

**DETERMINANTS OF FINANCIAL PERFORMANCE: EMPIRICAL EVIDENCE
FROM COMMERCIAL BANKS IN KENYA WITH THE MODERATING ROLE OF
DIGITALISATION**

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DECLARATION

I declare that this thesis is original and has not been submitted elsewhere for a degree. All sources are cited appropriately.

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ABSTRACT

The financial performance of commercial banks is a key driver of economic stability and growth in developing economies such as Kenya. This study examines the determinants of financial performance among Kenyan commercial banks, focusing on bank-specific factors, industry-specific factors, macroeconomic factors, and the moderating role of digitalisation. The analysis is grounded in the Efficiency Structure Theory, Deflation Theory, and Market Power Theory, which explain how operational efficiency, macroeconomic conditions, and market structure influence bank profitability. Guided by a positivism philosophy and an explanatory research design, the study utilises panel data from all 39 commercial banks regulated by the Central Bank of Kenya over the period 2000–2024. Secondary data from central bank reports and audited financial statements are analysed using hierarchical panel regression in Stata 18.5, with robustness confirmed through diagnostic tests including stationarity, Chow, normality, multicollinearity, heteroskedasticity, autocorrelation, and Hausman specification tests. Findings indicate that bank size is a strong and consistent determinant of performance (ROA, ROE, NIM), reflecting economies of scale. Asset quality negatively affects profitability, while liquidity exerts a modest positive effect, particularly on ROE, and capital adequacy is largely insignificant. At the industry level, market concentration enhances NIM, whereas private sector credit reduces ROE and NIM, suggesting margin compression associated with increased lending. Macroeconomic results show that GDP growth and moderate inflation support performance, while exchange rate depreciation weakens it; interest rates primarily influence NIM. Digitalisation emerges as a significant positive determinant across all measures and strengthens the effect of bank size, underscoring its role in improving efficiency and competitiveness. Overall, the models explain approximately 45–50% of the variation in financial performance. This study contributes by integrating conflicting empirical evidence on the determinants of commercial bank performance in Kenya through a multidimensional framework encompassing bank-specific, industry-specific, macroeconomic, and digitalisation factors. Using panel data and hierarchical regression with robust diagnostics, it provides new evidence on the moderating role of digitalisation. The findings extend efficiency and market power frameworks and offer practical implications for bank strategy and policy, while highlighting the need for future research incorporating qualitative factors and cross-country analysis.

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ACRONYMS AND ABBREVIATIONS

ARDL	Autoregressive Distributed Lag
BOE	Bank of England
CBK	Central Bank of Kenya
CBN	Central Bank of Nigeria
CBR	Central Bank Rate
ECB	European Central Bank
FE	Fixed Effects
GDP	Gross Domestic Product
KBA	Kenya Bankers Association
KCB	Kenya Commercial Bank
KSH	Kenyan Shillings
KS	Kolmogorov-Smirnov
NGN	Nigerian Naira
NIM	Net Interest Margin
NPL	Non-Performing Loans
OLS	Ordinary Least Squares
RE	Random Effects
RMP	Relative Market Power
ROA	Return on Assets
ROE	Return on Equity
ROI	Return on Investment

SARB	South African Reserve Bank
SCP	Structured Conduct Performance
UAE	United Arab Emirates
UK	United Kingdom
USD	United States Dollar
US	United States
VIF	Variance Inflation Factors
ZAR	South African Rand

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DEDICATION

This thesis is dedicated to my friends and family for their unwavering support throughout my studies, and to the Strathmore Business School for their ongoing assistance during this time. I am grateful to my family for the opportunity, strength, and knowledge they have given me.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Financial performance is a critical indicator of the strength and sustainability of commercial banks, reflecting their capacity to generate profits from assets, equity, and interest-bearing activities while maintaining efficiency and financial soundness (Sun, 2011). It is commonly assessed using key financial ratios such as Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM), which capture distinct dimensions of profitability and operational efficiency across time and institutions (Adhikari et al., 2023). Strong financial performance enhances market confidence, supports credit creation, and strengthens investor trust, whereas weak performance constrains liquidity and undermines financial stability (Gregory & Sovacool, 2019). As a result, commercial banks play a pivotal role in promoting economic growth and financial stability by mobilising savings, extending credit, and facilitating trade and investment (Omar & Makori, 2018), with their performance reflecting the sector's ability to manage risks, sustain profitability, and support capital formation (Chen & Liao, 2011).

Globally, bank performance has been shaped by interest rate cycles, inflationary pressures, exchange rate movements, and regulatory reforms (IMF, 2023). Following the 2008 global financial crisis, many advanced economies, including the United States (US), the United Kingdom (UK), and the Eurozone, adopted prolonged low-interest-rate policies, which compressed net interest margins and profitability for over a decade (Beltratti & Stulz, 2010). However, the post-pandemic inflation surge between 2021 and 2023 prompted aggressive monetary tightening, which increased net interest income but also raised funding costs and credit risk.

In the United States, banks recorded relatively strong profitability, with ROA averaging between 1- 1.5%, ROE between 10-15%, and NIM between 2.5-3.5% (FDIC, 2024). In comparison, UK banks exhibited moderate profitability, with ROA ranging from 0.4 to 1%, ROE between 6-12%, and NIM between 1.5-2.5%, constrained by post-Brexit regulatory adjustments and intense competition (BoE, 2024). Similarly, in the Eurozone, banks maintained lower returns, with ROA between 0.2-0.8%, ROE between 4-8%, and NIM between 1 and 2%, largely reflecting the legacy of prolonged negative interest rates and weak credit growth (ECB, 2024). Emerging markets such

as China and India have demonstrated relative resilience, while Brazil's banks remain among the most profitable globally, albeit subject to volatility arising from inflation and credit risk fluctuations.

Across Sub-Saharan Africa, commercial banks operate in challenging environments characterised by inflation, currency depreciation, and high credit risk. In Nigeria, lending rates fluctuated between 11-25% since 2000, while inflation rose from 6.9% in 2000 to 24.5% in 2024 (CBN, 2024). The Central Bank of Nigeria (CBN) stated that the naira depreciated nearly 96% after its 2023 float, and GDP growth slowed to 2.9% that year (CBN, 2024). Nigerian banks generally report ROA between 1-2%, ROE between 8-20%, and NIM between 3-7%, though performance remains sensitive to currency and credit shocks. By contrast, South Africa's banking sector has exhibited moderate profitability, with ROA ranging from 0.8 to 1.5%, ROE between 8-12%, and NIM between 2.5-4% (SARB, 2023; SARB, 2024). According to SARB (2023), the rand depreciated from 6.9 ZAR/USD in 2000 to 18.4 ZAR/USD in 2023, while inflation eased from 7.0% in 2022 to 6.0% in 2024, reflecting persistent macroeconomic pressures. These trends highlight the structural vulnerabilities faced by banks in the region.

In Kenya, the commercial banking industry has evolved significantly since independence, transitioning from a foreign-dominated system into a diversified and regionally integrated sector. Commercial banks play a central role in financial intermediation by mobilising deposits and allocating credit to individuals, businesses, and governments, thereby supporting economic growth (CBK, 2023). They form the backbone of the financial system, contributing to employment, tax revenue, and financial inclusion through innovations such as mobile banking and digital credit platforms (World Bank, 2023), while also facilitating monetary policy transmission (IMF, 2024).

The Central Bank of Kenya licenses and regulates 39 commercial banks, classified into Tiers I, II, and III based on asset size and market share (CBK, 2023; CBK, 2024). Market dominance remains concentrated among Tier I banks such as Equity Bank, KCB Group, and Co-operative Bank, which control over 70% of industry assets (CBK, 2024), while smaller Tier II and III banks face higher liquidity and credit risks (KBA, 2023). Although the sector has demonstrated resilience through growth, consolidation, such as the NIC and CBA merger forming NCBA Bank in 2019 (CBK, 2019), and increased digitalisation, it has also experienced structural challenges, including bank

failures such as Imperial Bank and Chase Bank between 2015 and 2016 and profitability pressures among smaller banks (CBK, 2017).

Despite these developments, the sector faces increasing financial and macroeconomic pressures that continue to shape its performance. Capital adequacy ratios have declined from above 30% in 2002 to around 20% in 2024, signalling reduced risk buffers, while asset quality remains high at approximately 20% compared to the CBK benchmark of 5% (CBK, 2024). Smaller banks remain particularly vulnerable, with non-performing loans reaching 15.6% in 2023.

Macroeconomic instability, including exchange rate depreciation from KShs 77/USD in 2000 to over KShs 140/USD in 2023, rising inflation, and volatile interest rates, has further intensified these challenges (CBK, 2024). Historically, Kenyan banks recorded strong performance, with ROA between 2-3% and ROE exceeding 20% during the 2000s and early 2010s (CBK, 2023). However, profitability has become more uneven in recent years due to shocks such as the interest rate capping law in 2016–2019 and the COVID-19 pandemic. Sector-wide ROA averaged around 2.2%, while ROE declined from 24.5% in 2022 to 21.6% in 2023 (CBK, 2023), and NIMs narrowed from over 7% in 2015 to below 5% in 2024 (CBK, 2024).

Despite extensive empirical work on bank performance, the literature remains fragmented and inconclusive. Methodologically, many studies by Shrestha (2023), Muriuki (2019), and Ngure (2014) rely on single indicators, short timeframes, and limited datasets. This limits the ability to capture the multidimensional and dynamic nature of financial performance. Even studies by Manyala et al., (2022) and Ongore and Kusa (2013) that adopt multiple measures of ROA, ROE, and NIM are constrained by outdated or short-period data. Conceptually, existing research by Alper & Anbar (2011) and Al-Homaidi et al., (2018) largely examines determinants in isolation; bank-specific studies exclude industry and macroeconomic effects, while industry-focused studies by Enisan and Oluwafemi (2015) and Sharma and Gounder (2012) emphasise economic growth rather than bank-level profitability. Similarly, macroeconomic evidence by Haque and Farzana (2018) and Nahiduzzaman et al., (2022) remains inconsistent, reflecting differences in model specification and measurement.

Furthermore, digitalisation remains underexplored and yields mixed findings (Kago and Mutuku, 2023; Sayari, 2024; Setiawan and Prakoso, 2024; Shanti et al., 2023). Few studies incorporate structural shocks such as the 2008 global financial crisis and COVID-19. Accordingly, there is no

comprehensive framework integrating these determinants over time. This study addresses this gap by employing a longitudinal panel dataset (2000–2024), multidimensional performance measures (ROA, ROE, NIM), and incorporating digitalisation as a moderating variable alongside an economic crisis dummy.

1.1.1 Financial Performance of Commercial Banks

According to Gregory and Sovacool (2019), financial performance refers to a bank's ability to generate sustainable profits while maintaining adequate levels of efficiency, liquidity, and solvency. In the banking sector, financial performance is commonly measured using key indicators such as Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM) (Adhikari et al.,2023). ROA measures how efficiently a bank utilises its assets to generate profits. In contrast, ROE reflects the return generated for shareholders, and NIM captures the core profitability derived from lending and deposit-taking activities (Sun,2011). Together, these indicators provide a comprehensive assessment of a bank's operational efficiency, profitability, and overall financial health.

Globally, the financial performance of commercial banks has been shaped by macroeconomic conditions, regulatory frameworks, and structural changes in the financial system (IMF,2024). Periods of economic expansion are typically associated with higher profitability due to increased lending and lower default rates, while economic downturns often result in reduced earnings and higher credit risk. In recent years, global banking performance has been influenced by low-interest-rate environments following the 2008 financial crisis, as well as subsequent monetary tightening and inflationary pressures, which have had mixed effects on profitability through changes in interest margins and funding costs (World Bank, 2023). In emerging markets, banks have generally demonstrated higher margins but also face greater exposure to macroeconomic volatility and credit risk (World Bank,2024).

In Kenya, commercial banks have historically recorded relatively strong performance, with profitability supported by high interest margins and expanding financial inclusion (CBK,2024). However, performance has become increasingly uneven due to rising non-performing loans, regulatory interventions such as interest rate controls, and macroeconomic instability (CBK,2023). Although digitalisation and product innovation have improved efficiency and access to financial services, banks continue to face pressures from declining margins, rising operating costs, and

heightened credit risk (KBA,2024). These dynamics underscore the importance of understanding the determinants of financial performance to enhance stability, resilience, and long-term growth within the banking sector.

1.1.2 Bank-Specific Factors

Bank-specific factors are internal characteristics and operational decisions that directly influence a bank's financial performance, efficiency, and stability (Chen & Liao, 2011). These factors reflect how effectively a bank manages its resources, risks, and operations to generate sustainable returns. Key determinants identified in the literature include bank size, asset quality, capital adequacy, and liquidity, which collectively capture financial strength, credit risk management, funding stability, and operational efficiency (IMF, 2024). Bank size reflects economies of scale and market power; asset quality, measured through non-performing loans (NPLs), indicates credit risk exposure and lending soundness; capital adequacy represents the bank's capacity to absorb losses; and liquidity reflects the ability to meet short-term obligations while maintaining lending activities (Gunawardhana & Perera, 2019). These variables are widely recognised because of their strong theoretical relevance and empirical importance in influencing efficiency, solvency, and operational sustainability.

Empirical evidence by Shrestha (2023), Al-Zaidanin (2020) and Haque and Farzana (2018) indicates that bank-specific factors are among the most significant determinants of financial performance, although their effects vary across contexts and time periods. Larger banks typically benefit from cost efficiencies, diversified income streams, and stronger governance frameworks, which enhance profitability, while poor asset quality increases provisioning costs and reduces earnings (Alper and Anbar,2011). Although capital adequacy enhances stability, its direct effect on profitability remains mixed, while liquidity supports operational continuity and lending capacity.

In Kenya, large Tier I banks generally outperform smaller institutions due to scale benefits and more sophisticated risk management systems, while Tier II and III banks continue to face issues with asset quality, capital adequacy, and liquidity management (CBK,2020). Despite regulatory efforts, performance gaps exist across bank tiers.

Historically, Kenyan banks maintained strong capital buffers, with capital adequacy ratios exceeding 30% in the early 2000s, but these have gradually declined to around 20% by 2024 (CBK, 2024). Asset quality improved between 2000 and 2015 as NPLs fell below 10% but worsened after

2019 due to the legacy of interest rate caps, the pandemic, and slower credit growth, reaching 15.6% in 2023 and 2024 (CBK, 2023; CBK, 2024). Liquidity levels have consistently stayed above the CBK's 20% minimum threshold, averaging over 40%, reflecting prudent liquidity management (KBA, 2023; KBA, 2024).

Although other bank-specific variables, such as management efficiency, cost-to-income ratios, corporate governance, and ownership structure, may influence performance, they are excluded due to limited data, measurement consistency, and comparability, as well as their qualitative or indirect nature. Consequently, the selected variables provide a parsimonious, robust, and methodologically consistent framework aligned with the study's objectives.

1.1.3 Macroeconomic Factors

Macroeconomic factors encompass external economic conditions that shape the operating environment of banks and significantly influence their financial performance (Snider, 2019). These include Gross Domestic Product (GDP) growth, inflation, interest rates, and exchange rates, all of which affect profitability, risk exposure, and operational dynamics (Wainaina, 2013). GDP growth reflects the pace of economic activity and influences loan demand and investment returns, while inflation affects real interest margins and operating costs (KBA, 2024). Interest rates determine the pricing of credit and deposits, thereby influencing spreads and profitability, whereas exchange rates affect foreign currency exposures and import-related credit risks (CBK, 2022). These variables are widely recognised due to their strong theoretical and empirical relevance as primary transmission channels of macroeconomic effects on banking outcomes (IMF, 2024).

Economic growth is generally associated with improved bank performance, as higher GDP growth stimulates credit demand, enhances repayment capacity, and reduces default risk (Gbenga, Olusegun & Adeyinka, 2019). Inflation exhibits a complex relationship with performance; moderate inflation can enhance margins, while high or volatile inflation erodes real returns and increases uncertainty (Moyo & Tursoy, 2020). Interest rate movements directly influence net interest margins, with rising rates potentially boosting income but also increasing borrowing costs and credit risk (Omondi & Muturi, 2013). Exchange rate depreciation increases financial vulnerability by raising foreign currency exposure and credit risk (Njagi & Nzai, 2022). Collectively, these variables provide a comprehensive representation of the macroeconomic environment. Although other factors, such as unemployment, political stability, foreign direct

investment, and fiscal policy, may also influence performance, they are excluded due to data limitations and their indirect or lagged effects.

Historically, in Kenya, GDP growth has fluctuated with domestic and global shocks, expanding by 5.6% in 2007, contracting by –1.5% in 2009 due to the post-election crisis, and by –0.3% in 2020 during the COVID-19 pandemic before rebounding to 5.5% in 2022 (World Bank, 2023). Inflation has averaged between 6-8%, while the Central Bank Rate (CBR) has ranged between 7-13% (CBK, 2023; CBK, 2024). The Kenyan shilling has depreciated from KShs 77/USD in 2000 to over KShs 150/USD in 2023 and KShs 129/USD in 2024 (CBK, 2024). Currently, Kenya faces slower GDP growth of around 5%, elevated inflation between 6-7%, and high interest rates with the CBR at 13% (CBK, 2024), causing tightening credit conditions and increasing default risk. These dynamics highlight the complexity of sustaining financial performance within the banking sector.

1.2 Problem Statement

The financial performance of commercial banks directly affects economic stability by shaping credit supply, influencing investor confidence, and determining the effectiveness of monetary policy transmission mechanisms. In Kenya, however, recent trends indicate increasing vulnerabilities within the banking sector, particularly among Tier II and Tier III banks. According to CBK (2024), profitability has declined, with Return on Assets (ROA) and Return on Equity (ROE) falling to 2.2% and 21.6% in 2023, while Net Interest Margin (NIM) dropped below 5% in 2024, reflecting margin compression and rising costs. These challenges are compounded by macroeconomic instability, including exchange rate depreciation from KShs 77/USD in 2000 to over KShs 150/USD in 2023, high inflation, and volatile interest rates, which have weakened asset quality and constrained credit growth (World Bank, 2023). Non-performing loans (NPLs) remain elevated at 15.6%, far above the CBK benchmark of 5%, while capital adequacy ratios have declined from above 30% in 2002 to about 20% in 2024, signalling reduced buffers against shocks. Collectively, these trends raise concerns about the resilience, efficiency, and sustainability of Kenya's banking sector despite ongoing reforms and digitalisation.

