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**THE EFFECT OF CREDIT RISK MANAGEMENT ON FINANCIAL
PERFORMANCE: A CASE OF KENYAN COMMERCIAL BANKS.**

146316

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**Submitted in partial fulfillment of the requirements for the Degree of Bachelor
of Business Science in Financial Engineering at Strathmore University.**

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Nairobi, Kenya

[January 2025]

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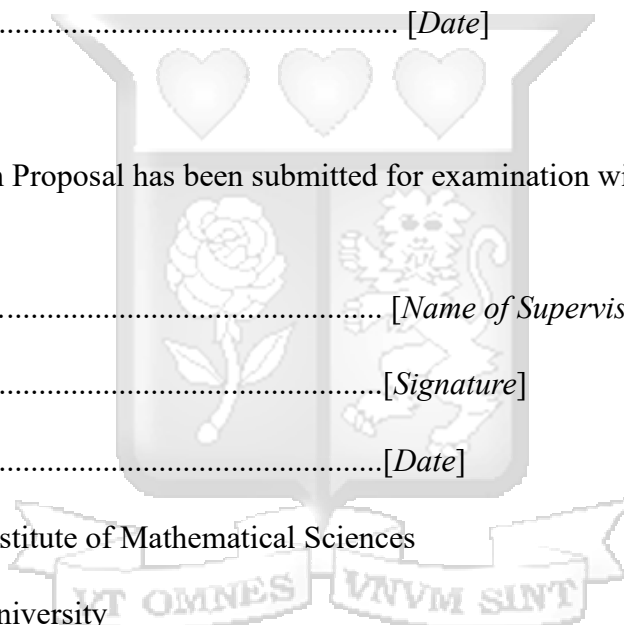
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ACKNOWLEDGEMENT

I would like to express my sincerest gratitude first and foremost to God and my supervisor, Mercy Kano for your continued support and guidance throughout this journey. I would also like to thank my family and friends for their moral and emotional support in completing this project.



ABSTRACT

Credit risk is one of the most impactful risks that commercial banks and other lending institutions face and is a lead cause of bank failure in Kenya. Therefore, it is crucial for this risk to be managed effectively to ensure profitability of commercial banks. This study determines the relationship between credit risk management and financial performance of Kenyan commercial banks. We also aim to determine the effect of credit risk management on profitability across different bank tiers. The study adopted a descriptive research design and collected quarterly data from 8 Kenyan commercial banks from 2014 to 2023. The research model specified ROE and ROA as measures of profitability and the CAMEL indicators and board composition as measures of credit risk management and bank tier as a categorical variable. The study utilised multiple linear regression analysis, where the results were presented in tables. The research found that medium and large tier banks have a lower ROE compared to small tier banks while they have a higher ROA compared to small tier banks. Therefore, the study concluded that there exists a mixed significant relationship between the CAMEL indicators and Board composition and profitability and that commercial banks across different bank tiers require customized approaches to tackle the issues they face and improve credit risk management.

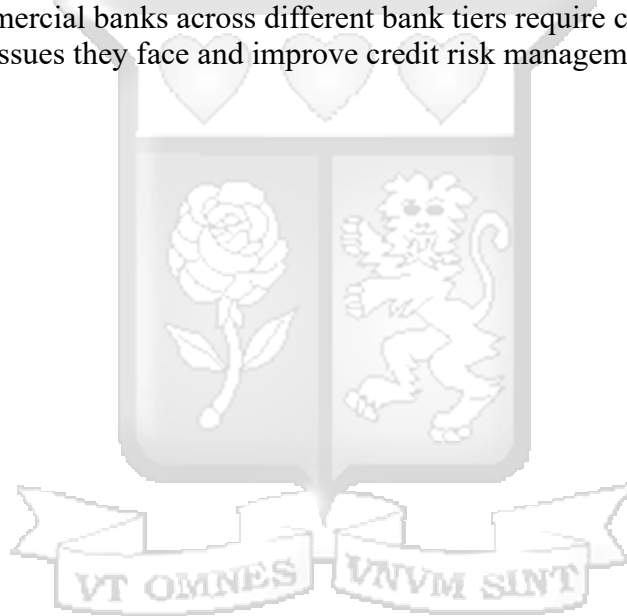
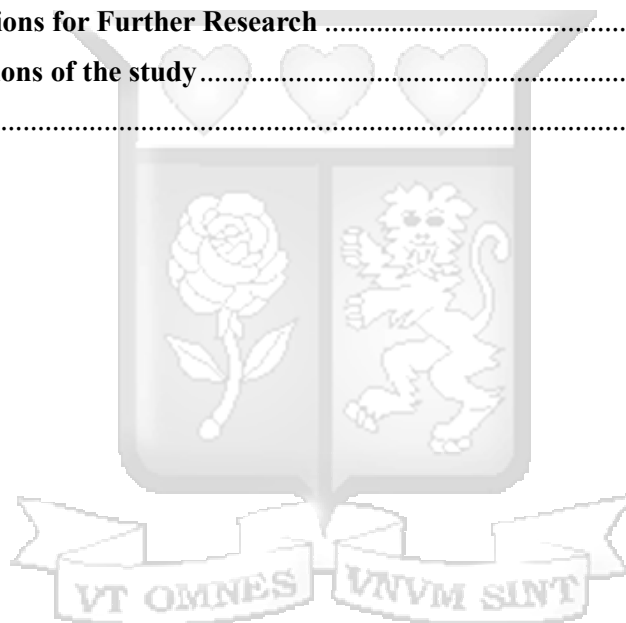


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LIST OF ABBREVIATIONS

1. CBK - Central Bank of Kenya
2. CAR – Capital Adequacy Ratio
3. EM - Equity Multiplier
4. NPLR - Non-Performing Loan Ratio



CHAPTER 1: INTRODUCTION

This chapter establishes the research project, highlighting the background behind this study and the research objectives and questions. Further, it allows description of the significance of the study.

1.1 Background of the study

Risk has been defined as the uncertainty and randomness of future trends. Risk management involves the reaction of either individuals or businesses in their attempt to ensure the risks they are exposed to are those they want to be exposed to.

According to (Kloman, 2009), it is a discipline for coping with the chance that future events may lead to inauspicious consequences. It is salient to have a balance between risk and return for profit sustainability in financial institutions.

When we have a given level of portfolio risk, to achieve the maximum expected return, investors can combine various classes of assets as par the portfolio theory (Markowitz, 1952) This theory advice on focus on reducing risks for different returns. As it becomes increasingly apparent that sustainable growth is highly dependent on the evolution of a thorough framework for risk management, it is key for banks to have such a framework in place.

Risk management is made up of essential procedures of risk identification, analysis and assessment, auditing, monitoring and risk control. In simple risk measures, standard deviation can be used. However, some risks may require complex risk measurement measures. Over 70% of assets of the statement of Financial Position of a bank is associated to risk management.

Commercial banks take on various risks when providing financial services. Market participants seek services of the commercial banks as they provide knowledge about the market, allow efficiency in transactions and lastly their funding capability. In these roles, they are the principal in the bargain and as such engross the risks associated (Santomero, 1997).

