

**PORTFOLIO DIVERSIFICATION, BANK SIZE AND FINANCIAL
PERFORMANCE OF COMMERCIAL BANKS IN KENYA**

BY

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DECLARATION

Declaration by Candidate

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DEDICATION

I dedicate this work to my parents, The Late Josphat Okwaro and my mum Decima Amukoa who taught me the virtue of hard work and resilience.

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ABSTRACT

Financial institutions can benefit from understanding how portfolio diversification affects bank performance, stability, and risk exposure. Risk reduction through portfolio diversification affects bank performance and clientele. Despite its popularity as a risk management tool, the effect of portfolio diversification on bank performance is unclear. Diversification may not improve financial performance due to increasing costs and depleted economies of scale. The purpose of this study was to establish the moderating effect of bank size on the relationship between portfolio diversification and financial performance of commercial banks in Kenya. The specific objectives guiding this study were to determine the influence of sectoral credit, to assess the effect of bancassurance, to establish the effect of deposits portfolio, to analyse the effect of investments portfolio and to examine the effects of bank size on the financial performance of commercial banks in Kenya. Additionally, the study sought to establish the moderating effect of bank size on the above relationship and financial performance of commercial banks in Kenya. Modern portfolio theory, organizational lifecycle theory and growth of firm theory provided the theoretical foundation for the study. Utilization of an explanatory research design with a longitudinal approach. The unit of analysis consisted of all 42 commercial banks registered in Kenya. From the annual financial statements of the institutions and the annual reports of the Central Bank of Kenya, 210-year observations of secondary data were extracted for the study spanning 2017-2021. The study's data were analysed using descriptive and inferential statistics, as well as statistical techniques such as the Pearson correlation coefficient and regression analysis. All analyses were conducted using STATA version 13. The hypotheses were evaluated using a hierarchical multiple regression model at a significance level of 0.05. The findings of this study were presented in table format. The study determined that sectoral credit diversification had a statistically significant negative effect on the financial performance of Kenyan commercial banks ($\beta = -0.113$, $p < 0.05$). The study found that bancassurance had no statistically significant impact on the financial performance of commercial banks ($\beta = 0.002$, $p > 0.05$). Diversification of deposit portfolios had a negative and statistically insignificant impact on the financial performance of commercial banks ($\beta = -0.107$, $p > 0.05$). Diversification of investment portfolios had a positive and statistically significant impact on the financial performance of commercial banks ($\beta = .153$, $p < 0.05$). Further, bank size had a positive and significant effect on financial performance ($\beta = 0.414$, $p < 0.05$). Bank size moderated the relationship between sectoral loan diversification and the financial performance of commercial banks in Kenya ($\Delta R^2 = 0.716$, $\beta = 0.018$, $p < 0.05$). The findings of the study indicated that bank size does not moderate the relationship between investments portfolio diversification and financial performance of commercial banks ($\Delta R^2 = 0.716$, $\beta = -0.002$, $p > 0.05$). The relationship between bancassurance and financial performance was negative and significantly moderated by the size of the bank ($\Delta R^2 = 0.721$, $\beta = -0.018$, $p < 0.05$), as well as the relationship between deposits portfolio diversification and financial performance ($\Delta R^2 = 0.721$, $\beta = 0.069$, $p < 0.05$). The study has managerial and practical implications for commercial banks to ensure they diversify their credit targets and avoid over-reliance on the domestic sector. The study revealed that bancassurance has no bearing on the financial success of commercial banks. The study contributes by demonstrating that portfolio diversification and firm size jointly influence the financial performance of banks, a combined effect not previously documented. Commercial banks are advised to diversify their investment portfolios to ensure their financial stability and to take advantage of low-risk government securities. Policymakers and regulators in Kenya's commercial banking sector, such as they should formulate policies and regulations that encourage mergers, acquisitions, and portfolio diversification.

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ABBREVIATIONS AND ACRONYMS

CBK	Central Bank of Kenya
COVID-19	Corona Virus Disease, 2019
DY	Dividend Yield
EPS	Earnings Per Share
EU	European Union
KBA	Kenya Bankers Association
KCB	Kenya Commercial Bank
MPT	Modern Portfolio Theory
NACOSTI	National Council for Science, Technology, and Innovation
NSE	Nairobi Securities Exchange
ROA	Return on Assets
ROE	Return on Equity
ROI	Return on Investment
US	United States and the

OPERATIONAL AND DEFINITION OF TERMS

- Bancassurance** Bancassurance is a business model in which banks and insurance companies collaborate to offer insurance products to bank customers. Through this partnership, banks sell insurance products such as life, health, and property insurance to their customers (Clipici, 2012).
- Bank Size** For the purpose of this study, the size of a bank is calculated by computing the natural logarithm of the entire assets of a corporation. According to Borlea, Achim, and Mare (2017), the size of a bank is utilized to gain an understanding of the advantages and disadvantages associated with scale economies and diseconomies.
- Deposit Portfolio Diversification** To reduce the proportion of deposits obtained from a particular source (individuals, businesses, or the public sector) at both local and foreign levels, one can redirect customer deposits to specific types of accounts (demand, savings, or time deposits) or create certificates that are supported by these deposits . (Alshomaly, 2014).
- Financial Performance** Financial performance refers to the measure of a company's overall health and ability to generate profits. It includes an analysis of the company's revenue, expenses, and profitability, as well as its ability to manage and allocate financial resources effectively (Business Dictionary, 2015)

Investment Portfolio Diversification Investment portfolio diversification is a strategy used by investors to reduce the volatility and hazards of their investment portfolios. This is achieved by holding a variety of different investments that have a low correlation with each other (Derek, 2015).

Portfolio Diversification Portfolio diversification is a strategy used by investors to reduce risk and exposure by holding a mix of different investments that have minimal correlation with each other. Portfolio diversification is a strategic approach to managing investments by including a variety of well-balanced assets in order to mitigate the overall risk associated with investment portfolios (Derek, 2015).

Sectoral Credit Diversification In sectoral credit diversification, Portfolio managers and investors employ a risk management technique known as sector rotation, in which they vary the allocation of credit granted to different sectors based on the bank's risk tolerance, objectives, and time frame for lending (Shubiri, 2010).

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter serves as the study introduction and incorporates the study background, statements of the problem, study objectives, and the study hypotheses. Besides, the chapter comprises the significance of the study and the scope of the study.

1.2 Background of the Study

Financial performance of an organization may be seen as a gauge of its efficiency and effectiveness in applying its resources to produce returns (Ihejirika & Aderigha, 2021). Besides, Peng, Jeng, Wang, and Chen (2017) indicated that financial performance is the state of the company's finances during a certain time period, including the amount of resources received and spent, as determined by a number of measures, including profitability, leverage, solvency, capital adequacy ratio, and liquidity. Moreover, subjective, market-based, and accounting metrics have been used to quantify financial performance (Iraya & Wafula, 2018). Subjective measures of performance include measures such as customer rating, company reputation, and brand image. According to Ndungu and Muturi (2019), market-based measures of performance include earning per share (EPS), Tobin's Q, and dividend yield, while accounting metrics include net profit, return on investment (ROI), return on assets (ROA), and return on equity (ROE). Financial performance was considered as an independent variable in this study since every organization seeks to attain its performance objectives according to Huynh and Dang (2022).

Financial performance has been a major source of concern for many organizations globally due to instabilities in the market brought by technological disruptions, corona virus disease 2019 (COVID-19) and the negative externalities from globalization

(Maranga, Ngali, & Wepukhulu, 2022). Besides, poor financial performance by commercial banks has been reported globally as the world enters the third year of the global pandemic (IBISWorld, 2022). Besides, McKinsey (2021) indicates that half of the banks globally were unable to meet their cost of equity, as ROE in 2020 was 6.7 percent, which was below the cost of equity, and thus making the industry's future to remain uncertain. The economic crisis brought about by the COVID-19 pandemic made some banks to experience unusual losses, major capital calls, and accelerated mergers and acquisitions in the industry.

Commercial banks have devised various financial strategies to enhance their performance including risk re-evaluation, modernization, human capital development, data and reporting, channel optimization and portfolio diversification (Huynh & Dang, 2022). Portfolio diversification is the practice of investing the commercial bank's resources in many investment classes and securities in order to enhance returns and reduce the portfolio's overall risk (Khai, Nguyet, Khoi, & Van Nam, 2020). Portfolio diversification, according to Hayden, Porath, and Westernhagen (2017) entails divergence of sectoral credit, engaging in other services such as bancassurance, diversifying the deposits portfolio, and also diversifying the investments portfolio.

In the United States (US) and the European Union (EU), Velasco (2021) established that performance and regulatory capital might function as a replacement for portfolio investment diversification to lessen a bank's default risk. Besides, financial performance and total regulatory capital is negatively related to bank investment diversity in US and EU. Moreover, Gandhi, Kiefer, and Plazzi (2017) determined that banks in the US are gradually diversifying into industries that were previously seen to be non-core to the banking industry. Banks that diversified into bancassurance tended to be successful regarding financial performance. However, banks with greater levels

of diversification into bancassurance are more susceptible to systemic risk, and more vulnerable to changes in the macroeconomy and monetary policy.

In the African market, commercial banks have a significant impact on every nation's growth. In the developing countries of Africa, a crucial need for economic growth is a strong, dynamic and forward-thinking financial sector. The average ROE for African banking industry decreased by 50% from 14 percent in 2019 to 7 percent in 2020, But the performance before COV1D-19 pandemic was decreasing from 22% in 2015 (McKinsey, 2021). In Nigeria, Ihejirika and Aderigha (2021) observed that though diversification of investments portfolio did not have a short term relationship with ROE, investments portfolio diversification into common shares and treasury bills and the performance of commercial banks had a long-term relationship. In Ethiopia, Hailu and Tassew (2018) observe that commercial banks had diversified investments in government securities, financial assets, insurance, investment sizes and loan portfolios with a positive influence on their financial performance.

In Kenya, commercial banks play a crucial role in the development of the nation and to improve their performance, they engage in portfolio diversification involving real estate financing, bancassurance investments, and also bond investments. This portfolio diversification has varied and mixed effects on financial performance (Kemuma, 2021). Moreover, Makokha, Namusonge, and Sakwa (2016) observed that commercial banks in Kenya engage in diversified investments, activities and operations in their pursuit of reduced risk and enhanced financial performance. Specifically, commercial banks in Kenya have engaged in geographical expansion, investments in various liquid and long-term assets, bancassurance, agency banking, mobile banking, and incorporation of microfinance into their banking operations. This study sought to determine how this portfolio diversification influenced performance of the commercial banks.

There are 43 commercial banks in Kenya which operate under the Banking Act, The Central Bank of Kenya (CBK) Act, and the Companies Act. This is in addition to other prudential and regulatory guidelines published by CBK (CBK, 2022). To drive policy for the commercial banking sector in Kenya, the Ministry of Finance is responsible for fostering the banking sector's liquidity, developing and implementing a monetary policy, ensuring creditworthiness, and effective operationalization of the sector. The commercial banks in Kenya also have an umbrella association, the Kenya Bankers Association (KBA), which represents and unites all commercial banks, deals with matters that concern both its members and the interests of the industry as a whole (Central Bank of Kenya, 2020).

Commercial banks have grown steadily in the country from 2000 and have increase their investment collections and foothold in the region in order to be profitable and continue to be helpful to businesses as a consequence of the escalating business competition and ongoing modernization (Kioko & Ochieng, 2020). Commercial banks have also modernized in the era of digitalization and big data analytics. However, the commercial banking sector in Kenya has experienced the closure or placement under receivership of various commercial banks including the Imperial Bank, Dubai Bank, Kenya Finance Bank, Euro Bank, and Charterhouse Bank (CBK, 2022). Besides, the industry has also witnessed various mergers and acquisitions involving Habib Bank Kenya, Diamond Trust Bank, Giro Commercial Bank, Equatorial Commercial Bank, National Bank of Kenya, KCB Group, Kingdom Bank, Cooperative Bank, Southern Credit Banking Corporation, NIC Group and Commercial Bank of Africa among others (Central Bank of Kenya, 2020). These reasons made the study to focus on commercial banks to understand how portfolio diversifications could be sued to enhance their performance.

The external and internal aspects in the banking industry, coupled with the various regulatory and technological disruptions in the banking sector including digitization, mobile banking, fintech companies, and artificial intelligence among others, have adversely affected financial performance (Ihejirika & Aderigha, 2021). The depressed financial performance is evidenced by the increase in non-performing loans, and decline of financial performance of the sector in 2020 at an ROA of 2.8% compared to an ROA of 4.1% in 2019 (Kemuma, 2021). This hence justifies the study on portfolio diversification and financial performance of the commercial banking sector in Kenya.

Bank size measured using the asset value of the bank was used as a moderating variable. This was used as a moderating variable since various studies such as Velasco (2021) and Kemuma (2021) have indicated that size of a commercial bank plays a key role in its investment decisions, corporate governance and profitability. As such, this variable was included in this study to ensure that the study examines the role played by size on regulating the relationship between portfolio diversification and financial performance.

1.3 Statement of the Problem

There have been various regulatory and technological disruptions in the banking sector including mobile banking, digitization, artificial intelligence, fintech companies, among others, which have affected performance of commercial banks differently (Ihejirika & Aderigha, 2021). Loan and asset finance, deposit services, and savings, among other banking products, had traditionally accounted for a large portion of the banking sector's operations. Due to the technological disruptions, the profitability of the banking sector has been adversely affected with increased non-performing loans and decrease in profitability as measured using return on equity (ROE) from 24.7 percent in 2019 to 22.8% in 2020. Besides, return on assets (ROA) fell from 4.1 percent in 2019 to 2.8 percent in 2020 (Kemuma, 2021). However, in the same period, savings

deposits reduced from 17.8% to 15.7% while loan portfolio to small and medium business increased from 19.2% to 20.9% of the total loan portfolios of commercial banks. Besides, investments in government securities increased from 4.6% to 5.8% (Central Bank of Kenya, 2020). These changes may enhance balance sheet vulnerabilities, which poses a threat to financial stability of the banking sector.

The concept of portfolio diversification has taken centre stage in the field of business management as a means of managing risk, enhancing revenues, and improving organizational performance. Diversification of bank portfolios that include real estate portfolios, credit to various sectors, investments, income streams, and deposits portfolios are some of the factors that influence a bank's financial success (Kioko & Ochieng, 2020b). Despite the fact that the link between financial performance and portfolio diversity has been the topic of several studies, the researchers have had conflicting and inconclusive findings which calls for further research in the Kenyan context to understand how portfolio diversity affects profitability of banks. In Nigeria, Ihejirika and Aderigha (2021) established that investment in government securities and ordinary shares was not significantly associated with performance of commercial banks. In Ethiopia, a study by Hailu and Tassew (2018) established that diversified portfolio consisting investment in financial assets, loan portfolio, and government securities, have positive significant effect on financial performance of banks. A study by Ndungu and Muturi (2019) that income source diversification had a positive effect while the product diversification had a negative impact the financial performance the commercial banks. In the Kenyan banking sector, Ngware et al. (2019) determined that sectoral credit had a significant influence on performance of commercial banks.

Many studies have shown that portfolio diversity improves financial performance over time, while others have contradictory findings. A study in Nigeria by Omeni and

George (2021) established that investments in treasury bills, and ordinary shares do not have an effect on return on equity while foreign balances and investments in subsidiaries are positively related to return on equity. Another study by (Makokha, Namusonge, & Sakwa, 2016a) had established that portfolio diversification had a positive and statistically significant relationship with financial performance of commercial banks. Further, Kioko and Ochieng (2020) had established that investments in bonds and mutual funds had no significant relationship with return on investments, whereas equity investments and real estate investments had a positive relationship with ROE. These contradictory findings indicate that evidence regarding the influence of portfolio diversification on performance of commercial banks is not conclusive and hence more study is required.

1.4 The General Objective

The main objective of this study was to establish the moderating effect of bank size on the relationship between portfolio diversification and financial performance of commercial banks in Kenya.

1.4.1 Specific Objectives

The specific objectives were;

1. To determine the effect of sectoral credit on the financial performance of commercial banks in Kenya.
2. To assess the effect of bancassurance on the financial performance of commercial banks.
3. To establish the effect of deposits portfolio on the financial performance of commercial banks in Kenya

4. To analyse the effect of investments portfolio on the financial performance of commercial banks in Kenya.
5. To examine the effects of bank size on the financial performance of commercial banks in Kenya.
- 6.a To assess the moderating effect of bank size on the relationship between sectoral credit and financial performance of commercial banks in Kenya
- 6.b To assess the moderating effect of bank size on the relationship between bancassurance and the financial performance of commercial banks
- 6.c To assess the moderating effect of bank size on the relationship between deposits portfolio and the financial performance of commercial banks in Kenya
- 6.d To assess the moderating effect of bank size on the relationship between Investments portfolio and the financial performance of commercial banks in Kenya

1.4.2 Research Hypothesis

The study sought to test the following hypotheses.

- H₀₁:** Sectoral credit has no significant influence on the financial performance of commercial banks in Kenya.
- H₀₂:** Bancassurance have no significant influence on the financial performance of commercial banks.
- H₀₃:** Deposits portfolio has no significant influence on the financial performance of commercial banks in Kenya
- H₀₄:** Investments portfolio has no significant influence on the financial performance of commercial banks in Kenya.

H₀₅: Bank size has no significant influence on commercial bank financial performance in Kenya

H_{06a}: Bank size does not moderate the relationship between sectoral credit and financial performance of commercial banks in Kenya

H_{06b}: Bank size does not moderate the relationship between bancassurance and the financial performance of commercial banks in Kenya

H_{06c}: Bank size does not moderate the relationship between deposits portfolio and the financial performance of commercial banks in Kenya

H_{06d}: Bank size does not moderate the relationship between investments portfolio and the financial performance of commercial banks in Kenya.