Empirical evidence on the determinants of bank performance remains fragmented and inconclusive. Studies on bank-specific factors report mixed findings. Shrestha (2023) and Alper and Anbar (2011) find that bank size enhances profitability while asset quality reduces it; Al-

Homaidi et al., (2018) report nonlinear effects; and Biru (2021) finds capital adequacy negatively related to performance. In Kenya, Njoki and Nyamute (2023) and Muriuki (2019) present conflicting results, while Manyala et al., (2022) find most variables to be insignificant. Evidence on industry-specific factors is similarly inconsistent. While Berger and Hannan (1989) and Claessens and Laeven (2004) link competition to efficiency, Fernandez de Guevara et al., (2005) and Goddard et al., (2004) find that market concentration enhances profitability. Moreover, studies on private sector credit by Sharma and Gounder (2012) and Enisan and Oluwafemi (2015) primarily focus on economic growth rather than bank-level performance, creating a conceptual gap.

Macroeconomic determinants also yield conflicting findings. Nahiduzzaman et al., (2022) report a positive effect of inflation on profitability, while Haque and Farzana (2018) find insignificant effects, and Al-Homaidi et al., (2018) report negative relationships. In Kenya, Muriuki (2019) and Ngure (2014) produce differing results, while Ongore and Kusa (2013) find minimal effects using multidimensional measures. Similarly, evidence on exchange rates remains inconclusive, with studies by Hossein et al., (2020), Njagi and Nzai (2022), and Moyo and Tursoy (2020) reporting negative, weak, or insignificant relationships. Emerging research on digitalisation further reflects mixed outcomes, with positive findings by Sayari (2024) and Kago and Mutuku (2023), negative findings by Setiawan and Prakoso (2024), and conditional effects by Shanti et al., (2023), often constrained by narrow measurement and reliance on single performance indicators.

These inconsistencies stem from three key limitations. First, methodological gaps arise from reliance on single indicators such as ROA, short timeframes, and the failure to capture long-run dynamics. Second, conceptual gaps result from examining determinants in isolation rather than integrating bank-specific, industry-specific, macroeconomic, and technological factors. Third, contextual and scope gaps persist, as some studies focus on large or listed banks with limited attention to smaller institutions, and also overlook digitalisation and crisis periods such as the 2008 global financial crisis and the COVID-19 pandemic.

Consequently, a comprehensive understanding of the determinants of financial performance among Kenyan commercial banks remains limited. This study addresses these gaps by employing multidimensional performance measures such as ROA, ROE, and NIM over an extended period (2000–2024), while integrating bank-specific, industry-specific, and macroeconomic factors

within a unified framework. It further incorporates digitalisation as a moderating variable and an economic crisis dummy to capture structural and external shocks. Specifically, the study investigates the effect of bank-specific factors, examines industry dynamics, assesses macroeconomic influences, and evaluates how digitalisation moderates the relationship between bank size and financial performance. By doing so, the study provides a more robust, integrated, and context-specific contribution to the literature and informs policy and decision-making aimed at enhancing financial stability and sustainable growth in Kenya's banking sector.

1.3 Objective of the Study

The general objective of this study was to establish the determinants of the financial performance of commercial banks in Kenya.

1.3.1 Specific Objectives

- i. To investigate the effect of bank-specific factors on the financial performance of commercial banks in Kenya.
- ii. To examine the effect of industry-specific factors on the financial performance of commercial banks in Kenya.
- iii. To explore the effect of macro-economic factors on the financial performance of commercial banks in Kenya.
- iv. To evaluate the moderating effect of digitalisation on the financial performance of commercial banks in Kenya.

1.4 Research Questions

- i. What is the effect of bank-specific factors on the financial performance of commercial banks in Kenya?
- ii. What is the effect of industry-specific factors on the financial performance of commercial banks in Kenya?
- iii. What is the effect of macro-economic factors on the financial performance of commercial banks in Kenya?
- iv. What is the moderating effect of digitisation on the financial performance of commercial banks in Kenya?

1.5 Significance of the Study

The financial performance of commercial banks in Kenya is critical to financial stability, economic growth, and efficient resource allocation. This study addresses key conceptual, contextual, methodological, and scope gaps in the literature and provides insights relevant to multiple stakeholders, including banking practitioners, policymakers, and researchers. The integration of bank-specific factors, industry-specific factors, macroeconomic factors and the moderating role of digitalisation, the study offers a more comprehensive understanding of financial performance in the Kenyan banking sector.

1.5.1 Banking Practitioners

Firstly, the findings from this study provide valuable insights for commercial banks in Kenya to identify areas of improvement to enhance their financial performance. For banking practitioners, this study addresses conceptual and scope gaps by providing an integrated framework that links internal bank factors such as size, asset quality, liquidity, and capital adequacy with external industry and macroeconomic conditions, including digitalisation. Existing studies often examine these determinants in isolation, limiting their practical applicability. By bridging this gap, the findings enable bank managers to better understand the combined and interactive effects of these variables on financial performance. This facilitates more informed decision-making in areas such as risk management, operational efficiency, and strategic investment in digital technologies. Additionally, the study expands the scope of analysis by incorporating digitalisation as a moderating variable, offering practical insights into how technology can enhance performance and resilience in a dynamic financial environment.

1.5.2 Policymakers and regulatory bodies

Secondly, the findings of this study provide important insights for Kenyan regulatory agencies and policymakers seeking to enhance financial stability within the Kenyan banking sector. For policymakers and regulatory bodies, the study addresses contextual and conceptual gaps by providing empirical evidence specific to the Kenyan banking sector. Much of the existing literature is based on developed or cross-country contexts, which may not fully capture the unique regulatory, economic, and structural characteristics in Kenya. This study contributes context-specific insights informing the design of effective regulatory frameworks and policies aimed at enhancing financial stability. By clarifying the role of macroeconomic factors such as GDP, inflation, and exchange rates, and industry dynamics such as market concentration and credit

expansion, policymakers can develop targeted interventions. Furthermore, the study highlights the growing importance of digitalisation, guiding regulators in formulating innovation-supportive policies that promote efficiency while safeguarding financial system stability.

1.5.3 Researchers

Additionally, this study contributes to existing knowledge in the field and provides data and information for future research in the same field or different sectors. For researchers, this study addresses methodological and scope gaps in the existing literature. Methodologically, it employs a hierarchical panel regression approach, allowing for a more robust analysis of the incremental effects of different categories of determinants on financial performance. This provides a structured and replicable framework for future empirical studies. In terms of scope, the study extends the analysis period (2000–2024) and incorporates a broader set of variables, including digitalisation and crisis effects, which are often underexplored in prior research. These contributions provide a strong foundation for future studies to build upon, including opportunities for cross-country comparisons, inclusion of qualitative factors such as governance, and further exploration of technological innovation on financial performance.

1.6 Scope of the Study

This study focuses on all thirty-nine licensed commercial banks regulated by the Central Bank of Kenya as of December 2024 (CBK, 2024). To capture trends and structural changes in financial performance over time, the study utilises panel data covering the period from 2000 to 2024. This timeframe is selected to incorporate significant economic events relevant to the study objectives, including the global financial crisis of 2007–2008 and the COVID-19 pandemic. Financial performance is examined using Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM) as dependent variables. Bank-specific, industry-specific, and macroeconomic factors are included as independent variables, with financial crisis incorporated as a dummy variable and digitalisation specified as a moderating variable. The study relies on secondary data and applies hierarchical panel data regression analysis. The study excludes qualitative factors such as corporate governance and managerial behaviour due to data limitations and challenges in consistent measurement. Furthermore, the scope is restricted to commercial banks and does not extend to other financial institutions such as insurance companies, microfinance banks, and SACCOs.

1.7 Definition of Terms

Financial Performance: The measurement of a bank's profitability, efficiency, and overall financial health, commonly assessed using indicators such as ROA, ROE, and NIM.

Profitability Indicators: Metrics such as ROA, ROE, and NIM are used to evaluate banks' ability to generate earnings relative to assets, equity, and interest income.

ROA (Return on Assets): Indicates how effectively a bank uses its assets to generate profits; higher ROA reflects better operational efficiency and asset utilisation.

ROE (Return on Equity): Measures the return earned on shareholders' equity, reflecting profitability from the owners' perspective and the bank's ability to maximise shareholder value.

NIM (Net Interest Margin): Captures the difference between interest income and interest expenses as a proportion of earning assets, showing how well banks manage their core lending and deposit operations.

Bank-Specific Factors: The internal features, such as size, asset quality, liquidity, and capital adequacy, that directly influence a bank's efficiency and profitability.

Bank Size: Larger banks often benefit from economies of scale, diversified operations, and greater market power, leading to higher profitability and resilience.

Capital Quality (Capital Adequacy): Indicates a bank's financial strength and ability to absorb losses; well-capitalised banks maintain stability and investor confidence.

Asset Quality: Measures the level of non-performing loans (NPLs); poor asset quality signals higher credit risk and directly reduces profitability.

Liquidity: Represents the bank's ability to meet short-term obligations; while adequate liquidity enhances stability, excess liquidity can reduce profitability.

Industry-Specific Factors: External sectoral dynamics, including market concentration and private sector credit, that shape competition, lending behaviour, and margins.

Macroeconomic Factors: Broader economic conditions such as GDP growth, inflation, interest rates, and exchange rates that affect the banking environment and loan performance.

GDP (Gross Domestic Product): Represents overall economic growth; higher GDP growth enhances loan demand, reduces credit risk, and improves bank profitability.

Inflation Rates: Affect banks' cost structures and interest margins; moderate inflation may increase lending returns, while high inflation erodes real profitability.

Interest Rates: Influences borrowing costs and lending income; rising rates can boost NIMs but may also heighten default risk and reduce loan growth.

Exchange Rates: Reflect currency stability; depreciation increases foreign-currency exposure and credit risk, thereby negatively impacting financial performance.

Digitalisation: Involves adopting technologies like mobile banking, fintech platforms, and digital credit systems, which enhance efficiency, cost reduction, and profitability.

Economic Crisis: Financial or economic disruptions that affect credit quality, lending capacity, and bank stability.

Panel Data Analysis: A quantitative method of analysing multiple banks over time to capture both cross-sectional and time-series variations in determinants of performance.

Efficiency: Reflects how effectively banks allocate resources and manage costs to achieve optimal profitability and operational performance.

Risk Management: Encompasses policies and strategies that identify, measure, and control credit market and liquidity risks, ensuring long-term financial stability.

1.8 Chapter summary

This chapter begins by introducing the study by outlining the background of the Kenyan banking sector and the factors influencing financial performance. It highlights the research problem of limited understanding of how bank-specific, industry-specific, and macroeconomic factors affect performance, especially in the context of digitalisation. The objectives and research questions are clearly stated, focusing on the effects of these factors on commercial banks in Kenya from 2000 to 2024. The significance of the study is emphasised for banking practitioners, policymakers, regulators, and researchers. The scope covers all thirty-nine commercial banks regulated by the Central Bank of Kenya as of December 2024. Key terms used in the study are also defined.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter is organised into six sections: the theoretical review, empirical review, summary of the literature, conceptual framework, measurement of study variables, and chapter summary. It begins with a theoretical review of the three guiding theories for the study: the Efficiency Structure Theory, Deflation Theory, and Market Power Theory. This is followed by an empirical review that examines existing research on bank-specific, industry-specific, and macroeconomic factors, as well as digitalisation. The chapter also provides a critical evaluation of the reviewed literature and identifies key research gaps. In addition, a conceptual framework is presented to illustrate the relationships among the study variables and their respective measurements. The chapter concludes with a summary of the key issues discussed.

2.2 Theoretical Review

This section presents the theoretical review, which, according to Turner, Baker, and Kellner (2018), explains the relationships between concepts or phenomena under specific conditions within a given field. It provides the theoretical foundation for empirical investigation by linking abstract concepts to observable and measurable variables. As noted by Walliman (2017), theories serve as systematic frameworks for interpreting empirical observations. In this study, the Efficiency Structure Theory, Deflation Theory, and Market Power Theory are applied to explain how bank-specific, macroeconomic, and industry-specific factors, as well as digitalisation, influence the financial performance of commercial banks in Kenya, measured using ROA, ROE, and NIM.

2.2.1 Efficiency Structure Theory

Demsetz (1973) is a key proponent of the Efficiency Structure Theory, which challenges the traditional Structure–Conduct–Performance paradigm by arguing that firm performance is primarily driven by internal efficiencies rather than market power. The theory posits that superior managerial efficiency and optimal scale generate cost advantages, leading to higher market share and increased profitability. Berger (1995) further distinguishes between X-efficiency and scale

efficiency. X-efficiency emphasises managerial effectiveness in minimising costs and maximising output, while scale efficiency suggests that larger institutions benefit from economies of scale, resulting in lower average costs and improved financial performance. In the banking context, this implies that institutions with more efficient management practices and optimal size tend to achieve higher profitability.

In this study, the theory provides the foundation for the bank-specific variables, namely bank size, asset quality, capital adequacy, and liquidity. Bank size reflects scale efficiency, where larger Kenyan banks, particularly Tier I institutions, benefit from economies of scale and diversified income streams. Asset quality, measured through non-performing loans (NPLs), captures credit risk management efficiency, as lower NPLs reduce provisioning costs and enhance profitability. Capital adequacy reflects financial resilience and the capacity to absorb shocks, while liquidity represents operational efficiency in meeting short-term obligations without constraining lending activities.

Within the Kenyan context, disparities between Tier I, II, and III banks' highlight variations in efficiency, with larger banks generally outperforming smaller ones due to stronger operational frameworks and resource capacity. These efficiency differences are reflected in financial performance indicators such as ROA, ROE, and NIM, which serve as outcome measures of how effectively banks utilise their internal resources. Therefore, the Efficiency Structure Theory provides a strong foundation for explaining how internal bank characteristics drive performance and aligns with the study's first objective.

2.2.2 Deflation Theory

The Deflation Theory, proposed by Fisher (1933), explains how declining price levels increase the real burden of debt, reduce asset values, and weaken financial performance. Deflationary pressures can lead to increased bankruptcies, reduced investment, and disruptions in economic activity, thereby adversely affecting both borrowers and financial institutions. These dynamics may also contribute to fluctuations in interest rates and distortions in financial markets.

Fisher (1933) further argues that macroeconomic instability, particularly through inflation and deflation cycles, alters the balance between creditors and debtors, often increasing default risk. Supporting this perspective, Nzuve (2016) emphasises the importance of fiscal adjustments in managing inflation, while McGuire and Conroy (1998) identify inflation as a key macroeconomic

variable influencing financial systems. Additionally, exchange rate movements, often explained through purchasing power parity, link inflation to currency depreciation, which negatively affects economic growth and financial performance (Kouki, Belhadjn, & Chikhaoui, 2018).

In this study, the Deflation Theory directly explains the role of macroeconomic variables, including GDP, inflation, interest rates, and exchange rates. GDP growth influences credit demand and repayment capacity, thereby affecting bank profitability. Inflation impacts real returns and cost structures, while interest rates determine lending margins and funding costs. Exchange rate volatility affects banks' foreign currency exposures and trade-related risks.

In Kenya, macroeconomic instability is characterised by exchange rate depreciation, inflationary pressures, and interest rate volatility. This influences bank performance, particularly through increased credit risk and reduced margins. These macroeconomic conditions are reflected in financial performance indicators ROA, ROE, and NIM, demonstrating how external economic forces shape banking outcomes. Thus, the Deflation Theory provides a relevant framework for understanding the third objective by linking macroeconomic dynamics to financial performance.

2.2.3 Market Power Theory

The Market Power Theory, advanced by Bain (1951), explains the relationship between market structure and profitability through two key hypotheses: the Structure–Conduct–Performance (SCP) hypothesis and the Relative Market Power (RMP) hypothesis. The SCP hypothesis posits that higher market concentration enables firms to influence prices and earn above-normal profits, while the RMP hypothesis argues that firms achieve superior performance through product differentiation and firm-specific competitive advantages. In the banking sector, this implies that institutions with larger market shares and operating in more concentrated markets can exert pricing power by setting higher lending rates and lower deposit rates, thereby enhancing profitability. Larger banks may also benefit from economies of scale and greater capacity to undertake higher-yield investments.

However, critics such as Berger and Hannan (1998) argue that observed profitability may instead reflect underlying efficiency rather than market power, highlighting the conceptual overlap with the Efficiency Structure Theory. In this study, the Market Power Theory provides the foundation for the industry-specific variables, particularly market concentration and private sector credit. Market concentration reflects the degree of competition within the banking sector, where higher

concentration may enable dominant banks in Kenya to achieve stronger margins. Private sector credit captures the extent of lending activity, influencing both market share and competitive dynamics within the sector.

The dominance of Tier I banks, which are the large commercial banks in Kenya, control a significant share of industry assets. This illustrates how market structure influences pricing behaviour and profitability. At the same time, increased lending to the private sector may compress margins due to competition and credit risk. These dynamics are captured through ROA, ROE, and NIM, which reflect the financial outcomes of market positioning and competitive behaviour. Therefore, the Market Power Theory provides a relevant framework for explaining the second objective by linking industry structure and competition to financial performance.

2.3 Empirical Review

The empirical review examines existing studies, research articles, and empirical evidence on the determinants of financial performance among commercial banks. It critically evaluates the methodologies employed, the variables analysed, and the key findings of each study. This section aims to synthesise the existing body of knowledge, identify patterns, inconsistencies, and gaps in the literature, and enhance understanding of how bank-specific, industry-specific, macroeconomic factors, and digitalisation influence the financial performance of commercial banks.

2.3.1 Bank-Specific Factors and Financial Performance

This section reviews empirical evidence on the relationship between bank-specific factors and financial performance, focusing on bank size, asset quality, capital adequacy, and liquidity. While there is a broad consensus that these internal factors significantly influence profitability, the literature reveals notable theoretical and empirical inconsistencies, as well as methodological and contextual limitations, thereby justifying further investigation.

A key area of consensus in the literature is that bank size and asset quality are critical determinants of performance, although their effects are not universally consistent. Studies by Shrestha (2023) and Alper and Anbar (2011) find that larger banks benefit from economies of scale, resulting in improved profitability, while poor asset quality, reflected in high non-performing loans (NPLs), reduces profitability. These findings are supported by robust econometric methods employed by Alper and Anbar (2011) and more recent datasets (Shrestha, 2023). However, a critical limitation in both studies is their narrow focus on listed banks in Nepal and Türkiye. This introduces a

contextual bias and limits generalisability to the broader banking sector, particularly among unlisted institutions. Furthermore, the reliance on ROA as the sole performance measure (Shrestha, 2023) creates a methodological gap, as it fails to capture multidimensional aspects of performance such as ROE and NIM.

