EFFECT OF BANK CHARACTERISTICS ON INTEREST RATE SPREAD OF COMMERCIAL BANKS IN KENYA

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13/03330

MASTER OF SCIENCE IN COMMERCE(FINANCE & ACCOUNTING)

KCA UNIVERSITY

2023

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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD MASTER OF SCIENCE IN COMMERCE(FINANCE & ACCOUNTING) IN THE SCHOOL OF BUSINESS AT KCA UNIVERSITY

MARCH, 2024

DECLARATION

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

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Sign: Date:

I do hereby confirm that I have examined the master's dissertation of **Nelly Akoth Mitoko** and have certified that all revisions that the dissertation panel and examiners recommended have been adequately addressed.

Sign: Date: Peter Kariuki

Dissertation Supervisor

ABSTRACT

A well-functioning financial system with optimal interest rate spreads in commercial banks is crucial for economic growth and development. Commercial banks play a key role in mobilizing savings, allocating capital, and financing investments, which are all critical to achieving sustainable economic growth. Optimal interest rate spread ensure that banks have sufficient margins to cover their operating costs and risks, while also providing affordable credit to borrowers. This, in turn, encourage investment and entrepreneurship, leading to increased economic activity and employment. The objective of this research is to examine the effect of bank characteristics on the interest rate spread of commercial banks in Kenya. The key objectives of this research are to assess the impact of deposit levels, liquidity, asset quality, and bank size on the interest rate spread across commercial banks operating in Kenya. This research was grounded on the theoretical frameworks of the liquidity preference theory, Fisher theory, and financial intermediation theory. The research used a descriptive research design. The selected sample consisted of 42 commercial banks located in Kenya. Due to the limited size of the target group, the research included the whole population. The research used secondary panel data spanning the years 2018 to 2022. The study included the use of descriptive statistics, including various metrics such as frequency distributions, percentages, variances, measures of dispersion (specifically standard deviation), and mean. The method of regression analysis was used to conduct inferential statistics. The study used a Fixed Effects model to explore how bank characteristics influence Interest Rate Spread in commercial banks in Kenya. Deposit Levels increased Interest Rate Spread by 0.041358 units (p-value 0.000), Liquidity by 0.022596 units (p-value 0.000), Asset Quality decreased it by -0.04441 units (p-value 0.000), and Bank Size increased it by 0.004325 units (p-value 0.000). All these factors were statistically significant at a 5% level, leading to the rejection of all null hypotheses. This indicates that higher deposit levels and liquidity slightly increase interest rate spread, better asset quality decreases it, and larger bank size is associated with a higher spread. The study concluded that in Kenyan commercial banks, four factors significantly influence the interest rate spread: deposit levels, liquidity, asset quality, and bank size. Higher deposit levels and liquidity can increase the spread, while better asset quality also positively impacts it. Larger bank size is associated with a wider interest rate spread. Recommendations include increasing deposit levels, maintaining high liquidity, improving asset quality, and for smaller banks, considering growth and expansion.

ACKNOWLEDGEMENT

I would wish to express my heartfelt gratitude to the almighty God and our Lord Jesus Christ for allowing me to embark on this undertaking. I am grateful to my supervisor, Dr. Peter Kariuki, for his constructive comments, advice, and motivation, which enabled me to complete my research project. This task was tough, but you were always there for advise and direction, and I thank KCA University for your assistance. I'd want to express my heartfelt gratitude to my mother for her efforts, support, and patience during my education.

DEDICATION

I dedicate this project to the memory of my late husband, David Mboya and my late father, Asher Mitoko. I also dedicate it to my mother, Peninah Mitoko and my children, Mercy, Isaac and Precious Mboya. I also dedicate it to all my friends, especially Carden from KCA University. You are truly a blessing to many.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

AfDB: African Development Bank

ARDL: Autoregressive Distributed Lag

CBK: Central Bank of Kenya

CS-ARDL: Cross-Sectional Augmented Autoregressive Distributive Lag Model

FS: financial stability

IMF: International Monetary Fund

NIM: Net Interest Margin

OLS: Ordinary Least Squares

PBOC: People's Bank of China

RAEA: Risk-adjusted Equity-To-Asset Ratio

RAROA: Risk-adjusted Return On Assets

ROA: Return On Assets

SGMM: System Generalized Method Of Moments

OPERATIONAL DEFINITION OF TERMS

Asset Quality: This refers to the condition of loans and other assets held by a commercial bank. Key indicators of asset quality include the level of non-performing loans and loan loss reserves (Bholat et al., 2018).

Bank Size: This refers to the total assets held by a commercial bank. It is often used as an indicator of the bank's market power and risk profile. Larger banks, for example, can typically absorb losses more easily than smaller banks and may thus be exposed to lower risk (Buyl, Boone & Wade, 2019).

Commercial Banks in Kenya: These are financial institutions licensed by the Central Bank of Kenya to accept deposits, make loans, and provide related services, such as money transfers and currency exchange, to individuals and businesses (Central Bank of Kenya, 2022).

Deposit: This refers to the funds placed into a banking institution by a customer, often in a specific type of account designed for safekeeping and growth of the funds. In the context of commercial banks, deposits form the main source of funds for lending activities (Stöllner, 2018).

Interest Rate Spread: This refers to the difference between the borrowing and the lending rate of financial institutions, such as commercial banks. It's a key indicator of the profitability and risk associated with a bank's lending activities (Chiang & Tsai, 2020).

Liquidity: In the context of a commercial bank, liquidity refers to the ability of the bank to meet its short-term obligations, such as customer withdrawals and interbank payments, without incurring unacceptable losses (Benson & Odey, 2022).

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

This investigation aims to analyze the many factors that affect the interest rate spread in the commercial banking industry in Kenya. Banks have a crucial part to play in the economic growth of a nation. They gather the surplus savings of the citizens and provide them for investment (Arora, 2021). Moreover, they generate fresh demand deposits while lending and buying investment securities (Julia & Kassim, 2020). Bills of exchange are accepted and discounted by banks, which facilitates domestic as well as international trade. Banks also enhance the mobility of capital (Orbell, 2017). Commercial banks are the most effective means of creating a credit flow of money in markets, according to Temirov (2019). According to Saini and Sindhu (2014), banks play an important role in fostering capital creation, limiting speculation, maintaining a balance between demand and availability, and moving physical resources into preferred channels. Rapid expansion in many areas of the economy is a direct result of the commercial banking system's ability to meet the needs of its customers in a systematic and orderly manner (Saini & Sindhu, 2014).