Credit risk has adversely affected various commercial banks and lending institutions leading to poor financial performance, and hence its proper management is key in ensuring the survival of these institutions. The single biggest element influencing the integrity of financial institutions and system is credit risk (CBK, 2023), since the primary function of commercial banks is lending.

Even though for most commercial banks lending is the lead root of credit risk, alternative sources include in the bankbook and the trading book and on both the on and off-balance sheet (Basel, 1999).

1.1.1 Management of Credit Risk

Risk management entails minimizing the possibility of failure and reducing precariousness of profitability and increasing the odds of success. (Best, 2000) holds that risk management's aim is to eradicate unexpected loss in institutions and further defines unexpected loss as that which causes an institution to fail or causes material damage to its corporate position. Developing countries face more risk than developed nations, hence the banking system of developing nations like Kenya faces more risks. During the Asian Bank crisis of 1997-1998, a single bank collapse had a domino effect on the entire Asian banking system which ultimately led to the collapse of the industry.

Credit risk is the likelihood of a debtor failing to meet their financial agreement under the indenture. It is the probability of defaulting on your obligations. According to (Greuning & Bratanovic, 2003) credit risk is the potential of a borrower not being able to pay the interest or repay the corpus in accordance with the set agreement. Exposure to credit risk continues being the prime cause of issues in commercial banks, therefore, banks should be more conscious in identifying, tracking and managing credit risk.

Credit risk management has the objective of maximizing the risk-adjusted rate by limiting exposure to credit risk within acceptable bounds (Basel, 1999). Therefore, lending institutions should manage credit risk of not only the entire portfolio but also in individual credits. The Basel Committee encouraged banks to function using a clear-cut credit-granting criteria, which should purpose to understand the borrower thoroughly, the intended use of the credit and the repayment sources.

Credit risk management is fundamentally focused on loan portfolio and the principles used to determine the credit worthiness to assess counterparties issuing financial instruments. Lending institutions should have in place lending policies which specify the scope of their credit facilities and how a credit portfolio is managed (Greuning & Bratanovic, 2009). These credit policies should align with the bank's management approach.

In recent years, the CAMEL rating system has gained momentum in evaluation of financial performance of financial institutions, especially banks. The CBK uses this rating system to evaluate how Kenyan commercial banks perform. The rating system is founded on Capital Adequacy, Asset Quality, Management efficiency, Earnings and Liquidity.

Capital Adequacy involves requirement of banks to always hold sufficient capital to protect against potential losses. Basel II was built on three pillars, which are minimum capital requirement, supervisory evaluation and discipline in the market. Asset Quality indicates the amassing of loans and advances in total assets. If the amassing is high, the share of non-performing assets is noteworthy and so is the vulnerability of assets to credit risk (Nimalathasan, 2008). On the other hand, management efficiency involves the capability of the board and management to recognize, quantify and manage risks associated with the operations of a firm and ascertain safe, robust and effective operations compliant with existing regulations. Earnings indicate a bank's ability to support present and future operations. It also shows factors that may affect sustainability of earnings. Liquidity on the other hand involves easy availability of assets that can be readily converted to cash, with minimum losses (Dang, 2011). According to (Rudolf, 2009), the liquidity of a bank demonstrates its ability to fully meet its obligations.

1.1.2 Financial Performance

Financial performance involves measuring an organization's ability to create revenue using their assets. (Mutua, 2014) defined financial performance as a monetary indicator of policies and operations of a firm. It can also be explicated as the faculty to result in resources from daily operations. Financial performance is pushed by a well-structured banking system and is indicated by economic stability, good governance and risk-taking (Gully, 2017).

David Cole introduced ratio analysis as a criterion of evaluating bank performance in 1972. There are several measures used to determine financial performance of institutions which include: Return on Assets, Return on Equity and Net Interest Margin.

Return on Assets (ROA) is an estimate of profit that stipulates how effectively an institution employs its resources to produce revenue. Its a measure of how efficiently

resources is utilized in generating income. Thus, a higher ROA indicates efficiency in utilization of company resources and hence higher profitability of a firm.

Net Interest Margin (NIM) is the ratio of the average interest-bearing assets to net interest income of a bank. It is a metric that represents the difference between interest revenue and interest disbursed to lenders. NIM shows the aperture between interest income received on credit, guarantees and borrowed funds' interest costs (Mutua, 2014). A higher interest margin indicates more profits hence more stability. However, NIM can also be used as an indicator of lending practices which are riskier related with considerable loan provisions. Net Interest Margin illustrates the efficiency of the banking industry and the price of bank intermediation services by engendering the difference between returns to savers and investors.

Return on Equity (ROE) is the most common estimate of profit of a firm. It refers to how much an institution earns relating to shareholder equity. A high ROE indicates proper utilization of shareholder capital and hence a higher profitability. It is the proportion of net income to book value of shareholder's equity. ROE shows effective use of shareholder funds by management.

The ROE and ROA are linked by the equity multiplier (EM). The EM shows the quantity of financing through debt relative to shareholder equity. The multiplier is a measure of financial leverage as well as risk and profit. The EM measures risk as it has a multiplier effect on ROA to determine ROE. Financial leverage is advantageous when bank returns are positive. Leverage also highlights the adverse effects of losses (Koch & MacDonald, 2015).

1.1.3 Banking in Kenya

Banking in Kenya is governed by The Banking Act, Companies Act, Central Bank of Kenya and the efficient recommendations published by the CBK. The primary regulator of banking in Kenya is the Central Bank of Kenya. The provisions of the Banking Act govern the licensing and regulation of commercial banks. Commercial banks are subject to regulatory requirements governing their position and market conduct to protect the financial structure's integrity and firmness (CBK Website). The CBK has a responsibility to work out and enact monetary policy and promote liquidity and solvency of the financial system. According to the Central Bank Act (Cap 491), the CBK is expected to advance the financial sturdiness by maintaining a strong banking system.

The Kenya Bankers Association (KBA) was established to represent member banks in negotiating the terms of their unionised employees and lobby for the sector's interests. Their role has developed over the years and has included the promotion of a reliable and competent banking industry which offers the best service to Kenyans entrusting their resources to member banks. The Central Bank of Kenya has licensed and regulated 47 financial institutions represented by the KBA (KBA).

Banks in Kenya are classified according to the type of ownership, nature of bank and the tier of banks. As at end of year 2022, banking in Kenya consisted of 38 commercial banks, one mortgage financing firm and one Mortgage Refinancing firm (CBK, 2022). Additionally, a weighted composite index is used to group commercial banks into peer groups where the index for large banks is five percent and above, medium banks between one percent and five percent while that for small banks is less than one percent (CBK, 2022). By end of year 2022, there were nine large banks, eight moderate banks and 22 small-scale banks. Any failures of the tier 1 banks can cause a catastrophic effect on the Kenyan economy, and possibly a financial crisis, therefore it is crucial to ensure their survival.

1.2 Problem Statement

The largest factor affecting the stability and integrity of financial institutions including commercial banks is credit risk. This thus makes its management very salient in a banks operation activities to maintain profitability and lead to growth and expansion. According to (McMenamin, 1999), who performed research in the US in the mid 1980s on national banks that failed, the congruous element was inadequacy to control loan quality by the management system. In Kenya, many banks' collapse in the 1990s was also because of credit risk mismanagement indicated in the peak amounts of non-performing loans (CBK, 2005).