Despite this apparent consensus, contradictions emerge when examining the nonlinear effects of bank size and liquidity. For instance, Al-Homaidi et al., (2018) provide contrasting evidence showing that beyond a certain threshold, increased bank size may lead to inefficiencies and reduced performance in Indian banks. Similarly, while liquidity is generally associated with improved risk management, Al-Homaidi et al., (2018) find that excessive liquidity negatively affects ROE, suggesting a trade-off between safety and profitability. These findings contrast with Gunawardhana and Perera (2019), who report that capital adequacy, asset quality, and liquidity significantly enhance profitability in Sri Lanka, although the magnitude of these effects varies across regulatory environments. While both studies employ robust panel methodologies, they are limited by short study periods and, in the case of Gunawardhana and Perera (2019), the continued reliance on ROA alone, reinforcing the persistent methodological weakness of unidimensional performance measurement.

Further contradictions arise in the role of capital adequacy and liquidity across different banking systems. Al-Zaidanin (2020) finds that bank size, capital adequacy, and asset quality strongly influence performance in UAE banks, supported by a relatively long panel dataset, enhancing reliability. However, the study does not address endogeneity issues such as reverse causality, raising concerns about the validity of causal inferences. In contrast, Haque and Farzana (2018) find that liquidity positively influences performance in Islamic banks in Bangladesh, highlighting the importance of institutional context. However, their exclusive focus on Islamic banks introduces a contextual limitation, as profit-sharing models differ from conventional banking systems. These contrasting findings suggest that the impact of bank-specific factors is highly context-dependent, reinforcing the need for studies that integrate multiple banking environments and structures.

Within the African context, empirical findings remain equally mixed and context sensitive. Abebe (2014) and Biru (2021) both find that bank size and liquidity positively influence performance in Ethiopian banks, while asset quality negatively affects profitability. However, Biru (2021) reports a negative effect of capital adequacy, contradicting studies that associate higher capital buffers

with stability and improved performance. Although both studies benefit from robust panel data methodologies, they are limited by sample selection bias, focusing only on the most established banks and excluding smaller or newer institutions. Similarly, Derbali (2021) finds that capital adequacy and liquidity enhance performance in Moroccan banks, but also notes that excessive liquidity can reduce efficiency, further reinforcing the nonlinear and context-dependent nature of these relationships. These studies collectively reveal a clear tension where, while bank-specific factors are important, their direction and magnitude vary significantly across institutional and regulatory contexts.

In Kenya, the evidence continues to reflect inconsistencies across studies, particularly regarding capital adequacy and liquidity. Njoki and Nyamute (2023) find that bank size and asset quality positively influence profitability, while capital adequacy has a negative effect. In contrast, Muriuki (2019) reports that both capital adequacy and asset quality negatively affect performance. While these studies provide valuable country-specific insights, they are both limited by their reliance on ROA as a single performance indicator, reinforcing a methodological gap in capturing multidimensional financial performance. Additionally, Njoki and Nyamute (2023) lack robustness checks, while Muriuki (2019) is constrained by a narrower analytical scope.

Further inconsistencies are evident in studies by Ongore and Kusa (2013) and Manyala et al., (2022), which adopt a multidimensional approach using ROA, ROE, and NIM, representing a methodological strength. Ongore and Kusa (2013) find that capital adequacy improves performance, asset quality negatively affects performance, and liquidity has no significant effect. In contrast, Manyala et al., (2022) report that capital adequacy, asset quality, and liquidity are not statistically significant, highlighting conflicting empirical evidence within the same context. However, both studies have notable limitations where Ongore and Kusa (2013) rely on outdated data (2001–2010), limiting relevance in the digital banking era, while Manyala et al., (2022) use a short time frame (2017–2021), which may not capture long-run dynamics or structural changes.

Overall, the empirical literature demonstrates that while bank-specific factors are widely acknowledged as key determinants of financial performance, there is no clear consensus on the direction, magnitude, or consistency of their effects. These contradictions stem from differences in methodology, such as single vs multidimensional performance measures, sample selection, such as listed versus unlisted banks, time horizons, such as short vs long-term data, and failure to

address econometric issues, such as endogeneity. Consequently, significant methodological, contextual, and conceptual gaps remain. This study addresses these gaps by adopting a comprehensive panel dataset covering all commercial banks in Kenya over an extended period (2000–2024), incorporating multidimensional performance measures such as ROA, ROE, and NIM, and providing a more integrated and robust analysis of how bank-specific factors influence financial performance across different banking tiers and economic conditions.

2.3.2 Industry-Specific Factors and Financial Performance

This section reviews empirical evidence on the relationship between industry-specific factors, specifically private sector credit and market concentration and the financial performance of commercial banks. While the literature generally recognises the importance of these factors, it reveals notable inconsistencies in findings, as well as conceptual, methodological, and contextual gaps, particularly in establishing a clear link between industry dynamics and bank-level profitability.

A major area of consensus is that private sector credit supports economic growth, yet a key tension in the literature lies in whether this translates into improved bank-level financial performance. Global studies by Sharma and Gounder (2012) and Rashid (2011) consistently find that increased private sector credit enhances GDP growth by fostering investment and financial deepening. Similarly, regional studies by Enisan and Oluwafemi (2015) and Were, Nzomoi, and Rutto (2012) confirm that credit expansion stimulates economic activity. However, these studies largely focus on macroeconomic outcomes rather than bank profitability, creating a clear conceptual gap. While their methodologies benefit from multi-country analysis (Sharma and Gounder, 2012) and long-time horizons (Rashid, 2011; Enisan and Oluwafemi, 2015), they are limited by their failure to incorporate bank-level performance indicators such as ROA, ROE, and NIM, thereby weakening the direct applicability of their findings to financial performance analysis.

Further tension arises when considering the risk implications of private sector credit expansion. While studies such as Enisan and Oluwafemi (2015) emphasise the growth-enhancing role of credit, Gbenga, Olusegun, and Adeyinka (2019) provide contrasting evidence, showing that excessive credit expansion without adequate risk assessment increases default risk and undermines financial stability. Similarly, Abuka and Egesa (2007) highlight that while credit access promotes growth, weak credit policies can exacerbate financial vulnerabilities. These findings introduce a

trade-off between credit growth and risk, suggesting that the impact of private sector credit on performance is nonlinear and context dependent. Despite employing robust econometric methods and long-time horizons, these studies remain constrained by limited generalisability beyond specific countries and continue to overlook bank-level profitability metrics, reinforcing both contextual and conceptual gaps. Additionally, studies such as Sharma and Gounder (2012) and Were, Nzomoi, and Rutto (2012) are limited by short timeframes, which fail to capture long-run dynamics and cyclical effects, highlighting a methodological gap that this study seeks to address.

In contrast, the literature on market concentration presents even more pronounced contradictions. Early studies, such as Berger and Hannan (1989), argue that higher concentration reduces competition, leading to inefficiencies, higher lending rates, and reduced consumer welfare. This finding is supported by Claessens and Laeven (2004), who show that increased competition enhances efficiency and economic growth across countries. However, opposing evidence is presented by Fernandez de Guevara, Maudos, and Perez (2005) and Goddard, Molyneux, and Wilson (2004), who find that higher market concentration is associated with improved bank performance due to increased pricing power and economies of scale. These conflicting findings reflect a fundamental theoretical tension between the Structure-Conduct-Performance (SCP) hypothesis, which supports concentration-driven profitability, and the efficiency hypothesis, which attributes performance to competitive efficiency rather than market dominance.

Methodologically, these studies exhibit both strengths and limitations. For instance, Claessens and Laeven (2004) and Goddard, Molyneux, and Wilson (2004) benefit from large cross-country datasets and advanced econometric techniques, enhancing robustness and external validity. However, their reliance on aggregated data masks bank-level heterogeneity, limiting the ability to capture differences across institutions. Similarly, Fernandez de Guevara, Maudos, and Perez (2005) employ refined econometric approaches but are constrained by a regional focus on Europe, limiting applicability to developing economies. Ariss (2010) contributes a unique perspective by comparing Islamic and conventional banks, but is limited by a small sample size, raising concerns about representativeness. Collectively, these studies highlight a contextual gap, as findings from developed or specialised banking systems may not translate directly to emerging markets such as Kenya.

In the Kenyan context, evidence on market concentration reveals mixed and inconclusive findings. Omondi and Muturi (2013) and Kiptui (2014) find that higher market concentration leads to increased interest rate spreads and improved profitability, supporting the argument that market power enhances performance. However, these studies primarily focused on interest rate spreads as proxies for profitability rather than comprehensive indicators such as ROA, ROE, or NIM, creating a methodological gap in performance measurement. While both studies employ dynamic panel models, which strengthen their analytical rigour, they are limited by their narrow focus on short-term profitability and failure to assess long-term stability or risk implications, particularly during economic downturns.

Overall, the empirical literature demonstrates that industry-specific factors significantly influence banking sector outcomes; however, no clear consensus regarding their direct impact on financial performance. The literature is characterised by three key tensions. The first is credit expansion versus financial risk, where increased lending supports growth but may undermine stability. The second being concentration versus competition, where market power may enhance profitability but reduce efficiency; and lastly, macroeconomic versus bank-level focus, where many studies prioritise economic growth outcomes over profitability measures. These inconsistencies are further compounded by methodological limitations, including reliance on single indicators, short timeframes, and aggregated data, as well as contextual constraints arising from a narrow country or institutional focus.

Consequently, there remains a clear need for a comprehensive and methodologically robust analysis that directly links industry-specific factors to multidimensional measures of financial performance within a single framework. This study addresses these gaps by examining the effects of private sector credit and market concentration on ROA, ROE, and NIM using longitudinal panel data (2000–2024) across commercial banks in Kenya, thereby providing a more integrated, context-specific, and empirically robust understanding of how industry dynamics shape bank performance.

2.3.3 Macroeconomic Factors and Financial Performance

The analysis of empirical studies on macroeconomic factors reveals notable inconsistencies in both findings and methodological approaches, suggesting that the relationship between macroeconomic conditions and bank performance remains inconclusive. Although variables such as GDP, inflation,

interest rates, and exchange rates are widely recognised as key determinants of financial performance, existing studies report conflicting results across regions and contexts, largely due to differences in model specification, sample composition, and performance measurement. This study, therefore, focuses on these variables to reconcile these inconsistencies and provide a more integrated understanding within a multidimensional framework.

At the global level, clear divergences emerge in the literature regarding the role of inflation and GDP. For instance, Nahiduzzaman et al., (2022) found that inflation positively impacts bank profitability in Bangladesh, suggesting that banks can adjust interest rates to maintain margins. In contrast, Haque and Farzana (2018) found GDP and inflation to be insignificant for Islamic banks in the same country. While both studies are methodologically robust in adopting a multidimensional performance approach using ROA, ROE, and NIM, their narrow institutional focus on listed and Islamic banks introduces contextual bias, thereby limiting generalisability. This divergence suggests that institutional structure and bank type may condition the effects of macroeconomic variables, an issue that remains insufficiently addressed in prior research.

Further contradictions arise in Asian contexts. Gunawardhana and Perera (2019) found GDP, inflation, and interest rates to be insignificant in Sri Lanka, whereas Al-Homaidi et al., (2018) reported a negative effect of these variables on Indian bank profitability. These divergent findings can be traced to methodological differences, where studies by Gunawardhana and Perera (2019) relied solely on ROA, failing to capture broader profitability dynamics, while Al-Homaidi et al., (2018) employed ROA, ROE, and NIM, offering a more comprehensive perspective. However, despite this strength, Al-Homaidi et al., (2018) excluded cooperative banks, introducing a contextual limitation. Similarly, Al-Zaidanin (2020) found minimal macroeconomic effects in UAE banks but was constrained by a short study period, which limited the ability to capture long-run dynamics. In contrast, Alper and Anbar (2011) found that interest rates positively influenced performance in Türkiye, while GDP and inflation were insignificant, further reinforcing cross-country inconsistencies. Although methodologically robust, this study's focus on listed banks only introduces a contextual gap.

In Sub-Saharan Africa, the literature continues to exhibit contradictory findings. Biru (2021) reported that interest rates negatively affected ROA but not ROE, while GDP negatively affected ROE in Ethiopia. Conversely, Abebe (2014) found no significant relationship between GDP,

inflation, and performance. While both studies are strengthened by robust panel methodologies and multidimensional performance measures, they are limited by their restricted samples of only eight established banks, excluding newer institutions. This raises concerns about sample bias, suggesting that macroeconomic effects may differ across bank maturity levels. Similarly, Derbali (2021) found minimal influence of GDP and inflation in Morocco, while Moyo and Tursoy (2020) identified a significant inverse relationship between inflation and ROE in South Africa. Although both studies benefit from longer time horizons, Derbali (2021) is limited to listed banks, and Moyo and Tursoy (2020) rely solely on ROE, reinforcing the recurring issue of incomplete performance measurement.

In Kenya, the empirical evidence also reflects substantial inconsistencies, further justifying the need for this study. Muriuki (2019) found that GDP and exchange rates significantly influenced performance, and inflation and interest rates were insignificant. In contrast, Ngure (2014) found that interest rates have a strong positive effect, explaining 64% of the variations in ROA. While both studies benefited from relatively large sample sizes, they are methodologically limited by their reliance on ROA as the sole performance measure. This restricted the ability to capture the multidimensional aspect of profitability. Ongore and Kusa (2013), however, addressed this limitation by incorporating ROA, ROE, and NIM, and found that GDP and inflation have negligible effects on performance. Despite this methodological strength, the study's outdated data (2001–2010) reduces its relevance in the modern digital banking era. These conflicting findings suggest that time period, variable selection, and measurement approach significantly influence results, highlighting unresolved empirical tensions.

The literature on exchange rates introduces further contradictions. Hossein et al., (2020) found that exchange rate volatility negatively affects ROI, increasing financial risk. However, their reliance on ROI limits comparability with mainstream banking studies that use ROA, ROE, and NIM. Similarly, Njagi and Nzai (2022) found a weak negative effect on ROA in East Africa, while El Hussein and Osman (2019) reported weak negative effects on both ROA and ROE. In contrast, Moyo and Tursoy (2020) found no strong relationship, although ARDL estimates suggested some linkage. Majok (2015) also found a positive but weak relationship in Kenya. While many of these studies employ robust econometric techniques and longer datasets, they consistently suffer from methodological fragmentation, particularly in the use of single performance indicators, which limits comparability and contributes to conflicting conclusions.

Overall, the empirical literature reveals three key unresolved issues. First, there are clear tensions in findings, with macroeconomic variables showing positive, negative, and insignificant effects across different contexts. Second, these contradictions are largely driven by methodological differences, including reliance on single performance indicators such as ROA or ROE, short study periods, and failure to account for long-run dynamics. Third, contextual limitations persist, as many studies focus on specific bank categories such as listed, Islamic, or mature banks, limiting generalisability. These gaps justify the need for a comprehensive, panel-based study covering a longer time horizon (2000–2024), incorporating multiple performance measures such as ROA, ROE, and NIM, and including a broader sample of banks. By addressing these limitations, this study aims to reconcile conflicting findings and provide a more robust and generalisable understanding of how macroeconomic factors influence the financial performance of commercial banks in Kenya.

2.3.4 Digitalisation and technological adaptation on financial performance

In recent decades, digitalisation and technological adoption have emerged as transformative forces in the banking sector, reshaping service delivery, risk management, and operational efficiency. Technologies such as mobile banking, internet banking, digital payment platforms, blockchain, and fintech innovations have enabled banks to enhance customer experience while improving cost efficiency and competitiveness. Despite the increasing importance of digitalisation, empirical evidence on its impact on financial performance remains inconclusive and often contradictory, largely due to differences in measurement approaches, time horizons, and banking environments. These inconsistencies highlight the need for a more integrated and methodologically robust analysis.

At the international level, clear tensions exist regarding the direction and timing of digitalisation's impact on financial performance. For instance, Sayari (2024) found that internet banking positively influences ROA and ROE in both Islamic and conventional banks in Saudi Arabia, suggesting that digital adoption enhances efficiency and profitability. However, this positive effect contrasts with findings by Setiawan and Prakoso (2024), who reported that digitalisation reduces ROA in Indonesian banks, with bank size moderating the relationship such that larger banks are better able to absorb digitalisation costs. Similarly, Shanti et al., (2023) found that digitalisation improves long-term profitability but has negative short-term effects due to high implementation costs,

introducing a temporal dimension to the debate. These contrasting findings reveal a key tension: while digitalisation may enhance long-run performance, its short-term impact may be negative or conditional on bank characteristics such as size.

These inconsistencies can be partly explained by methodological limitations across studies. Sayari (2024), while strong in incorporating both Islamic and conventional banking models, focuses narrowly on internet banking, thereby excluding broader dimensions such as mobile banking and fintech integration, creating a scope gap. In contrast, Shanti et al., (2023) contribute by distinguishing between short- and long-term effects, but their reliance on ROA alone limits the ability to capture broader profitability dynamics. Similarly, Setiawan and Prakoso (2024) introduce an important methodological advancement by incorporating bank size as a moderating variable, highlighting interaction effects; however, their finding of a negative impact on ROA raises concerns about potential omitted variable bias or measurement limitations, particularly given the exclusion of other performance indicators such as ROE and NIM. Collectively, these studies demonstrate that differences in variable measurement, model specification, and performance indicators significantly influence results, contributing to conflicting conclusions.

In the Kenyan context, the literature also presents partially consistent yet methodologically constrained findings. Omar and Theuri (2023) found a positive relationship between digitalisation and profitability among microfinance banks, while Kago and Mutuku (2023) reported a strong positive relationship, with digital adoption explaining 90.3% of the variation in ROA. While these findings reinforce the argument that digitalisation enhances financial performance, they must be interpreted cautiously. The exceptionally high explanatory power reported by Kago and Mutuku (2023) raises questions about model specification, potential overfitting, or omitted variables, suggesting possible robustness concerns. Additionally, although Omar and Theuri (2023) provide strong contextual relevance by focusing on an emerging market with high mobile penetration, both studies are limited by their overreliance on ROA as the sole performance measure, thereby failing to capture multidimensional performance through ROE and NIM. This methodological limitation mirrors a broader pattern observed in the literature and contributes to the persistence of unresolved empirical debates.