Globally, Banks in various countries and regions are subject to a variety of regulatory regimes, each of which has the potential to affect the bank's business practices as well as the interest rate spreads available to customers. According to Kroszner and Strahan (2014), commercial banks in the United States, there are various federal and state agencies that oversee banking operations, including the entities referred to are the Federal Reserve, the Federal Deposit Insurance Corporation (FDIC), and the Office of the Comptroller of the Currency (OCC). On the other hand, European banks are regulated by both the European Central Bank and national banking authorities. Usmonov (2022) argued that the degree of competition in the market and the cost of funds for

banks are both affected by the regulatory environment, which in turn affects the interest rate spreads. In addition, interest rate spreads are not very wide in Japan, which has a highly competitive banking sector; as a result, interest rate spreads are relatively narrow. In contrast, countries like Canada and Australia, which have more consolidated banking sectors, have wider interest rate spreads (Bindseil, 2020). According to Mehmeti and Deda (2022), Macedonia has high loan rates, as do other developed and emerging nations. Moreover, bank size, market share, and non-performing loans in Macedonia are factors that positively affect lending rates.

Regionally, a wider difference in interest rates in developing nations acts as an obstacle in collecting funds as it dissuades potential savers and investors from investing or borrowing. It eventually leads to a decrease in lending, investment, and the economic growth of a nation. Conversely, a lower margin guarantees better money circulation, which leads to economic growth and increased efficiency of banks (Anjom, 2021). Many African countries lack a well-developed banking regulatory framework, making it more difficult for banks to operate and maintain a healthy interest rate spread (Pinto, Gaio, & Gonçalves, 2020). According to an African Development Bank report, one of the major factors impeding the development of Africa's banking sector is regulatory issues (African Development Bank, 2013).

Moreover, the banking sector in many African countries is relatively concentrated, with a few large banks dominating the market. Because these banks have more market power and charge higher interest rates, interest rate spreads have increased. The research conducted by Nigeria's Central Bank suggests that the increase in lending rates can be attributed to the concentration of banks in the sector. In 2021, Nigeria experienced a significant interest rate differential of 7.28%. The banking industry in Ghana is of great significance to the country's economy, particularly in terms of facilitating savings and loans. The interest rate spread in Ghana is currently 11.8 percent. In

Zambia, as is the case in other developing and some developed countries, loan rates are high, making it challenging to access credit. The study's findings indicate that bank characteristics such as size, operational expenses, and liquidity risk negatively impact lending rates in Zambia.

Locally, in Kenya, interest rate spread has been a subject of concern and debate due to its potential impact on the cost of credit, access to finance, and economic growth (Alper, Clements, Hobdari & Porcel, 2019). According to CBK (2021), interest rate spread in the country has been relatively high in recent years. The average interest rate spread for Kenya's commercial banks was 8.5% in 2021, for instance. This means that banks' lending rates averaged 13.2%, while their deposit rates averaged around 4.7%. Financial institutions in Kenya that accept deposits of money, lend that money out, and offer other services including foreign banking, document collection, and trade finance are known as commercial banks (Mwanzia, 2019). When it comes to licencing and oversight, commercial banks must look to the Central Banks of the countries in which they conduct business. The Banking Act (Cap 488) of Kenya requires the Central Bank of Kenya (CBK) to issue banking licences, oversee banking operations, and enforce banking regulations. The Kenyan governement is home to 42 different commercial banks. There are three commercial banks in Kenya in which the Kenyan government holds a sizable share. Families own most of the surviving locally-based commercial banks. Commercial banks in Kenya take deposits from customers and earn a profit by making loans to local businesses at exorbitant interest rates.

While the section effectively outlines the broader context of commercial banking in Kenya and its impact on economic growth, it fails to address specific operational challenges and market realities that have a direct impact on interest rate spreads in practise. Importantly, it fails to look at how different types of deposits, such as savings, current, and fixed deposits, affect interest rate spreads, a gap that should be studied given the diverse depositor behaviours and preferences in Kenya's

volatile economic landscape (Chege, Omagwa & Abdul, 2019). The section also overlooks the complex dynamics of liquidity management during economic stress or market disruptions, which can significantly shift a bank's liquidity position and, as a result, impact interest rate spreads (Mehmeti & Deda, 2022). In addition, while the study acknowledges the importance of asset quality, it does not fully address the varied effect of different asset classes, such as the role of non-performing assets in changing banks' risk profiles and interest rate spreads. In addition, the effect of bank size on pricing strategies and risk management is understudied, particularly in terms of operational scale and market influence. This creates a critical gap in understanding how banks of various sizes navigate interest rate spreads in Kenya's complex economic and regulatory environment (Mulili, 2022). Addressing these specific operational and market challenges would provide a more comprehensive and practical understanding of the factors influencing interest rate spreads in Kenya's commercial banking sector.

1.1.1 Bank characteristics

Bank characteristics are the internal aspects that commercial banks take into account when determining lending rates (Muraina, 2019). Bank factors like deposit base, liquidity risk, leverage, and bank size are taken into account when establishing lending rates (Chege, Omagwa, & Abdul, 2019). It is realistic to expect a positive impact from a decreasing spread and a negative impact from a growing spread on banking performance as a result of changes in the interest rate. More lending and output would occur if banks lowered their spread in response to increasing competition or a shift in the discount rate. In addition, Bunea, Corbos, and Popescu (2019) state that as the narrowing of the interest rate spread may be attributed to increased competition. In response, banks reallocate their money from non-interest bearing deposits held at the central bank to the loan market, aiming to augment the banker's markup. (Mehmeti & Deda, 2022). A shrinking interest

rate differential makes banks' conventional intermediary function less profitable; hence, credit institutions may be driven to participate in activities other than lending to enjoy the advantages of economies of scope (Claessens, Coleman & Donnelly, 2018).

1.1.2 Interest rate spread

Commercial banks' interest rate spread refers to the rate at which they earn on deposits less the rate at which they charge on loans (Anjom, 2021). Given its direct impact on a bank's net interest revenue, this spread is a key performance metric. The spread, which is typically expressed as a percentage of the interest rate imposed on loans, is highly variable and depends on a number of factors, including the prime rate, the creditworthiness of the borrowers, and the intensity of rivalry among banks for deposits (Klein, 2020). Both market structure and banking-specific government policies influence interest rate spreads. Spreads are smaller for risk-averse banks than they are for risk-neutral ones because being risk-averse causes a bank to charge more interest and make fewer loans. Bernanke (2020) asserted that monetary and fiscal policy influence the real interest rate spread. Spreads are calculated keeping the clients' interests in mind, as well as a good understanding of the industry's competitiveness. Interest rate spreads have a significant economic impact on advancement (Brynjolfsson & McAfee, 2014). According to Hamza et al. (2022), a more competent banking system benefits the economy by providing high expected profits for investors with a financial overflow, as well as cheap credit rates for financing in new projects needing external capital. Wide spreads in the banking industry discourage prospective savers due to poor deposit returns, restricting loanable funds accessible for prospective borrowers (Arshed & Kalim, 2021).

