guarantees and letters of credit across banks suggest that larger or more internationally focused institutions utilize these instruments more intensively. These findings demonstrate that letters of credit exert a differentiated influence on financial performance, and their strategic use is required to improve the performance of NSE-listed commercial banks.

The study concludes that bank size and off-balance sheet activities each have positive effects on financial performance independently, but bank size does not have a moderating effect on the OBS-performance link. It suggests that the gains from engaging in OBS are realized regardless of the bank size. Structural and operational differences, rather than size-based moderation, appear to exert more influence in shaping the impact of OBS on performance. Capital adequacy and liquidity, while important for financial stability, are not key direct drivers of financial performance in this study. However, the wide variety of these measures across banks indicates differences in risk management strategies, scope of operations, and resilience. Institutions with greater capital and liquidity buffers are more shock-absorbent and can maintain stability, highlighting the importance of these factors for regulatory oversight and the stability of the banking system overall.

5.4 Recommendations

From a policy perspective, such an analysis would mean that policy intervention or financial product design needs to consider the asymmetric distribution nature of trade finance instruments. In more specific terms, actual support or incentives would be needed to increase access and use by smaller participants with current low or zero utilization, thereby enabling increased trade facilitation and greater financial inclusion.

These banks should implement robust risk assessment procedures for guarantee transactions to prevent overexposure and ensure the long-term sustainability of profitability gains.

Regulators should track large LC exposures to mitigate concentration risk, ensuring that individual transactions do not compromise liquidity or solvency.

CBK could consider differentiated supervisory approaches recognizing the scale of operations, ensuring smaller banks are not disadvantaged in OBS participation while preventing risk concentration in larger banks.

5.4.1 Recommendations on Research Findings

Given the significant positive impact of trade finance on financial performance, publicly listed commercial banks should strategically expand their trade finance offerings, particularly targeting sectors and clients with higher transaction volumes.

Since guarantees enhance bank performance and are unevenly utilized, publicly listed banks should focus on tailoring guarantee products to match client needs, especially for high-value and complex transactions. Policymakers could also encourage uniform standards for guarantees to ensure consistency and reduce systemic risk.

Publicly listed commercial banks should strengthen their letters of credit services, particularly for clients engaged in international trade or corporate financing, as LCs improve

profitability and support liquidity management. These banks may also consider diversifying their LC portfolios to include a mix of small-scale and high-value transactions to maximize financial performance.

Since bank size does not significantly moderate the effect of off-balance sheet activities, smaller banks can still benefit from OBS initiatives if operationally well-managed. Banks of all sizes should therefore prioritize optimizing OBS practices, improving risk assessment, and leveraging technology to efficiently manage these activities. Policy guidance could focus on providing frameworks that enable smaller banks to participate in OBS activities without disproportionate risk exposure. Regulators could emphasize stress testing, risk-based supervision, and prudential guidelines to ensure institutions with lower buffers strengthen their financial positions, safeguarding the sector's stability

5.4.2 Recommendations for Further Study

Additional suggested studies include: -

1. The study was for off-balance sheet activities on commercial banks listed on the NSE in Kenya. Future study should consider all other commercial banks.
2. Examine other potential moderators or mediators in the OBS–performance relationship, such as corporate governance, management expertise, bank culture, or market competition. This could deepen understanding of factors that amplify or reduce OBS effects
3. Complement quantitative analyses with qualitative research to capture perceptions about OBS activities that may not be evident from financial data alone.