Management of the loan portfolio of a lending institution is crucial in minimizing credit risk and maximize profits. It is crucial to continuously review the loan granting process as the loa portfolio grows to ensure credit worthy individuals are approved

for credit. Defaulting of personal loans, especially, has posed a great risk for lenders. Therefore, its crucial to ensure effective credit management practices by individual institutions to ensure outstanding financial performance of these institutions.

Both globally and in Kenya, various studies have been undertaken to comprehend the correlation between credit risk and profitability of commercial banks. (Kithinji, 2010) observed that a lot of bank profits are not influenced by credit risk management. (Gitari, Mohamed & Huka, 2021), (Mutua, 2014), (Muthee, 2010) & (Wangari, 2015) found that credit risk and profitability are positively correlated. While the above research has provided clear results on the correlation between credit risk and profitability, none has considered that inclusion of tier group of banks, as a categorical variable, may yield a different outcome.

Hence, this study establishes the importance of managing credit risk across the different tier groups of commercial banks in Kenya. This study will help inform on the importance of management of credit risk especially in large banks in Kenya. This understanding will cement the importance of having a potent credit management framework in place and how important credit practices are across different tier groups.

1.3 Research Objective

To assess the impact of management of credit risk on the financial performance of Kenyan commercial banks and to explore its significance across various tier groups.

1.3.1 Specific Objectives

1. To analyse the effects of capital adequacy component of credit risk management on profitability of Kenyan commercial banks and to explore its significance across various tier groups.
2. To assess the effect of asset quality aspect of credit management on profitability of Kenyan commercial banks and to explore its significance across various tier groups.

3. To assess the impact of management efficiency component of credit risk management on profitability of commercial banks and to explore its significance across various tier groups.
4. To assess the effect of liquidity, an element of credit risk management, on profitability of Kenyan commercial banks and to explore its significance across various tier groups.
5. To assess the effect of board composition, an element of credit risk management, on profitability of Kenyan commercial banks and to explore its significance across various tier groups.

1.4 Research Questions

1. What relationship exists between credit risk management and profitability of Kenyan commercial banks.
2. How does effective credit risk management influence financial performance across different bank tiers.

1.5 Significance of the Study

Accurate management of credit risk is critical for commercial banks, investors and other lending organizations to make more informed decisions on frameworks for identification and management of credit risk and management of loan portfolios effectively.

The findings from this study will be crucial in ensuring banks, in expanding their loan portfolios, consider the best management practices for credit risk. The study will contribute to the process of investment decision making considering effective credit risk features. To investors, it will provide insights for future and current investments and the factors affecting the return on their investments.

The legislators and regulators will be equipped to comprehend the importance of various legislative frameworks credit risk management, appreciation and quantification of credit risk exposures and mitigating against financial crises. Future

scholars may use this study as a reference document to further studies on effects of managing credit risk on profitability, considering other factors.



CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The review of literature provides an overview of prior studies on effects of credit risk on profitability. This chapter aims to study theoretical and empirical perspectives on the subject and identify research gaps in previous research. The literature establishes a framework for the study and highlight contributions to literature by reviewing academic literature.

2.2 Theoretical Review

2.2.1 Modern Portfolio Theory

(Markowitz, 1952) developed the concept of portfolio selection, which assumed investors should consider expected return attractive and risk undesirable. The portfolio theory gives a guideline on how lending institutions are meant to structure loan portfolios to align with their goals (Markowitz, 1952). The theory suggests investment in several assets of low correlation with each other rather than a single asset, developing the concept of diversification.

An investor seeks to diversify and maximize expected return while minimizing risk. Moreover, as per Bernoulli's law, the actual yield on a portfolio will be about as much as the expected portfolio yield. The modern portfolio theory develops that some sources of risk can be abolished or modified by having a certain portfolio of assets. An investor would opt for a portfolio that provides the highest expected return with the least risk.

A major concept of the theory is that the combination of assets should be efficient, meaning that the combination has the greatest expected return at a given risk level, assuming investors are risk averse (Grinold, 1999). Portfolios allow creation of combinations of assets with higher expected returns and lower risk than those from individual assets. Portfolios reduce effects of unique risks that is unsystematic risk associated with individual assets, but it does not eliminate exposure to common risk factors, that is systematic (market) risk.

In summary, Modern Portfolio Theory addresses the link between risk and return for a combination of securities. Risk of a portfolio must consider the return correlation of each asset in the portfolio. The fluctuations in price of a security are distinctive

and are not associated to oscillations in price of other securities, allowing diversification or elimination of a portion of risk of each security. The theory proposes that diversification is a tool that rational investors should employ to optimize their portfolios and price risky assets.

The Modern Portfolio Theory will allow use the concept of diversification of loan portfolios across different bank tiers and how banks in each tier will better structure their loan portfolios to achieve optimal returns, allowing us to comprehend the effectiveness across tiers of banks in operating while effectively managing credit risk. Therefore, the theory will enable assessment on the effects of size of a bank on credit risk and comparing risk management effectiveness across bank tiers.

2.2.2 Credit Risk Theory

A bank loan is a debt in which financial assets are redistributed between a borrower and a lender. The lender gives an amount, the principal, to the lender at a fee, interest. Loans are associated with credit risk. Financial institutions provide loans, a primary source of their income and a way of increasing money supply in an economy.

Non-Performing Loans (NPLs), according to CBK (1997), are loans which are not served according to the loan contracts and bare financial institutions to possible losses and pose a significant concern as it can be used as an indicator of insolvency and potential bank failure. NPL accounts are those whose principal or interest is overdue 90 days or more beyond the due date. High-NPL financial markets should diversify risk by creating portfolios of both non-performing and performing loans.

According to (Viazzo, 2023), NPL levels have increased in only four banks in the Eurozone. However, in private sector lending, a rise in the proportion of NPLs relative to overall lending is anticipated, from 1.8% in 2022 to 2.6% in 2023 to 3.9% in 2024. During the 2013 eurozone debt crisis, the NPLs peaked at 8.4%.

It is critical and strategic that banks focus other revenue streams as pressure on bank profitability depends on over-reliance on interest rates. Banks can adopt strategies like stretching the range of its operations to its preponderantly asset finance focus to diversify revenue. The availability of custodial services and premium financing has reduced the need for interest income. Public sector banks who provided loans

without the necessary paperwork are having trouble recovering their debts, according to CBK (2002). The focus today is on the customer's ability to repay the loan, rather than on security as the basis for the loan.

Basel II has created a clear connection between a bank's exposure to business, market and underlying credit risk and the minimum capital required. This stage suggests that capital management is a crucial part of managing and mitigating risk. Risk management indicators can be derived from easily accessible roots, such as policies and codes, which can offer helpful guidance in identifying key risk indicators and expressing conformity with regulatory requirements. A bank can grow profitability through better risk-based resource allocation and product pricing by implementing a more comprehensive capital management framework (Basel 2004).