1.1.3 Commercial Banks in Kenya

There are a total of 43 banks in Kenya; 40 are owned by private individuals or companies, 3 are controlled by the government, and the remaining 15 are owned by foreign entities. Twenty-four of the twenty-five privately held CBs were CBs, while the remaining one was a mortgage lender (CBK, 2018). Deposits are accepted, payments are processed, credit is extended, bank checks and draughts are issued, and safe deposit boxes are provided by commercial banks (Sinyangwe, 2021). Insurance contract brokerage and monetary guidance are two of the extra services they offer. They, too, provide a broader selection of credit and credit-related instruments including overdrafts and cards (Yasushi & Miah, 2022).

Commercial banks help both borrowers and savers, which is why they play a vital role in national economies (Misati, Kamau, & Nassir, 2019). Kaugi (2020) states that the services provided by commercial banks in Kenya are uniform regardless of the size of the bank or its location. But their resources and obligations are different. Kenyan commercial banks have grown substantially thanks to new operating paradigms that have helped them better serve their customers and expand their businesses throughout the East African region (Githaiga, 2021). According to Munge (2020), the Central Bank of Kenya (CBK) regulates commercial banks in accordance with the Banking Act and the Companies Acts of Kenya. In order to keep and expand the country's economy via the banking sector, the CBK establishes regulatory framework and policies (Central Bank of Kenya, 2020). The CBK's restrictions haven't stopped banks from worrying about interest rates, particularly after the CBK liberalised the interest rate ceiling on loans, which has slowed economic growth (Mulili, 2022).

1.2 Statement of the Problem

The focus of this research is to investigate the distinct characteristics of commercial banks in Kenya that have an impact on the interest rate spreads. While extensive research has gone into determining how interest rates are generally affected by a variety of factors such as economic indicators and market conditions (Safavian & Zia, 2018; Okechukwu & Gerald, 2016), very few studies have concentrated on how the specific attributes of Kenyan commercial banks play into this (James, Agak & Siele, 2019). This study aims to fill this gap by examining the relationship between specific bank characteristics and the interest rate spread in the Kenyan setting.

The economic context in Kenya presents a unique case for study; interest rate spreads are significantly higher than the average, not only globally but also among other sub-Saharan African countries (IMF, 2021; AfDB, 2019). This high interest rate spread raises issues of financial inclusivity and economic growth, making it pertinent to study this phenomenon in the unique sociopolitical and economic environment of Kenya. The Structure-Conduct-Performance (SCP) model was the theoretical backbone of this study. This model has been used in prior financial research to understand how the internal structure and conduct of banks lead to various performance outcomes such as interest rate spreads (Sanderson, Mutandwa & Le Roux, 2018).

The current research adopted a theoretical framework that encompasses three prominent theories that bear relevance to the variables being investigated. These theories include the Liquidity Preference Theory, Fisher's Theory, and the Financial Intermediation Theory. The selection of each theory is contingent upon its capacity to provide a comprehensive explanation of how different bank characteristics may be impacting the interest rate spreads observed in commercial banks in Kenya.

This research study adopted a multi-faceted methodology that primarily focuses on descriptive research design complemented by explanatory research. The objective of employing a descriptive research design is to provide a detailed account of the characteristics of commercial banks in Kenya and the prevailing interest rate spreads (Bhattacherjee, 2012). Descriptive research aims to create an accurate snapshot of the variables in question and is particularly suited to this study, as it lays the groundwork for a comprehensive understanding of the banking sector in Kenya and its existing interest rate spreads

Prior studies have shown that bank size, liquidity, and capital adequacy are significant determinants of interest rate spreads (James, Agak & Siele, 2019; Khaduli, 2021). While these general factors are well-understood, there is a noticeable lack of research targeting how these specific bank characteristics uniquely influence interest rate spreads in Kenya (Muraina, 2019; Anjom, 2021). Therefore, this study seeks to fill the existing gaps in the literature by offering an understanding of how specific characteristics of commercial banks in Kenya influence interest rate spreads. Given the uniquely high interest rate spreads in Kenya, there is a critical need for this research, as its findings could have significant implications for economic policy and financial regulation.

1.3 Objectives of the Study

This study was guided by both general and specific objectives.

1.3.1 General Objective for the Study

To determine the effect of bank characteristics on interest rate spread of commercial banks in Kenya.

1.3.2 Specific Objectives

i. To determine the effect of deposit on interest rate spread of commercial banks in Kenya
ii. To establish the effect of liquidity on interest rate spread of commercial banks in Kenya
iii. To assess the effect of assets quality on interest rate spread of commercial banks in Kenya
iv. To determine the effects of bank size on the interest rate spread of commercial banks in Kenya

1.4 Research Hypothesis

H_{01}: There is no significant relationship between deposit and interest rate spread of commercial banks in Kenya

H_{02}: There is no significant relationship between liquidity and interest rate spread of commercial banks in Kenya

H_{03}: There is no significant relationship between assets quality and interest rate spread of commercial banks in Kenya

H_{04}: There is no significant relationship between bank size and the interest rate spread of commercial banks in Kenya.

1.5 Significance of the Study

1.5.1 To the banks management

The study findings may provide bank management with an understanding of the factors that affect interest rate spreads, which can be useful in developing strategies to manage them. By identifying the specific characteristics of banks that affect the interest rate spread, the management can then make informed decisions about how to adjust their policies and practices to optimize interest rate spread. The results of this study could also be used by bank management to identify areas where

they can gain a competitive advantage. For instance, if the study finds that banks with more diversified loan portfolios tend to have lower interest rate spreads, a bank that wants to lower its interest rate spread may diversify its loan portfolio to achieve a competitive advantage over other banks.

1.5.2 Policymakers

The study outcomes may provide policymakers with an understanding of the factors that affect interest rate spreads, which can be useful in developing policies to manage them. By identifying the specific characteristics of banks that affect the interest rate spread, policymakers can then make informed decisions about how to adjust their policies and regulations to optimize interest rate spread. Policymakers may use the results of this study to encourage competition among banks. Interest rate spreads are an important factor that affects the cost of credit for consumers. Policymakers may use the results of this study to develop policies that protect consumers from high interest rate spreads, such as setting limits on the maximum interest rates that banks can charge. Interest rate spreads can have an impact on the overall economic growth of a country. By understanding the factors that affect interest rate spreads, policymakers can develop policies that support economic growth.