1.5 Significance of the Study

These findings will be of valuable to policymakers, professionals in the banking sector, management of commercial banks, scholars and researchers. To policymakers such as CBK and ministry of finance, the findings provides evidence that can guide policy reforms or guide new policy formulation to guide portfolio diversification.

The findings could also be significant to investment, treasury and credit managers in the commercial banks as they provide evidence on how portfolio diversification influences financial performance. These findings could be useful to these top managers in devising the bank's financial goals and strategies regarding portfolio diversification in areas such as loans, investments, deposits and engaging in non-core activities like bancassurance. The findings of this research could also provide the commercial banks with reliable information that could allow them to gain and retain a sustainable competitive advantage and support the development of their market share as they focus on the beneficial portfolio diversification.

The study also provides additional empirical evidence regarding the influence of portfolio diversification on the financial performance of commercial banks which could be critical for finance scholars and academicians and banking professionals. The study adds to the body of knowledge in the field of portfolio diversification, bank size and financial performance of commercial banks which could be useful for academics, scholars and banking professionals. In addition, the study provides suggestions for further research which can be useful in providing directions to researchers who want to investigate the subject further in future.

1.6 The Scope of the Study

The purpose of this research was to ascertain the influence of portfolio diversification on financial performance of commercial banks in Kenya. Besides, the study sought to determine the moderating influence of bank size on the relationship between financial performance and portfolio diversification of commercial banks. Though there are many aspects of portfolio diversification, the study focused on sectoral credit, investments, bancassurance and deposits portfolio diversification. All licensed commercial banks in Kenya served as the unit of analysis. The study focused on the 42 commercial banks in Kenya and spanned a period of five years (2017–2021), which corresponds to a complete business cycle and thus can account for all seasonal trends. As a result of the Economic Recovery Strategies (2004), the Sacco Societies Act (2008), the Microfinance Act (2006), and Vision 2030 (2008), the period 2017–2021 was deemed appropriate for the Kenyan banking sector, which underwent substantial regulatory and institutional changes.

The quantitative secondary data was extracted from the annual financial reports of individual institutions and the Central Bank of Kenya's annual reports of supervision. As financial performance proxies are historical variables that have already occurred,

secondary data is deemed to be a more appropriate methodology in this context. The financial statements of publicly traded companies are audited and verified by qualified and seasoned auditors, who attest to the veracity and accuracy of the disclosed information.

The study used a longitudinal and explanatory research design to assess financial performance and establish causal linkages between the independent and dependent variables, respectively. The moderating effect of bank size on the relationship between each independent variable and the dependent variable will be examined through the implementation of multiple linear regression analysis. The inclusion and exclusion criteria were based on the bank's existence between 2017 and 2021. Chase Bank (K) Limited and Imperial Bank Limited were in receivership as of 2021, while Charterhouse Bank Limited was under statutory management. In the same year, CBK issued licenses to two additional banks, Dubai Islamic Bank Kenya Ltd. and Mayfair Bank Ltd. Additionally, these institutions must have maintained continuous operations for a minimum of five years. Banks that underwent receivership, statutory management, or liquidation were subject to exclusion criteria. The study was limited by the theoretical frameworks of modern portfolio theory, organizational cycle theory, and growth of the firm theory.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

The main study variables are covered in this chapter. Financial performance, bank size and portfolio diversification are the key factors covered in this chapter. The chapter further provides an overview of the theories applied in the study and how they are linked to the study objectives and hypotheses. The chapter also provides the extant empirical research on the field of portfolio diversification, bank size and financial performance and thus providing the gaps which the current study seeks to fill. Further, the chapter details the summary of gaps and the conceptual framework that shows the hypothesized relationship between the study variables.

2.2 Concept of Financial Performance

Financial performance is a measurement of a company's efficiency and efficacy in utilization of resources to attain its economic objectives (Fatihudin, Jusni, & Mochklas, 2018). It may be defined as the state of a business throughout a certain time period, and these states can be shown by the firm's liquidity, movements in share price, how the firm attains its objectives in its industry and profitability. A company's leverage, capital adequacy ratio, solvency, liquidity, and profitability are used to assess its financial performance (Kemuma, 2021). The financial performance of an organization can be assessed using its financial statements which are periodical financial records that include information on cash flows, liabilities and assets, equity, revenues, costs, and changes in capital.

Financial performance can be determined through either fundamental analysis or technical analysis. A fundamental analysis is one that is based on the financial profile, prospectus, and financial statements of the firm (Makokha, Namusonge, & Sakwa,

2016). Technical analysis highlights the fall and rise in demand or supply based on statistical data from the market that has been documented by an organization (Ngware et al., 2019). Measurement of financial performance is crucial for the accountability and effectiveness of management in any company. It is impossible to improve a process without trying to compare the output levels to a predetermined benchmark (Tabak, Fazio, & Cajueiro, 2011). A company that wants to increase its financial performance must determine the extent of resource use and the effects it has on the company before it can decide the best course of action.

Positive financial performance not only increases a commercial bank's market worth but also spurs expansion in the financial industry, which eventually produces a favourable development of the market (Ndungu & Muturi, 2019). Numerous researchers have investigated the factors that affect a firm's financial performance with varied and mixed findings and various financial performance measures. Financial performance measurements, according to Khai, Nguyet, Khoi, and Nam (2020), are an attempt to identify financial rewards in a highly sophisticated and competitive market. Financial performance often provides indicators of how well financial goals are being achieved (Peng et al., 2017). Despite the fact that several studies have been conducted, the subject of what drives financial performance remains a rich area of investigation due to the differences in firms and multiplicity of internal and external factors that can influence financial performance.

Financial performance is calculated in economics, finance, and accounting using measurements that are easily accessible in the companies' financial accounts. Evaluation of financial performance can be conducted in regard to markets, resources, assets, liabilities, liquidity and profitability. However, to enable comparability and standardisation of financial measurement, accounting measures of profitability are

usually used. These include ROE, ROA, EPS, dividend yield (DY), and ROI, among other metrics (Fatihudin et al., 2018). This study applied ROA as the measure of performance.

2.3 Concept of Portfolio Diversification

Portfolio diversification has always been advocated as a way to reduce portfolio risks and enhance returns (Ndungu & Muturi, 2019). Portfolio diversification entails engaging in numerous unrelated products, investments, and loan portfolios to manage risks and enhance returns (Huynh & Dang, 2022). The question whether commercial banks should diversify their investments, deposits, product and lending portfolios or focus primarily on a few key industries has been a key subject for regulators and scholars (Velasco, 2021). Fundamentally, according to corporate finance theory, banks should focus on a small number of investment, product and economic sectors in order to take advantage of the comparative advantage of management experience and knowledge (Chen & Chang, 2020). Additionally, it seems that no commercial bank would find portfolio diversification to be an appealing financial strategy since it may increase rivalry with other banks.

Traditional banking philosophy, in contrast, encourages the financial strategy of product, investment and loan portfolio diversification. In light of this, banks should diversify their portfolios to lessen asymmetry in information and further cut the costs associated with financial intermediation (Shim, 2019). Due to their restricted exposure to a small number of product and economic sectors, this hypothesis also contends that banks with less diversification are more susceptible to the economic slump (Ihejirika & Aderigha, 2021). Commercial banks should diversify their portfolios to prevent idiosyncratic shocks since, in reality, the recent spate of banking crises has also increased worries that bank failure is strongly correlated with concentration. According

to Kioko and Ochieng (2020), a commercial bank can hence diversify the investments they undertake, the deposits they accept from customers, the sectors they lend to and also can focus on other non-core products such as agency banking, bancassurance, import, export, and foreign exchange facilities, wealth management, investment banking and other ancillary services.

Despite being a well-established concept in the banking literature, the empirical research of the effect of loan portfolio diversification on bank profits has so far been constrained in context and breadth (Maranga et al., 2022). First, research on the cost-benefit implications of diversifying portfolios has been focused on advanced economies. More specifically, research looking at the banking industries in Japan, US, Germany and Italy have shown mixed findings regarding the influence of portfolio diversification with some linking it to higher profits and others reporting a negative relationship with financial performance (Chen & Chang, 2020). Thus, a study on how portfolio diversification affects financial performance of commercial banks in a developing country like Kenya is justified.

2.4 Concept of Bank Size

Focus on bank size as a variable that can influence performance dates back to the 1980s when it was claimed by scholars that smaller organizations are seen as being less efficient and profitable than bigger firms due to their inferiority in terms of efficiency as indicated by the relative efficiency theory (Ngware, 2021). Besides, Fama and French (2005) hypothesized that, from a firm's viewpoint, companies of smaller size suffer a greater cost of capital than larger firms, which they claimed explained a large portion of the across sections average stock returns. The size of a bank can be indicated by various factors including market capitalization, assets value, book value of assets, number of employees, number of branches, book value of equity, and profitability

among others (Njogu & Jagongo, 2021). Book value of assets was used in this study to measure bank size.

Bank size is a key factor to regulators in every country as it indicates the riskiness of the bank. By establishing a minimum capital foundation, banking sector regulators have implied they value they place on size as big firms are thought to be more stable. The understanding that larger commercial banks may develop human, material, technological and financial resources thus boosting their efficiency level is projected to result in a favourable connection. The hypothesis is that smaller banks would instil inefficiency scores that are lower than those of larger enterprises since dysfunction, agency issue, and coordination are more prevalent in bigger organizations (Kioko & Ochieng, 2020). Besides, according to the market-power theory, an institution's profitability seems to be significantly and mostly positively affected by its size (Ndungu & Muturi, 2019). However, if the firm's size increases to a certain point, it may result in the separation of ownership and control, thereby making the relationship between size of an organization and profitability to be negative. In this research, the size of the bank was used as a moderating variable to determine whether it moderates the relationship between financial performance of commercial banks and portfolio diversification.

2.5 Theoretical Review

The section provides an overview of the theories applied in the study and how they are linked to the study objectives and hypotheses. The theories considered in this section are modern portfolio theory organizational life cycle theory and growth of the firm theory.

2.5.1 Modern Portfolio Theory

This study was based on the modern portfolio theory (MPT) by Markowitz (1952). This theory focusses on how to optimize anticipated returns and reduce risks by creating portfolios that are weighted according to various risk levels. The theory hypothesizes that a firm or an individual investor can put together a variety of portfolios at acceptable risk levels that will provide the greatest predicted returns (Rossi, Schwaiger, & Winkler, 2019). This approach attempts to decrease risk in any given level of projected returns by carefully choosing various mixes of assets, or alternatively, to maximize earnings in a given portfolio risk.

This theory relates the variable of portfolio diversification as a form of managing the risk in an investment portfolio to enhance financial performance. Besides, the theory indicates that as the bank grows in size, its risk increases and hence its assets should be invested in diversified portfolios to management the risk for maximum returns. The MPT further posits that by carefully mixing various asset classes in a portfolio, the organization can optimize returns and risks at the same time. This is hence better than focussing only on a single asset portfolio (Shim, 2019). By advocating for the allocation of resources across various investments, products or loan portfolios that have minimum risks and anticipated returns, commercial banks can enhance their financial performance (Acharya, Hasan, & Saunders, 2021). Modern portfolio theory could hence explain how commercial banks can justify diversified investment decisions in terms of enhancing expected returns and minimizing expected risks (Maranga et al., 2022).

This theory was applied in this study to support the hypothesis that by allocating resources through several investment portfolios, the notion of portfolio diversification in the banking sector aids in defining optimum investment preferences and thus

enhancing financial performance of commercial banks. The theory thus supports the hypothesis that diversification in sectoral credit, deposits, investments and engaging in non-core activities such as bancassurance can enhance financial performance of commercial banks.

2.5.2 Organizational Life Cycle Theory

The organizational life cycle theory by Katz and Kahn (1978) asserts that there are successive phases of growth over a predetermined length of time and that organizations "mature" in their organizational structures as they adjust to meet their expanding external and internal needs. The firm in each stage of its growth is determined by previous and present resources and conditions. Thus, a firm can only develop to the next level of maturity only when it recognizes and resolves the shortcomings of the existing structure and when it uses the conditions in the environment to its advantage (Beverland & Lockshin, 2011). This theory indicates that a firm moves through five stages starting with the entrepreneurial stage, cooperation stage, control stage, innovation or decentralization where maturity happens. The speed with which organizations move through these stages dependent on various factors including its governance, structure, resources and efficiency.

This theory was applied in this study to explain the moderating role of bank size on the relationship between portfolio diversification and financial performance. As firms develop through the different stages, they grow in size and this determines its activities, centralization or decentralization and its need for portfolio diversification (Katz & Kahn, 1978). It is hence expected that as firms grow in size as they develop through the various phases, they may be engaged in more portfolio diversification than smaller firms (Beverland & Lockshin, 2011). Depending on how they manage their portfolios, they may experience different returns than those experienced by smaller firms.

2.5.3 Growth of the Firm Theory

This theory was developed by Penrose (1959), who provided the principles that guided firm performance and expansion of businesses, and the pace at which they may expand effectively and profitably. This theory posits that a firm performs sustainably through efficient management of its profitable possibilities, firm's resources, and diversification strategy. In particular, Penrose (1959) offers an explanatory logic to clarify causal relationships between firm performance, capacities and resources, which adds to a theory of performance based on resources. This theory is supported by Nestor, Okoye, Nweze, and Leonard (2018) who posited that a relationship between a company's assets, management and business possibilities influences its performance.

This theory was applied in this study to explain how internal factors and management in a firm which entails portfolio diversification can influence firm performance. The path towards a company's performance is determined by its present knowledge bases, unused resources and how the financial, human and material resources are combined. The relationship between resource-based relatedness and company level performance is well explained by Penrose (1959) as they indicate that economic rents are directly impacted by the decisions that result in the best resource configuration and management or risks that an organization face.

2.6 Review of Empirical Literature

This section provides the extant empirical research on the field of portfolio diversification, bank size and financial performance and thus providing the gaps which the current study seeks to fill. The reviewed of empirical literature in this section is in sections according to the study objectives.

2.6.1 Sectoral Credit Diversification and Financial Performance

Huynh and Dang (2022) explored the impact of loan portfolio diversification on bank profitability amongst Vietnamese commercial banks. The dynamic panel model was applied on secondary longitudinal data on Vietnamese banks from 2008 to 2019. The study findings depicted that there was sectoral loan portfolio diversification had a negative effect on bank profitability. Further findings showed that bigger banks are better able to minimize the disadvantage of loan portfolio diversity than their smaller counterparts. Additionally, the results determined there is a nonlinear inverted U-shaped link between loan portfolio diversification and bank returns.

A study in Ethiopia by Hailu and Tassew (2018) had the purpose of determining how sectoral credit diversification affected the financial performance of 17 commercial banks from 2013 to 2017. A quantitative research strategy was applied, and a panel random effect regression model was used to analyse the data. The study's findings demonstrated a significant positive effect diversification in loan portfolios on the financial performance of Ethiopian banks. According to the study's findings, loan portfolio diversification enhances the financial performance of Ethiopia's commercial banks. Therefore, banks should concentrate their efforts on encouraging portfolio diversity, creating marketing strategies that encourage its usage, and determining the optimum sectoral credit combination that may result in an effective loan portfolio.

2.6.2 Bancassurance and Financial Performance

A study in US by Gandhi, Kiefer, and Plazzi (2017) determined that banks in the country are gradually diversifying into industries that were previously seen to be non-core to the banking industry. The study, thus, examined the relationship between bank profitability and investment (credit) policy diversity. The findings established that diversified banks tended to gain from bancassurance, provide more credit, and be more

successful regarding financial performance. The study also determined that diversification into bancassurance, however, only has good periods as its advantages since it does not really reduce risk. The study also noted that banks with greater levels of diversification into bancassurance are more susceptible to systemic risk, and the availability of credit is more vulnerable to changes in the macroeconomy and monetary policy.

Kemuma (2021) investigated the impact of insurance investments on the financial performance of commercial banks in Kenya. The study population was the 43 commercial banks operational in the country while secondary information gleaned from the listed banks' audited and released financial reports for the years 2013 to 2018 was used. Multiple regression was applied to assess the influence investments in bancassurance on financial performance. The study findings determined that investments in bancassurance and bonds had a slightly positive but insignificant influence on financial performance which was measured through ROE.

2.6.3 Deposits Portfolio Diversification and Financial Performance

A study by Ngware (2021) investigated the influence of bank portfolio diversification on the financial performance in the banking sector in Kenya. Among the various portfolio diversification aspects considered was deposits portfolio diversification. Correlational and descriptive research designs were used in the study. The population addressed by this research consisted of the 43 commercial banking institutions that the CBK had officially licensed as of December 2018. Secondary unbalanced panel data with cross-sectional and time series attributes were used for the analysis. The data were gathered from published accounts on the websites of individual banks, the World Bank website, statistical reports by the Kenya National Bureau of Statistics, the Banking survey publications and the CBK supervision reports for the period from 2003

to 2018. Using panel data approaches with random effect and fixed effect models, findings indicated that financial performance was significantly improved by deposit diversification.

2.6.4 Investments Portfolio Diversification and Financial Performance

A study involving banks in US and Europe by Velasco (2021) explored the connections between investment portfolio diversity, performance and regulatory capital for banks. The study was based on the hypothesis that performance and regulatory capital might function as a replacement for investment diversification to lessen a bank's default risk. Consequently, performance and regulatory capital was seen to be likely to deter businesses from over-diversifying, which might inadvertently increase bank value. The study used secondary data and analysis was through pooled ordinary least squares regression. The findings showed that performance and total regulatory capital is negatively related to bank investment diversity using a sample of listed banks in developed nations from 2011 to 2017. Besides, findings showed that only income-based diversity and not asset-based diversification showed a strong correlation with narrower regulatory capital ratios and financial performance. The findings further pointed to a secondary impact of regulatory capital, mediated by bank diversification, on financial performance of the bank and bank value.