Management of credit risk involves assessing risk in a credit investment. After identification of the risk, decisions on investments can be made and the risk-reward balance can be evaluated from a more advantageous vantage point. credit risk can be minimized, by keeping an eye on the actions of customers, businesses or individuals, who plan to seek for credit from the company. A bank must be able to evaluate, manage, oversee, regulate, enforce, and reclaim credit instruments like loans, advances and guarantees due to the severe consequences of credit risk, which, if mismanaged, can result in failure of a bank (Kabiru, 2002).

Financial firms alleviate credit risk through collateral, warranties, and balancing out loans against deposits of the same equivalent. Credit risk is decreased when the payments are subtracted from the receipts and the remaining amount is paid. Other often used strategies include letters of credit, surety bonds, factoring, debt collection, and credit insurance. Even though applying these measures will reduce or move credit risk, there is still a chance that new risks such as operational, market, legal, and liquidity risks will surface (Stutz, 1985).

Basel II attempts to establish a universal standard on the capital amount needed by banks to mitigate against risks they face by establishing stringent capital and risk management guidelines intended to ensure banks maintain sufficient capital reserves to cover the risks to which the bank is exposed. According to these requirements, a

bank must hold a bigger capital amount to protect its solvency as it faces increasing risk (Basel, 2006).

The theory is essential as it provides models to assess and quantify credit risk exposure across different tiers and how its management affects profitability. The theory also allows estimation of potential losses from loan portfolios using stress testing and scenario analysis hence banks can calculate the possible losses from their loan portfolios in different economic scenarios.

The theory serves as the foundation for the creation of risk-adjusted performance measurements, like Risk-Adjusted Return on Capital, crucial for assessing how risk and return are traded off in lending activities. These theoretical frameworks guide our examination of efficient methods for measuring and managing credit risk across various bank tiers.

2.2.3 Trade-off Theory

Trade off theory addresses the balance between the price and gain of financing debt. Banks compare the advantages of debt against the costs of bankruptcy incurred by taking on excessive debt endeavour to determine the best capital structure. Using models for balancing tax benefits and costs of bankruptcy, organizations seek to stabilize the benefits like tax shield and costs like financial distress costs of debt to maintain an optimal capital structure (DeAngelo & Masulis, 1979). Businesses balance the costs of asset substitution and underinvestment by taking advantage of lowering possible free cash flow issues and potential conflicts between management and shareholders (Jensen & Meckling, 1976), (Myers, 1976) and (Jensen, 1986).

Institutions retain the most desirable capital structure when the benefit of debt and the cost are equal and have target leverage, which they gradually modify towards the target. According to Standard Capital Market Theory, risk and return are mutually exclusive. An individual can anticipate a higher return the more risk they are ready to take. However, this trade-off only applies to unsystematic risk since systematic risk can be avoided through diversification.

Therefore, financial theory, based on perfect capital markets, states that portfolios that are well diversified yield greater expected returns than those which are less diversified. Nevertheless, the assumption does not apply to banks, therefore, we lean

towards the theory of financial intermediation, which accounts for the role of information failure.

The trade-off between the risk of default of a loan and the return received in interest is determined by the risk-return balance and is the core of all decisions concerning investment. A high return indicates a high risk of default. Investors anticipate losses on loans and investments since such are comparatively low-risk ventures. Bank management should ensure losses are fewer or equal to expected losses for their portfolio of assets through proper, strategic portfolio diversification and management and thoughtful creation and maintenance of individual assets (Johnson, Porta, Silanes, Shleifer & 2000).

The theory emphasises on balancing cost and benefits of debt allowing us to check whether tier one banks with more diverse portfolios manage credit risk differently from tier two and three banks. In this study, it may be used as a plinth to inform the analysis of effective credit risk identification across different tiers. The theory directs our investigation on ways in which banks across tiers evaluate the trade-off between potential loan yields and related risks and the effects of these evaluations on their profitability.

However, this theory does not address components such as the ideal level of loan portfolio to maximize return and minimize risk and how to determine the optimal loan levels. Tools to determine optimal loan levels and the necessary criteria for diversification are not specified, creating a gap between trade-off and management of credit risk and commercial banks' profits.

2.3 Empirical Review

The section examines previous research related to this study and provide information about the topic, objectives, methodology, outcomes and gap in the studies.

In Europe, (Li & Zou, 2014) studied the influence of management of credit risk on profits of European commercial banks and investigate whether the relationship is stable or fluctuating through a series of statistical tests. The research collected data from 2007 to 2012 from 47 commercial banks in Europe and used an explanatory research design. The results revealed that management of credit risk influences

commercial banks' profits, NPLR significantly affects ROA and ROE, but CAR has an immaterial impact on ROA and ROE. However, our study focused on Kenyan commercial banks using secondary data for a period of ten years.

According to (Tang and Jiang 2003) examining the financial performance of the banking industry in Hong Kong, macroeconomic variables and bank-specific elements act out a significant role in affecting a bank's profitability. The study shows that macroeconomic factors have a favourable effect on a sample of four banks using data from 1997 to 2002. The study concludes that effective credit risk management, which reduces bad debts, improves bank efficiency and, consequently, profitability. On the other hand, our study used data from previous ten years and focused on addressing the impact of managing credit risk on commercial banks' profitability across different bank tiers in Kenya.

In Kenya, (Muasya, 2009) studied with the aim of finding out whether commercial banks were affected by non-performing loans during the financial crisis, using secondary data from 2004 to 2008 and used a regression model to determine the level of nonperforming loans and their impact on profitability and interest income using a selection from the 43 Kenyan commercial banks. The study concluded that nonperforming loans have an influence on commercial banks' profitability, where further examination of specific commercial banks of more than 25billion in assets indicated negative impacts. The study focused only on the tier 1 banks and their effect on profitability. However, our study looked at all tiers of Kenyan commercial banks and how credit management practices across different bank tiers affect profitability.

(Waweru & Kalani, 2009) investigated the commercial banking crises in Kenya. The study examined the causes of non-performing loans, the steps managers of banks seized to address the issue, and the extent to which those steps have been successful. The study sampled ten Kenyan commercial banks from 1997 to 2003 and used primary data collected using questionnaires. The study found Kenya's economic downturn, drop in consumer purchasing power and legal issues are elements influencing non-performing loans in banks. Moreover, the study acknowledges the similarities between the notion of nonperforming loans and loan delinquency. This study limited its sample to only 10 commercial banks, and a time duration of five

years. Our study only used secondary data from specific bank's financial statements and journal and other publications and focused on all Kenyan commercial banks for a duration of 10 years.

A study was carried out by (Muthee, 2009) to comprehend the correlation between management of credit risk and profitability of commercial banks. The study adopted a descriptive research design and used organized questionnaires to amass primary data and secondary data over a ten-year duration, from 2000 to 2009 and both qualitative and quantitative methods. Regression analysis was used for empirical analysis, defining the Non-Performing Loan ratio (NPLR) as the measure of credit risk and Return on Equity as measure of profitability. The results from the study concluded that management of credit risk influences profitability. This study did not consider looking into the issue of profitability across different tiers, a gap which our study sought to bespeak using data from 2014 to 2023.

However, (Kithinji, 2010) determined that a majority of a commercial bank's profitability is not affected by the quantity of credit and outstanding loans. The study further implies the consideration that other variables affect bank performance. This study used data during the 2004-2008 period and analysed the data using regression analysis. Our study used recent data, for a duration of ten years and included bank tiers as a categorical variable in assessing effects of effective management of credit risk on profits of commercial banks.