1.5.3 Scholars

The study findings may contribute to advancing the existing knowledge on the factors that affect interest rate spreads, which can be useful for future research. By identifying the specific bank characteristics that affect the interest rate spread, scholars and academicians can then develop new theories and test them to further advance knowledge on this topic. The study findings may also provide insights into the Kenyan banking sector, which can be useful for scholars and academicians interested in the banking sector of other African countries. By understanding the

unique characteristics of the Kenyan banking sector, scholars and academicians can then draw comparisons and make generalizations about other similar markets. In addition, the study may identify areas that require further research, which can be useful for scholars and academicians. By identifying research gaps, scholars and academicians can then develop research proposals to fill these gaps, which can contribute to advancing the existing knowledge on this topic. Lastly, the study findings may be useful for enhancing teaching in related courses such as banking and finance. By using the findings of the study in the classroom, academicians can provide their students with a practical understanding of the factors that affect interest rate spreads, which can help them to be better equipped for their future careers in the banking and finance industry.

1.6 Scope of the Study

The purpose of this research is to examine how different aspects of Kenyan commercial banks affect their interest rates. Data on bank size, asset quality, interest rate spread, liquidity risk, and capital sufficiency was collected for the study. Kenya has 43 commercial banks, making it an ideal location for this study because of the country's high concentration of fast-food franchises. The research strategy for this study was descriptive in nature. Between the months of February and August of 2023, the study was carried out.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a theoretical review that informs the research variables, as well as an empirical evaluation of the associated literature pertaining to the study variables. The chapter also introduces the knowledge gap and conceptual framework**.**

2.2 Theoretical Literature

Theoretical frameworks such as the liquidity preference theory, the fisher theory, and the financial intermediation theory are presented here as they pertain to the research variables.

2.2.1 The Liquidity Preference Theory

John Maynard Keynes developed the theory of liquidity preference in 1936. Interest rates, according to this theory, are set by the dynamic between the money supply and the demand for it. The demand for money, in turn, is predicated upon people' inclination to own liquid assets. According to Keynes, individuals have a preference for liquidity, or the ability to access their money easily, which leads them to hold a portion of their wealth in cash or cash-equivalents (Keynes, 1936). According to Keynes, the interest rate should be set such that it strikes a balance between the supply and demand for currency. People will pay a higher interest rate if they have to pay more to borrow money because demand is higher than supply. If there is an abundance of currency compared to its demand, however, people are less likely to invest in it, causing the interest rate to drop (Mishkin, 2010).

Keynes used a straightforward model consisting of a liquid asset and an illiquid asset, bonds without an expiration date (consoles), to build this basic idea into an economic theory. Higher

levels of liquidity preference are analogous to higher levels of capital demand in this framework. Many anticipate a rise in interest rates due to the widespread belief that money demand decreased. To avoid the risk of capital loss, Keynes advocates putting money into less liquid assets (Mishkin, 2010). Since there are other possible explanations, there is only moderate dispute over the inverse relationship between interest rates and money demand. Long-term capital stocks are more risky than short-term ones, so investors should be compensated for that by offering a liquidity premium. Since long-term securities are less susceptible to market rate movements than short-term assets, the resulting price or liquidity discrepancy is direct. If the investment's risk, its maturity, and its liquidity premium are all high, then its value was high. (Sompech, Chisti, & Srinophakun, 2012).

The Liquidity Preference Theory, established by Keynes, primarily focuses on the preference towards liquidity as the main determinant of interest rates. However, this theory faces various constraints when examining the intricacies of contemporary financial markets. To begin with, the theory's reliance on the division between monetary and non-monetary assets oversimplifies the complex and diverse characteristics of asset liquidity. Although the theory highlights the inclination towards assets that offer protection against price fluctuations, it fails to sufficiently consider the subtle distinctions between market liquidity and market risk. According to Beggs (2015), assets that are easily bought and sold in the market, such as exchange-traded stocks, can also experience significant fluctuations in price. However, the present theory fails to adequately explain this phenomenon. In addition, the theory's linear depiction of the relationship between liquidity preference and interest rates is an oversimplification. Real-world scenarios frequently show a non-linear interplay of these factors, which is influenced by numerous economic variables (Bernanke, 2006). The theory also fails to account for the impact of technological progress and

financial innovation, which have evolved significantly since Keynes' time, altering the dynamics of liquidity management in modern financial systems (Merton, 1995).

The theory is relevant to the study variables and especially the variable on the effect of risk liquidity since the demand for money is influenced by individuals' desire for liquidity, or the ability to access their money easily. Interest rates, which act as a check on the supply and demand for currency, are influenced by this inclination toward liquidity. The interest rate spread, or the gap between the interest rate that banks earn on deposits and the interest rate that they charge on loans, is affected by this risk. In times of significant liquidity risk, banks may need to impose a greater interest rate spread on their customers. Therefore, the theory informs the variable of the study and is thus suitable to be used in this study.

2.2.2 Fisher's theory

Fisher's theory, as argued by Fisher (1930), provides a foundation for understanding how changes in inflation affect how much money banks are willing to lend. The hypothesis states that the reduction of nominal lending rates by the inflation rate is the primary factor in determining lending rates (Mishkin, 2011). Those who support this hypothesis count on market participants' perfectly accurate predictions of future inflation rates. According to Eichhorn and Voeller (2012), in order to incentivize savers to retain their financial assets rather than real assets, financial markets must produce a positive nominal lending rate in real terms, since real assets tend to see growth in nominal terms regardless of the inflation rate. Furthermore, it is said that the actual interest rate should above the inflation rate as forecasted by the market. Since lending rates are affected by things like deposit and intermediation fees, reserve requirement expenses, and administrative fees and taxes, they must be positive in real terms at all times (Davis & Fisher, 1987).

Irving Fisher's Fisher's Theory provides a critical framework for understanding the relationship between inflation and interest rates. It does, however, have several limitations. One major criticism, as noted by Galí (2015), is that market participants assume perfect foresight into future inflation rates, which is frequently unrealistic given the unpredictable nature of economies. According to Patra et al. (2015) the theory also underestimates the impact of unexpected inflation, which can significantly distort the real value of interest rates and savings. Moreover, as discussed by Bismut and Ramajo (2019) Fisher's theory oversimplifies the relationship between nominal interest rates and inflation by ignoring other key economic variables such as monetary policy impacts and real economic growth. Another significant limitation, as highlighted by Maiti (2020), is the theory's failure to take risk premiums into account. In reality, lenders demand higher interest rates not only to compensate for expected inflation, but also for the risk of inflation uncertainty. In addition, behavioural economists such as Shiller (2003) have challenged the theory's assumptions about market efficiency and rational expectations, arguing that investor behaviour is frequently influenced by psychological factors, leading to market inefficiencies and deviations from the theory's predictions.