Overall, the empirical literature on digitalisation and financial performance reveals three key gaps. First, there are clear tensions in findings, with studies reporting positive, negative, and conditional

effects of digitalisation depending on time horizon, bank size, and context. Second, these contradictions are strongly linked to methodological differences, particularly the widespread reliance on single performance indicators, primarily ROA, limited consideration of interaction effects, and narrow definitions of digitalisation. Third, contextual and scope limitations persist, as many studies focus on specific bank types, mainly Islamic, microfinance, or listed banks or specific technologies, such as internet banking, limiting generalisability across the broader banking sector. These limitations justify the need for a more comprehensive approach. This study addresses these gaps by incorporating a broader conceptualisation of digitalisation, examining its moderating role, and employing multidimensional performance measures such as ROA, ROE, and NIM within a panel data framework over an extended period. By doing so, the study aims to reconcile conflicting findings, capture both short and long-term effects, and provide a more robust and generalisable understanding of how digitalisation influences the financial performance of commercial banks in Kenya.

2.4 Summary of Literature and Research Gaps

The empirical literature on the determinants of financial performance of commercial banks provides substantial insights; however, it is characterised by persistent inconsistencies, methodological fragmentation, and contextual limitations. The central issue emerging from the review is not the absence of research, but the lack of convergence in findings. This divergence is largely driven by differences in modelling approaches, variable measurement, and study contexts. Consequently, the existing evidence remains inconclusive, underscoring the need for a more integrated and comprehensive analytical framework.

A central concern in the literature is the presence of contradictory empirical evidence regarding the direction and significance of key determinants. Studies such as Derbali (2021), Al Zaidanin (2020), Gunawardhana and Perera (2019), Haque and Farzana (2018), Abebe (2014), and Ongore and Kusa (2013) report insignificant or mixed effects for core variables, while others document positive or negative relationships. These inconsistencies reflect underlying tensions within the literature, including trade-offs between profitability and stability, particularly in relation to liquidity and capital adequacy; growth–risk dynamics, especially in the context of private sector credit expansion; and efficiency linked to market power interactions observed in studies on market

concentration. Consequently, the literature does not provide a clear consensus, revealing a significant knowledge gap that necessitates a more integrated analytical approach.

A major source of these contradictions lies in methodological limitations. A substantial proportion of studies, including Setiawan and Prakoso (2024), Shanti et al., (2023), Njagi and Nzai (2022), Shrestha (2023), Njoki and Nyamute (2023), Kago and Mutuku (2023), Omar and Theuri (2023), Muriuki (2019), Gunawrdhana and Perera (2019), Ngure (2014), and Omondi and Muturi (2013), rely predominantly on ROA as a single measure of performance, while others such as Moyo and Tursoy (2020) and Majok (2015) rely solely on ROE. This narrow measurement approach fails to capture the multidimensional nature of bank performance, thereby contributing to inconsistent findings. Similarly, the use of short time horizons in studies such as Manyala et al., (2022), Al-Zaidanin (2020), Were, Nzomoi and Rutto (2012), and Sharma and Gounder (2012) limits the ability to capture long-run dynamics, cyclical fluctuations, and structural changes. This weakens the robustness and generalisability of empirical conclusions.

In addition to methodological concerns, conceptual gaps persist, particularly in the treatment of industry-specific factors. Studies by Gbenga, Olusegun, Adeyinka (2019), Enisan and Oluwafemi (2015), Rashid (2012), Sharma and Gounder (2012), and Abuka and Egesa (2007) largely examined private sector credit in relation to macroeconomic growth rather than bank-level profitability. This leaves the direct linkage between credit expansion and financial performance underexplored, thereby limiting understanding of how industry-specific factors influence bank profitability. Similarly, the reliance on alternative indicators such as ROI in Hossein et al., (2020) reduces comparability with mainstream banking studies that utilise ROA, ROE, and NIM, further reinforcing inconsistencies.

The literature is also constrained by contextual and sample selection biases. Many studies, including Nahiduzzaman et al., (2022), Derbali (2021), Biru (2021), Haque and Farzana (2018), Abebe (2014), and Alper and Anbar (2011), focus on specific bank categories such as listed, Islamic, or well-established banks, while excluding unlisted and newly established institutions. This limits the generalisability of findings, as different categories of banks operate under varying regulatory, operational, and risk conditions. Furthermore, the concentration of studies within these specific countries, including Türkiye, Bangladesh, India, Sri Lanka, UAE, Nigeria, South Africa,

Sudan, Ethiopia, and Kenya, restricts cross-context comparability and reinforces a broader contextual gap in the literature.

Another key limitation is scope fragmentation, whereby studies examine specific determinants in isolation rather than adopting an integrated perspective. For example, studies such as Njagi and Nzai (2022), Hossein et al., (2020), Moyo and Tursoy (2020), El Hussein and Osman (2019), Majok (2015), and Ngure (2014) focus primarily on macroeconomic variables, while others, such as Njoki and Nyamute (2023), Manyala et al., (2022), and Shrestha (2020), concentrate on bank-specific factors. This segmented approach overlooks the reality that bank performance is simultaneously influenced by bank-specific, industry-specific, macroeconomic, and technological factors, thereby limiting the explanatory power of existing models.

Overall, the literature reveals four critical unresolved issues: empirical inconsistency, characterised by conflicting findings without a clear consensus; methodological weaknesses, including reliance on single performance measures, short datasets, and limited robustness checks; conceptual gaps, particularly the weak linkage between certain determinants such as private sector credit and bank-level profitability; and contextual and scope limitations arising from narrow samples and fragmented analytical frameworks.

These limitations collectively justify the need for a comprehensive and integrated study. The current study addresses these gaps by employing multidimensional performance measures such as ROA, ROE, and NIM; utilising a longitudinal panel dataset spanning 2000–2024 to capture long-run dynamics; incorporating bank-specific, industry-specific, macroeconomic, and digitalisation factors within a unified analytical framework; and analysing all commercial banks in Kenya to enhance generalisability and robustness. By addressing these critical gaps, the study contributes to resolving these inconsistencies in the literature and provides a more holistic and empirically grounded understanding of the determinants of financial performance in commercial banks.

2.5 Conceptual Framework

A conceptual framework, according to Sekaran (2006), provides a visual and theoretical representation of the key variables in a study and the relationships among them. In this study, the framework illustrates financial performance measured using Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM) as the dependent variable, influenced by bank-

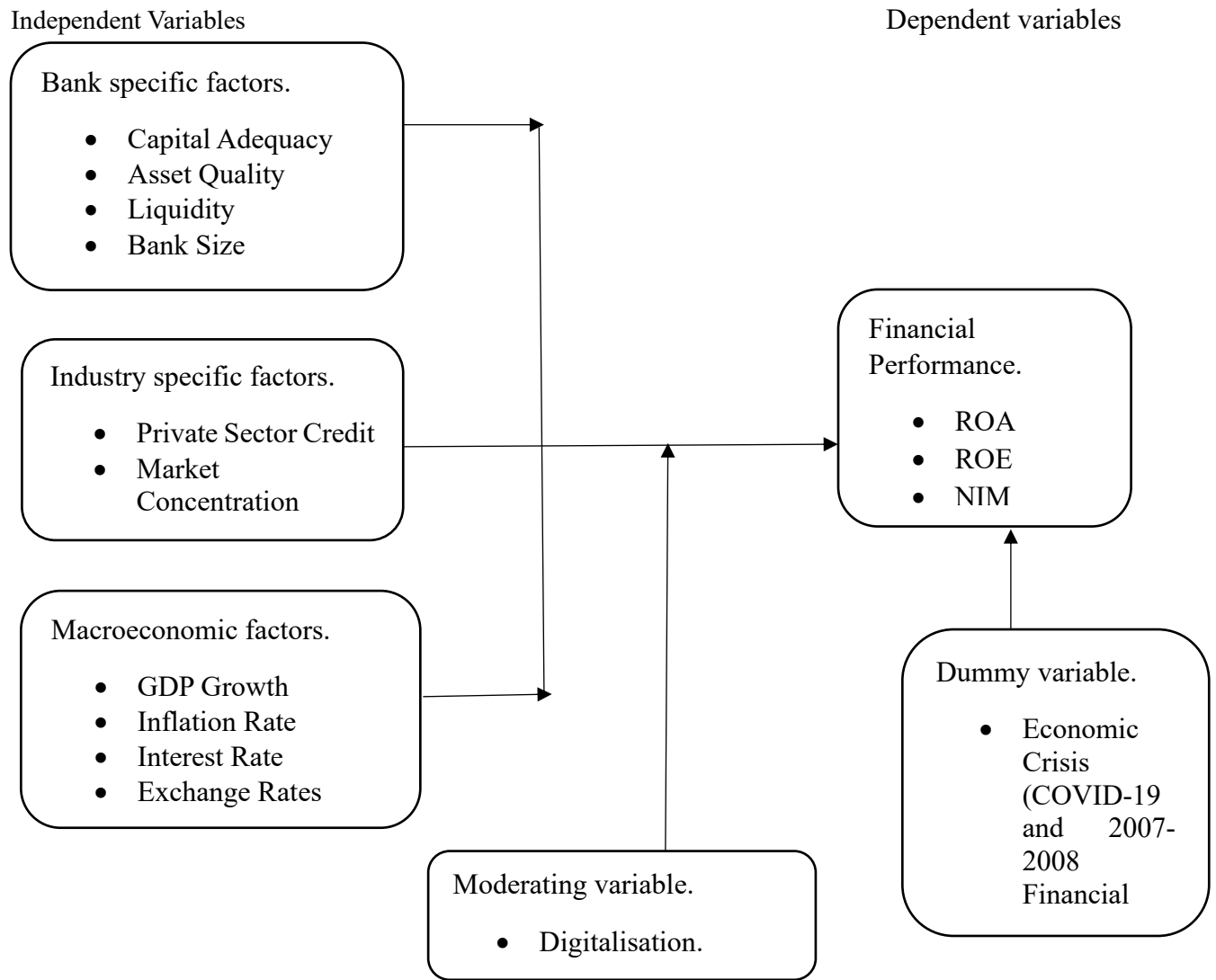
specific, industry-specific, and macroeconomic factors, with digitalisation incorporated as an additional explanatory component.

The bank-specific variables include capital adequacy, asset quality, liquidity, and bank size, while the industry-specific variables comprise of private sector credit and market concentration. In addition, macroeconomic variables such as GDP growth, inflation, interest rates, and exchange rates capture the broader economic environment in which banks operate. Digitalisation is incorporated as a moderating variable to assess how technological adoption influences the strength and direction of the relationship between these determinants and financial performance. Furthermore, economic crises, such as the 2007–2008 global financial crisis and the COVID-19 pandemic, are included as a dummy variable to capture the effects of external shocks on bank performance.

The framework assumes a linear relationship between the independent variables and financial performance, while recognising that this relationship may be influenced by technological advancements and disrupted during periods of economic instability. The theoretical foundation of the framework is anchored on three key perspectives. First, the Efficiency Structure Theory explains the role of bank-specific factors by suggesting that institutions with superior operational efficiency, stronger asset quality, and optimal capital structures are more likely to achieve higher profitability. Secondly, the Market Power Theory underpins the industry-specific factors, arguing that banks operating in more concentrated markets can exercise pricing power, thereby enhancing financial performance. Finally, the Deflation Theory provides insight into macroeconomic influences by highlighting how fluctuations in economic activity, inflation, and monetary conditions affect bank profitability, risk exposure, and lending behaviour.

Collectively, these theories justify the inclusion of internal, industry-specific, and macroeconomic determinants within a unified analytical framework. The integration of digitalisation as a moderating variable reflects the evolving nature of banking operations, while the inclusion of an economic crisis dummy captures structural breaks and external shocks. This comprehensive framework therefore provides a robust basis for analysing the multidimensional drivers of financial performance in commercial banks.

Fig 2.1: Conceptual Framework



Source: Researcher, 2026

Table 2.1: Operationalisation of Variables

Variable	Type of variable	Scale	Measurement	Data	Supporting Literature	Supporting Theory
Independent Variables						
Bank-Specific Factors						
Bank Size	Independent	Ratio	Log of Total Assets	Secondary	Njoki & Nyamute (2023), Al Zaidanin (2020), Gunawrdhana & Perera (2019), Haque & Farzana (2018), Al-Homaidi et al., (2018), Abebe (2014), and Alper & Anbar (2011).	Efficiency Structure Theory.
Capital Adequacy	Independent	Ratio	Capital Adequacy Ratio	Secondary	Njoki & Nyamute (2023), Nahiduzzaman et al., (2022), Biru (2021), Al Zaidanin (2020), Gunawrdhana & Perera (2019), Muriuki (2019), and Ongore & Kusa (2013).	Efficiency Structure Theory.

Asset Quality	Independent	Ratio	NPL Ratio	Secondary	Njoki & Nyamute (2023), Shrestha (2023), Nahiduzzaman et al., (2022), Biru (2021), Al Zaidanin (2020), Muriuki (2019), Haque & Farzana (2018) Al-Homaidi et al, (2018), Ongore & Kusa (2013), and Alper & Anbar (2011).	Efficiency Structure Theory.
Liquidity	Independent	Ratio	Liquidity Ratio	Secondary	Njoki & Nyamute (2023), Shrestha (2023), Nahiduzzaman et al., (2022), Biru (2021), Al Zaidanin (2020), Muriuki (2019), Haque & Farzana (2018) Al-Homaidi et al, (2018), Ongore & Kusa (2013), Maina & Muturi (2013),	Efficiency Structure Theory.

					and Alper & Anbar (2011).	
Industry-Specific Factors						
Private Sector Credit	Independent	Ratio	Private Sector Credit Growth	Secondary	Gbenga et al., (2019), Enisan & Oluwafemi (2015), Were et al, (2012), Sharma & Gounder (2012), Rashid (2011), Sogut (2008), and Abuka & Egesa (2007).	Market Power Theory.
Market Concentration	Independent	Ratio	Total Market Share of Assets of each Bank.	Secondary	Berger and Hannan (1989), Claessens and Laeven (2004), Goddard, Molyneux and Wilson (2004), Ariss (2010), Fernandez de Guevara, Maudos and Perez (2005), Demirguc-Kunt and Levine (2004), Omondi and Muturi (2013) and Kiptui (2014).	Market Power Theory.
Macroeconomic Factors						

GDP growth	Independent	Ratio		Secondary	Biru (2021), Al-Zaidanin (2020), Gunawrdhana & Perera (2019), Muriuki (2019), Al-Homaidi et al, (2018), Haque & Farzana (2018), and Abebe (2014).	Deflation Theory.
Interest Rate	Independent	Ratio		Secondary	Nahiduzzaman et al., (2022), Biru (2021), Al-Zaidanin (2020), Gunawrdhana & Perera (2019), Muriuki (2019), Al-Homaidi et al, (2018), Ngure (2014), Ongore & Kusa (2013), and Alper & Anber (2011).	Deflation Theory.
Exchange Rate	Independent	Ratio		Secondary	Njagi & Nzai (2022), Hossein et al., (2020), Moyo & Tursoy (2020), Muriuki (2019), El Hussein & Osman (2019), Al-Homaidi et	Deflation Theory.

					al, (2018), and Majok (2015).	
Inflation	Independent	Ratio		Secondary		Deflation Theory.
Dummy Variable						
Economic Crisis (2007-2008 Financial Crisis and COVID-19)	Dummy	Nominal	Nominal Binary	Secondary	Nahiduzzaman et al., (2022)	Deflation Theory.
Moderating Variable						
Digitalisation	Moderating	Ratio	Ration of digital transactions to total transactions	Secondary	Sayari (2024), Shanti et al., (2023), Setiawan & Prakoso (2024), Omar & Theuri (2023) and Kago & Mutuku (2023).	Efficiency Structure Theory and Market Power Theory.
Dependent Variables						
Return on Assets	Dependent	Ratio	Net Income to Total Assets	Secondary	Njoki & Nyamute (2023), Muriuki (2019), Gunawrdhana & Perera (2019), Majok (2015), Ngure (2014), Maina & Muturi (2013).	Efficiency Structure Theory, Market Power Theory and Deflation Theory.
Return on Equity	Dependent	Ratio	Net Income to Total Equity	Secondary	Moyo & Tursoy (2020), El Hussein & Osman (2019),	Efficiency Structure Theory, Market Power

					and Alper & Anbar (2011).	Theory and Deflation Theory.
Net Interest Income	Dependent	Ratio	Net Interest Income to Earning Assets	Secondary	Al Zaidanin (2020), Haque & Farzana (2018), Al-Homaidi et al, (2018), Abebe (2014), and Ongore & Kusa (2013).	Efficiency Structure Theory, Market Power Theory and Deflation Theory.

Source: Researcher, 2026

2.6 Chapter Summary

This chapter provides the theoretical foundation of the study, drawing from efficiency structure theory, deflation theory, and market power theory. The empirical review synthesises global, regional, and Kenyan evidence on bank-specific factors such as bank size, capital adequacy, asset quality, liquidity, industry-specific factors, namely private sector credit, market concentration, and macroeconomic variables such as GDP, inflation, interest rates, and exchange rates. The role of digitalisation as a moderating factor and economic crises as a dummy variable is also explored. The chapter highlights research gaps, namely contextual, methodological, and conceptual, before presenting a conceptual framework that links the independent, moderating, dummy, and dependent variables. The operationalisation of variables concludes the chapter.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter outlines the procedures followed to achieve the research objectives presented in Chapter One. This chapter describes the research philosophy, research design, study population, data collection methods, data analysis and presentation techniques, diagnostic tests, and the ethical considerations observed during the study.

3.2 Research Philosophy Underpinning the Study

The research philosophy underpinning this study is positivism, which is based on the premise that reality is objective and can be observed and measured without influencing the phenomena under investigation (Muhammad, 2024). According to Blair et al., (2023), this approach facilitates the quantitative assessment of relationships between variables by relying on observable and measurable data. In this study, positivism supports the empirical examination of the impact of bank-specific, industry-specific, and macroeconomic factors on the financial performance of commercial banks, measured using ROA, ROE, and NIM. This philosophy aligns with the study's emphasis on objectivity, the use of quantitative data, and the generalisability of findings (Muhammad, 2024). As noted by Blair et al., (2023), positivism is appropriate due to its focus on empirical evidence, objectivity, and the ability to generate generalisable conclusions regarding the determinants of financial performance in commercial banks.