REFERENCES

- Acemoglu, D., Ozdaglar, A., & Tahbaz-Salehi, A. (2012). The network origins of aggregate fluctuations. *Econometrica*, 80(5), 1977–2016.
- Acharya, V. V., Cooley, T. F., Richardson, M. P., & Walter, I. (2019). *Manufacturing tail risk: A perspective on the financial crisis of 2007–2009*. *Journal of Financial Intermediation*, 38, 1–15.
- Adewale, A. A., Shittu, S. A., & Adewole, J. A. (2023). Effect of bank's sizes and age on the financial performance of deposit money banks in Nigeria. *The Journal of V. N. Karazin Kharkiv National University. Series: International Relations. Economics. Country Studies. Tourism*, (18), 32–40.
- Afolabi, A. O., Adeyemi, S. L., & Olaleye, O. O. (2021). Credit risk management and performance of deposit money banks in Nigeria. *International Journal of Finance & Banking Studies*, 10(2), 45–60.
- Ahmed, A., & Rozario, J. (2024). The impact of off-balance sheet activities on bank performance: Evidence from emerging markets. *Journal of Financial Risk and Regulation*, 18(2), 101–118.
- Ahmed, M. A., & Rozario, K. P. (2024). Impact of off-balance sheet activities on bank profitability: Evidence from Bangladesh. *International Journal of Financial, Accounting, and Management*, 6(2), 283–299.
- Ahmed, Y. D. (2018). The relationship between off-balance sheet financing and off-balance sheet activities of microfinance banks in Kenya (Unpublished master's research project). University of Nairobi.
- Aktan, B., Chan, S. G., Žiković, S., & Evrim-Mandaci, P. (2013). Off-balance sheet activities impact on commercial banks performance: An emerging market perspective. *Economic Research-Ekonomska Istraživanja*, 26(3), 117–132.
- Alslaibi, M., Hassan, A., & Wafi, A. (2025). Financial performance and competitiveness in the banking sector. *International Journal of Banking Studies*, 12(1), 25–40.
- Alwi, S. F., Osman, I., Badri, M. B., Muhamat, A. A., Muda, R., & Ibrahim, U. (2022). Issues of letter of credit in Malaysian Islamic banks. *Journal of Risk and Financial Management*, 15(9), 373.
- Austin, Z. S. (2025). Bank size and financial performance: An estimated panel data study of quoted commercial banks in Nigeria. *International Institute of Academic Research and Development*, 9(3), 47–63.

- Ayieko, V. N., & Aluoch, M. O. (2025). Credit risk management and profitability of commercial banks in Nairobi City County, Kenya. *International Academic Journal of Economics and Finance (IAJEF)*, 4(4), 188–222.
- Badrane, M., & Bamousse, K. (2025). Innovative financing solutions and business performance in Morocco: An exploratory study. *Journal of Financial Innovation*, 12(1), 78–93.
- Bani Yousef, A. N., Taha, A. P. D. R., Muhmad, S. N., & Zainul Abidin, A. F. (2023). Operational risk and financial performance of banks in the Middle East and North Africa. *Journal of International Studies*, 19(2), 93–118. <https://doi.org/10.32890/jis2023.19.2.4>
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120.
- Bazih, J. H., & Vanwalleghem, D. (2021). Deriving value or risk? Determinants and the impact of emerging market banks' derivative usage. *Research in International Business and Finance*, 56, 101379.
- Beck, T., Demirgüç-Kunt, A., & Levine, R. (2006). Bank concentration, competition, and crises: First results. *Journal of Banking & Finance*, 30(5), 1581–1603.
- Berger, N. A., & Bouwman, C. H. S. (2017). Bank liquidity creation, monetary policy, and financial crisis. *Journal of Financial Stability*, 30(6), 139–155.
- Bergh, D. D., Connelly, B. L., Ketchen Jr, D. J., & Shannon, L. M. (2014). Signalling theory and equilibrium in strategic management research: An assessment and a research agenda. *Journal of Management Studies*, 51(8), 1334–1360. <https://doi.org/10.1111/joms.12097>
- Berrahal, A. (2025). How off-balance sheet exposures reshape the debt ratio for sustainable future. <https://doi.org/10.21203/rs.3.rs-7132744/v1>
- Berrahal, H. (2025). Off-balance sheet activities and bank risk: A dynamic approach. *Global Finance Journal*, 38(3), 112–130.
- Birhanu, T., Bosho Deressa, S., Azadi, H., Viira, A. H., Van Passel, S., & Witlox, F. (2021). Determinants of commercial bank loan and advance disbursement: The case of private Ethiopian commercial banks. *International Journal of Bank Marketing*, 39(7), 1227–1247.
- Boyd, J. H., & Runkle, D. E. (1993). Size and performance of banking firms: Testing the predictions of theory. *Journal of Monetary Economics*, 31(1), 47–67.
- Brunnermeier, M. K. (2009). Deciphering the liquidity and credit crunch 2007–2008. *Journal of Economic Perspectives*, 23(1), 77–100.