(Mutua, 2014) studied the effect of management of credit risk practices on profitability of Kenyan commercial banks, applying a descriptive research design enabling the generalization of the findings to a larger population. Questionnaires were used to gather primary data, which was then analysed using quantitative methods. The study concludes that, given that risk analysis is a credit risk management practice in banks, it is critical for commercial banks to apply contemporary risk measurement techniques, particularly for credit risks. The study concluded that credit risk identification contributes to financial performance. On the other hand, our study will use secondary data from financial reports and analysed using a linear regression model.

Moreover, (Gitari, 2021) conducted a study on profitability and regulation of credit risk management in commercial banks listed in Nairobi Securities Exchange in Kenya. The study adopted a longitudinal research design for a five-year period from 2014 to 2018 of 11 listed commercial banks. The study utilized primary and secondary data and regression models to determine if there exists a relationship between profitability, measured using return on capital employed, return on assets and return on equity and non-performing loan ratio credit, a measure of credit risk management regulation. The study discovered a positive correlation between management of credit risk and profitability. However, this study considered all listed Kenyan commercial banks and focus on how credit risk management influences profitability different bank tiers for a 10-year period.

In conclusion, from the various studies conducted on the relationship between profitability and management of credit risk in Kenyan commercial banks, it is obvious that managing credit risk is crucial in maximizing the profits of financial institutions. Apart from Kithinji's study which found that quantity of credit risk does not affect profitability, other studies found credit risk management affects profitability positively.

From the various theories and empirical evidence considered, adopting the best management practices is important to minimize loan losses. Financial institutions enhance their growth by adopting effective credit risk management practices.

2.4 Research gap

The strength of a bank is key in the growth and stability of an economy, where profitability and capital adequacy determine the strength of a bank. Thorough research has been conducted on the effect of managing credit risk on profitability. The studies yield contradicting results on this relationship.

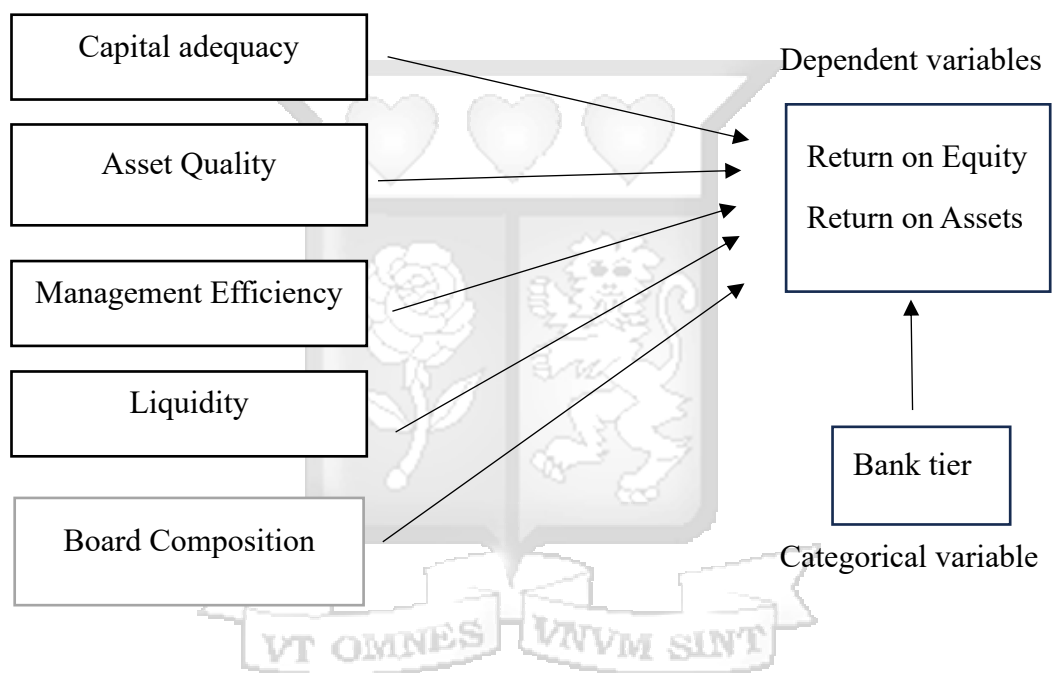
However, the studies did not consider how credit risk management affects profitability across different bank tiers. Understanding this effect across different bank tiers is key to make informed decisions and maintain financial stability as different tiers face different challenges and therefore differences in how credit management practices affect profitability. Moreover, there has not been research using data from recent years. In this study therefore we will use data from 2013 to

2022 Therefore, the existence of a research gap to which we focus our efforts to conduct research on it.

2.5 Conceptual Framework

The response variable is Return on Equity while the control variables are capital adequacy, asset quality, management efficiency, liquidity and Board composition. The categorical variable is bank tier.

Control variables



CHAPTER 3: METHODOLOGY

3.1 Introduction

This is a quantitative study which aims to analyse the correlation between credit risk and profitability of Kenyan commercial banks, considering the different tier groups, to capture how effective credit risk management across different tier groups affects performance. It contains the design of the research, collection of data and data sources analysis.

3.2 Research Design

According to (Kerlinger, 1986) a strategy of investigation to achieve responses to research inquiries is a research design. This study assumed a descriptive research design as it best identifies patterns in properties of variables of interest by observing, describing, summarising and analysing data. However, this design only provides the how and what but not the why.

This design is ideal for this study as it generates statistical results which are easy for interpretation and accounts for random variables which are not controlled by the researcher as it seeks to comprehend the natural behaviour of a variable.

3.3 Population and Sampling

Population

Population is an assemblage of individual or events that share observable traits which are assessed, and conclusions are drawn. For this study, the population of interest is all listed Kenyan commercial banks to provide an efficient framework for studying the influence of managing credit risk on profitability. As of December 2022, there were 38 licensed commercial banks in Kenya (CBK, 2022).

Sample

A sample is a small part used to represent a whole, whose data is collected for analysis. The study will utilize random sampling method to obtain a sample of 20 representing 53% of the 38 Kenyan commercial banks, based on data availability. This sample will be sufficient to draw meaningful conclusions.

It is crucial to acknowledge the limitations of a small sample when generalizing for findings of the entire population.

3.4 Data collection

Data collection methods should be adequate, suitable and reliable. Therefore, this study used secondary data from Kenyan licensed commercial banks. Annual reports and quarterly financial statements of individual banks, CBK website, Kenya Bankers Association and other publications and journals were the sources of quarterly data, from 2014 to 2023.

3.5 Data analysis

The data was cleaned by removing irrelevant, incomplete, errors or duplicated data from the dataset.

3.5.1 Descriptive statistics.

The study utilized R programming language to meet the intended objectives of this study. The data was then analysed using descriptive statistical analysis to understand the data's inherent characteristics.