3.3 Research Design

This section presents the research design, which provides a structured approach for data collection and analysis to ensure accurate responses to the research questions. According to Creswell and Creswell (2023), an explanatory research design is appropriate for examining cause-and-effect relationships among variables. Accordingly, this study adopts an explanatory design to assess how bank-specific, industry-specific, and macroeconomic factors influence the financial performance of commercial banks. Explanatory research seeks to clarify why phenomena occur by identifying causal relationships and associations between variables (Creswell & Creswell, 2023).

Given the study's focus on understanding how and why these determinants affect bank performance, this design enables the development and testing of such relationships beyond

descriptive analysis. Furthermore, it supports the application of statistical techniques, including regression analysis, panel data models, and time-series analysis, to estimate the direction, strength, and significance of relationships between the determinants and financial performance. The explanatory research design is therefore appropriate, as it facilitates a rigorous analysis of the causal relationships central to the study (Creswell & Creswell, 2023).

3.4 Study Population

The study population refers to the group of items, objects, or individuals from which a sample is drawn and to which findings are generalised (Leavy, 2023). The population for this study comprises all commercial banks (see Appendix 2) operating under the Banking Act Cap 488 in Kenya, which, according to CBK (2024), includes thirty-nine commercial banks. These institutions were selected due to their extensive geographical coverage across Kenya through branch networks and their provision of a wide range of financial services, including savings, credit, investment, insurance, and transactional services, which are essential to economic functioning. Furthermore, commercial banks account for a significant proportion of assets within the financial sector, underscoring their systemic importance.

The study adopts a census approach by including all commercial banks in Kenya, thereby ensuring comprehensive sector coverage and a complete representation of financial performance. As noted by Gorard (2023), a census enhances accuracy and generalisability by eliminating sampling bias and ensuring that all units are included in the analysis. This is particularly important when examining determinants of financial performance, as bank-specific characteristics such as size and capital adequacy may vary significantly across institutions.

3.5 Data Collection Methods

This study utilises secondary data obtained from audited financial reports of the commercial banks under study and publications from institutions such as the Central Bank of Kenya. These sources include income statements, statements of financial position, statements of changes in equity, and macroeconomic data. Panel data covering the period 2000–2024 were collected. The selection of this period is justified by the availability of sufficient observations for robust analysis, as well as the occurrence of significant economic events and trends, including the COVID-19 pandemic, the 2007–2008 financial crisis, geopolitical developments, accelerated currency depreciation, rising interest rates, increased government borrowing, and global financial tightening.

Macroeconomic variables such as GDP, inflation, interest rates, and exchange rates were sourced from the Central Bank of Kenya reports. Exchange rate data were collected across the study period, focusing on the Kenyan shilling against the US dollar. The US dollar was selected due to its status as the world's primary reserve currency and its widespread use in international trade.

3.6 Data Analysis and Presentation

This section outlines the data analysis procedures employed in the study. The collected data were coded, cleaned, and tabulated prior to analysis, and the results were presented using tables and graphs. The study utilised hierarchical panel regression analysis in STATA 18.5 to examine the determinants of financial performance of commercial banks in Kenya over the period 2000–2024.

Financial performance was measured using Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM). The independent variables included bank-specific factors such as bank size (BS), capital adequacy (CA), asset quality (AQ), and liquidity (LQ). Macroeconomic factors included GDP growth (GDP), inflation (INF), interest rates (INT), and exchange rates (ER), while industry-specific factors comprised market concentration (MC) and private sector credit (PSC).

In addition, an economic crisis dummy variable capturing the 2007/2008 financial crisis and the COVID-19 period, as well as digitalisation (DIG) as a moderating variable, were incorporated into the analysis. These metrics collectively provide a comprehensive assessment of financial performance and were calculated as follows:

- $ROA = \text{Net income} / \text{Total Assets}$.
- $ROE = \text{Net income} / \text{Total Equity}$
- $NIM = \text{Net income} / \text{Earnings Assets}$

This study employed hierarchical panel data regression, which Brooks (2008) describes as a method that analyses repeated observations of the same entities over time while controlling for individual heterogeneity. The model specification, adapted from Brooks (2008), captures both cross-sectional and time-series variations in the data:

$$Y = \alpha + \beta_1 X_1 + \varepsilon$$

Where:

Y will be the dependent variable (Financial Performance)

X will be the independent variable (Determinants)

$FP\pi_{it}$ = Financial Performance of bank i at time t as expressed by ROA, ROE, and NIM

β_0 = Intercept constant

$\beta_1 - \beta_{12}$ = X coefficients

ε_{it} = Error term

The models used in the study are as follows:

Model 1 (Bank Specific Factors):

$$FP\pi_{it} = \beta_0 + \beta_1 BS_{it} + \beta_2 CA_{it} + \beta_3 AQ_{it} + \beta_4 LQ_{it} + \varepsilon_{it}$$

Model 2 (add Industry Specific Factors):

$$FP\pi_{it} = \beta_0 + \beta_1 BS_{it} + \beta_2 CA_{it} + \beta_3 AQ_{it} + \beta_4 LQ_{it} + \beta_5 PSC_t + \beta_6 MC_{it} + \varepsilon_{it}$$

Model 3 (add Macroeconomic Factors):

$$FP\pi_{it} = \beta_0 + \beta_1 BS_{it} + \beta_2 CA_{it} + \beta_3 AQ_{it} + \beta_4 LQ_{it} + \beta_5 PSC_t + \beta_6 MC_{it} + \beta_7 GDP_t + \beta_8 INF_t + \beta_9 INT_t + \beta_{10} ER_t + \varepsilon_{it}$$

Model 4 (add Economic Crisis, Dummy):

$$FP\pi_{it} = \beta_0 + \beta_1 BS_{it} + \beta_2 CA_{it} + \beta_3 AQ_{it} + \beta_4 LQ_{it} + \beta_5 PSC_t + \beta_6 MC_{it} + \beta_7 GDP_t + \beta_8 INF_t + \beta_9 INT_t + \beta_{10} ER_t + \beta_{11} EC_t + \varepsilon_{it}$$

Model 5 (add Digitalisation moderator):

$$FP\pi_{it} = \beta_0 + \beta_1 BS_{it} + \beta_2 CA_{it} + \beta_3 AQ_{it} + \beta_4 LQ_{it} + \beta_5 PSC_t + \beta_6 MC_{it} + \beta_7 GDP_t + \beta_8 INF_t + \beta_9 INT_t + \beta_{10} ER_t + \beta_{11} EC_t + \beta_{12} DIG_{it} + \varepsilon_{it}$$

Model 6 (add interaction terms):

$$FP\pi_{it} = \beta_0 + \beta_1 BS_{it} + \beta_2 CA_{it} + \beta_3 AQ_{it} + \beta_4 LQ_{it} + \beta_5 PSC_t + \beta_6 MC_{it} + \beta_7 GDP_t + \beta_8 INF_t + \beta_9 INT_t + \beta_{10} ER_t + \beta_{11} EC_t + \beta_{12} DIG_{it} + \Sigma\beta (BS_{it} \times DIG_{it}) + \varepsilon_{it}$$

Where:

$FP\pi_{it}$ = Financial performance of bank i at time t as expressed by ROA, ROE, and NIM

α = Intercept constant

$\beta_1 - \beta_{12}$ = X coefficient

BS_{it} = Bank size

CA_{it} = Capital adequacy

AQ_{it} = Asset quality

LQ_{it} = Liquidity

PSC_{it} = Private sector credit

MC_{it} = Market concentration

GDP_t = GDP growth

INF_t = Inflation

INT_t = Interest rates

ER_t = Exchange rates

EC_t = Economic crisis

DIG_{it} = Digitalisation

ε_{it} = Error term

3.7 Diagnostic Test

This section presents the diagnostic tests conducted to ensure the validity and reliability of the estimated model. According to Everitt and Skrondal (2010), diagnostic testing is essential for assessing the statistical adequacy and robustness of a model. These tests may involve graphical analysis, statistical evaluation, and hypothesis testing. In this study, diagnostic tests for stationarity, normality, multicollinearity, heteroskedasticity, and autocorrelation were performed to verify the

assumptions underlying hierarchical panel data regression and to ensure the reliability of the estimated results.

3.7.1 Stationarity Test

Stationarity tests assess whether variables exhibit a constant mean and variance over time, thereby preventing spurious regression results (Baltagi, 2021). The Levin-Lin-Chu (LLC) test was applied to continuous variables such as Bank Size and GDP. The null hypothesis assumes the presence of a unit root (non-stationarity), while a p-value < 0.05 indicates stationarity (Verbeek, 2021). Where non-stationarity is detected, variables may be differenced or transformed into percentage changes to achieve stationarity and ensure valid and reliable estimation results.

3.7.2 Chow Tests

The Chow Test is used to determine whether Pooled Ordinary Least Squares (OLS) is appropriate or whether panel-specific effects exist. The null hypothesis assumes that pooled estimation is sufficient. According to Verbeek (2021), in panel data analysis, the test is applied to detect structural breaks and assess whether regression coefficients remain stable across entities or over time. It also guides whether bank-level data should be treated as a pooled dataset or whether unobserved individual effects should be incorporated. The test is typically conducted after an initial pooled regression and before selecting between Pooled OLS and Fixed Effects models, preceding the Hausman Test (Brooks, 2019). A p-value < 0.05 leads to rejection of the null hypothesis, indicating the presence of individual effects and the need for Fixed or Random Effects models (Brooks, 2019).

3.7.3 Hausman Tests

The Hausman Test is a statistical procedure used in panel data analysis to choose between Fixed Effects (FE) and Random Effects (RE) models by examining whether individual effects are correlated with the regressors (Brooks, 2019). The null hypothesis supports the Random Effects model. A p-value < 0.05 indicates that the Fixed Effects model is preferred due to its consistency, while a p-value > 0.05 supports the Random Effects model due to its efficiency (Brooks, 2019). The test is conducted after estimating both FE and RE models and typically follows the Chow Test once the presence of panel-specific effects has been established (Verbeek, 2017).

3.7.4 Normality Tests

Normality tests assess whether the data (or residuals) are normally distributed to support reliable statistical inference (Razali & Wah, 2011). The Kolmogorov–Smirnov (KS) test was applied, where the null hypothesis assumes a normal distribution and the alternative hypothesis assumes non-normality. According to Razali and Wah (2011), a p-value > 0.05 indicates normality, while a p-value < 0.05 suggests non-normality.

3.7.5 Multicollinearity Test

Multicollinearity arises when independent variables are highly correlated, leading to unstable and unreliable coefficient estimates. It was assessed using the Variance Inflation Factor (VIF) and tolerance values. According to Brooks (2008), VIF values above 10 indicate severe multicollinearity, while values between 1 and 5 are generally acceptable. Tolerance values below 0.2 indicate problematic levels of correlation (Hossain, 2012). Where multicollinearity is detected, variables may be transformed or converted into first differences to improve model stability (Gujarati, 2003).

3.7.6 Heteroskedasticity Test

Heteroskedasticity occurs when the variance of the error terms is not constant, which undermines the reliability of standard errors and statistical inference (Gujarati, 2003). The White test was applied, with the null hypothesis of homoscedasticity. A p-value > 0.05 indicates constant variance, while a p-value < 0.05 suggests the presence of heteroskedasticity (Wooldridge, 2005). Homoscedasticity was further assessed using the estimated chi-square and observed R^2 . The null hypothesis of homoscedasticity was accepted if the computed chi-square value for the observed R^2 exceeded the critical chi-square value at the 5% level of significance.

3.7.7 Autocorrelation

Autocorrelation refers to the correlation of residuals over time, which can bias regression estimates and standard errors (Wooldridge, 2005). The Wooldridge test for panel data was applied to detect first-order serial correlation, as it accounts for both time-series and cross-sectional dimensions. The null hypothesis assumes no autocorrelation. According to Woolridge (2005), a p-value > 0.05 indicates the absence of serial correlation, while a p-value ≤ 0.05 suggests its presence. Serial correlation is particularly relevant in financial performance studies, where past performance may

influence current outcomes. Therefore, appropriate detection and correction methods are essential to ensure accurate and reliable statistical inference (Brooks, 2008).

3.8 Ethical Issues

Ethical considerations are fundamental in research involving human participants, as adherence to established ethical standards ensures responsible conduct and the protection of participants' rights. Upholding these principles is essential for safeguarding participants and mitigating potential harm. This study adhered to key ethical requirements, including transparent communication through an institution-approved cover letter, respect for data ownership and copyright, and the maintenance of data accuracy and integrity. Confidentiality was strictly guaranteed, and all efforts were made to minimise harm and avoid bias. In addition, ethical approval procedures were completed prior to the commencement of data collection. All data collected were used solely for academic research purposes. By addressing these ethical requirements, the study demonstrates integrity, respect for participants' rights, and adherence to responsible research practices.

3.9 Chapter Summary

This chapter explains the research philosophy, design, and methods employed. The study adopts a positivist philosophy and an explanatory research design. The population includes all thirty-nine commercial banks licensed by the CBK under the Banking Act (Cap 488). Secondary data was collected from audited financial reports and publications spanning 2000–2024. The methodology outlines data analysis techniques, including diagnostic tests for stationarity, normality, multicollinearity, heteroskedasticity, and autocorrelation, as well as model specification tests such as the Hausman and Chow tests.

CHAPTER FOUR

RESULTS AND FINDINGS

4.1 Introduction

This chapter presents the empirical findings on the determinants of financial performance of commercial banks in Kenya. The analysis is based on data collected from thirty-nine commercial banks as of the end of 2024, covering the period from 2000 to 2024. Financial performance is measured using Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM). The chapter reports the results of diagnostic tests, descriptive statistics, inferential analysis, and hierarchical panel data regression, and concludes with a summary of the key findings.

4.2 Sample Representation

The study utilises a balanced panel dataset comprising 975 bank-year observations drawn from 39 commercial banks in Kenya over the period 2000 to 2024. The sample is based on the availability of complete financial and macroeconomic data for all study variables, ensuring consistency and reliability across the analysis period. The 39 banks account for over 90% of total banking sector assets, providing broad coverage of the Kenyan banking industry. The sample includes a diverse mix of large, medium, and small banks, thereby capturing variations in size and business models. This enhances the generalisability of the findings to the wider banking sector. Overall, the dataset combines cross-sectional variation across banks with time-series variation over twenty-five years, making it appropriate for panel regression analysis.

4.2.1 Descriptive Statistics

The study targeted all commercial banks (see Appendix 2) mandated under the Banking Act Cap 488 in Kenya, which, according to CBK (2024), comprises thirty-nine commercial banks. Complete data for all thirty-nine banks based on the selected variables were obtained, representing 100% of the target population and ensuring the appropriateness of the analysis.

Table 4.1: Descriptive Statistics of Variables

Variable	Observations	Mean	Standard Deviations	Min	Max
ROA	975	0.018	0.040	-0.370	0.365
ROE	975	0.128	0.309	-5.790	1.273
NIM	975	0.071	0.028	0.002	0.283
Bank Size	975	10.667	1.965	4.736	15.387
Capital Adequacy	975	0.233	0.153	-0.732	2.704
Asset Quality	975	0.160	0.160	0.001	2.588
Liquidity	975	0.489	0.249	-0.525	3.622
Market Concentration	975	0.029	0.048	0.000	0.652
Private Sector Credit	975	0.195	0.517	-1.000	12.549
GDP	975	0.029	0.072	-0.300	0.081
Inflation	975	0.076	0.032	0.020	0.163
Exchange Rates	975	91.137	20.341	62.68	156.46
Interest Rates	975	0.101	0.036	0.051	0.180

Source: Researcher,2026

The descriptive statistics presented in Table 4.1 indicate that the average capital adequacy is 0.233, with minimum and maximum values of -0.732 and 2.704, respectively. This translates to an average capital adequacy of 23.30% and exceeds the CBK regulatory requirement of 14.5%. This indicates that commercial banks were able to maintain adequate capital buffers. The average bank size is 10.667, with minimum and maximum values of 4.736 and 15.387, respectively. Asset quality averages 0.160, with a minimum of 0.001 and a maximum of 2.588. Liquidity averages 0.489, with minimum and maximum values of -0.525 and 3.62, respectively. This corresponds to an average liquidity ratio of 48.89% and exceeds the CBK regulatory threshold of 20.5%. This indicates that sufficient liquidity buffers were maintained among commercial banks.

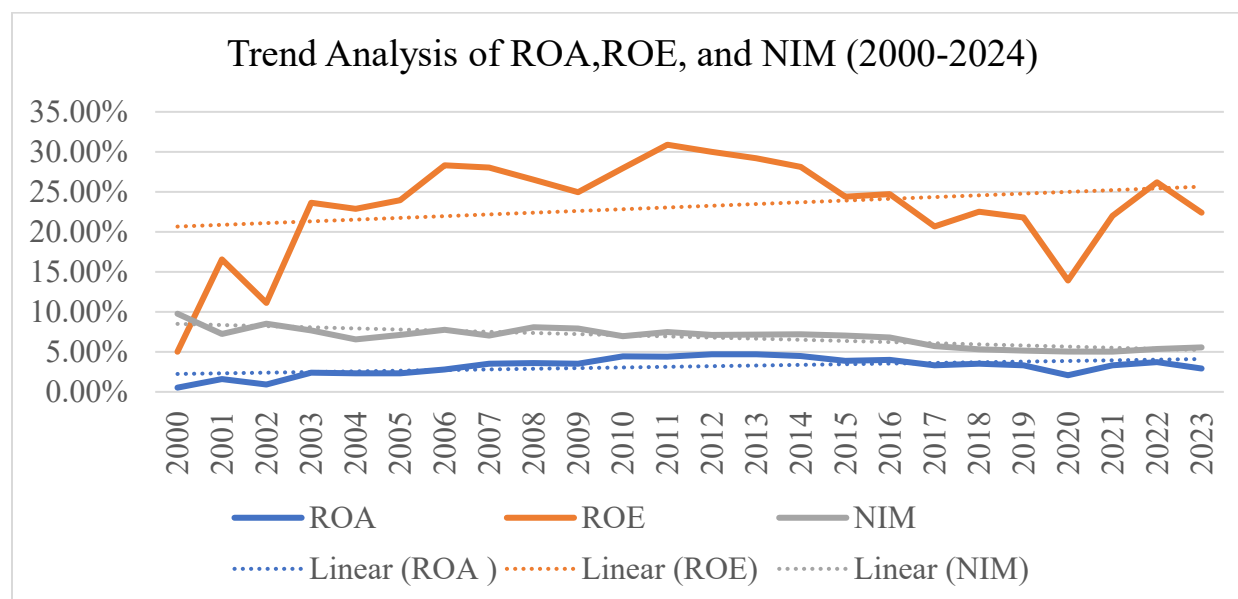
Market concentration averages 0.029, with values ranging from 0 to 0.652. Private sector credit growth has an average of 0.195, with minimum and maximum values of -1 and 12.549, respectively. Regarding macroeconomic variables, GDP growth averages 0.029, with minimum and maximum values of -0.300 and 0.081, respectively. The average inflation rate is 0.076, with values ranging from -0.020 to 0.163. Exchange rates averaged 91.137, with a minimum of 62.68 and a maximum of 156.46. Interest rates averaged 0.101, with minimum and maximum values of 0.051 and 0.180, respectively.