- Büyükoğlu, B., Şit, A., & Başar, B. D. (2023). Effects of Off-Balance Sheet Items on the Financial Performance of Turkish Deposit Banks. *Trends in Business and Economics*, 37(3), 197–205.
- Calcagnini, G., Farabullini, F., & Giombini, G. (2014). The impact of guarantees on bank loan interest rates. *Applied Financial Economics*, 24(6), 397–412.
- Cao, Q., Zhu, T., Yu, W., & Tan, H. (2023). Off-balance sheet business development and bank efficiency: A financial innovation matching perspective. *Heliyon*, 9(6), Article e16093. <https://doi.org/10.1016/j.heliyon.2023.e16093>
- Central Bank of Kenya. (2024). *Financial Sector Stability Report 2023*. <https://www.centralbank.go.ke>
- Chen, K., Ren, J., & Zha, T. (2018). The nexus of monetary policy and shadow banking in China. *American Economic Review*, 108(12), 3891–3936.
- Chen, Y., Wang, L., & Li, Z. (2023). Off-balance sheet exposure and profitability: Evidence from Chinese commercial banks. *Asian Economic and Financial Review*, 13(1), 77–92.
- Chibole, K. W., Lyani, N. M., & Maniagi, G. (2022). The moderating effect of bank size on the relationship between financial distress factors and financial commercial banks listed on NSE in Kenya. *The Strategic Journal of Business & Change Management*, 9(4), 706–719.
- Connelly, B. L., Certo, S. T., Ireland, R. D., & Reutzel, C. R. (2011). Signaling theory: A review and assessment. *Journal of Management*, 37(1), 39–67. <https://doi.org/10.1177/0149206310388419>
- Dalal, E. J. (2018). The impact of credit reference bureaus on credit performance of Kenyan banks (Doctoral dissertation, United States International University-Africa).
- Dan, A., Nyongesa, M., & Korir, J. (2024). Strategic adoption of off-balance sheet instruments in African banking: Trends and impacts. *African Journal of Financial Strategy*, 9(2), 54–67.
- Dan, W., Rong, L., & Yingting, L. (2024). Impact of off-balance-sheet activities on the effectiveness of monetary policy. *The North American Journal of Economics and Finance*, 73, 102176. <https://doi.org/10.1016/j.najef.2024.102176>
- Dang, V. D., & Nguyen, H. C. (2022). Bank profitability under uncertainty. *The Quarterly Review of Economics and Finance*, 83, 119–134. <https://doi.org/10.1016/j.qref.2021.12.001>
- Demirgüç-Kunt, A., & Detragiache, E. (2002). Does deposit insurance increase banking system stability? An empirical investigation. *Journal of Monetary Economics*, 49(7), 1373–1406.
- Diamond, D. W. (1984). Financial intermediation and delegated monitoring. *The Review of Economic Studies*, 51(3), 393–414. <https://doi.org/10.2307/2297430>

- Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, 74(366a), 427–431
- Ding, Y., & Zeller, B. (2017). The fraud exception in letters of credit – The Chinese approach. *International Review of Law*, 2017(3), 13.
- Durbin, J., & Watson, G. S. (1950). Testing for serial correlation in least squares regression: I. *Biometrika*, 37(3/4), 409–428.
- Echwa, M. T., & Atheru, G. (2020). Financial performance and risk management in Kenyan commercial banks. *International Academic Journal of Economics and Finance*, 3(2), 101–119.
- Eckbo, B. E., & Masulis, R. W. (1992). Adverse selection and the rights offer paradox. *Journal of Financial Economics*, 32(3), 293–332. [https://doi.org/10.1016/0304-405X\(92\)90038-K](https://doi.org/10.1016/0304-405X(92)90038-K)
- Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: What are they? *Strategic Management Journal*, 21(10-11), 1105–1121.
- Elyasiani, E., & Rezvanian, R. (2021). Bank profitability and the business cycle: The case of U.S. banks. *Journal of Economics and Business*, 114, 105955.
- Emongor, E. M. (2022). Moderating effect of bank size on the relationship between non-interest income and insolvency risk of commercial banks in Kenya (Master's thesis). Kenyatta University.
- Eyo, E. O., Nwaogu, M. A., & Agenson, M. E. (2020). Agricultural credit guarantee in Nigeria and the uncertainties of the macroeconomic environment. *International Journal of Economics and Financial Issues*, 10(20), 20–29.
- Fabio, P., & Calo, F. (2015). Loan guarantees: An option pricing theory perspective. *International Journal of Economics and Financial Issues*, 5(4), 905–909.
- Fadli, S., & Debbi, A. (2021). The impact of off-balance sheet items on the profitability of commercial banks: A case study of a group of Algerian commercial banks (2012–2018). *Journal of Entrepreneurship in Business Economics*, 7(2), 447–467.
- Fathonah, E., & Negoro, D. (2025). Analysis of factors affecting profitability of Bank Book IV period 2017–2019. *Jurnal Informatika Ekonomi Bisnis*, 7(2), 263–269. <https://doi.org/10.37034/infeb.v7i2.1169>
- Foss, N. J., & Knudsen, T. (2003). The resource-based tangle: Towards a sustainable explanation of competitive advantage. *Managerial and Decision Economics*, 24(4), 291–307.