In Nigeria, Ihejirika and Aderigha (2021) conducted an analysis of the Nigerian banking sector from 1990 to 2019 with a focus on financial performance portfolio diversification. Investments in common stocks, treasury bills, and investments in subsidiaries were assessed in the research as proxies for portfolio diversification, and return on equity was used as a proxy for measuring financial performance. The study used secondary data derived from the Nigerian Deposit Insurance Corporation's (NDIC) annual report and the Central Bank Statistical Bulletin. The study established

that investments in ordinary shares and treasury bills is adversely and not substantially connected to return on equity over the short term. However, investments in common shares and treasury bills and the performance of commercial banks had a long-term relationship.

2.7 The Moderating Role of Bank Size

Huynh and Dang (2022) established that amongst Vietnamese banks, bank size had a significant moderating effect on the association between loan portfolio diversification and bank profitability. The findings using data for the years 2008 to 2019 indicated that bigger banks are better able to minimize the disadvantage of loan portfolio diversity than their smaller counterparts. Besides, the negative effects of sectoral loan diversification on financial performance of commercial were lower in bigger banks than in smaller banks. The study by Ngware (2021) supported these findings and indicated that bank size had a positive moderating influence on the relationship between portfolio diversification and financial performance of commercial banks.

2.8 Review of Control Variables

The control variables in this study are capital adequacy, asset quality and liquidity. There are various studies that have linked these variables to financial performance. A study by Nestor, Okoye, Nweze, and Leonard (2018) examined the influence of capital adequacy on financial performance with a particular emphasis on a few listed Deposit Money Banks in Nigeria between 2010 and 2015. The study gathered secondary data from yearly reports, fact books, and the accounts of the Deposit Money Banks under examination. The study used fixed effects panel data model to analyse the data. Findings indicated that capital adequacy and financial performance are positively and significantly correlated. Additionally, the empirical evidence showed that capital adequacy has a statistically significant impact on the financial performance of deposit

money banks.

A study by Kadioglu, Telceken, and Ocal (2017) was undertaken with the purpose of determining whether non-performing loans have an impact on Turkish banks' profitability. The research used a panel regression approach to analyse quarterly data set that included 1809 observations from 55 Turkish banks during the first quarter of 2005 and the third quarter of 2016. The association between non-performing loans and bank profitability, as determined by return on assets and return on equity and, is shown to be negatively skewed and strong. Greater non-performing loans and lower asset quality result in higher return on equity and return on assets, whereas better asset quality and lower non-performing loans result in lower return on equity and return on assets.

In Ghana, a study by Charmler, Musah, Akomeah, and Gakpetor (2018) examined the trend in bank liquidity, the amount of bank liquidity, and how bank liquidity affected Ghanaian commercial banks' capacity to make a profit. The research's sample of 21 banks was examined from 2007 to 2016 during a ten-year period, and the data were set up as a panel for the study. According to the findings, commercial banks' average liquid asset to total asset ratio is 20%, and their average liquid asset to total interest-bearing liability ratio is 1.19. Using both metrics of bank liquidity, the findings indicate that liquidity is positively correlated with return on assets. The ratios of liquid assets to total assets have a small positive association with return on equity. Return on equity (ROE) and the ratio of total interest-bearing obligations to liquid assets were shown to have a negligible negative connection.

2.9 Research Gap

The reviewed studies in this section have various methodological, conceptual and contextual gaps which the current study seeks to fill. For instance, the study by Huynh and Dang (2022) explored the impact of loan portfolio diversification on bank profitability amongst Vietnamese commercial banks. This study focussed on a banking sector in a country that is different from the Kenyan context and hence the findings may not be generalizable to the Kenyan commercial banks. Besides, the study by Hailu and Tassew (2018) had the purpose of determining how sectoral credit diversification affected the financial performance of 17 commercial banks from 2013 to 2017. This study did not consider deposit portfolio, investments portfolio and bancassurance which were included in the current study. Moreover, studies like Gandhi, Kiefer, and Plazzi (2017) was conducted in developed markets which are different from the developing market of Kenya. The current study is hence justified to determine the influence of portfolio diversification on financial performance of commercial banks in Kenya.

2.10 Conceptual Framework

A conceptual framework is a graphical representation of the association between the study variables. The study's independent variable is portfolio diversification whereas the dependent variable is financial performance. Bank size acts as the moderating variable while the control variables are asset quality, capital adequacy and liquidity. In the research, portfolio diversification is measured using sectoral credit diversification, bancassurance, deposits portfolio diversification, and investments portfolio diversifications. Figure 2.1 provides the study's conceptual framework.

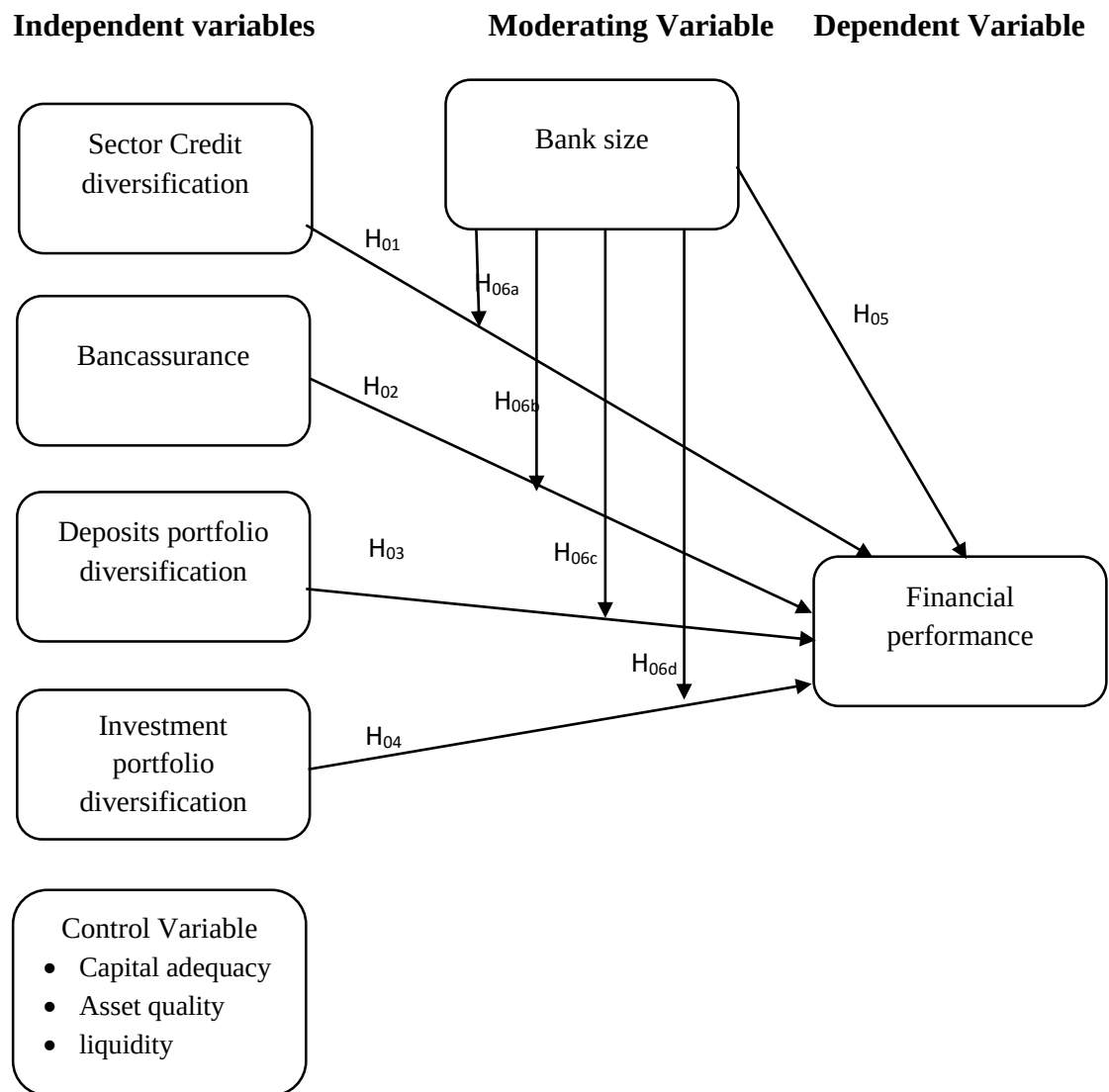


Figure 2.1: Conceptual Framework Diagram

Source: Author, (2023)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

Research design refers to the comprehensive methodology used to do research, which involves developing a well-structured and rational plan to investigate a particular research issue by collecting, interpreting, analysing, and discussing the findings of the study. This study was conducted using an explanatory design. An explanatory design provides the cause-and-effect relationship between variables and that is why it was selected for the study. The explanatory design was employed using a longitudinal approach because the data gathered for the study was both cross sectional and across time and sought to determine how portfolio diversification influences performance of commercial banks.

The chosen study design was deemed appropriate due to its incorporation of the collection of quantitative data pertaining to a single variable over an extended duration. Hence, the design was well-suited for this research since it encompasses a panel data set spanning a duration of five years. The utilization of an explanatory research strategy is frequently employed in order to infer the causal relationship between variables (Walliman, 2021). The number of commercial banks in Kenya, licensed under the Banking Act served as the unit of analysis in the study.

3.2 Target Population of the Study

A target population is the audience, units, objects or study participants that are of interest to the researcher (Chandra & Sharma, 2019). The population targeted in this study consist of all the 42 commercial banks that are registered with the Central Bank of Kenya under the Banking Act, Chapter 488 of the Kenyan laws. This provided 210

observations (42*5). Five years were selected as the study period because it covers a complete business cycle (Rossi, Schwaiger, & Winkler, 2009).

The target population of 42 registered commercial banks in Kenya is justified based on the need for a comprehensive understanding of portfolio diversification and performance within the banking sector. Including all registered commercial banks allows for a more thorough analysis, providing a holistic view of the industry and enabling comparisons between different banks

3.3 Sampling Procedure and Sample Size

The sampling strategy outlines the specific details of the study's sample, including the sample unit, sample frame, sample method, and sample size. The sample frame includes all population units from which the sample is derived. The study encompassed all 42 commercial banks in Kenya, as the population size was modest and easily controllable. Hence, data for this study was gathered from the 42 commercial banks in Kenya.

The study used purposive sampling technique to include only commercial banks that had complete data for the five years under study. Purposive sampling is a non-probability sampling method that involves the researcher selecting specific individuals or cases based on a predetermined set of criteria. It is often used in qualitative research to target specific groups or individuals who possess the information needed to address the research objectives. Purposive sampling allows for the selection of diverse participants who can provide different perspectives and insights related to diversified portfolios and bank performance.

3.4 Inclusion and Exclusion Criteria

The inclusion criteria were commercial banks with complete data for the five years for all the study variables to ensure data reliability and regulatory compliance. Besides,

banks for which complete financial data is available for the period between 2017 and 2021 will be included to facilitate accurate analysis. Only active banks that have been operational during the specified period were included to reflect current market dynamics. Exclusion criteria comprised of banks with incomplete financial data within the specified period were to be excluded from the study to maintain data integrity. This excluded banks that were engaged in mergers during the study period. Banks that collapsed and those under statutory management or facing regulatory issues during the study period will be excluded due to their abnormal operating conditions.

3.5 Data Types and Sources

The research utilized secondary data sourced from annual reports and financial statements of banks. The utilization of secondary data involved sourcing information from the annual reports and audited financial statements of the registered banks. In this particular scenario, the utilization of secondary data was deemed to be a more appropriate methodology. This is due to the fact that financial performance proxies are retrospective factors that have already transpired. Commercial banks have their financial statements audited and verified by competent and seasoned Auditors. These Auditors provide assurance regarding the dependability and precision of the disclosed information. Furthermore, the process of collecting data was conducted in accordance with a predetermined data collection sheet. The utilization of secondary data is advantageous in improving understanding and explaining the research's issue, while also providing additional information to aid in problem-solving (Ghauri, Grønhaug, & Strange, 2020). According to Sekaran and Bougie (2019), secondary data is generally considered to be more credible and objective in comparison to primary data.

3.6 Data Collection Instruments

The study gathered secondary data since data for the variables is readily available from reliable and valid sources (audited financial statements of the commercial banks and from CBK). Secondary data is any information or material that is existing at the time of the study and it was gathered for another purpose. The advantage for this type of data is that it is already available, and can be authenticated and its quality already assured (Easterby-Smith, Thorpe, Jackson, & Lowe, 2019). Besides, the researcher can collect the data which suits their study purpose (Collis & Hussey, 2018). The study utilized secondary data which was gathered using a secondary data collection template. This was a template that gathered data from all the 42 commercial banks and also gathered for a period of 5 years (2017 – 2021).

3.7 Data Collection Procedures

The process of data collection started after approval of the proposal by the school. The school then issued a letter of authorization which was used to apply for a permit from the national council for science, technology, and innovation (NACOSTI). After issuance of the permit the researcher then started the process of data collection where audited financial reports of the commercial banks, bank supervision reports of CBK and NSE annual filings were applied. In order to produce a panel dataset for the 42 commercial banks, the data was collected for a five-year period from 2018 – 2021. After gathering the required data, it was then cleaned, edited, and entered into Stata statistical software ready for analysis.

3.8 Inclusion and Exclusion Criteria

The study inclusion criteria were the commercial banks licensed and operating in Kenya within the study period and that which had all the requisite data for all the study years.

The study excluded any commercial bank that had missing data for any of the years of the study and those which may have been not in existence for the entire study period.

3.9 Measurement of Study Variables

This section provides all the study variables and how they were operationalized and measured.

Table 3.1: Operationalization of Variables

Variable Type	Variable	Measurement	Formula	Authors
Independent Variable	Sectoral credit diversification	Ratio of Household sector loans to total loans	Value in KES of loans to household sector/ Values of total loans to all economic sectors	Ngware et al. (2019)
Independent Variable	Bancassurance	Ratio of bancassurance revenues to total revenue	Bancassurance revenue / Total gross revenue	Peng et al. (2017)
Independent Variable	Deposits Portfolio Diversification	Ratio of savings deposits to total deposits	Savings deposits / Total deposits	Ngware (2021)
Independent Variable	Investments Portfolio diversification	Ratio of value of investments in government and other short-term securities to total value of all investments	Value of investments in government and other short-term securities / Value of total investments	(Hailu & Tassew, 2018)
Moderating variable	Bank Size	Natural log of total assets	Natural Log (Gross assets – Depreciation)	(Ngware et al., 2019)
Dependent variable	Financial Performance (ROA)	Net income to total assets	$ROA = (\text{Net profit} / \text{Total assets}) * 100$	(Ihejirika & Aderigha, 2021)
Control	Liquidity	High-quality liquid assets relative to total net cash flows	Liquid assets/ Net cash flows	(Charmler et al., 2018)
Control	Asset quality	Non-performing loans relative to total loan book	NPL/Total loans	(Kadioglu et al., 2017)
Control	Capital adequacy	Capital relative to risk weighted assets	$(\text{Tier 1 Capital} + \text{Tier 2 Capital}) / \text{Risk-Weighted Assets}$	(Nestor et al., 2018)

Source: Researcher's own conceptualization, 2023

3.10 Data Analysis

The study utilized panel data analysis approaches due to the presence of both time series and cross-sectional dimensions in the obtained data. In addition, panel data analysis techniques use both the temporal and cross-sectional characteristics of the data, resulting in a more dependable model (Linton, 2019). We employed panel data regression to increase the amount of data observations, rendering it highly valuable for analysing temporal and cross-sectional variations. Two models can be employed for the analysis of panel data: a pooled ordinary least squares (OLS) regression model and a panel data regression model. According to Wooldridge (2015), the pooled OLS model is recommended when there are no major variations between the years for the different organizations. Data collected for this study was analysed with the help of STATA software version 13.

Panel data regression can utilize either fixed effects or random effects models. These are utilized to address the potential impact on each individual business or group of companies across different sections. The fixed effect model is an analytical method that addresses entity heterogeneity by allowing each entity to have its own intercept value. It assumes that the coefficients of the slope remain constant across all entities (Linton, 2017). While the intercepts for different entities may differ, each intercept remains relatively stable over time, suggesting that it is time-invariant. The random effects model, in contrast, separates out changes among components (panels), and individual differences are stochastic and independent of the independent variables (Gujarati, 2011). The error term in this case accounts for both the random effects of the panels and the random instabilities (Angrist & Pischke, 2014). Each panel is treated separately, with random effects being treated as individual errors. However, it is necessary to identify specific factors that could potentially affect the independent variables when

employing the random effects technique. The study may lack access to some elements, which could introduce bias into the model due to the absence of these variables.

3.11 Conditions for Moderation

The moderation analysis technique can be used to investigate the influence of a third variable, known as the moderating variable, on the connection between the predictor and dependent variables. Moderation involves analysing the conditions or situations in which an effect occurs, rather than trying to establish a direct cause-and-effect relationship between these other variables (Chandra & Sharma, 2019). The moderating variable has the ability to enhance, diminish, or alter the characteristics of a connection. The study employed the moderation testing procedures outlined by Baron and Kenny (1986). The initial phase involved determining the impact of independent variables on the dependent variable. Subsequently, the impact of the moderating variable on the dependent variable was determined. Subsequently, the interaction terms were calculated by combining the independent variables with the moderating variable. Next, a multiple regression model was constructed using independent factors, a moderating variable, and the interaction term as predictors. The regression coefficient for the interaction terms demonstrated moderation. A substantial moderating impact is demonstrated by a significant coefficient.