In terms of financial performance, the average ROA is 0.018, with minimum and maximum values of -0.370 and 0.365, respectively. The average ROE is 0.128, with minimum and maximum values of -5.79 and 1.273, respectively. The average NIM is 0.071, with values ranging from 0.002 to 0.283.

4.2.1 Trend Analysis of Financial Performance

Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM) were used to measure the financial performance of commercial banks in Kenya. Figure 4.1 presents trends in these indicators for the period 2000 to 2024. Trend analysis enables the identification of patterns over time, including upward, downward, or cyclical movements.

Figure 4.1: Financial Performance: ROA, ROE and NIM trend analysis



Source: Researcher, 2026

The trend for ROA in Figure 4.1 indicates fluctuations in profitability and efficiency over time. Between 2000 and 2004, ROA improved steadily from 0.53% to 2.32%, reflecting increased operational efficiency. It remained relatively high thereafter, peaking at 4.70% in 2012. Between 2013 and 2019, ROA stabilised within the range of approximately 3.30% to 4.70%. However, due to the economic impact of COVID-19 in 2020, ROA declined to 2.07% and recovered to 3.30% in 2021 and stabilised at 2.90% in 2023. Overall, the ROA trend reflects the sensitivity of bank performance to external shocks.

Similarly, ROE in Figure 4.1 exhibits considerable variability, reflecting changes in shareholder returns. ROE increased significantly from 5.01% in 2000 to 23.65% in 2003, indicating improved profitability. Between 2004 and 2015, ROE remained relatively high, peaking at 30.89% in 2011 and averaging between 24% and 30%. From 2016 to 2020, profitability declined, with ROE falling to 13.90% in 2020. It subsequently recovered to 26.20% in 2022 and then slightly declined to 22.40% in 2023. These trends highlight the impact of economic conditions on shareholder returns.

Furthermore, the line graph in Figure 4.1 also indicates that the NIM of commercial banks in Kenya gradually decreases over time, reflecting narrowing spreads. NIM from 2000 to 2008 was high and stable, fluctuating between 6.56% and 9.77%. The years 2009 to 2016 exhibit a slight decline in NIM and then stabilise around 6.80-7.92%. From 2017 to 2023, NIM notably decreased to 5.72% in 2017, gradually declining to 5.03% in 2021, and then followed by a slight rebound to 5.56% in 2023. The decline in NIM reflects the competitive pressures, the changing interest rate environments and tighter monetary policies.

4.3 Diagnostic Tests

Diagnostic tests were conducted to assess the validity of the assumptions underlying the panel regression models. These included tests for stationarity, Chow, normality, multicollinearity, heteroskedasticity, Hausman specification, and autocorrelation. The tests were applied to the secondary data covering bank-specific, industry-specific, and macroeconomic variables, as well as the financial performance measures (ROA, ROE, and NIM). The results of these diagnostic tests are presented in the subsequent sections.

4.3.1. Stationarity Test

The Levin-Lin-Chu (LLC) unit root test was conducted to assess whether the variables used in the study are stationary. This is a key requirement for panel regression analysis to avoid spurious results. Table 4.2 presents the results of the LLC test.

Table 4.2: Levin-Lin Chu Unit Root Test

Variable	Test Statistic	P-value	Stationarity Decision
Bank Size	-3.452	0.000	Stationary
Capital Adequacy	-2.985	0.001	Stationary
Asset Quality	-4.125	0.000	Stationary
Liquidity	-2.764	0.003	Stationary
Market Concentration	-3.045	0.001	Stationary
Private Sector Credit	-2.546	0.005	Stationary
GDP	-3.932	0.000	Stationary
Inflation	-2.611	0.005	Stationary
Exchange Rate	-3.778	0.000	Stationary
Interest Rates	-2.421	0.008	Stationary

Source: Researcher,2026

The null hypothesis assumes the presence of unit roots (non-stationarity), while the alternative hypothesis indicates stationarity. The results presented in Table 4.2 show that all bank-specific, industry-specific, and macroeconomic variables exhibit negative test statistics with p-values below the 0.05 significance level. Consequently, the null hypothesis is rejected, confirming that all variables are stationary at the level. This indicates that the dataset satisfies the stationarity assumption required for panel regression analysis, thereby reducing the risk of spurious regression results.

4.3.2. Chow Test

The Chow test was conducted to determine the most appropriate model between Pooled OLS and the Fixed Effects model. The null hypothesis assumes that the Pooled OLS model is appropriate. Table 4.3 presents the results of the test.

Table 4.3: Chow Test

Model	F-statistic	P-value	Decision
ROA	5.324	0.000	Reject $H_0 \rightarrow$ Fixed Effects preferred
ROE	4.897	0.000	Reject $H_0 \rightarrow$ Fixed Effects preferred
NIM	6.112	0.000	Reject $H_0 \rightarrow$ Fixed Effects preferred

Source: Researcher,2026

The Chow test results indicate that the p-values for ROA ($F = 5.324$, $p = 0.000$), ROE ($F = 4.897$, $p = 0.000$), and NIM ($F = 6.112$, $p = 0.000$), are all below the 0.05 significance level. Accordingly, the null hypothesis of pooled homogeneity is rejected in all cases. This confirms the presence of significant individual (bank-specific) effects, implying that the Fixed Effects model is more appropriate than Pooled OLS for analysing financial performance.

4.3.3. Normality Test

The Kolmogorov–Smirnov (KS) test was conducted to assess whether the dataset follows a normal distribution. This test evaluates whether the sample is drawn from a specified distribution, typically the normal distribution, by comparing the empirical distribution of the data with the corresponding cumulative distribution function. Table 4.4 presents the results of the Kolmogorov–Smirnov (KS) normality test.

Table 4.4: Kolmogorov-Smirnov (KS) test

Ksmirnov residuals = normal (residuals)		
One-sample Kolmogorov-Smirnov test against theoretical distribution normal (residuals)		
Smaller group	D	P-value
Residuals	0.041	0.089
Cumulative	-0.041	0.089
Combined K-S	0.041	0.089

Source: Researcher,2026

The Kolmogorov–Smirnov (KS) test results in Table 4.4 show a D-statistic of 0.041 and a p-value of 0.089, which exceeds the 0.05 significance level. Therefore, the null hypothesis of normality cannot be rejected, indicating that the residuals are approximately normally distributed. This satisfies a key assumption of classical linear regression.

4.3.4. Multicollinearity Tests

Multicollinearity was assessed using tolerance values ($T > 0.2$) and the Variance Inflation Factor ($VIF < 10$). The results presented in Table 4.5 indicate that all variables fall within these acceptable thresholds.

Table 4.5: Multicollinearity Test: VIF

	Multicollinearity Statistics	
Variables	VIF	1/VIF (Tolerance)
Bank Size	1.27	0.788
Market Concentration	1.18	0.845
Asset Quality	1.18	0.849
Capital Adequacy	1.16	0.862
Exchange Rates	1.09	0.914
Liquidity	1.09	0.919
Interest Rates	1.06	0.944
Inflation	1.04	0.962
Private Sector Credit	1.04	0.962
GDP	1.03	0.969
Mean VIF	1.11	

Source: Researcher, 2026

Dependent Variables: ROA, ROE and NIM.

The results in Table 4.5 indicate the absence of multicollinearity among the study variables, as all tolerance values exceed 0.2 and VIF values are below 10. These findings are consistent with the thresholds recommended by Brooks (2008) and Gujarati (2003).

4.3.5. Heteroskedasticity Tests

The White test was conducted to detect heteroskedasticity in the regression models, specifically to assess whether the variance of the error terms remains constant across observations. The objective was to identify the presence of heteroskedasticity, which violates a key assumption of Ordinary Least Squares (OLS) regression. The presence of heteroskedasticity can result in biased standard errors, leading to unreliable statistical inferences, including incorrect p-values and confidence intervals.

Table 4.6: Heteroskedasticity Test: White Test

White's test Ho: Homoskedasticity Ha: Unrestricted heteroskedasticity			
Models	ROA	ROE	NIM
	Chi2 (75) = 72.41	Chi2 (65) = 84.22	Chi2 (65) = 61.35
	Prob > chi2 = 0.563	Prob > chi2 = 0.055	Prob > chi2 = 0.606

Source: Researcher, 2026

The results presented in Table 4.6 show p-values of 0.563, 0.055, and 0.606, all of which exceed the 0.05 significance level. Therefore, the null hypothesis of homoscedasticity cannot be rejected, indicating no evidence of heteroskedasticity at the 5% significance level (Wooldridge, 2005; Gujarati, 2003).

4.3.6. Autocorrelation Tests

The Wooldridge test for autocorrelation was conducted to detect the presence of first-order serial correlation in the panel data models. The test assesses whether error terms in one time period are correlated with those in another period. In panel data analysis, serial correlation violates the key assumption that error terms are independent over time. This can result in biased standard errors, unreliable test statistics, and misleading statistical inferences.

Table 4.7: Autocorrelation Test: Wooldridge Test

Wooldridge test for autocorrelation in panel data Ho: no first-order autocorrelation			
Models	ROA	ROE	NIM
	F (1,38) = 1.297	F (1,38) = 0.892	F (1,38) = 0.672
	Prob > F = 0.262	Prob > F = 0.352	Prob > F = 0.417

Source: Researcher,2026

The results presented in Table 4.7 show Prob > F values of 0.262, 0.352, and 0.417, all of which exceed the 0.05 significance level. Therefore, the null hypothesis cannot be rejected, indicating no evidence of autocorrelation in the regression models (Wooldridge, 2005).

4.3.7. Hausman Tests

The Hausman test was conducted to determine the most appropriate model between the Fixed Effects and Random Effects estimators. The test evaluates whether unobserved individual (bank-specific) effects are correlated with the explanatory variables.

Table 4.8: Hausman Test

Test: Ho: difference in coefficients not systematic
chi2(12) = (b-B) '[(V_b-V_B) ^ (-1)] (b-B) (test statistic value) = 3.06 Prob>chi2 = 0.045 (V_b-V_B) is not positive definite

Source: Researcher,2026

A statistically significant result ($p < 0.05$) indicates that the Fixed Effects model is preferred due to consistency, while a non-significant result supports the Random Effects model due to efficiency. The results presented in Table 4.8 inform the final model selection based on this criterion.

4.4 Inferential Statistics

The study employed inferential statistical techniques, including Pearson's correlation analysis and hierarchical panel data regression, to address the research objectives. Inferential statistics enable conclusions to be drawn about a population based on sample data. Unlike descriptive statistics,

which summarise data, inferential statistics utilise probability theory to examine relationships between variables through techniques such as correlation and regression analysis.

4.4.1 Correlation Matrix

The main objective of the study was to determine the determinants of financial performance of commercial banks in Kenya. Pearson's correlation analysis was used to examine the relationships among bank-specific, industry-specific, and macroeconomic variables. Table 4.9 presents the correlation matrix, indicating the strength and direction of linear relationships among the variables.

Table 4.9: Pearson Correlation Analysis of Relationship Between Independent Variables

Variables	Bank Size	Capital Adequacy	Asset Quality	Liquidity	Market Concentration	Private Sector Credit	GDP	Inflation	Exchange Rates	Interest Rates
Bank Size	1.000									
Capital Adequacy	-0.267	1.000								
Asset Quality	-0.079	-0.176	1.000							
Liquidity	-0.036	0.081	0.193	1.000						
Market Concentration	0.357	-0.154	0.011	-0.032	1.000					
Private Sector Credit	-0.054	0.069	-0.154	-0.029	-0.037	1.000				
GDP	-0.077	0.041	-0.113	-0.090	0.006	0.053	1.000			
Inflation	-0.068	0.056	-0.078	-0.008	-0.031	0.085	0.070	1.000		
Exchange Rates	-0.145	-0.131	0.061	0.049	-0.083	-0.078	-1105	-.151	1.00	
Interest Rates	-0.012	0.004	0.155	-0.120	0.053	-0.044	0.013	0.026	-0.032	1.00

Source: Researcher,2026

The results in Table 4.9 indicate that the strongest relationship, although still moderate, is between bank size and market concentration ($r = 0.357$), suggesting that increases in bank size are associated with higher market concentration. Another notable relationship is observed between inflation and exchange rates ($r = -0.151$), indicating a weak negative association consistent with macroeconomic expectations. Most variables exhibit weak correlations, with absolute values

below 0.2, including bank size and liquidity ($r = -0.036$), capital adequacy and GDP ($r = 0.041$), and interest rate and GDP ($r = 0.013$). These low correlations suggest limited co-movement among variables and indicate a low risk of multicollinearity.

Additional relationships include a negative association between capital adequacy and asset quality ($r = -0.176$), suggesting that higher capital levels may be associated with slightly lower asset quality, possibly reflecting provisioning effects. Similarly, bank size and capital adequacy ($r = -0.267$) exhibit a moderate negative relationship, indicating that larger banks may operate with relatively lower capital ratios. Overall, the correlation matrix does not indicate problematic multicollinearity, as none of the coefficients exceeds the commonly accepted threshold of ± 0.7 . Therefore, the variables can be included in the regression analysis with confidence in their independence.

4.5 Regression Analysis

The study employed hierarchical panel data regression analysis to examine the effect of bank-specific factors, industry-specific factors, and macroeconomic factors on the financial performance of commercial banks in Kenya. The analysis addressed four key objectives. The first objective was to determine whether bank-specific factors such as bank size, capital adequacy, asset quality, and liquidity affect financial performance. The second objective was to assess the effect of industry-specific factors such as market concentration and private sector credit. The third objective was to evaluate the influence of macroeconomic factors such as GDP, inflation, exchange rates, and interest rates, and the final objective was to examine the moderating effect of digitalisation. The regression results are presented in Tables 4.10, 4.11, and 4.12.

4.5.1 Hierarchical Regression Results (Dependent Variable: ROA)

Table 4.10 presents the hierarchical regression results examining the effects of bank-specific, industry-specific, macroeconomic, and moderating factors on financial performance, measured by Return on Assets (ROA). A fixed effects model with robust standard errors was employed. The models are estimated sequentially: Model 1 includes bank-specific factors; Model 2 incorporates industry-specific factors; Model 3 adds macroeconomic variables; Model 4 introduces the economic crisis dummy; Model 5 includes digitalisation; and Model 6 incorporates interaction terms. The R-squared values indicate the explanatory power of each model, while statistical significance is reported at the 1%, 5%, and 10% levels.

Table 4.10: Hierarchical Regression Results (Dependent Variable: ROA)

Variable	Model 1 (ROA)	Model 2 (ROA)	Model 3 (ROA)	Model 4 (ROA)	Model 5 (ROA)	Model 6 (ROA)
Bank Size	0.007 t =3.69 p=0.001***	0.007 t=3.81 p=0.000***	0.007 t=3.81 p=0.000***	0.007 t=3.69 p=0.001***	0.007 t=3.70 p=0.001***	0.007 t=3.67 p=0.001***
Capital Adequacy	0.029 t=0.53 p=0.596 ^{NS}	0.031 t=0.56 p=0.577 ^{NS}	0.031 t=0.56 p=0.578 ^{NS}	0.029 t=0.53 p=0.597 ^{NS}	0.025 t=0.55 p=0.591 ^{NS}	0.024 t=0.52 p=0.587 ^{NS}
Asset Quality	-0.047 t= -2.07 p=0.045**	-0.052 t=-2.20 p=0.028**	-0.052 t=-2.20 p=0.028**	-0.047 t=-2.08 p=0.044**	-0.052 t=-2.09 p=0.040**	-0.052 t=-2.08 p=0.044**
Liquidity	0.011 t=1.73 p=0.092*	0.010 t=1.74 p=0.082*	0.010 t=1.72 p=0.085*	0.011 t=1.72 p=0.094*	0.011 t=1.75 p=0.091*	0.012 t=1.72 p=0.094*
Market Concentration	—	-0.009 t=-0.57 p=0.571 ^{NS}	-0.008 t=-0.57 p=0.571 ^{NS}	-0.009 t=-0.57 p=0.571 ^{NS}	-0.009 t=-0.58 p=0.570 ^{NS}	-0.007 t=-0.47 p=0.671 ^{NS}
Private Sector Credit	—	-0.004 t=-1.19 p=0.240 ^{NS}	-0.004 t=-1.19 p=0.240 ^{NS}	-0.004 t=-1.19 p=0.240 ^{NS}	-0.004 t=-1.20 p=0.241 ^{NS}	-0.004 t=-1.19 p=0.243 ^{NS}
GDP	—	—	0.040 t=2.32 p=0.026**	0.040 t=2.32 p=0.026**	0.034 t=2.32 p=0.022**	0.040 t=2.34 p=0.027**
Inflation	—	—	0.031 t=1.04 p=0.304 ^{NS}	0.031 t=1.04 p=0.304 ^{NS}	0.034 t=1.06 p=0.302 ^{NS}	0.031 t=1.07 p=0.307 ^{NS}
Exchange Rate	—	—	-0.000 t=-2.45 p=0.019**	-0.000 t=-2.45 p=0.019**	-0.002 t=-2.47 p=0.019**	-0.000 t=-2.45 p=0.019**

Interest Rates	—	—	0.024 t=0.67 p=0.509 ^{NS}	0.024 t=0.67 p=0.509 ^{NS}	0.026 t=0.69 p=0.506 ^{NS}	0.027 t=0.69 p=0.511 ^{NS}
Economic Crisis	—	—	—	-0.002 t=-0.77 p=0.444 ^{NS}	-0.001 t=-0.76 p=0.433 ^{NS}	-0.002 t=-0.74 p=0.442 ^{NS}
Digitalization (Moderator)	—	—	—	—	0.030 t=10.00 p=0.000***	0.028 t=9.23 p=0.000***
Interaction Terms (BS * DIG)	—	—	—	—	—	0.006 t=3.01 p=0.003***
Constant	-0.045 t = -1.80 p=0.080*	-0.042 t=1.71 p=0.085*	-0.035 t=-1.70 p=0.087*	-0.039 t=-1.77 p=0.079*	-0.043 t=-1.82 p=0.077*	-0.041 t=-1.73 p=0.079*
Observations	975	975	975	975	975	975
R-Squared	0.223	0.279	0.332	0.358	0.409	0.452

Source: Researcher,2026

Method: Fixed effects regression

Note: Used Robust Standard Errors

p < 0.10 (*), *p* < 0.05 (**), *p* < 0.01 (***). NS = Not significant

4.5.2 Hierarchical Regression Results (Dependent Variable: ROE)

Table 4.11 presents the hierarchical regression results for financial performance measured by Return on Equity (ROE). The analysis follows the same fixed effects approach and sequential model structure as in Table 4.10. The results demonstrate how the incremental inclusion of variables improves model fit, with R-squared values indicating explanatory power. Statistical significance is reported at the 1%, 5%, and 10% levels.