The Fisher theory is relevant to the study on the effect of bank characteristics on interest rate spread of commercial banks in Kenya as it provides a framework for understanding the relationship between inflation rates and lending rates. The theory argues that nominal lending rates are reduced by inflation rates to determine real lending rates. Therefore, if inflation rates change, lending rates was changeed, all other things being equal. In the context of the study, the Fisher theory could be used to investigate whether changes in inflation rates have an impact on the interest rate spreads of commercial banks in Kenya. For example, if inflation rates increase, banks may need to increase their nominal lending rates to maintain their real lending rates, which could result in higher interest

rate spreads. Alternatively, if inflation rates decrease, banks may be able to decrease their nominal lending rates while still maintaining their real lending rates, resulting in lower interest rate spreads.

2.2.3 Financial intermediation theory

The Financial Intermediation Theory was developed by Gurley and Shaw (1960). The theory states that financial intermediaries, such as banks and other financial institutions, play a critical role in the economy by channeling funds from savers to borrowers (Pyle, 1971). Financial intermediaries are able to pool funds from many small savers and lend them out to borrowers in larger amounts, thereby reducing transaction costs and improving the efficiency of the financial system (Gorton & Winton, 2003). The theory suggests that financial intermediaries perform three key functions: maturity transformation, risk transformation, and liquidity transformation. Maturity transformation involves borrowing short-term funds from savers and lending them out for longer periods of time to borrowers. Risk transformation involves taking on risks associated with lending and investing, and spreading those risks across a diverse portfolio of assets. Liquidity transformation involves providing savers with access to their funds on demand, while investing those funds in assets that may not be easily sold or turned into cash (Allen & Santomero, 2001).

Raising interest rates to appease the most risk-averse investors is a concern since it discourages businesses and consumers from borrowing money, stunting economic growth. Lenders mitigate risk associated with unfavourable selection by checking applicants' credit histories. Investors should not count on this credit to cover all of their expenses; in fact, they run the risk of being refused any credit at all (Adrian & Shin, 2009). In order to improve loan quality, Mbotu (2010) suggests that commercial banks should focus more on interest rates. Commercial banks take measures to lower the risk of loan default when there is an information asymmetry between the borrower and the bank since the borrower may expect actual profits after flawless completion.

The theory's oversimplified assumption of information symmetry between borrowers and lenders is a key criticism, as highlighted by Stiglitz and Weiss (1981). In reality, information asymmetry is common, which frequently leads to adverse selection and moral hazard, issues that the theory does not adequately address. In addition, Freixas and Rochet (2008) point out that the theory fails to fully account for systemic risks and the potential for financial contagion, which became especially apparent during the 2007-2008 global financial crisis. Another limitation of the theory, as discussed by Diamond and Dybvig (1983), is its treatment of liquidity risks. While it recognises banks' role in liquidity transformation, it frequently underestimates the risk of bank runs and liquidity crises. This shortcoming was starkly revealed during various financial crises, when the banking sector's vulnerability to sudden withdrawals became clear.

Moreover, the theory largely ignores the impact of regulatory frameworks and government policies on financial intermediation processes, which is emphasised in Barth, Caprio, and Levine's (2001) analysis of international banking systems. Gorton and Winton (2003) also criticise the theory for focusing only on financial intermediaries' diversification strategies. While theory suggests that intermediaries can effectively diversify risks, in practise, the concentration of certain types of assets can lead to increased vulnerability, as seen in the subprime mortgage crisis. Also, Allen and Santomero (2001) contend that the theory fails to adequately account for the role of technological advancements and financial innovation in transforming the banking industry and the nature of financial intermediation.

The theory is relevant to this study because banks play an important role in connecting borrowers and lenders, facilitating financial transactions, and managing risk. Bank characteristics such as size, capital adequacy, liquidity, and credit quality can affect their ability to perform these functions effectively, which can affect the interest rates they charge on loans. Understanding the

relationship between bank characteristics and interest rates in the context of commercial banks in Kenya can provide insights into the factors that drive lending behavior and assist policymakers in designing effective regulatory frameworks to promote financial stability and economic growth.

2.2.4 Modern Portfolio Theory

Harry Markowitz, in his key work "Portfolio Selection," published in the Journal of Finance in 1952 (Markowitz, 1952), created the Modern Portfolio Theory (MPT). Markowitz's Modern Portfolio Theory revolutionized the field of finance by introducing the concept of portfolio optimization. The idea posits that analyzing the potential risk and reward of a single venture is insufficient. Markowitz (1952) suggests thinking about how each investment will perform in respect to the rest of the portfolio. The end goal is to construct a portfolio with the highest achievable anticipated return at a certain level of risk. The theory quantitatively presents the notion of diversification, stating that holding different kinds of financial assets is less risky than holding any single asset (Markowitz, 1952; Elton & Gruber, 1995).

The Modern Portfolio Theory operates under several assumptions. These include assumptions that investors are rational and aimed to maximize their returns for a given level of risk unless they prefer more risk to less. Another assumption is that an asset's risk and return can be quantified and that their behavior can be predicted based on historical performance. Furthermore, the theory assumes that investors have access to all available information and there are no taxes or transaction costs (Markowitz, 1952; Sharpe, 1964).

The strengths of Modern Portfolio Theory lie in its mathematical rigor and its focus on diversification and risk minimization. It provides a structured way to think about investment and has been empirically supported (Fama & French, 1992). However, it also has its weaknesses. The assumptions about rational behavior and the absence of transaction costs and taxes are considered

by many to be unrealistic. Behavioral economists have also pointed out that investors are not always rational and can be influenced by a myriad of psychological factors (Shiller, 2003; Kahneman & Tversky, 1979).

The Modern Portfolio Theory is particularly relevant to the variable of 'asset quality' in this study. The theory's emphasis on diversification and risk-adjusted returns can offer insights into how banks manage their asset portfolios. Understanding this can, in turn, shed light on the bank's interest rate spreads. A bank with a well-diversified and high-quality asset portfolio may have a lower interest rate spread as the risk involved is minimized, aligning well with the theory's principles.

2.3 Empirical Review

The section summarized the relevant literature in light of the study's parameters. Which included the link between bank characteristics and the interest rate on commercial banks and the impact of deposit base, liquidity risk, capital sufficiency, and asset quality on the growth of the bank.