3.12 Model Specification

The study employed longitudinal data, encompassing the timeframe from 2013 to 2022. This study will employ a hierarchical multiple regression model, as suggested by Baron and Kenny (1986), to examine the direct and moderating effects. We will evaluate the hypotheses by conducting a sequence of hierarchical linear regression analyses. The subsequent model parameters and regression equations will be employed:

Model 1. Testing the effect of control variables on the financial performance.

$$FP = \beta_0 + \beta_1 CA_{it} + \beta_2 AQ_{it} + \beta_3 L_{it} + \varepsilon_{it}$$

Model 2. Testing the effect of independent variables on financial performance.

$$FP = \beta_0 + \beta_1 C_{it} + \beta_2 SCD_{it} + \beta_3 BD_{it} + \beta_4 DPD_{it} + \beta_5 IPD_{it} + \varepsilon_{it}$$

Model 3. Testing the moderating effect of bank size on financial performance.

$$FP = \beta_0 + \beta_1 C_{it} + \beta_2 SCD_{it} + \beta_3 BD_{it} + \beta_4 DPD_{it} + \beta_5 IPD_{it} + \beta_6 BS_{it} + \varepsilon_{it}$$

Model 4. Introducing the first interaction term between sectorial credit diversification and bank size.

$$FP = \beta_0 + \beta_1 C_{it} + \beta_2 SCD_{it} + \beta_3 BD_{it} + \beta_4 DPD_{it} + \beta_5 IPD_{it} + \beta_6 BS_{it} + \beta_7 SCD_{it} \\ * BS + \varepsilon_{it}$$

Model 5. Introducing the second interaction term between bancassurance diversification and bank size

$$FP = \beta_0 + \beta_1 C_{it} + \beta_2 SCD_{it} + \beta_3 BD_{it} + \beta_4 DPD_{it} + \beta_5 IPD_{it} + \beta_6 BS_{it} + \beta_7 SCD_{it} \\ * BS + \beta_8 BD_{it} * BS + \varepsilon_{it}$$

Model 6. Introducing the third interaction term between deposits portfolio diversification and bank size.

$$FP = \beta_0 + \beta_1 C_{it} + \beta_2 SCD_{it} + \beta_3 BD_{it} + \beta_4 DPD_{it} + \beta_5 IPD_{it} + \beta_6 BS_{it} + \beta_7 SCD_{it} \\ * BS + \beta_8 BD_{it} * BS + \beta_9 DPD_{it} * BS + \varepsilon_{it}$$

Model 7. Introducing the fourth interaction term between investments portfolio diversification and bank size.

$$FP = \beta_0 + \beta_1 C_{it} + \beta_2 SCD_{it} + \beta_3 BD_{it} + \beta_4 DPD_{it} + \beta_5 IPD_{it} + \beta_6 BS_{it} + \beta_7 SCD_{it} \\ * BS + \beta_8 BD_{it} * BS + \beta_9 DPD_{it} * BS + \beta_5 IPD_{it} * BS + \varepsilon_{it}$$

Where;

FP	=	Financial Performance
C	=	Control Variable (Capital Adequacy, Asset Quality, Liquidity)
SCD	=	Sectorial Credit Diversification
BD	=	Bancassurance Diversification
DPD	=	Deposits Portfolio Diversification
IPD	=	Investments Portfolio Diversification
BS	=	Bank Size (Moderator)
$\beta_1 \dots \beta_9$	=	Coefficients of the equations
t	=	Time
i	=	Firm
ε	=	error term

3.13 Diagnostic Tests

The study performed pre- and post-test diagnostics to verify the model's strong suitability and its effectiveness and dependability. This encompasses several statistical tests such as the linearity test, normality test, multicollinearity test, heteroscedasticity test, unit root test, stationarity test, and serial correlation test.

3.13.1 Normality tests

Linear regression analysis is based on the underlying assumption that the errors in the regression model adhere to a normal distribution. Ensuring this assumption is crucial for the effectiveness of the t-tests to be meaningful (Linton, 2017). In this study, we employed the Jacque Bera test (Wooldridge, 2015) to conduct the experiment. Upon completing the regression model, the study produced and stored the residuals of the regression. The normality of these residuals was subsequently assessed using a significance level of 5%. The null hypothesis in this test posits that the regression errors follow a normal distribution.

3.13.2 Linearity Test

A linearity test evaluates the presence of a linear relationship between the predictor and response variables (Hilmer & Hilmer, 2013). The linearity assumption is crucial for linear models since attempting to fit nonlinear data into linear models would yield misleading results that have limited value in hypothesis testing. The study employed the ANOVA test to evaluate the presence of linearity, with the null hypothesis being that linearity exists. Linearity test is used to test whether all linear regression models between a dependent variable and an independent variable are related to a straight line to the right or bottom right. If the linear sig value is <0.05 , a linear relationship is found.

3.13.3 Multicollinearity Test

The purpose of this test was to detect the presence of multicollinearity, which, if left unaddressed, can cause the parameter estimator to become unstable, making it challenging to evaluate and comprehend the estimated parameters (Gujarati, 2011). The Stata program was utilized to assess multicollinearity in the model by calculating the Variance Inflation Factor (VIF). Multicollinearity occurs when the Variance Inflation Factor (VIF) exceeds 10, but is not present when the VIF is below 10.

3.13.4 Heteroscedasticity Test

After fitting the model, a test of heteroscedasticity was undertaken on the errors of the regression model. Heteroscedasticity is a phenomenon where the variability of the errors in a regression model is not the same across different predicted values, leading to an uneven distribution of the errors. Heteroscedasticity has an impact on the precision and effectiveness of the standard errors, which can result in the lack of reliability of hypothesis tests and confidence intervals (Angrist & Pischke, 2014). The study utilized the Wald's test, which assumes homoscedasticity when the p-value exceeds 0.05.

3.13.5 Unit root test / Stationarity Tests

In order to determine whether a time series variable is nonstationary and contains a unit root, the unit root test is utilized. The null hypothesis proposes that the series exhibits a unit root, while the alternative hypothesis implies that the series is stationary and devoid of a unit root. When assessing the null hypothesis, the Augmented Dickey-Fuller (ADF) test was applied. When the p-value is smaller than the alpha level that was selected, it is appropriate to reject the null hypothesis. The statistical software Stata was employed to conduct this study, and the Augmented Dickey-Fuller (ADF) test was utilized with a 5% significance threshold. The alternative hypothesis contends that the data are stationary, while the null hypothesis proposes that the data have a unit root.

3.13.6 Serial Autocorrelation

For optimal outcomes, it is crucial that a model does not display any form of serial correlation or autocorrelation. The Wooldridge approach was used to assess the mentioned assumptions in panel data. Serial correlation is observed when the p value is less than 0.05, and it is not observed otherwise. Autocorrelation has a tendency to amplify the variability of the coefficient estimates. Furthermore, it has a detrimental

effect on the standard errors. When autocorrelation is detected, we utilize a fixed effects regression model with autoregressive disturbances.

3.14 Hausman Test

Osborne and Waters (2019) suggest that researchers frequently employ the Hausman specification test as a means of determining whether to choose for random effects or fixed effects models. Previous research included several regression methodologies, including both fixed and random effects models. The decision regarding the utilization of fixed-effect or random-effect regression models is contingent upon the outcomes of the Hausman test. Fixed-effect regression enables the researcher to account for unobservable individual characteristics that remain constant over time and may be associated with the observed independent variables. The fixed-effect model postulates that time-invariant traits are idiosyncratic to each individual and therefore not correlated with the characteristics of other individuals. According to Osborne and Waters (2019), the random effect model suggests that the variability observed among entities is stochastic in nature and lacks any correlation with the independent variables. The Hausman test encompasses two hypotheses: the null hypothesis, which asserts that the random-effects model is the preferred model, and the alternative hypothesis, which supports the fixed-effects model. If the p-value is less than 0.05, the null hypothesis is rejected, indicating that the fixed-effect model should be employed. Conversely, if the p-value is greater than or equal to 0.05, the random-effect model should be utilized.

3.15 Ethical Considerations

Depending on the secondary data's nature, ethical issues surrounding the use of data often centre on possible harm to specific data subjects (Collis and Hussey, 2018). Three ethical issues appertaining to secondary data include the consent for future use of the data, the source of the data and the accuracy of the data. Regarding consent, there is

implied consent for any information that is published on publicly accessible platforms such as the internet. The source of the data is vital to ensure that the data is reliable and credible. This study relied on published financial reports from the commercial banks, thus consent is not required and the source is well-determined. Besides, the accuracy of the data was implied since the financial reports were audited. Other ethical issues that were taken into account for this study encompassed access to data, the sufficiency and relevance of the secondary data, and appropriate dissemination of findings. Prior to commencing data collection, the necessary authorization to gather data was sought from Moi University. Additionally, a research permit was secured from the National Commission for Science, Technology, and Innovation (NACOSTI).

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

This chapter includes the study's findings and a discussion of the findings, as well as the methods utilized for data analysis. In the process of analysing the data that was acquired, descriptive statistics, diagnostic tests and model fitting are all processes that were applied. The data analysis process used in this chapter follows the methodology that was recommended in chapter three, the study's objectives and the study's hypotheses. The study also undertook diagnostic tests which were necessary to determine which model was fit for the study. After the tests, the chapter provides the fixed effects panel data regression model that was fitted.

4.2 Descriptive Statistics

This section presents the descriptive statistics of the collected data. Over a span of five years, data was gathered for a total of 38 commercial banks, covering the period from 2017 to 2021. The data pertaining to four institutions, namely Chase Bank (K) Ltd., Imperial Bank Ltd., and Charterhouse Bank Ltd., was not accessible due to their receivership or liquidation status. Additionally, it is worth noting that DIB Bank Kenya Ltd. did not have any notable observations throughout the entire duration of the five-year period. Table 4.1 provides descriptive statistics for the research variables, encompassing measures such as the mean, standard deviation, lowest values, and maximum values. The data presented in Table 4.1 reveals that the average value for sectoral credit diversification was 0.181, with a standard deviation of 0.136 across all observations. Furthermore, the mean value was 0.147 when considering variation across different banks, and 0.152 when examining variation within different years. The results of this study suggest that, on average, the proportion of loans allocated to the

household sector by banks accounted for 18.1% of the overall loan portfolio within the banking industry. The results pertaining to bancassurance reveal that the average value was 0.043, accompanied by a comprehensive standard deviation of 0.092. Furthermore, there was a standard deviation of 0.102 observed among the various banks, while within the years, the standard deviation was 0.097. This finding suggests that the money generated from bancassurance accounted for 4.3% of the total revenue generated by the banking sector. The results of the study indicate that the average value for deposit portfolio diversification was 0.762, with a standard deviation of 0.552 across all observations. Additionally, the mean diversification value was 0.492 when comparing different banks, and 0.573 when considering the diversification during a five-year period. The results of this study suggest that, on average, the percentage of savings deposits in relation to total deposits within the banking industry was 76.2%.

Additionally, the results pertaining to the diversification of investment portfolios indicate that the average value was 0.151, with a standard deviation of 0.118 across all entities. Specifically, the mean was 0.132 among the commercial banks, while among the commercial banks, the mean was 0.144. The results of this study suggest that within the banking industry, the percentage of investments allocated to government and other short-term securities relative to the overall value of assets was 15.1%. Based on the findings presented in Table 4.1, the mean logarithm of prohibited assets was determined to be 11.16, with a standard deviation of 10.17 across all observations. Moreover, the standard deviation was found to be 10.34 among the various banks, while within each individual bank, the standard deviation was calculated to be 11.11. Furthermore, the data pertaining to the financial performance, as assessed by the Return on Assets (ROA) metric, reveals that the mean value was 3.872%, accompanied by a total standard

deviation of 3.738%. This standard deviation can be further broken down into 2.788% amongst the different banks and 2.522% within the five-year time period.

The results presented in Table 4.1 also included a summary of the control factors. In relation to liquidity, the results reveal that the average value was 0.211, accompanied by a standard deviation of 0.108 in the whole sample. Furthermore, the interbank variation yielded a standard deviation of 0.106, while the cross-bank variation resulted in a standard deviation of 0.119. The aforementioned statistics suggest that, during the course of the previous five years, the banking industry maintained an average ratio of 21.1% between liquid assets and net cash flows. Moreover, the results pertaining to asset quality reveal that the average value was 0.124, with a standard deviation of 0.091 across the entire sample. Furthermore, the standard deviation was 0.082 when considering variations between different banks, and 0.066 when examining changes during the specified study period. The aforementioned statistics suggest that the mean proportion of nonperforming loans within the banking industry amounted to 12.4% of the overall loan portfolio. Furthermore, the average value of capital adequacy was found to be 18.48%, with a standard deviation of 8.912 when considering the entire dataset. When examining the individual banks, the standard deviation was 8.711, but within the five-year research period, it was 2.721. The results of this study suggest that the banking sector's capital adequacy exceeded the legally required level of 12%.

The findings summarized in Table 4.1 also provided a summary of the control variables. Regarding liquidity, the findings indicate that the mean was 0.211 with a standard deviation of 0.108 overall, 0.106 between the banks and 0.119 between the banks. These findings imply that on average the proportion of liquid assets to net cash flows in the banking sector for the five years was 21.1%. Besides, findings on asset quality indicate that the mean was 0.124 and the standard deviation was 0.091 overall, 0.082 between

the banks and 0.066 within the study period. These findings indicate that the average nonperforming loans in the banking sector was 12.4% of the total loan book. Additionally, the mean of capital adequacy was 18.48% and the standard deviation was 8.912 overall, 8.711 between the banks and 2.721 within the five-year study period. These findings indicate that the capital adequacy of the banking sector was well above the statutory minimum of 12%.

Table 4.1: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max	Obs.
Sectoral credit diversification	0.181	0.136	0.031	0.321	190
Bancassurance	0.043	0.092	0	0.082	190
Deposits Portfolio Diversification	0.762	0.552	0.501	0.912	190
Investments Portfolio diversification	0.151	0.118	0.062	0.217	190
Bank Size	11.16	10.17	10.36	12.05	190
Financial Performance (ROA)	3.872	3.738	-12.31	12.08	190
Liquidity	0.211	0.108	0.144	0.391	190
Asset quality	0.124	0.091	0.093	0.187	190
Capital adequacy	18.48	8.912	11.761	39.15	190

Source: Field Data, 2023

4.3 Diagnostic Tests

The objective of this study was to examine the effect of portfolio diversification on the financial performance of commercial banks in Kenya using regression analysis. Prior to performing a linear regression analysis and making assumptions about linearity, diagnostic procedures were undertaken to ascertain the suitability of the data for fitting a linear regression model. The tests conducted encompassed assessments for linearity,

multicollinearity, stationarity, normality of residuals, serial correlation, and heteroscedasticity. The outcomes of these tests are shown in this section.

4.3.1 Multicollinearity Test

The research findings shown in Table 4.2 indicate that all of the independent and moderating variables exhibited Variance Inflation Factors (VIFs) below 2. The mean value of the Variance Inflation Factor (VIF) was calculated to be 1.328. Among the independent variables, sectoral credit diversification exhibited the greatest VIF of 1.542, while bank size had the lowest VIF of 1.024. According to Hansen (2022), if all the Variance Inflation Factors (VIFs) in a regression model are below 5, it can be inferred that the independent variables in the model do not exhibit a statistically significant linear relationship. Consequently, in the absence of multicollinearity, the regression coefficients and standard errors obtained from this regression model can be deemed precise and dependable.

Table 4.2: Multicollinearity Test Using Variance Inflation Factors

Variable	VIF	1/VIF
Sectoral credit diversification	1.542	.649
Bancassurance	1.515	.661
Deposits Portfolio Diversification	1.392	.719
Investments Portfolio diversification	1.171	.854
Bank size	1.024	.977
Mean VIF	1.328	

Source: Field Data, 2023

4.3.2 Linearity Test

The researchers conducted a second diagnostic test, namely the analysis of variance (ANOVA) test, in order to assess the assumption of linearity between the predictor and dependent variables. This statistical analysis assesses the presence of a linear relationship between the predictor and outcome variables. As stated by Wooldridge (2019), the condition of linearity must be satisfied in order to appropriately apply a

linear regression model to the data. The study employed the analysis of variance (ANOVA) test to evaluate the presence of linearity, with the null hypothesis being that linearity exists. The findings are presented in Table 4.3.

Table 4.3: Test of Deviation from Linearity

Variables Relationship	F	Sig.
Sectoral credit diversification*ROA	1.627	.284
Bancassurance*ROA	2.002	.092
Deposits Portfolio Diversification*ROA	0.898	.336
Investments Portfolio diversification*ROA	1.594	.311

Source: Field Data, 2023

The findings presented in Table 4.3 indicate that the null hypothesis of linearity was accepted in all instances, as evidenced by the p-values over 0.05. This observation implies the presence of a linear association between the predictor variables (sectoral credit diversification, bancassurance, deposit portfolio diversification, and investment portfolio diversification) and the outcome variable (return on assets, ROA).

4.3.3 Test for Stationarity

The study utilized longitudinal data, and a stationarity test was necessary due to the assumption that the data were stationary. In order to conduct an analysis on data exhibiting time series qualities, it is important to ensure the presence of stationarity. The absence of stationarity might lead to erroneous or false findings. A stationary time series is characterized by the constancy of its variance, mean, and autocorrelation throughout the duration of the data. The application of regression analysis on non-stationary data can yield inaccurate outcomes, resulting in the perception of a significant relationship between variables even when one does not truly exist. In order to assess stationarity, the study utilized the Augmented Dickey Fuller (ADF) test. This

section presents a concise overview of the findings. Table 4.4 presents the results of the Augmented Dickey-Fuller (ADF) test conducted to examine the impact of sectoral credit diversification.

The findings presented in Table 4.4 indicate that the magnitude of the test statistic (4.854) exceeded the crucial barrier of 2.907, which is set at a significance level of 5%. Additionally, the findings indicate that the Mackinnon approximation p value ($p = 0.0000$) is below the critical threshold of significance set at 5%. This observation indicates that the series of sectoral credit diversification (SCD) exhibited a stagnant behavior. This suggests that a linear regression model can be applied without the need for differencing. The results of the Augmented Dickey-Fuller (ADF) test conducted on the bancassurance data indicate that the absolute value of the test statistic (5.578) surpasses the absolute value of the critical value (2.908) at the 5% significance level. Additionally, the findings indicate that the p value ($p = 0.0000$) obtained using the Mackinnon approximation is lower than the predetermined significance level of 5%. This implies that the bancassurance series has met the criteria of stationarity.