Table 4.11: Hierarchical regression results (Dependent variable: ROE)

Variable	Model 1 (ROE)	Model 2 (ROE)	Model 3 (ROE)	Model 4 (ROE)	Model 5 (ROE)	Model 6 (ROE)
Bank Size	0.033 t=2.79 p=0.008***	0.034 t=6.21 p=0.000***	0.034 t=6.16 p=0.000***	0.033 t=2.77 p=0.009***	0.027 t=2.88 p=0.009***	0.030 t=2.76 p=0.009***
Capital Adequacy	-0.291 t=-1.01 p=0.318 ^{NS}	-0.213 t=-1.13 p=0.258 ^{NS}	-0.216 t=1.31 p=0.257 ^{NS}	-0.293 t=-1.02 p=0.316 ^{NS}	-0.286 t=-1.00 p=0.311 ^{NS}	-0.285 t=-1.00 p=0.314 ^{NS}
Asset Quality	-0.266 t=-2.63 p=0.012**	-0.374 t=-2.91 p=0.004**	-0.379 t=2.90 p=0.004**	-0.271 t=-2.64 p=0.012**	-0.262 t=-2.54 p=0.011**	-0.271 t=-2.67 p=0.013**
Liquidity	0.083 t=2.45 p=0.019**	0.104 t=2.39 p=0.017**	0.104 t=2.35 p=0.019**	0.084 t=2.39 p=0.022**	0.080 t=2.49 p=0.020**	0.081 t=2.40 p=0.023**
Market Concentration	-	0.115 t=0.82 p=0.420 ^{NS}	0.116 t=0.76 p=0.455 ^{NS}	0.108 t=0.77 p=0.448 ^{NS}	0.118 t=0.82 p=0.448 ^{NS}	0.118 t=0.79 p=0.448 ^{NS}
Private Sector Credit	-	-0.023 t=-1.90 p=0.065**	-0.024 t=-1.92 p=0.069**	-0.023 t=-1.90 p=0.064**	-0.018 t=-1.49 p=0.034**	-0.023 t=-1.91 p=0.066**
GDP	-	-	0.282 t=2.34 p=0.025**	0.208 t=1.38 p=0.177 ^{NS}	0.278 t=1.84 p=0.079**	0.208 t=1.39 p=0.175 ^{NS}
Inflation	-	-	0.467 t=2.24 p=0.031**	0.493 t=2.17 p=0.036**	0.469 t=2.13 p=0.031**	0.493 t=2.18 p=0.035**
Exchange Rate	-	-	-0.002 t=-3.05 p=0.004***	-0.002 t=-3.15 p=0.003***	-0.002 t=-3.15 p=0.003***	-0.002 t=-3.15 p=0.003***

Interest Rates	-	-	-0.283 t=-0.84 p=0.404 ^{NS}	-0.385 t=-0.95 p=0.348 ^{NS}	-0.385 t=-0.95 p=0.346 ^{NS}	-0.282 t=-0.95 p=0.348 ^{NS}
Economic Crisis	-	-	-	-0.034 t=-1.06 p=0.295 ^{NS}	-0.033 t=-1.06 p=0.292 ^{NS}	-0.033 t=-1.06 p=0.296 ^{NS}
Digitalization (Moderator)	-	-	-	-	0.041 t=3.42 p=0.001***	0.039 t=-3.25 p=0.002***
Interaction Terms (BS * DIG)	-	-	-	-	-	0.007 t=3.50 p=0.001***
Constant	-0.018 t=-0.10 p=0.921 ^{NS}	-0.017 t=-0.10 p=0.921 ^{NS}	-0.017 t=-0.10 p=0.921 ^{NS}	0.004 t=0.02 p=0.984 ^{NS}	0.004 t=0.02 p=0.984 ^{NS}	0.004 t=0.02 p=0.984 ^{NS}
Observations	975	975	975	975	975	975
R-Squared	0.132	0.285	0.341	0.381	0.464	0.497

Source: Researcher,2026

Method: Fixed effects regression

Note: Used Robust Standard Errors

p < 0.10 (*), *p* < 0.05 (**), *p* < 0.01 (***). NS = Not significant.

4.5.3 Hierarchical Regression Results (Dependent Variable: NIM)

Table 4.12 presents the hierarchical regression results for financial performance measured by Net Interest Margin (NIM). The same modelling approach and structure are applied. The sequential inclusion of variables enhances model explanatory power, as reflected in the R-squared values. Statistical significance is reported at the 1%, 5%, and 10% levels.

Table 4.12: Hierarchical regression results (Dependent variable: NIM)

Variable	Model 1 (NIM)	Model 2 (NIM)	Model 3 (NIM)	Model 4 (NIM)	Model 5 (NIM)	Model 6 (NIM)
Bank Size	-3.10e-06 t=-0.00 p=0.996 ^{NS}	-3.10e-06 t=-0.09 p=0.927 ^{NS}	-3.10e-06 t=-0.09 p=0.925 ^{NS}	-6.97e-06 t=-0.01 p=0.996 ^{NS}	-3.10e-06 t=-0.01 p=0.998 ^{NS}	-3.10e-06 t=-0.00 p=0.998 ^{NS}
Capital Adequacy	0.009 t=1.56 p=0.119 ^{NS}	0.009 t=1.11 p=0.268 ^{NS}	0.008 t=1.09 p=0.276 ^{NS}	0.009 t=1.31 p=0.197 ^{NS}	0.009 t=1.33 p=0.199 ^{NS}	0.005 t=3.42 p=0.001***
Asset Quality	0.004 t=0.72 p=0.473 ^{NS}	0.004 t=0.47 p=0.637 ^{NS}	0.003 t=0.41 p=0.679 ^{NS}	0.004 t=0.90 p=0.653 ^{NS}	0.004 t=0.46 p=0.657 ^{NS}	0.007 t=0.57 p=0.566 ^{NS}
Liquidity	0.005 t=1.49 p=0.137 ^{NS}	0.005 t=0.81 p=0.417 ^{NS}	0.005 t=0.81 p=0.419 ^{NS}	0.005 t=0.90 p=0.376 ^{NS}	0.005 t=0.91 p=0.377 ^{NS}	0.006 t=0.94 p=0.294 ^{NS}
Market Concentration	-	0.067 t=3.12 p=0.002***	0.073 t=4.38 p=0.000***	0.066 t=2.98 p=0.005**	0.069 t=2.99 p=0.005**	0.007 t=0.29 p=0.769 ^{NS}
Private Sector Credit	-	-0.004 t=-2.30 p=0.022**	-0.004 t=-5.93 p=0.000***	-0.004 t=-5.56 p=0.000***	-0.003 t=-5.55 p=0.000***	-0.003 t=-9.37 p=0.000***
GDP	-	-	0.014 t=2.32 p=0.026**	0.007 t=0.95 p=0.348 ^{NS}	0.007 t=0.96 p=0.349	0.013 t=2.27 p=0.023**
Inflation	-	-	0.102 t=1.04 p=0.304 ^{NS}	0.105 t=5.41 p=0.000***	0.105 t=5.43 p=0.000***	0.105 t=4.72 p=0.000***
Exchange Rate	-	-	-0.000 t=-2.45 p=0.019**	-0.000 t=-5.52 p=0.000***	-0.000 t=-5.55 p=0.000***	-0.000 t=-2.45 p=0.015***
Interest Rates	-	-	0.107 t=0.67 p=0.509	0.100 t=4.78 p=0.000***	0.100 t=4.79 p=0.000***	0.110 t=5.35 p=0.000***

Economic Crisis	-	-	-	-0.003 t=-1.48 p=0.148 ^{NS}	-0.003 t=-1.49 p=0.149 ^{NS}	-0.003 t=-1.21 p=0.023**
Digitalization (Moderator)	-	-	-	-	0.026 t=4.51 p=0.000***	0.026 t=4.14 p=0.000***
Interaction Terms (BS * DIG)	-	-	-	-	-	0.044 t=18.38 p=0.000***
Constant	0.085 t=9.43 p=0.000***	0.085 t=9.43 p=0.000***	0.085 t=9.43 p=0.000***	0.087 t=5.40 p=0.000***	0.087 t=5.43 p=0.000***	0.087 t=5.43 p=0.000***
Observations	975	975	975	975	975	975
R-Squared	0.176	0.281	0.333	0.358	0.404	0.448

Source: Researcher,2026

Method: Fixed effects regression

Note: Used Robust Standard Errors

p < 0.10 (*), *p* < 0.05 (**), *p* < 0.01 (***). NS = Not significant.

4.6.1 Effect of Bank-Specific Factors on the Financial Performance of Commercial Banks

The first objective was to assess the effect of bank-specific factors, namely bank size, capital adequacy, asset quality, and liquidity, on financial performance. The results presented in Tables 4.10, 4.11, and 4.12 indicate that bank size has a positive and statistically significant relationship with both ROA ($\beta = 0.007$, $p < 0.01$) and ROE ($\beta = 0.033$, $p < 0.01$), suggesting that larger banks achieve higher profitability, likely due to economies of scale and improved operational efficiency.

Asset quality exhibits a negative and statistically significant relationship with ROA ($\beta = -0.047$, $p < 0.05$) and ROE ($\beta = -0.266$, $p < 0.05$), indicating that higher levels of non-performing loans reduce profitability. Liquidity shows a positive relationship with both ROA and ROE, being weakly significant for ROA ($p < 0.10$) and strongly significant for ROE ($\beta = 0.083$, $p < 0.05$), suggesting that adequate liquidity enhances financial returns.

Capital adequacy remains statistically insignificant across most models ($p > 0.10$), indicating a limited direct effect on profitability during the study period. However, for NIM, capital adequacy becomes significant at later stages ($\beta = 0.005$, $p < 0.01$) after introducing digitalisation, suggesting

its relevance in interest-based profitability under technological influence. Overall, R^2 values indicate that bank-specific factors explain a meaningful but limited proportion of performance variation (ROA: 0.223; ROE: 0.132; NIM: 0.1758).

4.6.2 Effect of Industry-Specific Factors on the Financial Performance of Commercial Banks

The second objective examined the effect of industry-specific factors, namely market concentration and private sector credit, on financial performance. The results indicate that for ROA, both variables are statistically insignificant ($p > 0.10$), suggesting limited direct influence on asset-based profitability. For ROE, private sector credit exhibits a negative and weakly significant relationship ($\beta = -0.023$, $p < 0.10$), implying that increased lending may reduce returns due to higher risk or margin compression, while market concentration remains insignificant. For NIM, market concentration shows a positive and highly significant relationship ($\beta = 0.067$, $p < 0.01$), indicating that lower competition enhances interest margins. In contrast, private sector credit is negative and significant ($\beta = -0.004$, $p < 0.05$), suggesting that increased lending exerts downward pressure on margins. The inclusion of industry-specific factors modestly improves model fit (ROA: 0.056; ROE: 0.153; NIM: 0.105).

4.6.3 Effect of Macroeconomic Factors on the Financial Performance of Commercial Banks

The third objective assessed the effect of macroeconomic factors on financial performance. For ROA, GDP is positive and statistically significant ($\beta = 0.040$, $p < 0.05$), indicating that economic growth enhances bank profitability, while exchange rates are negative and significant ($\beta = -0.000$, $p < 0.05$), suggesting that currency depreciation adversely affects returns. Inflation and interest rates are statistically insignificant. For ROE, GDP ($\beta = 0.282$, $p < 0.05$) and inflation ($\beta = 0.467$, $p < 0.05$) exhibit positive and significant relationships, whereas exchange rates are negative and highly significant ($\beta = -0.002$, $p < 0.01$). These findings imply that favourable macroeconomic conditions improve equity returns, while exchange rate volatility undermines profitability. For NIM, all macroeconomic variables are statistically significant: GDP and inflation are positive ($\beta = 0.014$; $\beta = 0.102$, $p < 0.05$), while exchange rates are negative ($\beta = -0.000$, $p < 0.05$). This suggests that economic expansion and moderate inflation support interest margins, whereas exchange rate instability reduces them. The inclusion of macroeconomic variables substantially improves the explanatory power of the models (ROA: 0.332; ROE: 0.341; NIM: 0.333).

4.6.4 The Moderating Effect of Digitalisation on the Financial Performance of Commercial Banks

The final objective was to assess the moderating effect of digitalisation on the financial performance of commercial banks. The digitisation moderating variable was introduced in Model 5, followed by the interaction term (Bank Size $\times$ Digitalisation) in Model 6. The evidence and results from Tables 4.10, 4.11 and 4.12 show digitalisation exhibits a strong positive and significant effect on ROA ($\beta = 0.030$, $p < 0.01$), ROE ($\beta = 0.041$, $p < 0.01$), and NIM ($\beta = 0.026$, $p < 0.01$), confirming that technological adoption substantially enhances banks' ROA, ROE and NIM. The interaction term (Bank Size $\times$ Digitalisation) is also positive and significant across all models (ROA: $\beta = 0.006$; ROE: $\beta = 0.007$; NIM: $\beta = 0.044$; $p < 0.01$). These results indicate that digitalisation enhances financial performance and strengthens the positive effect of bank size. Larger banks benefit more from technological adoption through improved efficiency, cost reduction, and profitability. Model explanatory power increases significantly (ROA: 0.409; ROE: 0.464; NIM: 0.404).

4.6.5 Effect of Economic Crisis Dummy Variable on the Financial Performance of Commercial Banks

The economic crisis dummy variable was introduced in Model 4 to assess the impact of macroeconomic shocks. The evidence and results from tables 4.10, 4.11 and 4.12 show that the economic crisis dummy variable is negative but statistically insignificant across all the performance metrics of ROA, ROE, and NIM ($p > 0.10$). This indicates a limited direct impact on profitability after controlling for other factors. This suggests resilience within the Kenyan banking sector. This suggests that Kenyan banks displayed resilience during crisis periods, possibly due to regulatory capital buffers, diversification, and adaptation mechanisms that cushioned performance against systemic shocks. However, its inclusion slightly improves model fit (ROA: 0.358; ROE: 0.381; NIM: 0.358), suggesting that while not significant individually, the crisis period contributed slightly to model fit when combined with other explanatory factors.

4.7 Conclusion

This chapter analysed the determinants of the financial performance of commercial banks in Kenya. The findings indicate that bank size, asset quality, and digitalisation are the most significant drivers of performance. Larger banks benefit from economies of scale, while poor asset quality

reduces profitability. Liquidity enhances returns, whereas capital adequacy shows limited direct influence. Industry-specific factors produce mixed effects, with market concentration improving NIM and private sector credit reducing profitability. Macroeconomic factors, particularly GDP and inflation, positively influence performance, while exchange rate depreciation negatively affects profitability. Digitalisation emerges as a key determinant, both directly improving performance and strengthening the effect of bank size. The economic crisis variable is insignificant, suggesting resilience within the sector. Overall, the explanatory power of the models improves across specifications (ROA: 0.223→0.452; ROE: 0.132→0.497; NIM: 0.176→0.448), indicating that these variables collectively explain approximately 45 to 50% of the variation in financial performance.

4.8 Chapter Summary

This chapter presented empirical findings aligned with the study objectives. Bank-specific factors significantly influence performance, with bank size positively affecting performance measures like ROA and ROE. Asset quality negatively impacted profitability, and liquidity enhanced profitability. However, capital adequacy remains largely insignificant. Industry-specific factors show mixed effects, where market concentration improved NIM and private sector credit reduced ROE and NIM. Macroeconomic variables were key determinants, with GDP and inflation positively influencing performance. However, exchange rate depreciation reduced profitability. Digitalisation is a strong positive driver across all measures and enhances the effect of bank size. The economic crisis variable is negative but insignificant, indicating resilience. Overall, financial performance is driven by a combination of bank-specific factors, industry-specific factors, macroeconomic factors, and technological factors, with digitalisation and macroeconomic conditions playing the most significant roles.

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter is organised into five sections: discussion, conclusions, recommendations, limitations of the study, and a chapter summary. It synthesises the study's findings by interpreting them in relation to the research objectives and the reviewed literature.

5.2 Discussions

The primary objective of this study was to determine the determinants of the financial performance of commercial banks in Kenya. The findings are discussed in line with the study's objectives, namely: examining the effects of bank-specific factors, industry-specific factors, macroeconomic factors, and the moderating role of digitalisation.

The first objective examined the effect of bank-specific factors such as bank size, capital adequacy, asset quality, and liquidity on financial performance. The findings underscore the importance of internal bank characteristics in shaping profitability. Bank size exhibited a consistently positive and highly significant relationship with both ROA and ROE, supporting the Efficiency Structure Theory, which posits that larger institutions benefit from economies of scale, improved efficiency, and better resource utilisation. These findings are consistent with Shrestha (2023), Alper and Anbar (2011), Abebe (2014), Biru (2021), Derbali (2021), Manyala et al., (2022), Muriuki (2019), and Njoki and Nyamute (2023) as consistent profitability drivers. Asset quality showed a significant negative effect on both ROA and ROE. This indicates that poor credit quality reduces profitability due to increased non-performing loans and provisioning costs. Liquidity demonstrated a positive and significant relationship with ROE and a weaker positive relationship with ROA, suggesting that adequate liquidity enhances performance. In contrast, capital adequacy was largely insignificant, except for NIM after incorporating digitalisation, implying that capital buffers primarily support stability rather than profitability. This contrasts with findings by Haque and Farzana (2018), Al Zaidanin (2020), Nahiduzzaman et al., (2022), Derbali (2021), Biru (2021), and Ongore and Kusa (2013), implying that capital strength in Kenya primarily serves as a stability tool rather than a performance enhancer.