3.5.1 Diagnostic Tests

3.5.2.1 Model Specification

Model specification is the process of determining the independent variables to include or exclude in a regression model. Here several tests were conducted to ensure the appropriate model is used, either Pooled model, Fixed Effects model or Random Effects model. They are:

Hausman Test

Hausman test is a test of endogeneity in the independent variables. The test is used to choose between a fixed effects model or the random effects model for the data. We test the null hypothesis that the random effects model is appropriate and the alternative hypothesis that the fixed effects model is appropriate.

$$H_0: \text{Random effects model is appropriate}$$

H₁: Fixed effects model is appropriate

We fail to reject the null hypothesis if the p-value is greater than 0.05 ($p > 0.05$).

Breusch Pagan Test

The Breusch Pagan test is a test for heteroskedasticity of errors in a regression. This test is a measure of how errors increase across the independent variables and assumes the error variances are due to a linear function of one or more independent variables in the model and follows a chi-squared distribution. For this test, the null hypothesis is that the variances are equal to zero, suggesting a Pooled OLS is a better estimator and the alternative hypothesis is that the error variances are not all equal to zero, indicating a Random Effects Model is a better estimator. Therefore, we fail to reject the null hypothesis if the p-value is greater than 0.05 ($p > 0.05$).

F-test

F-test determines whether the fixed effects, observed and unobserved, of a model are zero across all units (Reyna, 2010). Bias is indicated by a significant F-statistic in a pooled model and a random effects model if covariance of observed and unobserved variables does not equal to zero. The null hypothesis is that the pooled model is preferred to fixed effects model. We fail to reject the null hypothesis if the p-value is greater than or equal to 0.05 ($p \geq 0.05$).

3.5.1 Analytical Model

This study utilizes a multiple linear regression model which determines the relationship between one dependent variable and multiple independent. Therefore, we employ a multiple linear regression model of the form:

$$y_i = \beta_0 + \beta_1 x_{i,1} + \beta_2 x_{i,2} + \dots + \beta_k x_{i,k} + \varepsilon$$

Where: y_i represents the dependent variable, β_0 represents the intercept and β_1 to β_k represents the coefficients, x represents the independent variables and ε represents the error term.

This research used Return on Equity (ROE) and the Return on Assets (ROA) as profitability measures and dependent variables. The variables were also used as

measures of financial performance. ROE determines financial performance by dividing net income by shareholder equity and is considered a measure of efficiency in generating profit while ROA is a measure of profitability which divides the net income by total assets. ROE and ROA were chosen as the required components are available in the annual reports for the banks.

Popular and effective bank specific elements used by the CBK to evaluate bank's overall financial performance are the CAMEL ratios. Therefore, this research opted to utilize Capital Adequacy, Asset Quality, Management Efficiency, liquidity and the board composition as the measures of credit risk management and independent variables. Therefore, in this study, the following models were applied:

Equation 1:

$$ROE = \alpha + \beta_{i,t}CA_{i,t} + \beta_{i,t}AQ_{i,t} + \beta_{i,t}ME_{i,t} + \beta_{i,t}LQ_{i,t} + \beta_{i,t}Board_{i,t} + B_{i,t}Tier_{i,t} + \varepsilon$$

Equation 2:

$$ROA = \alpha + \beta_{i,t}CA_{i,t} + \beta_{i,t}AQ_{i,t} + \beta_{i,t}ME_{i,t} + \beta_{i,t}LQ_{i,t} + \beta_{i,t}Board_{i,t} + B_{i,t}Tier_{i,t} + \varepsilon$$

Where:

ROE = Return on Equity

ROA = Return on Assets

α = Intercept

$CA_{i,t}$ = Capital Adequacy of bank i at time t

$AQ_{i,t}$ = Asset Quality of bank i at time t

$ME_{i,t}$ = Management Efficiency of bank i at time t

$LQ_{i,t}$ = Liquidity of bank i at time t

$Board_{i,t}$ = Board composition (more non-executive members) of bank i at time t

$\beta_{i,t}$ = Coefficients of bank i at time t

ε = error term

To use the variables below, we use the following metrics:

Variable	Measurement Metric
ROE	Net income to Total equity
ROA	Net Income to Total assets

Capital Adequacy	Total capital to Total assets
Asset quality	Non-performing loans to Total loans
Management Efficiency	Total operating expense to Total revenue
Liquidity	Total loans to Total assets
Bank Tier	Log of Assets
Board Composition	Number of executive and non-executive board members

3.5.2 Diagnostic tests after Model Specification

Test of significance

This study utilized Walsh test, a parametric measure of significance of a set of independent variables. A significant variable is one which adds value to the model and if omitted could affect the model significantly. The hypotheses are:

$$H_0: \beta_0 = 0$$

$$H_0: \beta_0 \neq 0$$

If $\beta^\wedge$ is significantly different from β_0 , then the variable is significant for the model.



CHAPTER 4: EMPIRICAL RESULTS AND ANALYSIS

4.1 Introduction

This chapter will focus on the empirical findings for our research. The chapter contains descriptive statistics for our data, the model specification, model analysis and tests after model analysis, explaining and describing the results.

4.2 Descriptive Analysis

Table 4.1: Descriptive statistics for the panel data

	Min	Max	Mean	Std
ROE	-2.0409	0.3424	0.05289	0.18702404
ROA	-0.2061	0.047389	0.009008	0.02011555
Capital.Adequacy	0.01854	0.38266	0.1413	0.04899843
Asset.Quality	0	32.551	2.8164	4.00476462
Management.Efficiency	0	3.1324	0.6912	0.43633383
Liquidity	0	0.11732	0.03675	0.02443433
Board	0	1	0.95	0.21828629
Tier	1	3	2	0.86738175

The descriptive statistics conducted as shown in the Table 4.1 allows to check the data quality and provides a clear overview of the data.

Table 4.2: Visual representation of the results

Metric	Lowest value	Bank	Period
ROE	-2.0409	UBA Bank	Q4 2021
ROA	-0.2061	Access Bank	Q4 2021

Metric	Highest value	Bank	Period
ROE	0.3424	Equity Bank	Q4 2022
ROA	0.047389	Equity Bank	Q4 2015

The ROE mean of 0.05289 indicates a low average Return on Equity, while the standard deviation of 0.18702 indicated relatively high variations in ROE.

On average, the banks have an ROA of 0.00901 and a standard deviation of 0.02012 which indicates relatively similar performance across the banks.

The minimum capital adequacy of 0.01854 is representative of low levels of capital relative to risk weighted assets. The Capital Adequacy of 0.049 on the other hand

indicates different risk exposures and capital buffers across banks. A minimum Asset Quality of 0 indicates no non-performing loans during certain periods for some banks. However, the Asset Quality standard deviation of 4.00476 suggests different loan portfolio performance.

The minimum management efficiency of 0 shows that some banks have little operational expenses relative to their income, with a standard deviation of 0.43633 indicating differences in cost efficiency across banks. A liquidity minimum of 0 indicates minimal liquid assets relative to total assets and a low standard deviation of 0.02443 indicates fairly consistent liquidity levels across banks and time.

The research also analysed the categorical variables, where we concluded that the average of board is 0.95 with a standard deviation of 0.21828629 and where 1 represents more non-executive board members while 0 represents more executive members in the board. Tier on the other hand had a mean of 2 and a standard deviation of 0.86738175. The tier indicated the various nabk levels there are, where 1 represents large banks, 2 medium banks and 3 for small banks.