The results of the Augmented Dickey-Fuller (ADF) test for deposit portfolio diversification (DPD) reveal that the absolute value of the test statistic (5.319) exceeded the absolute critical threshold of 2.908 at the 5% significance level. Furthermore, the findings indicate that the p value ($p = 0.0000$) obtained using the Mackinnon approximation is below the predetermined threshold of significance, which is set at 5%. This finding indicates that the series of deposit portfolio diversification exhibited stagnant behavior. This suggests that it is possible to fit a linear regression model without the need for differencing. The results of the Augmented Dickey-Fuller (ADF) test indicate that the absolute value of the test statistic for investment portfolio diversification (IPD) was 5.450, which above the absolute critical threshold of 2.908 at

the 5% significance level. Additionally, the findings indicate that the p value ($p = 0.0000$) obtained by the Mackinnon approximation is below the predetermined significance level of 5%. This finding indicates that the investment portfolio diversification series had stagnant behavior. This suggests that a linear regression model can be applied without the need for differencing.

The findings of the Augmented Dickey-Fuller (ADF) test indicate that the absolute value of the test statistic (3.172) exceeded the absolute value of the critical threshold (2.908) at the 5% significance level, suggesting evidence against the null hypothesis. Additionally, the results of the study indicate that the p value for the Mackinnon approximation ($p = 0.0000$) falls below the predetermined level of significance, which is typically set at 5%. This suggests that the series of bank sizes exhibited stationarity. The findings suggest that it is possible to fit a linear regression model without the need for differencing. The results of the Augmented Dickey-Fuller (ADF) test for Return on Assets (ROA) suggest that the absolute value of the test statistic (4.913) exceeded the absolute critical threshold of 2.908 at the 5% significance level. Additionally, the findings of the study indicate that the p value for the Mackinnon approximation ($p = 0.0000$) is below the predetermined threshold of significance, which is set at 5%. This observation implies that the ROA series exhibited stationarity as well. This suggests that a linear regression model can be applied without the need for differencing.

Table 4.4: Unit Root Test for Study Variables

Dickey-Fuller test for unit root for SCD					Number of obs = 190
Interpolated Dickey-Fuller					
	Test statistic	1% critical value	5% critical value	10% critical value	
Z (t)	-4.854	-3.539	-2.907	-2.588	
Mackinnon approximate p-value for Z(t) = 0.0000					
Dickey-Fuller test for unit root for Bancassurance					Number of obs = 190
Interpolated Dickey-Fuller					
	Test statistic	1% critical value	5% critical value	10% critical value	
Z (t)	-5.578	-3.542	-2.908	-2.589	
Mackinnon approximate p-value for Z(t) = 0.0000					
Dickey-Fuller test for unit root for DPD					Number of obs = 190
Interpolated Dickey-Fuller					
	Test statistic	1% critical value	5% critical value	10% critical value	
Z (t)	-5.319	-3.542	-2.908	-2.589	
Mackinnon approximate p-value for Z(t) = 0.0000					
Dickey-Fuller test for unit root for IPD					Number of obs = 190
Interpolated Dickey-Fuller					
	Test statistic	1% critical value	5% critical value	10% critical value	
Z (t)	-5.450	-3.542	-2.908	-2.589	
Mackinnon approximate p-value for Z(t) = 0.0000					
Dickey-Fuller test for unit root for Bank size					Number of obs = 190
Interpolated Dickey-Fuller					
	Test statistic	1% critical value	5% critical value	10% critical value	
Z (t)	-3.172	-3.542	-2.908	-2.589	
Mackinnon approximate p-value for Z(t) = 0.0216					
Dickey-Fuller test for unit root for ROA					Number of obs = 190
Interpolated Dickey-Fuller					
	Test statistic	1% critical value	5% critical value	10% critical value	
Z (t)	-4.913	-3.542	-2.908	-2.589	
Mackinnon approximate p-value for Z(t) = 0.0000					

Source: Field Data, 2023

4.3.4 Serial Correlation Test

Following an evaluation of the data's stationarity, the study proceeded to conduct tests for serial correlation. The analysis was performed on the residuals obtained following the fitting of the model. The purpose of this test is to ascertain whether a correlation exists between the research variables and their corresponding lag-related counterparts throughout different time periods. According to Silva, Bosancianu, and Littvay (2019), the presence of serial correlation may have an impact on the effectiveness of the model, while without affecting the efficiency or reliability of the regression estimators. The study employed the Wooldridge test to evaluate serial correlation. The null hypothesis posited for the test asserts the absence of any serial connection. The test outcomes are presented in Table 4.5.

Table 4.5: Test of Autocorrelation Using Wooldridge Test

Wooldridge test for autocorrelation in panel data	
H ₀ : No first order autocorrelation	
F =	1.184
Prob > F =	0.1722

Source: Field Data, 2023

The findings of the autocorrelation test suggest that there was no evidence of autocorrelation. The acceptance of the null hypothesis of no autocorrelation was indicated by the statistical test results ($F = 1.184$, $p = 0.1722$). According to Linton (2019), the presence of serial correlation is not found to have significant effects on datasets including fewer than 10 time periods. However, Stock and Watson (2019) argue that incorporating measures to account for serial correlation will enhance the efficacy of the fitted model. However, the study discovered that the data was appropriate for modeling through the recommended linear regression methods due to the absence of serial correlation in the error terms.

4.3.5 Heteroscedasticity Test

The study examined heteroscedasticity, which refers to the unequal error variance across different levels of the predicted dependent variable, when utilizing standard errors to fit the model. Hansen (2022) posits that the presence of heteroscedasticity might result in substantial fluctuations in the coefficients of the model and the inefficiency of estimators. The study utilized the modified Wald test, specifically the White test, to see if there was evidence of heteroscedasticity in the variance of errors. The outcomes of this test are presented in Table 4.6.

Table 4.6: Test of Heteroscedasticity

<i>Modified Wald test for GroupWise heteroscedasticity in fixed effects regression model</i>
$H_0: \sigma(i)^2 = \sigma^2 \text{ for all } i$
$\chi^2 = 1.985$
$Prob > \chi^2 = 0.2903$

Source: Field Data, 2023

The findings are presented in Table 4.6. The results of the modified Wald test for group-wise heteroscedasticity indicated that the chi-square test statistic was not statistically significant (chi-square = 1.985, $p = 0.2903$). This finding suggests that there is insufficient evidence to reject the null hypothesis of homoscedasticity. This observation suggests that the variability of errors had a uniform pattern across all the projected values of return on assets (ROA).

4.3.6 Normality Test

The present work conducted an examination to assess the normal distribution of the regression residuals. The Shapiro-Wilk test was employed to conduct this analysis. Following the completion of the model fitting procedure and the subsequent creation of residuals, a test was conducted. In order to make valid inferences about the significance

levels and coefficients derived from a regression model, it is necessary for the error terms inside the model to conform to a normal distribution, as stated by Huntington-Klein (2021). It is necessary to engage in this process in order to derive precise and valid deductions. Table 4.7 displays the outcomes of the Shapiro-Wilk test.

Table 4.7: Test of Normality of Residuals Using Shapiro Wilk

Variable	Obs	W	V	z	Prob > z
Residuals	190	0.9684	1.412	0.547	0.2417

Source: Field Data, 2023

The findings presented in Table 4.7 demonstrate that the Shapiro-Wilk test did not yield statistically significant results, since the obtained p-value ($p = 0.2417$) exceeded the predetermined significance level of 0.05 ($z = 0.547$). The findings of this study suggest that the null hypothesis, which posits that the regression residuals conform to a normal distribution, was supported. This provides support for the idea that the model's findings on significance levels and coefficients are valid.

4.3.7 Correlation Analysis

The research conducted an analysis to examine the association between the variables under investigation, with the aim of establishing a linear relationship among them. The researchers employed Pearson correlation analysis to examine the data, and the results are displayed in Table 4.8. The results of the study suggest that there is a statistically significant negative correlation between sectoral credit diversification (SCD) and return on assets (ROA) ($r = -0.421$, $p < 0.05$). The results of the study also indicated that there was no statistically significant correlation between bancassurance (Banc) and return on assets (ROA) ($r = .080$, $p > 0.05$). Furthermore, the results revealed a statistically significant negative correlation between deposit portfolio diversification (DPD) and return on assets (ROA) ($r = -0.348$, $p < 0.05$). Additionally, there exists a noteworthy

positive correlation between investment portfolio diversification (IPD) and return on assets (ROA) with a correlation coefficient of 0.456, indicating statistical significance at a significance level of $p < 0.05$. The results of the study indicate a statistically significant positive correlation between liquidity (Liq) and return on assets (ROA) ($r = 0.170$, $p < 0.05$). Additionally, the obtained correlation findings indicate that there is no statistically significant association between asset quality (AQ) and return on assets (ROA) ($r = -0.103$, $p > 0.05$). In addition, it is worth noting that there exists a noteworthy positive correlation between capital adequacy (CA) and return on assets (ROA) with a correlation coefficient of 0.355, indicating a statistically significant association ($p < 0.056$). Furthermore, there was a statistically significant correlation between the size of the bank (BS) and the return on assets (ROA) with a correlation coefficient of 0.279 and a p-value less than 0.05.

Table 4. 8: Correlation Analysis of Study Variables

	SCD	Banc	DPD	IPD	Liq	AQ	CA	BS	ROA
SCD	1								
Banc	.098	1							
DPD	.055	-.237**	1						
IPD	-.291**	.045	.020	1					
Liq	-.230**	.232**	.050	.196**	1				
AQ	.151*	-.129	-.213**	-.063	-.250**	1			
CA	-.426**	.044	.075	.338**	.182*	-.147*	1		
BS	-.348**	.142*	-.025	.242**	.215**	-.150*	.270**	1	
ROA	-.421**	.080	-.348**	.456**	.170*	-.103	.355**	.279**	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Source: Field Data, 2023

4.3.8 Hausman Test

Following the completion of the diagnostic tests, a Hausman test was employed to ascertain the most suitable representation of the data for the inquiry, namely whether random effects or fixed effects panel data models were more appropriate. The Hausman test is a statistical tool used to detect endogeneity in predictor variables, which refers to

variables that are influenced by other aspects inside the regression model. These variables have the potential to enhance the precision of forecasts. The study employed the Hausmann test to examine the relationship between sectoral credit diversification (SCD), bancassurance (Banc), deposits portfolio diversification (DPD), and investments portfolio diversification (IPD) as independent variables, and return on assets (ROA) as the dependent variable. The outcomes of the Hausman test are presented in Table 4.9.

Table 4.9: Hausman Test

. hausman fixed random				
	—— Coefficients ——			
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
SCA	.330945	.1939137	.1370313	.0232634
Banc	.3213674	.6803387	-.3589714	.0977924
DPD	-.0217866	-.0407604	.0189738	.0991796
IPD	.02393	.109546	-.085616	.0653362
b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg Test: Ho: difference in coefficients not systematic $\chi^2(4) = (b-B)' [(V_b - V_B)^{-1}] (b-B)$ $= 57.58$ $\text{Prob} > \chi^2 = 0.0000$				

Source: Field Data, 2023

Based on the research results presented in Table 4.9, the null hypothesis, which posits that the observed differences in coefficients lack regular patterns, was rejected. This rejection was supported by a chi-square value of 57.58, with a significance level of $p < 0.05$. This provides support for the assertion that the fixed effects model was a suitable choice for the supplied data. The utilization of the fixed effects model allows for the adjustment of unobservable unit-specific properties across time. This model posits the assumption that there exists a relationship between these traits and the predictor

variables it utilizes. The subsequent sections present the results obtained from the fixed-effects models that were employed.

4.4 Regression Results

The objective of this study was to examine the moderating influence of bank size on the association between portfolio diversity and financial performance across commercial banks in Kenya. The study utilized a hierarchical regression model consisting of eight models to examine the presence of direct effect of independent variables and moderating effects of moderating variables on financial performance. The hierarchical regression analysis involved several models. The first model included the dependent variable and control variables. The second model added the independent variable and moderator. Models four to seven progressively introduced interactions to examine the hypotheses, while still including the dependent variable, control variables, independent variable, and moderator. The random effects models were chosen by all the models, as indicated by the Hausman's tests undertaken to determine the appropriate selection between random and fixed effects. The study hypotheses were evaluated using a significance level of 0.05, wherein a p-value lower than 0.05 leads to the rejection of the null hypothesis.

4.4.1 Control Variables

Table 4.10 indicates that the overall first model, was significant (F-value = 257.63; $p < 0.05$). The value for overall R-square is 0.4674 in fixed effect model implying that Exogenous Variables explained at least 46.74% of the variation of the Endogenous variable while the remaining 53.26% is caused by other factors outside this model and this captured by the error term. Results indicate that the modelled variables fitted the data very well. This is because random effects which use Chi-square test (87.47) is significant (p -value $0.000 < 0.05$). The control variable liquidity (LIQ) had a negative

and insignificant ($\beta = -0.091$; $t = -1.08$, $p > 0.05$) effect on financial performance. The p-value is more than 0.05 meaning firm liquidity has an insignificant effect on financial performance. This suggests that alterations in the liquidity levels of a commercial bank are not anticipated to exert a substantial impact on its financial performance. Further, it was shown that the asset quality (AQ) of commercial banks did not exert a substantial effect on their financial performance ($\beta = -0.019$, $t = -0.48$, $p > 0.05$). The implications of these findings suggest that there is no anticipated effect on the financial performance of a commercial bank as a result of a change in its asset quality level. Nevertheless, it is worth noting that the capital adequacy (CA) of commercial banks exhibited a notable and favourable effect on their financial performance ($\beta = 1.045$, $t = 16.05$, $p < 0.05$). The results of this study suggest that commercial banks exhibiting a greater capital adequacy ratio demonstrated superior financial performance compared to their counterparts. Moreover, the results suggest that a marginal rise of one unit in capital adequacy is anticipated to result in a 0.51.3% augmentation in financial performance.

Table 4.10: Effect of the Control Variables on Financial Performance

Fixed-effects (within) regression		Number of obs	=	190		
Group variable: Bank		Number of groups	=	38		
R-sq:		Obs per group:				
within = 0.6378		min	=	5		
between = 0.4165		avg	=	5.0		
overall = 0.4674		max	=	5		
		F(3,149)	=	87.47		
corr(u_i, Xb) = -0.5408		Prob > F	=	0.0000		
ROA	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]
LIQ	-.091	.084	-1.08	.281	-.258	.076
AQ	-.019	.039	-0.48	.63	-.095	.058
CA	1.045	.065	16.05	0.000	.916	1.173
Constant	0.000	.034	-0.00	1	-.067	.067
sigma_u 0.72384591						
sigma_e 0.46401466						
rho	0.70875081	(fraction of variance due to u_i)				
Mean dependent var		0.000	SD dependent var		1.000	
R-squared		0.638	Number of obs		190	
F-test		87.474	Prob > F		0.000	
F test that all u_i=0: F(37, 149) = 7.51 Prob > F = 0.0000						
Note: sigma_u is the standard deviation of residuals within groups, sigma_e is the standard deviation of residuals (overall error terms), rho is the intraclass correlation.						

4.4.2 Testing the Direct Effect

In order to assess and ascertain the direct effect of the independent variables on the dependent variables in the second model, a multiple regression model was fitted in model 2. The control variables were included in this model. Table 4.11 presents the results of fixed effects estimation for this model. The F statistic shows that the model is generally significant ($F=47.02$, $p < 0.05$). The variation contributed by the independent variables to this second model resulted in an overall R^2 value of 0.5239 showing an improvement from the first model. This indicates that the variation attributable to controls and predictors is 52.39%. The beta value of sectorial credit diversification was negative and significant ($\beta = -0.113$, $p < 0.05$). Therefore, the study infers that a rise in sectorial credit diversification by a unit causes financial performance to reduce by -0.113 units. The results of this study suggest that commercial banks with a larger share of credit allocated to the household sector had comparatively weaker financial performance in comparison to their counterparts with a smaller proportion of credit allocated to the household sector.

Moreover, the beta value of bancassurance was positive and insignificant ($\beta = .002$, $p > 0.05$). Consequently, this implies that bancassurance has no effect on financial performance of banks. The findings of this study indicate that the effect of bancassurance revenue on the financial performance of commercial banks was not statistically significant.

Findings show that the beta value of deposits portfolio diversification was negative and insignificant ($\beta = -0.107$, $p > 0.05$). The results of this study suggest that commercial banks with a higher share of savings deposits had inferior financial performance compared to their counterparts with a lower proportion of savings deposits. Moreover,

the results suggest that a marginal rise of one unit in the ratio of savings deposits to total deposits would result in a decrease of -0.107 in financial performance.

The study findings revealed that investments portfolio diversification had a positive and significant ($\beta = .153$, $p < 0.05$) effect on financial performance. The findings suggest that commercial banks with a larger proportion of their investments allocated to government securities had superior financial performance compared to their counterparts with a lower allocation to government securities. Furthermore, the results suggest that a marginal increase of one unit in the share of investments allocated to government securities relative to the total investments will result in a corresponding rise in the return on assets (ROA) by 15.3%. This result echoes the findings of findings of Hailu and Worku (2018) who established that investment in financial assets had positive significant impact on financial performance of Banks in Ethiopia. It however contradicts the results of Kioko and Ochieng (2020) whose study established a negative and insignificant relationship between investments and return on investments for firms at Nairobi Securities Exchange in Kenya.