The second objective assessed industry-specific factors, namely market concentration and private sector credit. Results indicated that both variables were insignificant for ROA, suggesting minimal influence on asset-based profitability. However, private sector credit negatively affected ROE and market concentration positively affected NIM. These findings partially support the Market Power Theory. While market concentration enhances margins, it does not consistently improve overall profitability. However, the insignificance of concentration for ROA and ROE weakens the broader profitability claims of the theory. The negative impact of private sector credit on ROE and NIM suggests that aggressive lending may compress margins due to increased risk. These findings align with Fernandez de Guevara, Maudos and Perez (2005), Goddard, Molyneux, and Wilson (2004), Kiptui (2014), and Omondi and Muturi (2013). These studies found that concentrated markets enhance margins, but excessive credit expansion can undermine performance.

The third objective examined the effects of macroeconomic factors on financial performance. GDP had a positive and significant relationship with ROA and ROE, while inflation positively impacted ROE and NIM. Exchange rate depreciation negatively affected all performance indicators. This confirms that economic expansion enhances bank profitability due to increased lending opportunities and a reduction in default risk. These findings support the Deflation Theory, highlighting the role of macroeconomic conditions in shaping bank performance. The results align with Nahiduzzaman et al., (2022), Njagi and Nzai (2022), Moyo and Tursoy (2020), El Hussein and Osman (2019), and Majok (2015). The effects of interest rates were largely insignificant for ROA and ROE but significant for NIM. This confirms their direct link to interest-based profitability. Overall, macroeconomic stability emerges as a vital enabler of sustainable banking performance.

The final objective assessed the moderating effect of digitalisation. Digitalisation exhibited a strong positive and significant impact across all performance metrics, ROA, ROE, and NIM. This significantly enhanced the model explanatory power. The interaction between bank size and digitalisation was also positive and significant, indicating that digitalisation strengthens the effect of size on performance. These findings support the Efficiency Structure Theory, showing that technology enhanced economies of scale, reduced intermediation costs, and improved operational efficiency. The study findings also align with Sayari (2024), Shanti et al., (2023), Omar and Theuri (2023), and Kago and Mutuku (2023), but contradict Setiawan and Prakoso (2024). Furthermore, the economic crisis dummy variable was negative but insignificant, suggesting that although crises

slightly reduced profitability, Kenyan banks remained resilient due to strong regulatory frameworks and adaptive strategies.

5.3 Conclusions

The main objective of this study was to establish the determinants of the financial performance of commercial banks in Kenya. This study concludes that the financial performance of commercial banks in Kenya is shaped by a combination of bank-specific, industry-specific, macroeconomic, and technological factors, with clear theoretical implications.

The first objective of the study was to investigate the effects of bank-specific factors on the financial performance of commercial banks in Kenya. Firstly, the findings confirm and extend the Efficiency Structure Theory. Bank size and liquidity enhance profitability, demonstrating that efficiency gains from scale and optimal resource allocation are critical drivers of performance. However, the negative effect of asset quality and the insignificance of capital adequacy indicate that efficiency depends not only on resource availability but on effective utilisation and risk management. Therefore, the study concludes that efficiency is multidimensional, combining scale, risk control, and operational effectiveness.

The second objective of the study was to examine the effects of industry-specific factors on the financial performance of commercial banks in Kenya. Secondly, the findings provide partial support for the Market Power Theory (Bain, 1951). While market concentration improves interest margins (NIM), it does not consistently enhance overall profitability (ROA and ROE). Furthermore, the negative impact of private sector credit suggests that aggressive lending strategies can undermine performance by increasing risk. The study, therefore, concludes that market power positively contributes to profitability only when balanced with prudent credit management, further refining the traditional theory.

The third objective of the study was to explore the effects of macroeconomic factors on the financial performance of commercial banks in Kenya. Thirdly, the findings support and extend the Deflation Theory proposed by Fisher (1933), confirming that macroeconomic conditions significantly influence bank performance. Economic growth and moderate inflation enhance profitability, while exchange rate volatility reduces it. However, the strong effect of exchange rates highlights the importance of external shocks, suggesting that Deflation Theory must be interpreted within a broader macro-financial context that includes open-economy risks.

The final objective of the study was to examine the moderating effect of digitalisation on the financial performance of commercial banks in Kenya. Finally, the study concludes that digitalisation is a critical moderating force that strengthens the relationship between traditional determinants and financial performance. By enhancing efficiency, reducing costs, and improving service delivery, digitalisation acts as a modern extension of the Efficiency Structure Theory (Demsetz, 1973; Berger, 1995). This positions technology not merely as an operational tool but as a core determinant of competitive advantage in the banking sector.

5.4 Recommendations

5.4.1 Recommendations for Practice and Policy

The study's findings generate important policy and managerial implications grounded in the three core theories. From the perspective of the Efficiency Structure Theory by Demsetz (1973), the results emphasise that profitability is driven by operational efficiency rather than scale alone. Banks should therefore prioritise improving asset quality through stronger credit risk management, while leveraging size and liquidity to optimise performance. Policymakers should complement capital adequacy regulations with measures that enhance efficiency, such as supporting digital transformation and strengthening credit information systems.

From the Market Power Theory by Bain (1955), the findings suggest that while market concentration can enhance margins, it does not guarantee overall profitability and may be offset by credit risk. Banks should therefore focus on quality-driven lending rather than aggressive credit expansion, while regulators should strike a balance between promoting competition and preventing excessive concentration that could harm consumer welfare.

From the Deflation Theory by Fisher (1933), the results highlight the critical role of macroeconomic stability. Policymakers should prioritise maintaining stable inflation and exchange rates to support banking sector performance. Banks, on the other hand, should adopt proactive risk management strategies. These should include hedging against volatility in exchange rates and adjusting pricing strategies as a response to macroeconomic changes.

Across all three theoretical perspectives, digitalisation emerges as a unifying factor that enhances efficiency, mitigates risks, and strengthens competitiveness. Banks should therefore invest in digital infrastructure and innovation, while regulators should create enabling environments through supportive policies, cybersecurity frameworks, and innovation incentives.

5.4.2 Recommendations for Further Research

This study examined the determinants of the financial performance of commercial banks in Kenya, focusing on the effects of bank-specific factors, industry-specific factors, and macroeconomic factors. Future research should consider incorporating additional macroeconomic variables, such as political stability and foreign direct investment, as well as bank-level factors, including governance and management practices. Further investigation into technological innovation as an industry-specific factor would also provide deeper insights into its role in shaping financial performance. In addition, future studies should examine the long-term effects of financial crises beyond the study period to capture potential lagged impacts. Conducting cross-country comparative analyses would also be valuable in assessing how differences in regulatory environments influence bank performance.

5.5 Limitations of the study

While this study provides valuable insights, it has several limitations. First, the study focuses on Kenya, and the findings may not be fully generalisable to other economies. Second, the analysis covers the period 2000–2024, which may not fully capture the impact of regulatory changes over time, as these are not explicitly examined. Third, the study primarily employs quantitative methods, which may not adequately capture qualitative factors such as management efficiency and corporate governance that can influence financial performance. In addition, the reliance on secondary data may introduce inconsistencies and potential reporting biases. Despite these limitations, the study contributes to the understanding of the determinants of financial performance in Kenya's commercial banking sector, offering practical implications for policymakers and practitioners, while also providing a foundation for future research.

5.6 Chapter Summary

This chapter presented the discussion, conclusions, recommendations, limitations, and summary of the study. It interpreted the findings within the context of existing theories and literature, highlighting the roles of bank-specific factors, industry-specific factors, macroeconomic factors, and technological factors in shaping financial performance. The chapter concluded that digitalisation and macroeconomic stability are key drivers of performance when supported by internal efficiency factors. Practical recommendations were provided for policymakers, regulators, and banking practitioners, alongside suggestions for future research to extend the study's scope.

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Appendix 1: Summary of Research Gaps

Author(s) & Year	Context	Focus of Study	Key Findings	Identified Gaps	Type of gap
Alper and Anbar (2011)	Turkey	Examined bank specific and macroeconomic determinants of profitability.	Bank size, asset quality and interest rates significantly affect profitability.	Limited to listed banks in Turkey. No industry specific factors.	Contextual gap.
Al-Homaidi et al., (2018)	India	Examined bank specific and macroeconomic determinants of profitability.	Both bank specific and macroeconomic factors impact financial performance.	Study was hampered by a lack of availability of data on cooperative banks.	Contextual gap.
Al-Zaidanin (2020)	UAE	Examined bank specific and macroeconomic determinants.	Bank size impacts performance while capital adequacy, asset quality and macroeconomic factors i.e. GDP, inflation and interest rates have no impact.	Study did not address endogeneity issues such as reverse causality between profitability and determinants. Study had short study period.	Contextual and methodological gaps.
Haque and Farzana (2018)	Bangladesh	Examined bank specific and macroeconomic determinants of profitability.	Capital adequacy impacts performance while macroeconomic factors have no impact.	Limited to Islamic Banks.	Contextual gap.
Nahiduzzaman et al., (2022)	Bangladesh	Investigated the impact of COVID on financial performance and profitability.	Bank specific factors worsen profitability while inflation enhanced profitability.	Limited to listed private banks. The study was crisis specific does not consider long run determinants.	Contextual gap.
Gunawardhana and Perera (2019)	Sri Lanka	Investigated the impact of bank specific and	Macroeconomic factors have no impact on performance.	Focused on ROA only as measure of financial performance.	Methodological gap.

		macroeconomic factors on performance.			
Shrestha (2020)	Nepal	Examined bank specific determinants of financial performance.	Asset quality has a significant effect on financial performance.	Focuses only on listed banks and used ROA as sole measure of performance. Lacks macroeconomic and industry specific determinants.	Methodological, contextual, and scope gaps.
Abebe (2014)	Ethiopia	Bank specific and macroeconomic determinants of profitability.	All bank specific variables considered except bank size affect performance of the bank significantly but negatively. While macroeconomic factors had no significant effect on performance.	Ignored newly established banks and focused on 8 of the oldest banks.	Contextual gap.
Biru (2021)	Ethiopia	Examined bank specific and macroeconomic determinants of profitability.	Bank specific factors impact ROA and ROE while interest rates similarly impact ROA and ROE.	Ignored newly established banks and focused on 8 of the oldest banks.	Contextual gap.
Derbali (2021)	Morocco	Examined bank specific and macroeconomic determinants of profitability.	GDP and inflation have no impact on performance while bank size impacted performance.	Focused only on listed banks ignoring unlisted banks.	Contextual gap.
Njoki and Nyamute (2023)	Kenya	Examined bank specific determinants of performance.	All bank specific determinants affected financial performance.	Used ROA as sole measure on performance and only focused on bank specific determinants ignoring macroeconomic and industry determinants.	Methodological and scope gaps.

Ongore and Kusa (2013)	Kenya	Examined bank specific and macroeconomic determinants of performance.	Bank specific factors significantly affect the performance of except for liquidity while the overall effect of macroeconomic variables was inconclusive.	Data was limited to 2001 to 2010 hence being outdated in the digital banking era.	Contextual gaps.
Muriuki (2019)	Kenya	Evaluates bank specific determinants.	Bank specific factors strongly predict financial performance of listed commercial banks in Kenya.	Ignores ROE and NIM as performance metric. Narrow focus on bank factors while omitting macroeconomic factors.	Methodological and scope gaps.
Manyala et al., (2022)	Kenya	Assesses credit risk and financial performance.	Credit risk determinants such as capital adequacy, asset quality and liquidity had a significant effect on the financial performance.	Focuses only on credit risk and excludes a multidimensional approach that includes industry specific and macroeconomic determinants. Study was hampered by the limited period not capturing long run relationships.	Methodological and scope gaps.
Sharma and Gounder (2012)	Pacific Islands	Evaluated determinants of bank credit.	Private sector credit influences GDP growth.	No focus on profitability outcomes.	Contextual, methodological, scope and conceptual gaps.
Rashid (2011)	South Asian region	Evaluates the relationship between private sector credit.	Private sector credit influences GDP growth.	No focus on profitability outcomes.	Methodological, scope and conceptual gaps.

Enisan and Oluwafemi (2015)	Nigeria	Evaluates bank credit growth.	Inflation and interest rates influence private sector credit growth.	Narrow focus on Nigeria only and focus is not on profitability directly.	Contextual, scope and conceptual gaps.
Gbenga, Olusegun, and Adeyinka (2019)	Nigeria	Evaluates private sector credit and growth.	Private sector drives growth.	Focus on Nigeria only and focus is not on profitability directly.	Contextual, scope and conceptual gaps.
Abuka and Egesa (2007)	East Africa	Evaluates private sector credit and growth.	The EAC could increase credit delivery to the private sector by harmonizing reforms in the areas such as legal frameworks governing access to bank credit in the region.	Focuses on policy level outcomes and not profitability.	Conceptual and scope gaps.
Were, Nzomoi, and Rutto (2012)	Kenya	Evaluates private sector credit and performance.	Private sector credit drives bank sectoral performance	Study has no long term panel dataset to assess trend over the long run.	Methodological and scope gap.
Moyo and Tursoy (2020)	South Africa	Investigated the impact of inflation and exchange rates on performance.	Both negatively affect performance.	Only focused on certain macroeconomic determinants and ignored others macroeconomic and bank specific determinants. Also ignored ROA and NIM as performance measures.	Methodological and scope gaps.
Ngure (2014)	Kenya	Evaluates the effect of interest rates on performance.	Increase in interest rates leads to higher profitability.	Ignores other macroeconomic and bank specific determinants and measured performance with	Scope and methodological gaps.

				only ROA and ignored ROE and NIM.	
Hossein et al., (2020)	Iran	Investigates the impact of exchange rate volatility.	Exchange rate volatility reduced bank performance.	Used ROI as measure of performance which is less commonly used as primary profitability metric in banking studies compared to ROA, ROE and NIM. Narrow focus on exchange rates.	Conceptual, scope and methodological gaps.
Njagi and Nzai (2022)	East Africa	Investigates the impact of exchange rate volatility.	Exchange rate volatility reduced bank performance.	Ignores other macroeconomic determinants and measured performance with only ROA and ignored ROE and NIM.	Scope and methodological gaps.
El Hussein and Osman (2019)	Sudan	Investigates the impact of exchange rate volatility.	Exchange rate volatility reduced bank performance.	Crisis country focus and only focused on exchange rate volatility and ignore other macroeconomic and bank specific determinants.	Scope gap.
Majok (2015)	Kenya	Assessed exchange rate fluctuations and performance.	Exchange rate fluctuation negatively impact performance.	Ignores other macroeconomic and bank determinants and measured performance with only ROA and ignored ROE and NIM.	Scope and methodological gaps.
Sayari (2024)	Saudi Arabia	Evaluated impact of digitalization	Internet banking enhanced ROA and ROE in Islamic and conventional banks.	Study only focuses on internet banking overlooking other digital innovations	Scope and methodological gaps.

		on financial performance.		such as mobile banking	
Shanti et al., (2023)	Indonesia	Evaluated impact of digitalization on financial performance.	Digitalization positively supports long-term profitability but negatively affects short term profitability.	Study narrowly focuses on digitalization and uses ROA as only measure of performance.	Scope and methodological gaps.
Setiawan and Prakoso (2024)	Indonesia	Evaluated impact of digitalization on financial performance.	Digitalization reduced ROA.	Study narrowly focuses on digitalization and uses ROA as only measure of performance.	Scope and methodological gaps.
Omar and Theuri (2023)	Kenya	Evaluated impact of digitalization on financial performance.	Positive effect of digitalization on profitability of microfinance bank.	Study narrowly focuses on digitalization and uses ROA as only measure of performance.	Scope and methodological gaps.
Kago and Mutuku (2023)	Kenya	Evaluated impact of digitalization on financial performance.	Strong positive relationship between digital adoption and performance metrics such as ROA.	Study narrowly focuses on digitalization and uses ROA as only measure of performance.	Scope and methodological gaps.

Source: Researcher, 2026

Appendix 2: List of Commercial Banks in Kenya

	Descriptions
1	ABSA Bank of Kenya Ltd
2	Access Bank (Kenya) Plc
3	African Banking Corporation Ltd
4	Bank of Africa Kenya Ltd
5	Bank of Baroda (Kenya) Ltd
6	Bank of India
7	Citibank N.A Kenya
8	Consolidated Bank of Kenya Ltd
9	Co-operative Bank of Kenya Ltd
10	Credit Bank PLC
11	Development Bank of Kenya Ltd
12	Diamond Trust Bank Ltd
13	DIB Bank Kenya Ltd
14	Ecobank Kenya Ltd
15	Equity Bank Ltd
16	Family Bank Ltd
17	First Community Bank Ltd
18	Guaranty Trust Bank (K) Ltd
19	Guardian Bank Ltd
20	Gulf African Bank Ltd
21	Habib Bank A.G Zurich
22	Housing Finance Company (HFC)
23	I &M Bank Ltd
24	Kenya Commercial Bank Ltd
25	Kingdom Bank Ltd
26	Mayfair CIB Bank Ltd
27	Middle East Bank (K) Ltd
28	M-Oriental Bank Ltd

29	National Bank of Kenya Ltd
30	NCBA Bank Kenya PLC
31	Paramount Bank Ltd
32	Prime Bank Ltd
33	SBM Bank Kenya Ltd
34	Sidian Bank Ltd
35	Spire Bank Ltd
36	Stanbic Bank Kenya Ltd
37	Standard Chartered Bank of Kenya Ltd
38	UBA Kenya Bank Ltd
39	Victoria Commercial Bank PLC

Source: CBK, 2026

Appendix 3: Ethical Review Approval Letter



8th January 2025

Mr Okolobo Okapisi Eric,
okolobo.okapisi@strathmore.edu

Dear Mr Okolobo,

RE: Determinants of Financial Performance: Empirical Evidence from Commercial Banks in Kenya

This is to inform you that SU-ISERC has reviewed and approved your above SU-masters proposal. Your application reference number is SU-ISERC2466/24. The approval period is from 8th January 2025 to 7th January 2026.

This approval is subject to compliance with the following requirements:

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

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

Yours sincerely,

Mr Ambrose Rachier,
Chairperson; SU-ISERC

Appendix 4: Similarity Report



Page 2 of 115 - Integrity Overview

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16% Overall Similarity

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