- Gao, Y., Jiang, C., & Lin, L. (2021). Financial innovation, off-balance sheet activities, and risk-taking of commercial banks in China. *Frontiers in Psychology*, 12, 678912. <https://doi.org/10.3389/fpsyg.2021.678912>
- Gerhardt, M., & Vander Vennet, R. (2017). Bank bailouts in Europe and bank performance. *Finance Research Letters*, 22, 74–80.
- Gitari, M., Mohamed, M., & Huka, G. (2021). Digital innovation and profitability of commercial banks in Kenya. *International Journal of Finance and Accounting*, 6(1), 45–55.
- Goyal, A., & Santa-Clara, P. (2003). Idiosyncratic risk matters! *The Journal of Finance*, 58(3), 975–1007. <https://doi.org/10.1111/1540-6261.00555>
- Gurmessa, N. E., Ndinda, C., Agwanda, C., & Akiri, M. (2022). Partial credit guarantee and financial additionality for smallholders coffee cooperatives: Experience from Ethiopia. *Development in Practice*, 32(8), 1049–1062.
- Hachem, K. C., & Song, Z. M. (2016). Liquidity regulation and unintended financial transformation in China. *NBER Working Paper No. 21880*.
- Haq, M., Tripe, D., & Seth, R. (2022). Do traditional off-balance sheet exposures increase bank risk? *Journal of International Financial Markets, Institutions & Money*, 80, 101627. <https://doi.org/10.1016/j.intfin.2022.101627>
- Haque, S., & Anwar, M. (2024). Impact of off-balance sheet activities on bank profitability: Evidence from Bangladesh. *IvySci Journal*. <https://www.ivysci.com/en/articles/7913571>
- Haruna, A. D., & Garba, U. R. (2025). Impact of liquidity management on profitability of listed deposit money banks in Nigeria: The moderating effect of leverage. *International Journal of Finance and Banking Research*, 11(1), 22–35.
- Haruna, A., & Garba, I. (2025). Assessing key drivers of financial performance in sub-Saharan African banks. *Journal of African Finance*, 11(1), 15–29.
- Hassan, S. U., Sabo, B., & Aliyu, I. A. (2023). Moderating effect of bank size on the relationship between interest rate, liquidity, and profitability of commercial banks in Nigeria. *Gusau Journal of Accounting and Finance*, 4(1), 96–120.
- Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica*, 46(6), 1251–1271.
- Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics*, 31(1–3), 405–440. [https://doi.org/10.1016/S0165-4101\(01\)00018-0](https://doi.org/10.1016/S0165-4101(01)00018-0)