2.3.1 The Effect of Deposit on Interest Rate Spread of Commercial Banks

Khaduli (2021) conducted a study to analyse the relationship between interest rate spreads and bad loans at Kenyan commercial banks. In this study, researchers took a causal approach. The study employed a census sampling strategy due to the very modest population size. A schedule for collecting secondary data was followed. A panel regression model was employed because of the study's usage of panel data. Quantitative methods, including both descriptive and inferential statistics, were used to examine the data. The analysis indicated that there was a large standard variability in the lending rates charged by different banks. According to the research, lending rates have a considerable and favourable effect on banks' non-performing loans in Kenya. Non-

performing loans in Kenyan commercial banks were shown to fluctuate in tandem with the deposit rate, according to the study. Debt collection expenses were also shown to have no bearing on defaulted loans in the study. A decrease in nonperforming loans was shown to follow an increase in lending rates. An rise in deposit rates was found to increase non-performing loans in the study. The study concluded that in order to increase the loan ratio, CBK should develop a policy for controlling the credit rate and the deposit rate.

The effect of deposit charges on the profitability of Kenyan commercial banks was investigated by Ilamoya and Omar (2022). The study's theoretical underpinnings were the Bank Led Growth Model and the Diffusion of Innovations Framework. Forty commercial banks were expected to read this. The sample size was calculated using a proportional method of simple random sampling. The research findings indicated that high interest provided on deposits attracts deposits and that interest paid on deposits decreases revenue produced by commercial banks, hence reducing commercial banks' financial performance. The research found an association between the independent variable (deposit cost) and the dependent variable (financial success). The study found that deposit charges significantly affected the profitability of Kenyan commercial banks.

Terefe (2019) did a research study to assess the elements influencing commercial bank deposit growth in Ethiopia. From 2001 to 2017, a panel dataset of six commercial banks in Ethiopia was utilised for descriptive and econometric studies. The expansion of deposits in commercial banks served as the dependent variable, with the aforementioned explanatory factors serving as the independent variables. The growth of commercial banks' deposits is positively affected by the bank's location, the exchange rate, loans and advances, and nominal GDP. On the other hand, inflation and monetary expansion weigh heavily against expansions in bank deposits. Advertising and publicity were shown to have a favourable and negligible influence.

Ali et al. (2019) commercial banks in Sudan from 1970 to 2012 in order to calculate the total deposits they had. The variables were analyzed using the error correction model (ECM) and the cointegration approach of autoregressive distributed lag (ARDL). Overall deposits lost value owing to inflation and the growth of the money supply, the research concluded. The study discovered that credit, interest rate (profit margin), and real per capita GDP all had a beneficial impact on deposits. The study indicated that in the short term, there are inaccurate and statistically significant indications. The studies' concluding finding, that the lagged residual coefficient (ECt1) within the ECM model has the right sign and is highly significant, indicates that the dependent variable tends to adjust to changes in the long run.

Haddawee, Ali and Flayyih (2020) looked at how deposits fared in an analysis of commercial banks' profitability. The goal was to pinpoint the deposit types that have the most impact on financial institutions' bottom lines. Over the course of five years, from 2012 to 2016, a statistically significant sample was drawn from the Commercial Bank of Jordan. Deposits were shown to have a statistically significant and favorable relationship with profitability metrics. Profitability was highest for savings accounts, then time deposits, and lastly current deposits, the research found. According to the study, commercial banks should prioritise the attractiveness of saving and time deposits since these forms of deposits are more profitable than current accounts. Banks should proactively create strategic measures to diversify their credit portfolios in order to improve their financial health and attract a larger variety of investment deposits.

Yakubu and Abokor (2020) conducted a research study to examine the main components that were responsible for the expansion of bank deposits in Turkey between the years 2000 and 2016. The autoregressive distributed lag method is utilized in the research study to investigate the impact of bank-level and macroeconomic factors on the expansion of deposits. The findings of the study

indicated that in the long run, significant determinants of deposit growth include factors such as bank stability, the efficiency of the banking sector, broad money supply, economic growth, and inflation. The findings also demonstrated that in the short run, the only factors that are significant for the mobilization of bank deposits are branch expansion and broad money supply.

Nguyen (2022) examined the impact of institutional quality on bank deposit growth in European transition countries, coupled with bank-specific and macroeconomic factors. Generalized method of moments (GMM) analysis was used on the panel data. The results showed that the beneficial impact of deposit mobilisation on bank deposit growth is bolstered by institutional quality. The study also discovered a correlation with money kept in the bank. The expansion of bank deposits was also found to be significantly influenced by macroeconomic factors including broad money supply and economic growth. However, the increase of bank deposits is unaffected by bank-specific characteristics like efficiency and branch expansion. According to the findings, transition nations should prioritise recognising institutional quality indicators as a means to improve bank funding resilience.

Osuala, Uruakpa, and UA (2020) carried out a study to examine the effect of banks' marketing techniques on the process of gathering deposits in commercial banks in Nigeria. The analysis in this research used time series data from 2005 to 2016 and using the Ordinary Least Squares (OLS) regression approach. The dependent variable of the model was the deposit mobilised by the chosen commercial banks. The independent variables were corporate social responsibility, the number of resolved complaints, advertising cost, staff expenditures, and branch network. The research findings indicated that corporate social responsibility, the resolution of complaints, staff expenditures, and promotional costs had a substantial impact on the mobilisation of deposits by banks in Nigeria. However, the presence of branch networks was shown to have little statistical

significance. The research determined that the marketing methods used by banks in Nigeria had a substantial impact on the mobilisation of deposits. Therefore, banks need allocate significant resources towards corporate social responsibility, human expenses, and advertising in order to attract and maintain clients.

Shah, Fu, Ishfaq and Abbas (2022) studied the relationship between wealth management products and bank deposits. The study used a Panel ARDL-PMG model to analyse a quarterly panel dataset for the 30 largest Chinese banks from 2010 to 2019. In this analysis, we employed a CS-ARDL model, which stands for cross-sectional augmented autoregressive distributive lag. Wealth management products and deposits were found to have a steady long-run substitution connection. Moreover, the association between wealth management products and deposits was significant and stable only for small and medium-sized banks, but not for the big four. The results also showed that the association between deposits and wealth management products persisted after the People's Bank of China (PBOC) lifted its deposit rate cap.