Table 4. 11: Results for Fixed Effect Model on Direct Effect

Fixed-effects (within) regression		Number of obs	=	190
Group variable: Bank		Number of groups	=	38
R-sq:		Obs per group:		
within = 0.6942		min	=	5
between = 0.3963		avg	=	5.0
overall = 0.5239		max	=	5
		F(7,145)	=	47.02
corr(u_i, Xb) = -0.2028		Prob > F	=	0.0000

ROA	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]
LIQ	-.057	.079	-0.72	.471	-.214	.099
AQ	-.022	.037	-0.59	.553	-.096	.052
CA	.687	.097	7.11	0.000	.496	.878
SCD	-.113	.052	-2.16	0.033	-.217	-.009
BANC	.002	.04	-0.01	.994	-.08	.079
DPD	-.107	.057	-1.88	.063	-.219	.006
IPD	.153	.043	3.60	0.000	.069	.237
Constant	2.64	.031	0.00	1	-.062	.062

sigma_u 0.59544825	
sigma_e 0.43224548	
rho	0.65489849 (fraction of variance due to u_i)

Mean dependent var	0.000	SD dependent var	1.000
R-squared	0.694	Number of obs	190
F-test	47.017	Prob > F	0.000

F test that all u_i=0: F(37, 145) = 7.80		Prob > F = 0.0000	
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Note: *sigma_u* is the standard deviation of residuals within groups, *sigma_e* is the standard deviation of residuals (overall error terms), *rho* is the intraclass correlation.

4.5 Testing for the Moderating Effect

A summary of the results of hierarchical regression analysis undertaken to assess the moderation of foreign ownership is shown in table 4.12. The Five models were applied in an additive manner to test for moderation. A moderator is any variable that affects the association between two or more other variables; moderation is therefore the effect the moderator has on this association. As a consequence, it follows that the statistical test for moderation must demonstrate the predictor variable's differential effect as a function of the moderating variable (Dawson, 2014). A moderation effect could be enhancing, where increasing the moderator would increase the effect of the predictor

on the outcome; buffering, where increasing the moderator would decrease the effect of the predictor on the outcome; or antagonistic, where increasing the moderator would reverse the effect of the predictor on the outcome (Nielsen & Seay, 2014). Moderation is deemed to be present when the amount of variance accounted for by interaction is significantly greater than the level of variance accounted for by the moderation alone (Dawson, 2014). This is typically represented by changes in R-squared in OLS regression models and the F statistic in FE models.

The study utilized Fixed Effects regression. Bank size was used as a moderating variable in the study which was assessed to moderate the relationship between portfolio diversification and financial performance of commercial banks in Kenya. A series of regressions were done with model (M1) showing controls, model (M2) showing the main effects while Model (M3) is the introduction of the moderator and Model (M4) to Model (M8) shows the interaction effect. This was done in a series of hierarchical regressions with the preceding model nested in the subsequent model. The model comparison results are presented in Table. 4.12. The test results for this model (M3) are presented in Table 4.13. The results show that the moderator (firm size) is significant as shown by the F statistic ($F=45.27$, $p=0.000$). Model (M2) which is the direct effects model is nested in model (M3) facilitating for testing for improvement or weakening of the subsequent model. It is evident from the results that bank size has a positive and significant ($\beta = 0.414$, $p < 0.05$).

Table 4. 12: Moderating effect of Bank Size

Fixed-effects (within) regression			Number of obs = 190			
Group variable: Bank			Number of groups = 38			
R-sq:		Obs per group:				
within = 0.7155		min = 5				
between = 0.3729		avg = 5.0				
overall = 0.5000		max = 5				
		F(8,144) = 45.27				
corr(u_i, Xb) = -0.3616		Prob > F = 0.0000				
ROA	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]
LIQ	-.045	.077	-0.59	.556	-.197	.106
AQ	-.029	.036	-0.81	.421	-.101	.042
CA	.704	.094	7.51	0	.519	.889
SCD	-.145	.052	-2.81	.006	-.248	-.043
BANC	.009	.039	0.23	.818	-.068	.086
DPD	-.117	.055	-2.11	.036	-.226	-.008
IPD	.132	.042	3.16	.002	.05	.215
BS	.414	.126	3.29	.001	.165	.664
Constant	-8.36	.03	-0.00	1	-.06	.06
sigma_u 0.65646317						
sigma_e 0.41835025						
rho 0.71117451 (fraction of variance due to u_i)						
Mean dependent var		0.000	SD dependent var		1.000	
R-squared		0.715	Number of obs		190	
F-test		45.268	Prob > F		0.000	
F test that all u_i=0: F(37, 144) = 8.21					Prob > F = 0.0000	
Note: sigma_u is the standard deviation of residuals within groups, sigma_e is the standard deviation of residuals (overall error terms), rho is the intraclass correlation						

4.6 Testing the Effect of the First Interaction

In an attempt to assess the moderating effect of bank size on the relationship between sectoral credit diversification and financial performance, the interaction between sectoral credit diversification and bank size was added to the model (M4). The test results for this model (M4) are presented in Table 4.13. The results show that addition of the interaction term to the model is significant as shown by the F statistic ($F=40.05$, $p = 0.000$).

With regard to the beta value ($\beta = .018$, $p < 0.05$) of the moderation of bank size on the relationship between sectoral credit diversification and financial performance was positive and significant. Model six (M6) shows the results of the moderating effect of bank size on the relationship between bancassurance and financial performance. It was hypothesized that bank size does not moderate the relationship between bancassurance and the financial performance of commercial banks in Kenya. The results show that addition of the second interaction term to the model is significant as shown by the F statistic ($F = 35.82$, $p = 0.000$). The beta value was found to be negative and significant ($\beta = -.018$, $p < 0.05$).

The beta coefficient results of the second interaction was positive and significant ($\beta = .018$, $p < 0.05$). This suggests that the size of a bank has a substantial impact on the relationship between bancassurance and the financial performance of commercial banks. The results of this study suggest that alterations in the scale of a bank does have a substantial impact on the correlation between bancassurance revenues and the financial performance of commercial banks results show that it was hypothesized.

Table 4. 13: Testing the effect of the first interaction

Fixed-effects (within) regression			Number of obs = 190			
Group variable: Bank			Number of groups = 38			
R-sq:		Obs per group:				
within = 0.7159		min = 5				
between = 0.3688		avg = 5.0				
overall = 0.4950		max = 5				
		F(9,143)		= 40.05		
corr(u_i, Xb) = -0.3785		Prob > F		= 0.0000		
ROA	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]
LIQ	-.046	.077	-0.59	.554	-.198	.107
AQ	-.024	.038	-0.65	.517	-.099	.05
CA	.712	.096	7.46	0	.523	.901
SCD	-.144	.052	-2.77	.006	-.246	-.041
BANC	.009	.039	0.23	.819	-.069	.087
DPD	-.114	.056	-2.04	.043	-.224	-.004
IPD	.133	.042	3.18	.002	.05	.216
BS	.425	.129	3.31	.001	.171	.679
SCD*BS	.018	.039	0.47	.038	-.058	.094
Constant	-.002	.031	-0.08	.94	-.063	.059
sigma_u 0.66586585						
sigma_e 0.41948429						
rho 0.71588172 (fraction of variance due to u_i)						
Mean dependent var		0.000	SD dependent var		1.000	
R-squared		0.716	Number of obs		190	
F-test		40.045	Prob > F		0.000	
F test that all u_i=0: F(37, 143) = 8.16			Prob > F = 0.0000			

Note: *sigma_u* is the standard deviation of residuals within groups, *sigma_e* is the standard deviation of residuals (overall error terms), *rho* is the intraclass correlation

4.7 Testing the Effects of the Second Interaction

With regard to the beta value of the moderation of bank size on the relationship between bancassurance diversification and financial performance,

Table 4. 14: Testing the effects of the second interaction

Fixed-effects (within) regression			Number of obs = 190			
Group variable: Bank			Number of groups = 38			
R-sq:		Obs per group:				
within = 0.7161		min = 5				
between = 0.3628		avg = 5.0				
overall = 0.4913		max = 5				
			F(10,142) = 35.82			
corr(u_i, Xb) = -0.3794			Prob > F = 0.0000			
ROA	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]
LIQ	-.047	.077	-0.60	.547	-.2	.106
AQ	-.026	.038	-0.68	.5	-.101	.049
CA	.711	.096	7.42	0	.522	.901
SCD	-.143	.052	-2.74	.007	-.246	-.04
BANC	-.004	.058	-0.07	.946	-.118	.11
DPD	-.115	.056	-2.05	.042	-.226	-.004
IPD	.133	.042	3.15	.002	.049	.216
BS	.425	.129	3.30	.001	.17	.68
SCD*BS	.017	.039	0.44	.011	-.06	.094
BANC*BS	-.018	.059	-0.31	.026	-.135	.099
Constant	-.005	.032	-0.16	.874	-.069	.059
sigma_u 0.66956441						
sigma_e 0.42082015						
rho 0.71684063 (fraction of variance due to u_i)						
Mean dependent var		0.000	SD dependent var		1.000	
R-squared		0.716	Number of obs		190	
F-test		35.822	Prob > F		0.000	
F test that all u_i=0: F(37, 142) = 7.89					Prob > F = 0.0000	
Note: sigma_u is the standard deviation of residuals within groups, sigma_e is the standard deviation of residuals (overall error terms), rho is the intraclass correlation						

4.8 Testing the effects of the third interaction

Model seven (M7) shows the results of the moderating effect of bank size on the relationship between deposit portfolio diversification and financial performance. The results show that addition of the third interaction term to the model is significant as shown by the F statistic ($F=33.18$, $p = 0.000$). Results in table 4.15 indicate that the beta coefficient results was positive and significant. Bank size moderates the relationship between deposit portfolio diversification and financial performance of

commercial banks ($\beta = .069$, $p < 0.05$). The results of the ward statistics $F(10,142) = 33.18$ also confirms that indeed bank size moderates the relationship

Table 4. 15: Testing the effects of the third interaction

Fixed-effects (within) regression			Number of obs = 190			
Group variable: Bank			Number of groups = 38			
R-sq:		Obs per group:				
within = 0.7213		min = 5				
between = 0.3615		avg = 5.0				
overall = 0.4960		max = 5				
		F(11,141) = 33.18				
corr(u_i, Xb) = -0.3573		Prob > F = 0.0000				
ROA	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]
LIQ	-.052	.077	-0.67	.502	-.204	.1
AQ	-.059	.043	-1.37	.173	-.144	.026
CA	.681	.097	7.02	0.000	.489	.873
SCD	-.163	.053	-3.06	.003	-.268	-.058
BANC	-.012	.058	-0.21	.835	-.126	.102
DPD	-.106	.056	-1.88	.062	-.217	.005
IPD	.13	.042	3.11	.002	.047	.213
BS	.435	.128	3.39	.001	.181	.688
SCD*BS	-.018	.044	-0.41	.048	-.106	.069
BANC*BS	-.03	.059	-0.50	.016	-.147	.087
DPD*BS	.069	.043	1.62	.018	-.015	.154
Constant	.000	.032	0.00	.997	-.064	.064
sigma_u .66123506						
sigma_e .41843533						
rho .71405778 (fraction of variance due to u_i)						
Mean dependent var		0.000	SD dependent var		1.000	
R-squared		0.721	Number of obs		190	
F-test		33.176	Prob > F		0.000	
F test that all u_i=0: F(37, 141) = 7.96			Prob > F = 0.0000			
Note: sigma_u is the standard deviation of residuals within groups, sigma_e is the standard deviation of residuals (overall error terms), rho is the intraclass correlation						

4.9 Testing the Complete Effect of Moderation

Model 8 (M8) shows the results of the moderating effect of bank size on the relationship between investment portfolio diversification and financial performance. The results show that addition of the fourth interaction term to the model is significant as shown by the F statistic ($F=30.20$, $p = 0.000$).

Table 4. 16: Testing the Complete Effect of Moderation

Fixed-effects (within) regression			Number of obs = 190			
Group variable: Bank			Number of groups = 38			
R-sq:		Obs per group:				
within = 0.7213		min = 5				
between = 0.3619		avg = 5.0				
overall = 0.4964		max = 5				
		F(12,140) = 30.20				
corr(u_i, Xb) = -0.3570		Prob > F = 0.0000				
ZROA	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]
LIQ	-.052	.078	-0.67	.503	-.205	.101
AQ	-.059	.047	-1.26	.209	-.152	.033
CA	.682	.1	6.81	.000	.484	.88
SCD	-.163	.055	-3.00	.003	-.271	-.056
BANC	-.012	.058	-0.21	.835	-.127	.103
DPD	-.105	.059	-1.80	.075	-.221	.011
IPD	0.13	.042	3.09	.002	.047	.213
BS	.434	.131	3.31	.001	.174	.694
SCD*BS	-.018	.047	-0.39	.017	-.112	.075
BANC*BS	-.03	.059	-0.50	.037	-.147	.088
DPD*BS	.069	.054	1.26	.008	-.039	.176
IPD*BS	-.002	.073	-0.02	.981	-.147	.143
Constant	0.000	.032	0.00	.998	-.064	.064
sigma_u .66087416						
sigma_e .41992625						
rho .71237947 (fraction of variance due to u_i)						
Mean dependent var		0.000	SD dependent var		1.000	
R-squared		0.721	Number of obs		190	
F-test		30.196	Prob > F		0.000	
F test that all u_i=0: F(37, 140) = 7.90						
Note: sigma_u is the standard deviation of residuals within groups, sigma_e is the standard deviation of residuals (overall error terms), rho is the intraclass correlation						

4.10 Testing of Hypotheses

On the basis of the Hausman test, this study's hypotheses were tested using fixed effect model. Consequently, the fixed effect model findings were employed in the final analysis to counter the deficiencies associated with the random effect model. The findings of the fixed effect presented in table 4.16 shows that the model's overall R-squared is 0.4964 suggesting that the predictor variables explain 49.64% variation in

the outcome variable. The model specifications, $F(12,140) = 30.20$ and $\text{Prob} > F = 0.000$, also indicate that it is statistically significant.

The first hypothesis **H₀₁**: stated that sectoral credit has no significant influence on the financial performance of commercial banks in Kenya. The findings revealed a negative and significant ($\beta = -0.163$, $p < 0.05$) effect between sectoral credit diversification and financial performance consequently leading to the rejection of the null hypothesis and conclusion that an increase in sectoral credit diversification leads to a decrease in financial performance. These findings agreed with Chen, Wei, Zhang and Shi (2013) who indicated that sectoral diversification has a positive association with return on assets among Chinese Listed Commercial Banks.

The finding further lends support to the finding of a study by Githaiga and Muturi (2019) who concluded that sectoral credit diversification to a significant effect on financial performance in Kenya. A study on sectoral credit diversification, bank performance and monitoring effectiveness across banks in East Africa by Mulwa (2018) similarly established a significant effect of sectoral credit diversification on banking industry returns on assets. In the same vein, the findings of this study lend support to a study by Prastiwi and Anik (2020) whose study established that credit diversification based on the economic sector has a significant effect on increasing the profitability of commercial banks in Indonesia. The results of a study by Lee and Jang (2007) which indicated that diversification strategy does not provide profit growth, and stability of performance contradicts the findings of this study. Hailu and Tassew (2018) study findings demonstrated a significant positive effect diversification in loan portfolios on the financial performance of Ethiopian banks.

Makokha et.al. (2016) examined the effect of portfolio diversification on Commercial Banks financial performance. The study established a positive statistically significant relationship between portfolio diversification and financial performance.

The second hypothesis **H₀₂**: hypothesized that bancassurance have no significant influence on the financial performance of commercial banks. The hypothesis was upheld as a result of the findings that bancassurance had a negative and insignificant ($\beta = -.012, p > 0.05$) effect on financial performance. This contradicts the findings of a study by Chepkorir and Mugo (2018) whose study established that bancassurance had negative and insignificant impact on Banks Return on assets. However, it differs from the results of Midega, Matanda, and Ngali, (2022) whose study concluded that there exist a positive relationship between bancassurance and performance of NSE listed banks in Kenya. Similarly, results of a study by Njeri (2017) among insurance firms concluded that there existed a positive and significant relationship between bancassurance life insurance products, motor vehicle insurance products.

Gandhi, Kiefer, and Plazzi (2017) determined that banks in the country are gradually diversifying into industries that were previously seen to be non-core to the banking industry. The findings established that diversified banks tended to gain from bancassurance, provide more credit, and be more successful regarding financial performance. The study also determined that diversification into bancassurance, however, only has good periods as its advantages since it does not really reduce risk. The study also noted that banks with greater levels of diversification into bancassurance are more susceptible to systemic risk, and the availability of credit is more vulnerable to changes in the macroeconomy and monetary policy.

The third hypothesis **H₀₃**: postulated that deposits portfolio diversification has no significant influence on the financial performance of commercial banks in Kenya. The null hypothesis was upheld as a result of the findings, which indicated a negative and insignificant relationship between deposit portfolio diversification and financial performance ($\beta = -0.105$, $p > 0.05$). Obara et.al, (2020) study confirms the results of this study as it also established that deposit diversification exerted high negative effects on bank performance of quoted banks In Nigeria. In the same vein, this finding, however, contradicted the findings of Chen et al., (2014), who concluded that portfolio diversification negatively impacted banking financial performance. It however contradicts the findings of a study by Makokha, Namusonge and Sakwa (2016) who established a positive statistically significant relationship between portfolio diversification and financial performance.

The fourth hypothesis **H₀₄**: stated that investments portfolio diversification has no significant influence on the financial performance of commercial banks in Kenya. The null hypothesis was rejected as a result of the findings, which indicated a positive and significant relationship between deposit portfolio diversification and financial performance ($\beta = 0.13$, $p < 0.05$). These results are similar to the findings of Mutui and Wephekulu (2018) whose study on effect of portfolio diversification on financial performance of commercial banks listed at NSE, Kenya showed that invest portfolios had a positive and financial performance of commercial banks. In the same vein, Hailu and Tassew (2018) concluded that investment diversification positively affects the financial performance of commercial banks in Ethiopia. Further, a study by Majengo, Otinga and Mironga (2023) also found out that investment diversification has positive effect on financial performance of commercial banks listed at Nairobi Securities Exchange. A study by Jelagat and Muoki (2020) on influence of investment

diversification on profitability of commercial banks in Nakuru Town, Kenya investment diversification was found to relate with profitability of commercial banks significantly.