- Homer-Dixon, T., Walker, B., Biggs, R., Crépin, A.-S., Folke, C., Lambin, E. F., ... & Troell, M. (2015). Synchronous failure: The emerging causal architecture of global crisis. *Ecology and Society*, 20(3), 6.
- Hughes, J. P., Mester, L. J., & Moon, C. G. (2001). Are scale economies in banking elusive or illusive? Evidence obtained by incorporating capital structure and risk-taking into models of bank production. *Journal of Banking & Finance*, 25(12), 2169–2208. [https://doi.org/10.1016/S0378-4266\(01\)00191-2](https://doi.org/10.1016/S0378-4266(01)00191-2)
- Kahuthu, K. (2016). The effect of trade finance on the commercial banks listed on NSE in Kenya (Unpublished master's thesis). University of Nairobi.
- Karanja, P., & Wanjiru, M. (2023). Internal capabilities and bank performance: A case of listed banks in Kenya. *African Journal of Economic Policy*, 30(1), 44–59.
- Karumba, M., & Wafula, M. (2012). Collateral lending: Are there alternatives for the Kenyan banking industry? (No. 3). KBA Centre for Research on Financial Markets and Policy Working Paper Series.
- Kasa, T. (2013). *Determinants of commercial banks' off-balance sheet activities: An empirical study on Ethiopian banking industry* (Doctoral dissertation). Addis Ababa University.
- Keffala, M. R. (2024). The effect of off-balance sheet activities on credit risk of African banks. *Journal of Financial Reporting and Accounting*. <https://doi.org/10.1108/JFRA-07-2023-0358>
- Kirimi, P. N., Kariuki, S. N., & Ocharo, K. N. (2022). Moderating effect of bank size on the relationship between financial soundness and financial performance. *African Journal of Economic and Management Studies*, 13(1), 62–75.
- Knezevic, M., & Lukic, A. (2016). The importance of bank guarantees in modern business (Business environment in Serbia). *Investment Management and Financial Innovations*, 13(3), 215–221.
- Krugman, P. (1980). Scale economies, product differentiation, and the pattern of trade. *The American Economic Review*, 70(5), 950–959.
- Kumar, M. (2020). The role of bank guarantees in international trade. *Journal of International Business Studies*, 41(2), 211–230.
- Lawrence, T., Mokoena, S., & van der Merwe, R. (2020). Credit risk and commercial bank performance: Evidence from South Africa. *African Journal of Banking and Finance*, 7(3), 101–120.
- Lippman, S. A., & Rumelt, R. P. (2003). The payments perspective: Microfoundations of resource analysis. *Strategic Management Journal*, 24(10), 903–927.

- Macharia, J. (2019). An evaluation of the effect of off-balance sheet risks on financial performance of commercial banks listed at Nairobi Security Exchange in Kenya. *Advanced Scholars Journal of Accounting and Taxation*. <https://advancedscholarsjournals.org>
- Malalu, M. S., & Njoka, C. (2024). Financial risks and financial performance of commercial banks listed in Nairobi Securities Exchange, Kenya. *International Academic Journal of Economics and Finance*, 4(3), 369–390.
- Marshall, A. (1920). *Principles of Economics* (8th ed.). Macmillan.
- Miloş, M. C., & Miloş, L. R. (2022). Use of derivatives and market valuation of the banking sector: Evidence from the European Union. *Journal of Risk and Financial Management*, 15(11), 501.
- Mishkin, F. S. (1999). Financial consolidation: Dangers and opportunities. *Journal of Banking & Finance*, 23(2–4), 675–691.
- Moraa, S. H. (2022). Effect of off-balance sheet risks on financial performance of commercial banks listed in Nairobi Securities Exchange, Kenya (Doctoral dissertation). Kisii University.
- Mutarindwa, S., Siraj, I., & Stephan, A. (2021). Ownership and bank efficiency in Africa: True fixed effects stochastic frontier analysis. *Journal of Financial Stability*, 54, 100886.
- Mutinda, D. M., & Aluoch, M. O. (2025). Portfolio diversification and profitability in selected commercial banks in Kenya. *International Academic Journal of Economics and Finance (IAJEF)*, 4(4), 65–89.
- Mutua, C., & Njuguna, A. (2023). The influence of derivatives on the financial performance of listed banks in Kenya. *East African Business Review*, 6(2), 88–104.
- Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2), 187–221. [https://doi.org/10.1016/0304-405X\(84\)90023-0](https://doi.org/10.1016/0304-405X(84)90023-0)
- Ndung'u, H. K. (2020). Effect of trade finance on financial performance of Tier 1 commercial banks in Kenya (Doctoral dissertation). Daystar University.
- Ngware, S. G., Olweny, T., & Muturi, W. (2020). Do bank size moderate relationship between banks' portfolio diversification and financial commercial banks listed on NSE in Kenya? *SEISENSE Journal of Management*, 3(2), 14–30.
- Nthenge, M. N. (2013). Effects of trade finance on the financial performance of banks: A case of Family Bank Limited (Unpublished master's project). Kenyatta University.