2.3.2 The Effect of Liquidity on Interest Rate Spread of Commercial Banks

Ebenezer, Islam, Yusoff and Rahman (2019) conducted research into the link between ASEAN-5 banks' profitability and interest rate and liquidity risk. Data were collected from 63 commercial banks throughout the ASEAN-5 countries between 2009 and 2017 and analysed using the panel data estimate method. A positive significant influence on firm value was found for the loan-to-deposit ratio, while a negative significant effect was found for the liquid asset ratio and interest rate risk for ASEAN. Return on assets was also shown to be positively influenced by GDP and inflation and positively impacted by the loan-to-deposit ratio for ASEAN banks. However, return on assets was found to be negatively influenced by interest rate risk and bank size. In addition, the findings show that interest rate risk significantly increases return on equity whereas liquidity risk

significantly decreases it. The research also discovered that inflation significantly increases return on equity while bank size significantly decreases it. The study's findings also suggest that banks should follow prudential and regulatory rules and make sure their corporate management is taking care of their liquidity exposure, which could reduce their profits and decrease their market value.

Ebenezer, Islam, Yusoff, and Rahman (2019) conducted a study to assess the role of liquidity risk in Chinese corporate bond spreads. The research created a set of Chinese corporate bond liquidity measures and estimated corporate bond spreads using the entire treasury yield curve. The study indicated that liquidity premium accounted for a relatively modest fraction of corporate bond spread in China, despite low market liquidity and tight pre-screening of corporate bond issuers. Liquidity premium still accounts for a significantly higher share of corporate bond spreads, despite the fact that developed markets have superior liquidity and less pre-issuance restrictions, as demonstrated by this study.

Karakas and Melek (2022) studied the correlation between liquidity and profitability in commercial banks. Used panel data analysis on 20 commercial banks in Turkey from the period between 2002-2020. There are positive relationships between the return on assets ratio and liquid assest ratio, current ratio but negative associations with return on equity and net interest margin. The acid-test ratio has a negative relationship with return on assets ratio and vice versa while a positive relation is observed between it and the return on equity, net interest margin. Loans to deposits has a negative effect on all the three measures of profitability. Liquidity and Profitability Relationship in Commercial Banks Is Negative.

Parvin et al. (2019) analysed the influence of liquidity and bank size on the profitability of commercial banks in Bangladesh from 2011 to 2015. This research applied descriptive and correlation analytic statistics to data sourced from annual reports of seven commercial banks in

Bangladesh. This study found that, with return on asset (ROA) as a measure for profitability it is evident that there is a considerable relationship between the loan to asset ratio and bank size. The results also showed that the deposit to asset ratio negatively influenced on ROA of the selected firms. However, liquidity and bank's size were however noted to have no significant effect on the profitability of the banks. Liquidity and bank size affect profitability but not significantly, a case of commercial banks in Bangladesh. Nevertheless, banks must exercise prudent control over their liquidity and scale to guarantee their sustained prosperity.

In a research study conducted by Nzula (2016), An empirical investigation into the effect of short-term interest rates on commercial banks Liquidity in Kenya. The descriptive survey and historical research data were collected from secondary sources of 44 listed commercial banks in Kenya as from the year 2011 to 2015. With respect to the hypothesized relationships, one-way ANOVA and multiple regression analysis were used in this research. The finding indicated a weak positive correlation between bank liquidity and short-term interest rates, as well as between bank debt-to-equity ratio and liquidity. In addition, it discovered a detrimental association between the operational expenditure ratio and bank liquidity. Nevertheless, the research found that in Kenya, factors such as short-term interest rates, debt-to-equity ratio, and operational cost ratio do not significantly influence bank liquidity. The study suggests that future research should take into account other elements, such as macroeconomic circumstances and bank-specific features, which might potentially influence the liquidity of banks in Kenya.

Vaita (2017) undertook a research to analyze the effect of liquidity on financial performance of listed banks in Kenya. The whole population of Kenya's six tier one listed commercial banks was analyzed using a descriptive technique (Wright and Ayub, 2014, p.125). Through surveys, bank websites, the Central Bank of Kenya, and Kenya National Bureau of Statistics information was

collected. Descriptive and inferential statistics were used to analyse the data. The results of the study indicated that liquidity coverage ratio did not have a statistically significant impact on return on equity (ROE) while it had a positive and significant effect on return on assets (ROA). The study also reported management efficiency to have large and non-significant positive influences on both return on equity (ROE) and return on assets (ROA). Additionally, the study found that GDP rise was significantly insignificant to ROE and ROA. This is evident from the study findings which show that commercial banks have to behave in a desirable manner during their operations to attain required financial performance and at the same time keeping minimum liquidity ratio. Therefore, for the sake of improving on its financial performance commercial banks should give prominence to management efficiency as well as infrastructure development associated with GDP.

Chen and Jiang (2021) analysed the liquidity risk factors of conventional and Islamic banks to see where they overlap and where they differ. The research conducted a comprehensive analysis by selecting a sample of 27 Islamic banks and 49 conventional banks operating in the Middle East and North Africa (MENA) area. To investigate the relationship between liquidity risk and various bank-specific and macroeconomic factors, a dynamic panel data technique was used. The study covered the period from 2005 to 2015. The research shows that the liquidity risk of alternative banks is determined by a different set of variables than that of conventional banks, which is in turn determined by macroeconomic factors. Islamic banks are immune to the effects of the economy as a whole. The research urged regulators in both financial systems to give liquidity risk management a higher priority. As the results show differing liquidity risk factors between conventional and Islamic banks, the study serves to inform its readers of these distinctions in risk management.

Kesraoui, Lachaab, and Omri (2022) conducted a study to determine the concurrent impact of credit risk and liquidity risk, the two main causes of bank default, on profit margins during

economic downturns in MENA nations with two separate banking systems. From 2004 through 2020, researchers used a monthly balanced data collection that includes 30 traditional banks and 14 Islamic institutions from 9 countries. Banks' cost of intermediation was found to be heavily influenced by the two risk variables highlighted by the study. Most interestingly, their effect on bank profitability is highly responsive to economic swings. Moreover, the results showed that both risk variables have a bigger impact on price-cost margins when economic conditions are favourable.

The Study by Amira, Alala and Musiega (2023) On the Effects of Liquidity Risk Management on Financial Performance in Kenyan Commercial Banks. This was done using a panel dataset that consisted of both time series and cross sectional data for a duration of ten years, between 2010 and 2019. This analysis comprised of descriptive and inferential statistics. The study found that liquidity risk, management of had no significant relationship with return on equity (ROE) and return on assets (ROA). Results of the research suggest that liquidity risk management has a negative effect on financial performance, but not statistically significant. It is advisable for commercial banks to maintain a prudent approach to liquidity risk management in order to mitigate the potential for unprofitable ventures.