The fifth hypothesis H₀₅ which stated that bank size has no significant influence on commercial bank financial performance in Kenya. Results of the beta value was found to be positive and significant ($\beta=0.434$, $p<0.05$) is therefore rejected and a conclusion made that bank size has a significant effect of financial performance. The results of this study echoes the findings by Ngware, Olweny and Muturi (2020) which concluded a positive effect of bank size on ROE and ROA that was also significant.

Ho6a that bank size does not moderate the relationship between sectoral credit and financial performance of commercial banks in Kenya, the results show that bank size moderates the relationship between sectoral credit diversification and financial performance of banks ($\beta=.018$, $p<0.05$). The study thus rejects the null hypothesis and concluded that indeed there is evidence that bank size moderates the relationship between sectoral credit diversification and financial performance.

It was hypothesized in **Ho6b** that bank size does not moderate the relationship between bancassurance diversification and financial performance of commercial banks in Kenya, the results show that bank size moderates the relationship between bancassurance diversification and financial performance of banks ($\beta=-.018$, $p<0.05$). The study thus rejects the null hypothesis and concluded that indeed there is evidence that bank size moderates the relationship between bancassurance diversification and financial performance.

Ho6c hypothesized that bank size does not moderate the relationship between deposit portfolio diversification and financial performance of commercial banks is therefore

rejected and conclusion is made that bank size moderates the relationship between deposit portfolio diversification and financial performance. This finding lends support to the findings of Ngware, Olweny and Muturi (2020) whose study found out that bank size had a significant moderating effect on the relationship of banks portfolio diversification and financial performance of banks in Kenya.

Ho6d was hypothesized that bank size does not moderate the relationship between investment portfolio diversification and the financial performance of commercial banks in Kenya ($\beta = -0.002$, $p > 0.05$). The results indeed show that bank size does not moderate the relationship. The null hypothesis is therefore upheld and conclusion is made that bank size does not moderate the relationship between investment portfolio diversification and financial performance.

4.11 Mod Graphs

The concept of moderation suggests that the connection between two variables is subject to alter based on the presence of a moderator variable. This suggests that in order to assess moderation, the statistical test must evaluate the varying impact of the exogenous variable on the endogenous variable based on the moderator. A moderation effect can manifest in three ways: enhancing, buffering, or antagonistic (Hayes, 2013). In the enhancing scenario, increasing the moderator variable amplifies the effect of the predictor variable on the outcome variable. Conversely, in the buffering scenario, increasing the moderator variable diminishes the effect of the predictor variable on the outcome variable. Lastly, in the antagonistic scenario, increasing the moderator variable causes the effect of the predictor variable on the outcome variable to be reversed. The concept of moderation is deemed to be present when the following three criteria are met. Initially, it is expected that the extent to which variation is explained by the presence of an interaction term will be notably greater than the extent to which variance

is explained in the absence of said interaction. Additionally, it is imperative that the coefficient for the interaction term exhibits a non-zero value. The present analysis focuses on the simple slope for the interaction, which serves as the foundation for investigating the nature of the interaction through the investigation of simple slopes. Finally, it is important to note that both the models with and without the inclusion of the interaction term exhibit statistical significance, as stated by Hayes (2013). Scholars in the past have emphasized the importance of graphically representing the interaction impact of the moderator as the most effective method for understanding its nature (Jose, 2008; Aiken & West, 1991). Interaction plots tell us whether the moderator has any effect on the relationship between the predictor and the outcome variables (Aiken et al., 1991). On an interaction plot, parallel lines indicate that there is no interaction effect while different slopes suggest that an interaction might be present (Jose, 2008).

4.11.1 Moderating Effect of Bank Size on the Relationship between Sectoral Credit Diversification and Financial Performance

Figure 4.1 which reveals that at low levels of sectoral credit diversification, financial performance is high with banks who have large bank size compared to those with banks with small bank size. However, as bank size decreases, financial performance decreases with both groups of banks, but the decrease is high with those who have high levels of sectoral credit diversification.

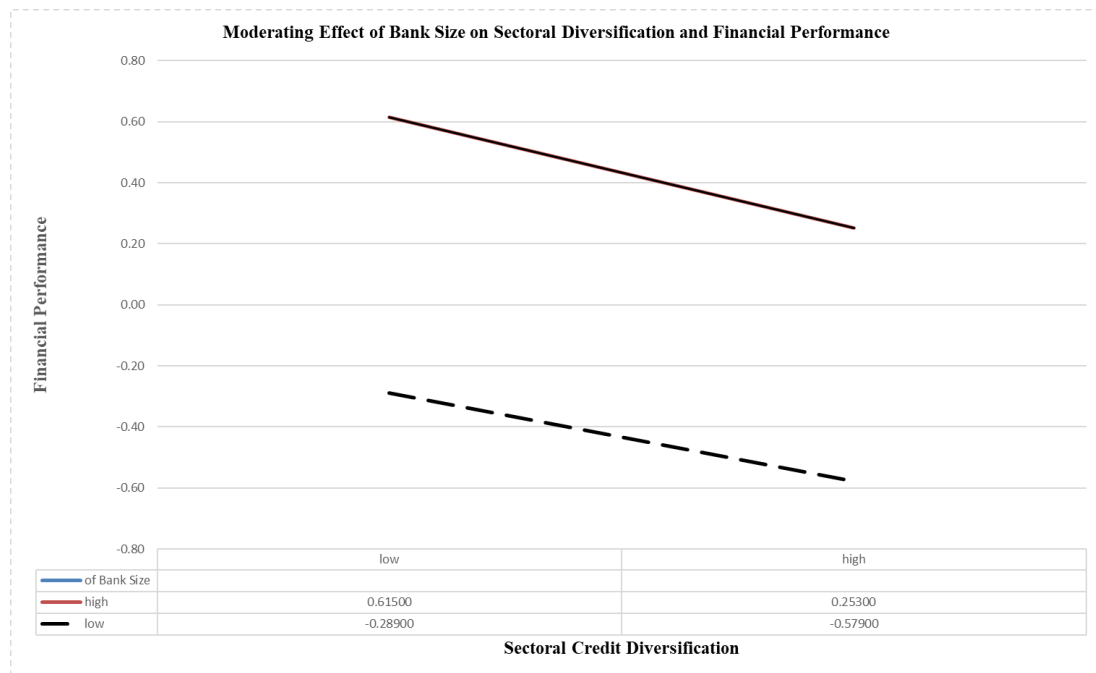


Figure 4. 1: Moderating Effect of Bank Size on the Relationship between Sectoral Credit Diversification and Financial Performance

The above relationship indicates a buffering moderation since the results from model 2 which shows the direct effect of the independent variables, electronic sourcing on the dependent variable, procurement performance has decreased in model 4 when the moderator is introduced. The buffering moderation is from $\beta = -0.113$, $p = 0.033$ which is significant in model 2 to $\beta = -.0163$, $p = 0.003$ in model 4 which is significant.

4.11.2 Moderating Effect of Bank Size on the Relationship between Bancassurance Diversification and Financial Performance

Figure 4.2 which reveals that at low levels of bancassurance diversification, financial performance is high with banks who have high entrepreneurial orientation compared to those with low levels bancassurance diversification. However, as bancassurance diversification decreases, financial performance decreases with both groups of banks, but the decrease is high with those who have high levels of bancassurance.

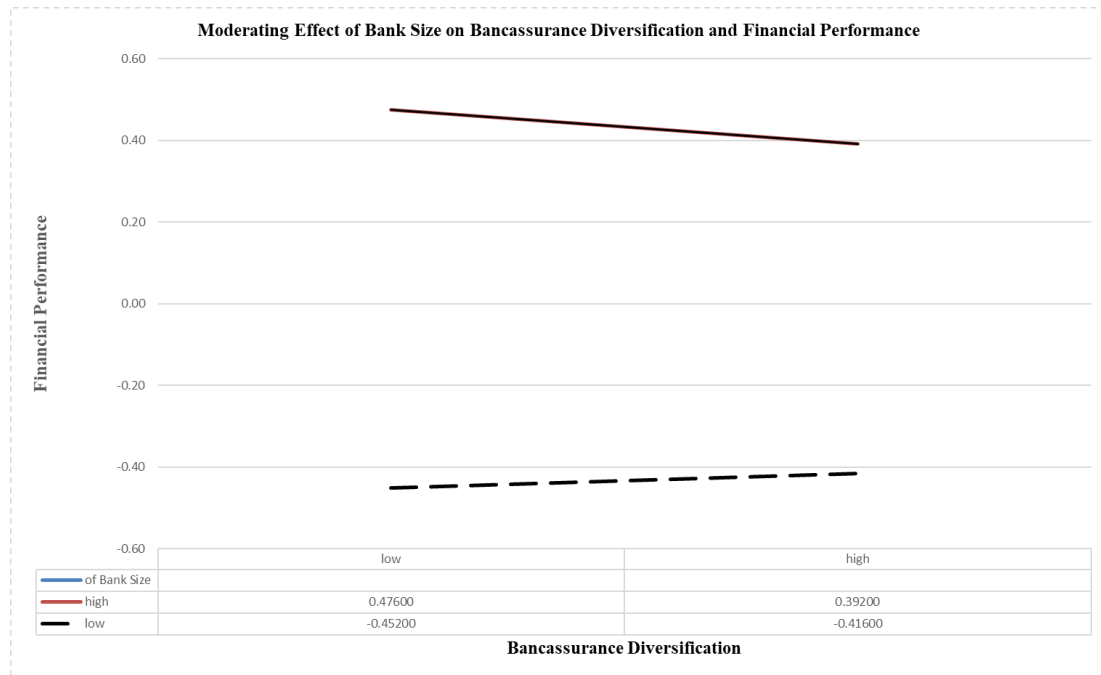


Figure 4. 2: Moderating Effect of Bank Size on the Relationship between Bancassurance Diversification and Financial Performance

The above relationship indicates a buffering moderation since the results from model 2 which shows the direct effect of the independent variables, bancassurance diversification on the dependent variable, financial performance has decreased in model 4 when the moderator is introduced. The buffering moderation is from $\beta = 0.002$, $p = 0.994$ which is insignificant in model 2 to $\beta = -.03$, $p = 0.037$ in model 4 which is significant

4.11.3 Moderating Effect of Bank Size on the Relationship between Deposit Portfolio Diversification and Financial Performance

Figure 4.3 which reveals that at low levels of deposit portfolio diversification, financial performance is high with banks who have high entrepreneurial orientation compared to those with low levels bancassurance diversification. However, as bancassurance diversification decreases, financial performance decreases with both groups of banks, but the decrease is high with those who have high levels of bancassurance.

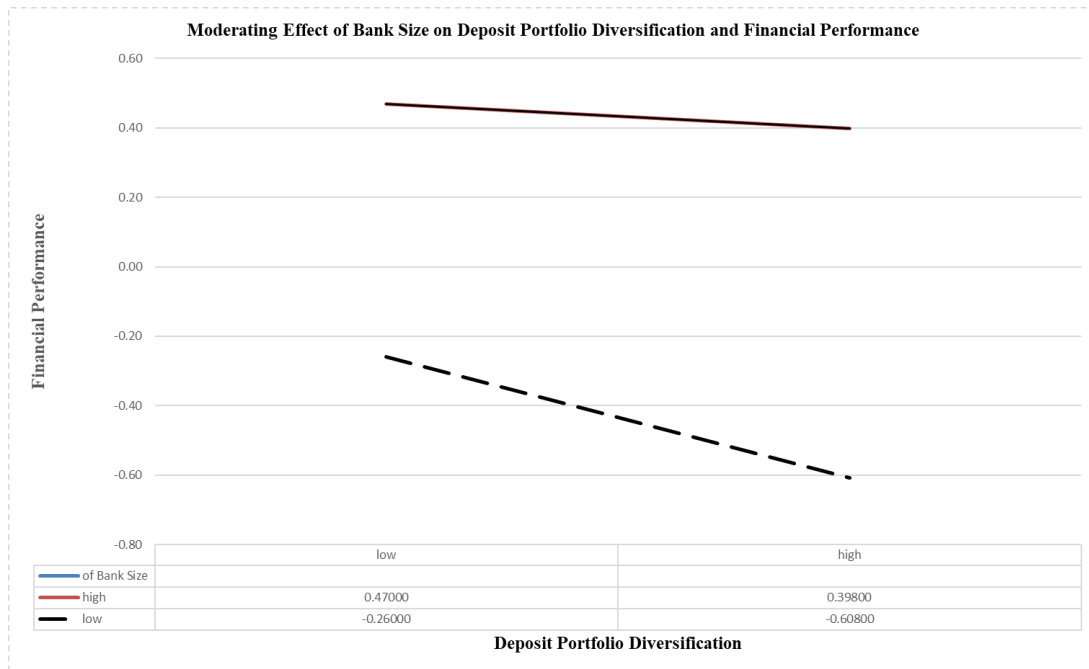


Figure 4. 3: Moderating Effect of Bank Size on the Relationship between Deposit Portfolio Diversification and Financial Performance

The above relationship indicates a buffering moderation since the results from model 2 which shows the direct effect of the independent variables, deposit portfolio diversification on the dependent variable, financial performance has decreased in model 4 when the moderator is introduced. The buffering moderation is from $\beta = -0.107$, $p = 0.063$ which is insignificant in model 2 to $\beta = -.105$, $p = 0.075$ in model 4 which is insignificant.

4.11.4 Moderating Effect of Bank Size on the Relationship between Investment Portfolio Diversification and Financial Performance

Figure 4.4 which reveals that at low levels of investment portfolio diversification, financial performance is low with banks who have high bank size compared to those with low levels of bank size. However, as investment portfolio diversification increases, financial performance increases with both groups of banks, but the increases is high with those who have low levels of bank size.

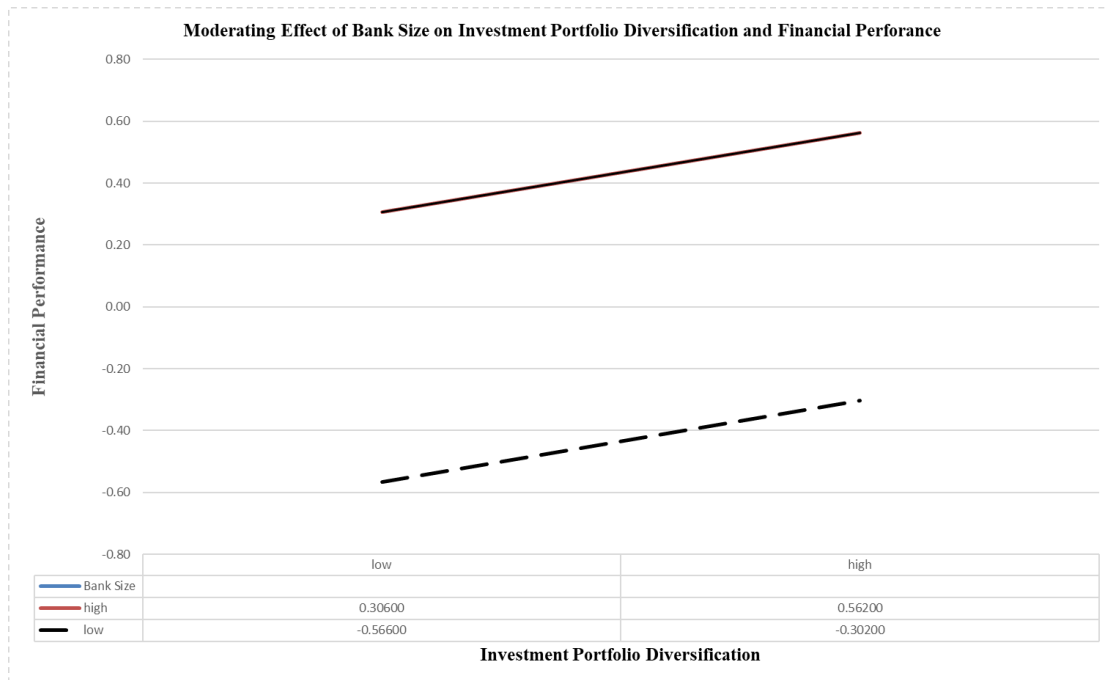


Figure 4. 4: Moderating Effect of Bank Size on the Relationship between Investment Portfolio Diversification and Financial Performance

The above relationship indicates a buffering moderation since the results from model 2 which shows the direct effect of the independent variables, investment portfolio diversification on the dependent variable, financial performance has decreased in model 4 when the moderator is introduced. The buffering moderation is from $\beta = 0.153$, $p = 0.000$ which is significant in model 2 to $\beta = 0.13$, $p = 0.002$ in model 4 which is significant.