4.3 Diagnostic tests

Hausman Test

Table 4.3: Hausman tests

Hausman Test
data: ROE ~ Capital.Adequacy + Asset.Quality + Management.Efficiency + ...
chisq = 4.5906, df = 5, p-value = 0.4678
alternative hypothesis: one model is inconsistent

The research employed the plm package in the R software and conducted the Hausman test for both models. For Equation 1, the computed p-value of 0.4678 was greater than 0.05. Therefore, we failed to reject the null hypothesis and concluded that the random effects estimator was the appropriate choice for the data.

Hausman Test
data: ROA ~ Capital.Adequacy + Asset.Quality + Management.Efficiency + ...
chisq = 10.735, df = 5, p-value = 0.05689
alternative hypothesis: one model is inconsistent

For Equation 2, the computed p-value was 0.05689, which is higher than 0.05, therefore, we failed to reject the null hypothesis and concluded that the random effects estimator was the fit choice for this panel data.

Breusch-Pagan Test

Table 4.2: Breusch-Pagan Test

Lagrange Multiplier Test - time effects (Breusch-Pagan)
data: ROE ~ Capital.Adequacy + Asset.Quality + Management.Efficiency + ...
chisq = 1.9334, df = 1, p-value = 0.1644
alternative hypothesis: significant effects

The Breusch-Pagan test was conducted for Equation 1, and brought about a p-value of 0.1644, which is greater than 0.05. Therefore, we failed to reject the null hypothesis and concluded that there is no sufficient evidence of heteroskedasticity. Hence, the Pooled OLS estimator was selected as the appropriate estimator.

Lagrange Multiplier Test - time effects (Breusch-Pagan)
data: ROA ~ Capital.Adequacy + Asset.Quality + Management.Efficiency + ...
chisq = 0.078335, df = 1, p-value = 0.7796
alternative hypothesis: significant effects

For equation 2, the Breusch-Pagan test resulted to a p-value of 0.7796, a value greater than 0.05, therefore we failed to reject the null hypothesis and concluded that the Pooled OLS estimator was the better fit for this data.

F test

Table 4.3: F test

F test for individual effects
data: ROE ~ Capital.Adequacy + Asset.Quality + Management.Efficiency + ...
F = 1.0424, df1 = 6, df2 = 308, p-value = 0.3977
alternative hypothesis: significant effects

For Equation 1, an F-test was conducted and a p-value of 0.3977 computed, which is greater than 0.05. We failed to reject the null hypothesis and concluded that the Pooled OLS estimator is a better fit.

F test for individual effects
data: ROA ~ Capital.Adequacy + Asset.Quality + Management.Efficiency + ...
F = 2.5743, df1 = 6, df2 = 307, p-value= 0.01899
alternative hypothesis: significant effects

For Equation 2, the F-test resulted to a p-value of 0.01899, which is less than 0.05. Therefore, we rejected the null hypothesis and deduced a Fixed Effects estimator was a better fit.

However, since from the Hausman test we concluded that the Random Effects estimator was a better fit and that the Pooled OLS estimator was the better fit according to the Breusch-Pagan test, we therefore use the Pooled OLS estimator for Equation 2.

4.4 Model Analysis

4.4.1. Model 1

The first regression analysis was conducted according to the first model:

$$ROE = \alpha + \beta_{i,t}CA_{i,t} + \beta_{i,t}AQ_{i,t} + \beta_{i,t}ME_{i,t} + \beta_{i,t}LQ_{i,t} + \beta_{i,t}E_{i,t} + \beta_{i,t}NE_{i,t} + \beta_{i,t}Tier_{i,t} + \varepsilon$$

Table 4.4: Pooled OLS Model for equation 1

Coefficients:				
	Estimate	Std.Error	t-value	pr(> t)
(Intercept)	0.13291	0.05935	2.2394	0.025833
Capital Adequacy	0.62681	0.224644	2.7902	0.005591
Asset Quality	-0.0011	0.002843	-0.3916	0.695618
Management Efficiency	-0.2149	0.025076	-8.5686	4.91E-16
Liquidity	0.55982	0.416882	1.3429	0.180291
Board More Executive	-0.0279	0.042305	-0.6588	0.510531
Tier Medium	-0.0128	0.025772	-0.4967	0.619762
Tier Large	-0.0209	0.024999	-0.836	0.403812

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares: 11.158
 Residual Sum of Squares: 7.6324
 R-Squared: 0.31597
 Adj. R-Squared: 0.30062
 F-statistic: 20.5882 on 7 and 312 DF, p-value: < 2.22e-16

The findings of the Pooled OLS model have distinct effects on ROE. The intercept revealed that the ROE would be 0.13291 given all other independent variables are zero. A unit change in Capital Adequacy would result in a 0.62681 unit change in the ROE, hence, there exists a strong positive relationship between ROE and Capital Adequacy. A unit change in Asset Quality would result in a -0.0011 unit change in ROE. This indicates that Asset Quality has a minimum impact on ROE.

On the other hand, a unit change in Management Efficiency had a negative impact on ROE of -0.2149. For Liquidity, a unit change in liquidity, would lead to a 0.55982 change in ROE, indicating that it has stronger impact on ROE. A board of Directors with more executive members than non-executive members have a negative impact on the ROE since a unit change in Board More E results in a -0.0279 unit change in ROE.

Tier Medium and Tier Large have negative coefficients of -0.0128 and -0.0209 respectively. This shows that if a bank is in medium tier, its ROE is expected to be 0.0128 units less than a small tier bank. Consequently, for a large tier bank, the expected ROE is 0.0209 less than a small tier bank.

The model also indicated an R-Squared of 0.31597 which indicates that 31.597% of the variance in the dependent variable is explained by the model. The model also records the F-statistic which shows the model's statistical significance.

4.4.2. Model 2

The second regression was conducted according to the second equation:

$$ROA = \alpha + \beta_{i,t}CA_{i,t} + \beta_{i,t}AQ_{i,t} + \beta_{i,t}ME_{i,t} + \beta_{i,t}LQ_{i,t} + \beta_{i,t}E_{i,t} + \beta_{i,t}NE_{i,t} + \beta_{i,t}Tier_{i,t} + \varepsilon$$

Table 4.5: Pooled OLS Model for Equation 2

Coefficients	Estimate	Std.Error	t-value	Pr(> t)
(Intercept)	0.01674	0.005941	2.8173	0.005151 **
Capital Adequacy	0.04716	0.022489	2.0971	0.036790 *
Asset Quality	0.00017	0.000285	0.6051	0.545523
Management Efficiency	-0.0265	0.00251	-10.5683	< 2.2e-16 ***
Liquidity	0.11569	0.041733	2.7721	0.005905 **
Board More Executive	-0.0018	0.004235	-0.4315	0.666382
Tier medium	0.00354	0.00258	1.3737	0.170508
Tier large	0.00015	0.002503	0.0589	0.95305

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares: 0.12908

Residual Sum of Squares: 0.076489

R-Squared: 0.40742

Adj. R-Squared: 0.39412

F-statistic: 30.6444 on 7 and 312 DF, p-value: < 2.22e-16

The Pooled OLS model has distinct effects on ROA. The intercept revealed that the ROA would be 0.01674 given all other independent variables are zero. A unit change in Capital Adequacy would result in a 0.04716 unit change in the ROA, hence, there exists a positive relationship between ROA and Capital Adequacy. A unit change in Asset Quality would result in a 0.00017 unit change in ROA.