- Nyanga, J., & Muriithi, W. (2023). Resource-based view and performance of microfinance banks in volatile markets: Evidence from Kenya. *Journal of Financial Services Research*, 67(2), 134–150.
- Nyokabi, N. (2018). The effect of forex trading on the financial commercial banks listed on NSE in Kenya (Unpublished master's thesis). University of Nairobi.
- Okonkwo, C., & Ugochukwu, O. (2022). Off-balance sheet items and profitability of Nigerian banks. *Nigerian Journal of Banking and Finance*, 19(1), 33–49.
- Orubia, M. G., Ngali, R., & Matanda, J. (2025). Trade financing and financial performance of commercial banks listed in Nairobi Securities Exchange, Kenya. *International Journal of Social Sciences Management and Entrepreneurship*, 9(1).
- Owino, D., Otieno, F., & Wekesa, S. (2022). Off-balance sheet financing and financial performance: A study of Tier I banks in Kenya. *Kenya Journal of Business and Economics*, 7(3), 120–137.
- Owusu, R. A., Boateng, H., & Boso, N. (2023). The role of intangible resources in banking performance: A resource-based view perspective. *International Journal of Productivity and Performance Management*, 72(4), 1020–1037.
- Panditharathna, K., & Kawshala, B. A. H. (2021). The factors affecting bank profitability. *International Journal of Scientific and Research Publications*, 7(7), 212–216.
- Peteraf, M. A. (1993). The cornerstones of competitive advantage: A resource-based view. *Strategic Management Journal*, 14(3), 179–191.
- Peteraf, M. A., & Barney, J. B. (2003). Unraveling the resource-based tangle. *Managerial and Decision Economics*, 24(4), 309–323.
- Priem, R. L., & Butler, J. E. (2001). Is the resource-based “view” a useful perspective for strategic management research? *Academy of Management Review*, 26(1), 22–40.
- Ross, S. A. (1977). The determination of financial structure: The incentive-signalling approach. *The Bell Journal of Economics*, 8(1), 23–40. <https://doi.org/10.2307/3003485>
- Saifi, F., & Khouiled, B. (2024). The impact of off-balance sheet items on business leadership: Case of bank's technical efficiency. *Business Ethics and Leadership*, 8(4), 158–172. [https://doi.org/10.61093/bel.8\(4\).158–172.2024](https://doi.org/10.61093/bel.8(4).158-172.2024)
- Savon, R. (2025). The impact of non-performing loans on credit supply: Evidence from Morocco. *Moroccan Journal of Economics and Finance*, 15(2), 134–149.
- Segura, A., & Zeng, J. (2020). Off-balance sheet funding, voluntary support, and investment efficiency. *Journal of Financial Economics*, 137(1), 90–107.

- Shaari, N., Ramakrishnan, S., & Karim, M. R. A. (2022). Bank competitiveness and resource capabilities in ASEAN economies. *Journal of Competitiveness*, 14(3), 94–110.
- Simba, M., Nyangau, S., & Ngacho, C. (2020). An evaluation of the effect of off-balance sheet risks on financial performance of commercial banks listed at the Nairobi Securities Exchange in Kenya. *Advanced Journal of Accounting and Finance*, 5(2), 55–66. <https://advancedscholarsjournals.org/journal/arjat/articles/an-evaluation-of-the-effect-of-off-balance-sheet-risks-on-financial-performance-of-commercial-banks-listed-at-nairobi-security-exchange-in-kenya>
- Smith, A. (1776). *An Inquiry into the Nature and Causes of the Wealth of Nations*.
- Smolina, N., Ivanov, P., & Kovalenko, T. (2025). Exploring performance metrics in commercial banking: A comparative study. *Journal of Banking & Financial Research*, 14(1), 45–60.
- Smolina, N., Markovskaya, E., & Krupnov, Y. (2023). Determinants of profitability of commercial banks. *E3S Web of Conferences*, 381, 02013. <https://doi.org/10.1051/e3sconf/202338102013>
- Spence, M. (1973). Job market signaling. *Quarterly Journal of Economics*, 87(3), 355–374.
- Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355–374. <https://doi.org/10.2307/1882010>
- Taleb, N. N. (2012). *Antifragile: Things that gain from disorder*. New York: Random House.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509–533.
- Tefera, Y. (2020). *Off-balance sheet commitments: Determination of practice and impact on performance* (Unpublished master's thesis). Addis Ababa University.
- Teixeira, D. (2013). Off-balance-sheet items in European banking: A panel data econometric model on risk and liquidity. *FEP Economia e Gestão*.
- Uzoma, A. B., Osunkoya, M., Ayo, A. D., Adetiloye, K., & Akinjare, V. (2020). Risk and profitability considerations in off-balance sheet engagements: A comparative analysis of deposit money banks in Nigeria. In *Proceedings of the 28th International Business Information Management Association (IBIMA) Conference Vision* (pp. 4443–4452).
- Wagner, W. (2021). Off-balance-sheet exposure and systemic risk: Evidence from U.S. stress tests. *Financial Markets, Institutions & Instruments*, 30(1), 27–58. <https://doi.org/10.1111/fmii.12196>
- Wei, Y., Samiee, S., & Lee, R. (2022). Resource orchestration in emerging market firms: Integrating RBV and dynamic capabilities. *Journal of Business Research*, 147, 634–646.

- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171–180.
- Wu, D., Li, R., & Li, Y. (2024). Impact of Off-Balance-Sheet Activities on the Effectiveness of Monetary Policy. *The North American Journal of Economics and Finance*, 73, 102176.
- Yahaya, A., Shagari, J. N., & Mohammed, A. (2022). Bank size and financial performance in Sub-Saharan Africa: A dynamic panel approach. *Malaysian Management Journal*, 26, 1–30.
- Yasar, M. F., Martin, C. L., & Kiessling, T. (2020). Signaling theory: A review and assessment. *International Journal of Management Reviews*, 22(4), 528–550.
- Yogesh. (2022). Off-balance sheet activities on performance and stability of commercial banks: Systematic literature review (SLR). *Corporate Governance Insight*, 4(1), 68–80.
- Yousif, A., Al-Habsi, M., & Faraj, H. (2023). Risk exposure from off-balance sheet activities in Middle Eastern banks. *Middle East Journal of Banking & Finance*, 21(2), 67–84.
- Youssef, O. (2024). The role of commercial banks in economic development and financial inclusion. *Academy of Accounting and Financial Studies Journal*, 28(S5), 1–3.
- Youssef, R. A. (2019). The impact of off-balance sheet items on capital adequacy: An applied study at the National Bank of Iraq for the period from 2008–2017. *Journal of Finance and Business Economics*, 3(3), 190–202.
- Zhang, Q., Chen, S., & Jin, Y. (2020). The impact of off-balance-sheet regulations on bank risk-taking: Evidence from China. *Research in International Business and Finance*, 54, 1–15.

APPENDICES

Appendix I: Letter To Bankss

Juliana Ndavi
KCA University
Main Campus,
NAIROBI.

Dear Banks,

RE: ACCEPTANCE LETTER

I am currently pursuing a Master's degree in Finance and Investment at KCA University and am conducting a study titled "*Off-Balance Sheet Activities and the Commercial banks listed on NSE in Kenya.*"

It is with great respect that I invite your esteemed organization to participate in this academic research. Your expertise and insights are highly regarded and would provide invaluable contributions to the depth, relevance, and practical significance of this study.

Please rest assured that all information gathered will be used strictly for academic purposes. The confidentiality and anonymity of all participants will be rigorously maintained—data will be securely stored, anonymized, and will not be disclosed to any third party without your prior consent.

We kindly request your cooperation in completing the attached questionnaire at your earliest convenience. Your thoughtful participation is sincerely appreciated and will play a crucial role in enriching the findings of this study.

.

Yours truly,

Juliana Ndavi
Reg no.

KCA University

Appendix II: Data Collection Tool

		2018	2019	2020	2021	2022	2023	2024
Commercial banks listed on NSE in Kenya								
	Return on Equity			-				
	Return on Investment			-				
Trade Finance Instrument								
	Unutilised Lines of Credit							
	Loan Commitments							
	Capital commitments							
Guarantees								
	Performance bonds							
	Acceptances (payment)							
	Financial Guarantees							
Letters of credit								
	Standby letters of credit							
	Commercial Letter of Credit							
	Confirmed Letter of Credit							
Control Variables								
	Capital Adequacy							
	Liquidity							
Bank size								
	Total assets			-				

Thank you for your cooperation