4.12 Hierarchical Moderation Regression Summary

Table 4. 17: Moderation Regression Summary

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)
(Constant)	0.000 (.034)	2.64 (.031)	-8.36 (.03)	-.002 (.031)	-.005 (.032)	.000 (.032)	0.000 (.032)
Control Variable							
Liquidity	-0.091 (0.084)	-0.057 (0.079)	-0.045 (0.077)	-0.046 (0.077)	-0.052 (0.077)	-0.059 (.043)	-0.052 (.078)
Asset Quality	-0.019 (0.039)	-0.022 (0.037)	-0.029 (0.036)	-0.024 (0.038)	-0.026 (0.038)	-0.059 (0.043)	-0.059 (0.047)
Capital Adequacy	1.045 (0.065)	0.687 (0.097)	0.704 (0.094)	0.712 (0.096)	0.711 (0.096)	0.681 (0.097)	0.682 (0.10)
Main Effect							
SCD		-0.113 (0.052)	-0.145 (0.052)	-0.144 (0.052)	-0.143 (0.052)	-0.163 (0.053)	-0.163 (0.055)
Banc		0.002 (0.04)	0.009 (0.039)	0.009 (0.039)	-0.004 (0.058)	-0.012 (0.058)	-0.002 (0.073)
DPD		-0.107 (0.057)	-0.117 (0.055)	-0.114 (0.056)	0.133 (0.042)	-0.106 (0.056)	0.13 (0.042)
IPD		0.153 (0.043)	0.132 (0.042)	0.133 (0.042)	0.133 (0.042)	0.130 (0.042)	0.130 (0.042)
Moderator							
Bank Size			0.414 (0.126)	0.425 (0.129)	-0.018 (0.059)	0.069 (0.043)	-0.002 (0.073)
Interaction term							
SCD*BS				0.018 (0.039)	0.017 (0.039)	-0.018 (0.044)	-0.018 (0.047)
Banc*BS					-0.018 (0.059)	-0.03 (0.059)	-0.03 (0.059)
DPD*BS						0.069 (0.043)	0.069 (0.054)
IPD*BS							-0.002 (0.073)
Model Summary							
R Square	0.638	0.694	0.715	0.716	0.716	0.721	0.721
Chi-square	87.474	47.017	45.268	40.045	35.822	33.176	30.196
Prob > chi2	0.000	0.000	0.000	0.000	0.000	0.000	0.000

4.13 Summary of Hypotheses Testing Results

The results presented in Table 4.18 below indicated the summary of both multiple and hierarchical regression models. Thus, the table shows (R^2) and Δ in (R^2) for both main and interaction effects as well as the decision on the formulated hypothesis as shown in table 4.18.

Table 4. 18: Summary of Hypotheses Testing Results

Hypothesis formulated		Beta	p-values	Decision
Main Effect				
H₀₁:	Sectoral credit has no significant influence on the financial performance of commercial banks in Kenya	-.163	.003	Reject
H₀₂:	Bancassurance have no significant influence on the financial performance of commercial banks	-0.012	0.835	Fail to Reject
H₀₃:	Deposits portfolio has no significant influence on the financial performance of commercial banks in Kenya	-.105	.075	Fail to Reject
H₀₄:	Investments portfolio has no significant influence on the financial performance of commercial banks in Kenya	0.13	0.002	Reject
H₀₅:	Bank size has no significant influence on commercial bank financial performance in Kenya	.434	0.001	Reject
Moderation-Bank Size				
H_{06a}	Bank size does not moderate the relationship between sectoral credit and financial performance of commercial banks in Kenya.	-.018	.017	Reject
H_{06b}	Bank size does not moderate the relationship between bancassurance and the financial performance of commercial banks in Kenya.	-0.018	0.037	Reject
H_{06c}	Bank size does not moderate the relationship between deposits portfolio and the financial performance of commercial banks in Kenya.	0.069	0.018	Reject
H_{06d}	Bank size does not moderate the relationship between investments portfolio and the financial performance of commercial banks in Kenya.	-0.002	0.981	Fail to Reject

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The chapter provides a summary of the study's main findings, important outcomes, and suggestions for future action, including research. The summary presents the findings in connection to the study's goals and its research topics. So, the outcomes offered solutions to the research's open-ended questions. The primary findings of the study formed the basis for the conclusions, and suggestions for improving policy and practice are made. The chapter concludes with suggestions for more research.

5.2 Summary of the Findings

The study sought to establish the moderating effect of bank size on the relationship between portfolio diversification and financial performance of commercial banks in Kenya. The specific objectives guiding this study were to determine the influence of sectoral credit, to assess the effect of bancassurance, to establish the effect of deposits portfolio, to analyse the effect of investments portfolio and to examine the effects of bank size on the financial performance of commercial banks in Kenya. Additionally, the study sought to establish the moderating effect of bank size on the above relationship and financial performance of commercial banks in Kenya. Modern portfolio theory, organizational lifecycle theory and growth of firm theory provided the theoretical foundation for the study. Utilization of an explanatory research design with a longitudinal approach. The unit of analysis consisted of all 42 commercial banks registered in Kenya. The study's data were analysed using descriptive and inferential statistics, as well as statistical techniques such as the Pearson correlation coefficient and regression analysis. All analyses were conducted using STATA version 13. The

hypotheses were evaluated using a hierarchical multiple regression model at a significance level of 0.05. Further summary of the study findings is itemized based on the specific objectives of the study.

5.2.1 Influence of Sectoral Credit on the Financial Performance of Commercial Banks

The objective of this study was to assess the influence of sectoral credit on the financial performance of commercial banks operating in Kenya. The study's results indicated that there was a statistically significant negative impact of sectoral credit diversification on the financial performance of commercial banks in Kenya ($\beta = -.163$, $p < 0.05$). The results of this study indicate that commercial banks that allocated a higher proportion of their loan portfolio to the household sector had relatively poorer financial performance compared to banks that allocated a smaller percentage of their credit to the household sector. Furthermore, the research findings indicate that a rise in credit allocated to the household sector relative to the total credit would lead to a decline in return on assets (ROA), and conversely. Therefore, the hypothesis stating that the impact of sectoral loans on the financial performance of commercial banks in Kenya is not significant was ultimately disproven. These findings agreed with Chen, Wei, Zhang and Shi (2013), who indicated that sectoral diversification has a positive association with return on assets among Chinese Listed Commercial Banks.

5.2.2 Effect of Bancassurance on the Financial Performance of Commercial Banks

The second objective of this study was to evaluate the effect of bancassurance on the financial performance of commercial banks. The research findings indicated that there was no statistically significant impact of bancassurance on the financial performance of commercial banks ($\beta = -.012$, $p > 0.05$). Based on the aforementioned findings, it appears that the proportion of overall income derived from bancassurance by

commercial banks did not exert a significant influence on the financial performance of these banks. The null hypothesis, which posits that there is no significant impact of bancassurance on the financial performance of commercial banks, was found to be valid and accepted. This contradicts the findings of a study by Chepkorir and Mugo (2018) whose study established that bancassurance had negative and insignificant impact on Banks Return on assets. However, it differs from the results of Midega, Matanda, and Ngali, (2022) whose study concluded that There exist a positive relationship between bancassurance and performance of NSE listed banks in Kenya. Similarly, results of a study by Njeri (2017) among insurance firms concluded that there existed a positive and significant relationship between bancassurance life insurance products, motor vehicle insurance products

5.2.3 Establish the Effect of Deposits Portfolio on the Financial Performance of Commercial Banks

The primary aim of the study was to examine the effect of the deposit portfolio on the financial performance of commercial banks operating in Kenya. The research results indicated that the diversification of deposit portfolios had a statistically significant negative impact on the financial performance of commercial banks ($\beta = -0.105$, $p > 0.05$). Based on the results of this study, it can be shown that commercial banks with a greater proportion of deposits allocated to savings accounts had comparatively inferior financial performance when compared to their counterparts with a lower proportion of such deposits. Furthermore, the results indicate that a rise in the proportion of savings deposits within the overall deposit composition will lead to a decline in return on assets (ROA), and conversely. Hence, the null hypothesis, which posits that the deposit portfolio does not exert a statistically significant impact on the financial performance of commercial banks in Kenya, was found to be invalid. Obara et.al, (2020) study

confirms the results of this study as it also established that deposit diversification exerted high negative effects on bank performance of quoted banks in Nigeria. In the same vein, this finding, however, contradicted the findings of Chen et al., (2014), who concluded that portfolio diversification negatively impacted banking financial performance. It however contradicts the findings of a study by Makokha, Namusonge and Sakwa (2016) who established a positive statistically significant relationship between portfolio diversification and financial performance.

5.2.4 Effect of Investment Portfolio on the Financial Performance of Commercial Banks

The fourth objective of the study aimed to determine the effect of an investment portfolio on the financial performance of commercial banks in Kenya. The findings of the study suggest that there is a statistically significant and positive relationship between investment portfolio diversity and the financial performance of commercial banks ($\beta = 0.13$, $p < 0.05$). The findings suggest that commercial banks with a larger proportion of their investments allocated to government securities had superior financial performance compared to their counterparts with a lower allocation to government securities. Additionally, the results suggest that a higher allocation of investments in government securities relative to overall investments is associated with a rise in return on assets (ROA), and conversely, a decrease in this allocation is linked to a decline in ROA. Hence, the null hypothesis, which posits that the investment portfolio does not exert a substantial impact on the financial performance of commercial banks in Kenya, was shown to be rejected.

These results are consistent with the findings of Mutui and Wepukulu (2018), who conducted a study on the impact of portfolio diversification on the financial performance of commercial banks listed at the Nairobi Securities Exchange (NSE).

Their findings indicated that investment portfolios had a positive impact on the financial performance of commercial banks. In the same vein, Hailu and Tassew (2018) determined that the financial performance of commercial banks in Ethiopia is positively impacted by investment diversification. Furthermore, a study conducted by Majengo, Otinga, and Mironga (2023) determined that investment diversification has a beneficial impact on the financial performance of commercial banks listed on the Nairobi Securities Exchange. In a study conducted by Jelagat and Muoki (2020), the profitability of commercial banks in Nakuru Town, Kenya was significantly influenced by investment diversification.

5.2.5 Effect of Bank Size on the Financial Performance of Commercial Banks

The primary aim of this research was to investigate the effect of bank size on the financial performance of commercial banks operating in Kenya. The results of the study indicate that there is a statistically significant positive relationship between the size of a bank and its financial success ($\beta=0.434$, $p< 0.05$). The results of this study suggest that larger banks exhibited higher levels of profitability compared to smaller banks, on average. The null hypothesis, which posits that there is no meaningful relationship between bank size and commercial bank financial performance in Kenya, was therefore rejected.

Size was found to have a positive effect on financial performance of commercial banks in Kenya in a study conducted by Mwangi (2018) on the profitability of commercial banks in Kenya confirming the findings of this study. Similarly. The study by Mwikali (2022) showed that size of the bank has a statistically significant effect on performance.

5.2.6 Moderating Influence of Bank Size

The final aim of the study was to evaluate the moderating influence of bank size on the correlation between sectoral credit, bancassurance, deposit portfolios, and investment portfolios, and the financial performance of commercial banks in Kenya. The study's findings revealed that the size of the bank had a significant impact on moderating the association between sectoral loan diversification and the financial performance of commercial banks in Kenya ($\beta = 0.018$, $p < 0.05$). The study's results also revealed that the size of a bank had a statistically insignificant beneficial effect on the association between investment portfolio diversity and the financial performance of commercial banks ($\beta = -0.002$, $p > 0.05$). The effect of bank size on the correlation between bancassurance and financial performance ($\beta = -0.018$, $p < 0.05$) was found to be significant and the association between deposit portfolio diversification and financial performance ($\beta = -0.002$, $p < 0.05$) was also found to be significant.

5.3 Conclusions

The conclusions obtained are based on the results of the study. The study's findings indicate that the diversification of loans across different sectors is crucial for enhancing the financial performance of commercial banks in Kenya. The study additionally suggests that commercial banks who allocated a greater amount of their loan portfolio to the household sector had inferior financial performance in comparison to their counterparts, who allocated a smaller proportion of their credit to this sector. The study further suggests that bancassurance is not crucial for the financial performance of commercial banks. Additionally, the research findings indicate that the deposit portfolio had a crucial role in determining the financial performance of commercial banks in Kenya.

The research findings further established that the diversification of the investment portfolio is crucial for enhancing the financial performance of commercial banks. Furthermore, the research findings indicated that the inclusion of an investment portfolio had a crucial role in enhancing the financial performance of commercial banks. Furthermore, the size of banks played a crucial role in determining the financial performance of commercial banks in Kenya. The findings of the study also indicated that the size of banks played a regulatory role in determining the correlation between sectoral loans and the financial performance of commercial banks in Kenya, as well as the correlation between investment portfolios and the financial performance of commercial banks. Nevertheless, the correlation between bancassurance and financial performance, as well as the connection between deposit portfolio and financial success, were not shown to be influenced by the size of the bank.

5.4 Recommendations

The conclusions derived from the study form the basis for the suggestions put out in this section. The research findings indicate a considerable and unfavourable impact of sectoral credit diversification on the financial performance of commercial banks. Consequently, this study holds significance for managerial and practical applications, policy considerations, theoretical advancements, and suggestions for future research endeavours.

5.4.1 Managerial/Practical Implications

The study holds significance for practical and managerial considerations within the commercial banking sector, emphasizing the importance of diversifying lending targets and avoiding excessive reliance on the household sector. The study additionally concluded that the financial performance of commercial banks is not contingent upon the implementation of bancassurance. This finding suggests a practical

recommendation that, while bancassurance has the potential to enhance a bank's revenue, it is advisable for the bank to exercise caution and avoid allocating excessive resources towards its implementation. Additionally, the study revealed that the deposits portfolio played a crucial role in the financial performance of commercial banks in Kenya. Hence, it is advisable that commercial banks engage in the diversification of their deposit portfolio and refrain from excessive reliance on savings accounts.

The study also found that the composition of investment portfolios has a notable impact on the financial performance of commercial banks. Hence, it is advisable for commercial banks to engage in portfolio diversification as a means to maintain financial stability and capitalize on the opportunities presented by low-risk government securities. Furthermore, the study found that the financial performance of commercial banks in Kenya had a substantial correlation with the size of the institutions. Hence, it is imperative for banks to actively pursue strategies such as acquisitions, mergers, or the infusion of extra equity in order to augment their asset base and capital. Additionally, the research findings indicated that the size of banks played a moderating role in the association between investment portfolio and financial performance of commercial banks in Kenya, as well as the relationship between sectoral credit and financial performance. However, the size of the bank did not modify the correlation between bancassurance and financial performance, nor did it affect the relationship between the deposit portfolio and financial success. Therefore, it is advisable for commercial banks to establish an optimal portfolio when diversifying their sectoral loan and investment portfolios, taking into consideration their respective sizes.

5.4.2 Policy Implications

The results obtained from this study include significant significance for policy formulation and regulatory frameworks within the realm of the commercial banking

industry. The study found that the size of a bank had a regulatory role in the correlation between portfolio diversity and the performance of commercial banks. Furthermore, the research findings indicate that the size of a bank and the extent of portfolio diversification exert a substantial influence on the performance outcomes of commercial banks. The implications of these findings can be utilized by policymakers and regulators in the commercial banking industry, including the Central Bank of Kenya, to support the promotion of portfolio diversification and the consolidation of smaller banks through mergers. Additionally, policymakers possess the capacity to develop laws and regulations that could effectively incentivize mergers, acquisitions, and portfolio diversification within the commercial banking industry in Kenya.

5.4.3 Theoretical Implications

The present study yielded results that carry theoretical implications. The study found that certain aspects of diversification, namely sectoral credit diversification and investment portfolio diversification, exerted a substantial impact on the financial performance of commercial banks. However, other aspects of diversification, such as bancassurance and deposit portfolio diversification, did not demonstrate a significant influence on the financial performance of commercial banks. Moreover, the research findings indicated that the size of a bank had a substantial impact on the financial performance of commercial banks. This contradicts certain theoretical assumptions that suggest larger banks experience diseconomies of scale, leading to adverse effects on their profitability. Moreover, the research findings indicate that while certain elements of portfolio diversity exert a notable influence on bank returns, it is crucial to acknowledge that the magnitude of this effect differs among banks of varying sizes.

5.4.4 Recommendations for Future Research

This study provided valuable evidence regarding the impact of portfolio diversification on the financial performance of commercial banks in Kenya. Moreover, the research presented significant findings about the moderating impact of bank size on the correlation between portfolio diversity and the financial performance of commercial banks. Non-bank financial institutions and other non-financial enterprises in Kenya were omitted from the study. Hence, it is important to note that the results may lack generalizability to non-bank financial entities, including microfinance banks, savings and credit cooperative societies (SACCOs), and microfinance institutions. Hence, it is imperative for future investigations to delve into the impact of portfolio diversification on the financial performance of these aforementioned financial institutions, since they play a crucial role in fostering economic development and facilitating financial expansion inside the nation.

This study employed Return on Assets (ROA) as the sole metric for evaluating performance, without taking into account alternative financial performance indicators. In addition to the utilization of the Return on Assets (ROA) measure in the research, it is also possible to employ additional financial performance indicators such as Return on Equity (ROE) and Return on Investment (ROI) to evaluate the impact of portfolio diversification on the financial performance of commercial banks in Kenya, as determined by the application of these alternative measures. Moreover, this research has the potential to offer more profound insights into the impact of portfolio diversity on various aspects of the financial performance of commercial banks.

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APPENDICES

Appendix I: Data Collection Schedule

[illegible]

Appendix II: List of Commercial Banks

1. ABC Bank
2. Absa Bank
3. Bank of Africa Kenya Ltd
4. Bank of Baroda (K) Limited
5. Bank of India
6. CFC Stanbic Bank Limited
7. Chase Bank
8. Citibank N A
9. Consolidated Bank of Kenya Limited
10. Co-operative Bank
11. Credit Bank Limited
12. Development Bank of Kenya Ltd
13. Diamond Trust Bank Kenya Limited
14. DIB Bank Kenya Limited
15. Ecobank Kenya Limited
16. Equatorial Commercial Bank Limited
17. Equity Bank
18. Family Bank Limited
19. Fidelity Bank
20. Fina Bank
21. First Community Bank Limited
22. Giro Commercial Bank Ltd
23. Guaranty Trust Bank (K) Ltd
24. Guardian Bank Ltd.
25. Gulf African Bank Limited
26. Habib Bank
27. Habib Bank AZ
28. I&M Bank
29. Imperial Bank Limited
30. KCB Bank
31. Middle East Bank (K) Limited
32. M-Oriental Bank Limited
33. National Bank

- 34. NCBA Bank
- 35. Paramount Bank Limited
- 36. Prime Bank Limited
- 37. Sidian Bank
- 38. Spire Bank
- 39. Standard Chartered
- 40. Trans-National Bank Limited
- 41. UBA Kenya Bank Ltd
- 42. Victoria Commercial Bank Limited

Appendix III: Research Permit

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