On the other hand, a unit change in Management Efficiency had a negative impact on ROA of -0.0265. For Liquidity, a unit change in liquidity, would lead to a 0.11569 change in ROA, indicating that it has positive impact on ROA. A board of Directors with more executive members than non-executive members have a negative impact on the ROA since a unit change in Board More E results in a -0.0018 unit change in ROA.

Tier Medium and Tier Large have positive coefficients of 0.00354 and 0.00015 respectively. This shows that if a bank is in medium tier, its value for ROA is 0.00354 units higher than that in the small tier, holding other factors constant. For bank in the large tier, its ROA value is 0.00015 units higher than a small tier bank.

The model also indicated an R-Squared of 0.40742 which indicates that 40.742% of the variance in the dependent variable is explained by the model. The model also records the F-statistic which shows the model's statistical significance.

4.5 Test of Significance

Table 4. 6: Wald test for Equation 1

Wald test				
Model 1: ROE ~ 1				
Model 2: ROE ~ Capital.Adequacy + Asset.Quality + Management.Efficiency + Liquidity + board + tier				
Res.Df	Df	Chisq	Pr(>Chisq)	
1	319			
2	312	7144.12	< 2.2e-16	***

This research utilized Wald test to analyse the significance of the coefficients of the models. From our research, for the first equation, we found the p-value as < 2.2e-16, therefore we conclude that the predictors are statistically significant.

Table 4. 7: Wald test for Equation 2

Wald test				
Model 1: ROA ~ 1				
Model 2: ROA ~ Capital.Adequacy + Asset.Quality + Management.Efficiency + Liquidity + board + tier				
Res.Df	Df	Chisq	Pr(>Chisq)	
1	319			
2	312	7214.51	< 2.2e-16	***

For the second equation, we also found a p-value of < 2.2e-16 and concluded that the predictors are statistically significant.

CHAPTER 5: CONCLUSION

5.1 Introduction

This chapter summarizes the key findings of the previous chapter and gives the conclusions, recommendations and suggestions for further research based on the objectives set out in the early chapters.

5.2 Discussion on Research Findings

Starting our research, we set out to investigate the relationship between credit risk management and financial performance of Kenyan commercial banks and understand how effective credit risk management affects profitability across different bank tiers.

Both ROE and ROA exhibit a strong positive correlation with capital adequacy, indicating its significance in maintaining profitability through sound financial management. Both profitability metrics are positively impacted by liquidity as well, suggesting that greater liquidity improves a commercial bank's capacity to fulfill their financial obligations. However, management efficiency has a negative impact on both ROE and ROA, indicating that inefficient use of resources lowers profitability. Both metrics are barely affected by asset quality, suggesting that it has little direct bearing on profitability.

A commercial bank with more executive members on its board, indicate a negative impact on both profitability measures. This would indicate that a well-balanced board or a predominantly non-executive board would improve governance and hence profitability.

Moreover, medium and large tier banks have a negative impact on ROE to indicate that they have lower ROE compared to small tier banks. This can be attributed to the higher operational complexities faced by large and medium banks which may increase inefficiencies and higher expensed hence lowering profitability. However, medium and large tier banks have a positive impact on ROA, showing they have higher ROA than smaller banks, attributable to efficiency in asset management and controlled lending practices.

Hence, we conclude that there exists a mixed relationship between credit risk management and profitability. This is attributable to the varied influence of credit risk management components on the profitability metrics, such that certain components may benefit shareholder returns more than efficiently using assets.

While (Muthee, 2009) found that proper credit risk management affects profitability of commercial banks, this study found that there exists mixed relationship between credit risk management and profitability of Kenyan commercial banks. These differences may be attributed to the different data sets used in the study, where this study used data from 2014 to 2023 while the previous study used 2000 to 2009 data. Moreover, this study utilized the CAMEL indicators as measures of credit risk management and two metrics (ROE and ROA) as measures of profitability while the previous study only used NPLR and ROE. Therefore, this study highlights the importance of multidimensional indicators to determine the impact of credit risk management on profitability and the influence of external economic factors like the 2020 COVID 19 pandemic.

On the other hand, (Li& Zou, 2014) found that credit risk management affects profitability of commercial banks in Europe while this study found a mixed relationship between credit risk management and profitability of Kenyan commercial banks. The differences may be because of the geographical differences of the studies, the different sample sizes utilized since this study had a sample of 8 Kenyan commercial banks and the previous study utilised a sample of 47 of the largest commercial banks in Europe. Moreover, both studies utilized data from different time periods. Hence, this highlights the need to tailor credit risk management across different geographical areas and that differences in changes in global and local economic factors have varying effects of credit risk management and profitability. Therefore, commercial banks should be careful on how they manage their credit risk as it is one of the most important factors that ensures survival of these institutions. Size and scale influence balance of commercial banks' credit risk management and profitability. While medium and large banks show better asset utilization but battle with operational inefficiencies, small banks are thriving at providing shareholder returns. Banks at all levels require customized approaches that tackle the challenges they face and improve credit risk management procedures.

5.3 Conclusion

In conclusion, the study established that effective credit risk management has a significant impact on profitability of Kenyan commercial banks. However, the impact is mixed. With the two profitability metrics, the different CAMEL indicators

have different effects on the metrics. Therefore, credit risk management has a strong relationship with financial performance.

Moreover, the study also established that the impact of credit risk management on profitability varies across different bank tiers and as such, customized approaches are needed to maximize the impact of credit risk management on profitability across the different tiers.

5.4 Recommendations

This study recommends that commercial banks should maintain customized approaches to maximize the influence of credit risk management on profitability. Tailored credit risk management practices, according to the tiers, should reflect the specific bank's resource capabilities and risk-return appetite.

Moreover, they should enhance their board composition to include a balance in the number of executive and non-executive board members to promote transparency.

The study also recommends that commercial banks try maintaining low operational costs to increase their profit margins hence higher financial performance.

5.5 Suggestions for Further Research

For further research, it is recommended to researchers that they include more indicators to the research model, such as macroeconomic variables and other profitability measures. Such a study would illuminate how the effects of external economic factors and internal bank policies interact and improve the model's predictive accuracy.

Moreover, researchers may seek to expand the dataset to reduce sampling risks and produce more accurate results and conclusions, creating a better understanding of the impact of credit risk management on profitability of commercial banks.

Incorporating the impact of regulations and policies in assessment of the impact of credit risk on financial performance would also be a credible addition to future studies.

Further research could incorporate other risk types for other types of banks, for example investment banks in the banking industry. In addition, since profitability is only one aspect of financial performance, other aspects of may also be explored.

5.6 Limitations of the study

During the research, several challenges arose during the data collection process with the primary issue being the limited availability of historical data, which limited the scope of the data.

Secondly, the study was limited to only commercial banks in Kenya, such that the results obtained may not be viable to other lending institutions or institutions in different geographical areas.

Thirdly, the study only utilized the CAMEL indicators, board composition and profitability, overlooking other variables such as macroeconomic variables and bank-specific variables.



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