2.3.3 The Effect of Assets Quality on Interest Rate Spread of Commercial Banks

Wambugu and Mungai (2019) conducted a study to analyse the impacts of asset quality on commercial banks' bottom lines in Kenya. The research sample was drawn from the population of 43 commercial banks using a census-sampling strategy. The study adopted a causal research strategy and relied on secondary sources of information. The data was analysed using a regression model and the SPSS statistical programme. For this study, researchers looked at comprehensive secondary data from 34 commercial banks covering the years 2013-2017 (this number accounts

for 79% of the study's primary population). The results showed that commercial banks did not differ greatly in their asset quality ratios. For the years 2013-2017, the sample of commercial banks in Kenya showed a wide range in their average return on equity. The return on equity of commercial banks was also shown to be decreasing over the same time period.

Arisa (2018) carried out a research study to calculate how asset quality impacts the price of NSE-listed commercial banks. All eleven NSE-traded commercial banks served as the study's population. Capital adequacy, bank size, management effectiveness, capital structure, bank age, and interest rate spread were the independent variables used. Multiple linear regression was utilised in this descriptive cross-sectional investigation. The data was analysed using SPSS v2.1. The value of commercial banks listed on the NSE was found to be connected to additional factors outside the scope of this research. The quality of the assets was found to have a direct relationship to the results of the business in the study. The results also showed that there were statistically significant values for bank size, managerial efficiency, and interest rate spread. Results showed that factors such as asset quality, capital adequacy, bank age, and capital structure had no discernible impact on the market value of commercial banks traded on the NSE. Measures to improve bank size and management efficiency were advised for commercial banks in the study to boost their worth.

Kadioglu and Ocal (2017) conducted a study to determine if non-performing loans had an impact on bank profitability in Turkey. From 2005 to 2016, a panel regression analysis was performed on quarterly data from 55 Turkish banks. The non-performing loans are found to have a significant negative association with bank profitability where the profitability indicator is return on equity and ALSO return on assets. First, worsened asset quality is a consequence of increased non-performing loans that in turn generates decreasing retums on equity and assets. On the contrary is, lower non-

performing loans cause improvement in asset quality hence increase return on equity and return on assets. The Effects of ARM Expenses and Non-performing loans on the Profitability in Turkish Banking Sector. This calls for banks to enhance their credit risk management and lending practices so as to reduce or minimize non-performing loans.

In Kenya, Nzoka (2015) conducted a research study titled the effect of asset quality on value of commercial banks. Explanatory research design of using secondary data from the audited annual financial reports for the 43 commercial banks in Kenya for the period between 2014 and 2021. Data analysis was conducted by SPSS version 26 and STATA in a descriptive and inferential manner. The Influence of Asset Quality on Commercial Banks Value in Kenya. Banks should enhance their asset quality through the implementation of desirable risk management strategies and improvement of their management efficiency.

Kamran, Omran and Mohamed-Arshad (2019) conducted a study bank-specific risk metrics, national/international risk variables, capital-to-risk ratios, and audit quality was analysed for their impact on stability metrics. From 2007 to 2016, annual observations were done on a sample of 28 commercial banks from Pakistan's national financial market. The robust title uses panel regression models such as ordinary least squares (OLS), fixed effect, and random effect to investigate the impact of risk factors, capital ratio, and audit quality on FS. Based on the study, liquidity risk, credit risk and operational were all significant negative contributors to stability ratios. The research identified that the financial stability indicators broke apart when the capital ratio was extremely high. Both indicators of stability were found to improve with higher auditor compensation, according to the study. Policymakers, financial analysts, and bank credit officers were all urged to look into the connection between commercial banks, audit quality, and capital ratios in light of the study's findings. Financial Institutions.

Ikpesu and Oke (2022) researched to look at how capital sufficiency and the quality of banks' assets influence economic growth in Nigeria. From 2010 to 2019, annual panel data were used for the analysis. Audited financial statements of twelve banks traded on the Nigeria stock exchange were analysed using the system generalised method of moments (SGMM) over the study's time period of 2010 through 2019. Capital adequacy and asset quality were found to have a beneficial effect on bank performance. The research found that higher levels of capital and higher quality assets boost banking sector performance across the country. The results of the study indicated that when banks have sufficient capital and high-quality assets, their profits and performance increase.

2.3.4 The Effect of bank size on Interest Rate Spread of Commercial Banks

Haryanto, Chandrarin, and Bachtiar (2019) studied the connection between commercial banks in Vietnam's size, credit risk, and profitability. The study contributed to the literature on profitability measurement by included non-operating assets in the denominator of return on assets calculations. The study also highlighted the importance of non-operating assets in generating non-interest revenue. The research employed a two-stage procedure. The results show that credit risk reduces profits, while the effect is milder for larger financial institutions. The study found a negative relationship between bank size and profitability, suggesting that larger banks are less effective than their smaller counterparts. The study also discovered evidence of a non-linear link between bank size and profitability, suggesting that, up to a certain point, larger banks are more profitable than smaller ones.

Kirimi, Kariuki, and Ocharo (2022) evaluated the size of the bank as a determining factor in the correlation between financially stable banks in Kenya and their profitability. The research included information from 39 different commercial banks from 2009-2018. The data was analysed using a panel data regression model. According to the results, the association between commercial banks'

NIM and ROA indicates that bank size has a negative moderating influence on the relationship between NIM and financial stability. However, no moderating effect was discovered when return on equity (ROE) was employed as the financial success metric. In order to achieve an optimal degree of financial soundness and improve banks' financial performance, the study's findings indicated that bank management and other officials take the influence of bank size into account when designing financial soundness rules. The study also suggested that banking organisations establish guidelines for standardised asset quality management practises to guarantee the banking industry's ongoing success.

Gatete (2015) performed a study to examine the effect of bank size on commercial bank profitability in Kenya. A descriptive study was conducted using a regression model using data acquired from the financial statements and records of Kenya's 43 commercial banks. Commercial banks have the power to make profits from their holdings. Bank size is modestly positively associated with commercial bank profitability in Kenya. The logarithm of asset was statistically significant, although liquidity, operational efficiency, and capital sufficiency were not. Bank size has a beneficial impact on commercial bank profitability in Kenya. However, other variables such as the bank's efficiency, lending policy, and management and investment choices also contribute to profitability.

Lorenc and Zhang (2020) conducted a study to determine whether or whether the actual economy feels the effects of financial crisis at larger banks in a different way than it does at smaller banks. The study concluded that the stress experienced by the largest banks had a substantive and detrimental effect on the actual economy. The study also discovered that the effect is magnified when bank size increases. Stress at the top of the size distribution was found to have a negative effect on quarterly real GDP growth that was more than twice as large as the impact caused by

stress at the bottom of the size distribution and more than three times as large as the impact caused by stress in the middle of the distribution. Researchers concluded that their findings were generally useful about how regulatory standards should vary in strictness according to bank size. The research suggested that, holding all else constant, the strictest regulations should apply to the largest banks and the least to the smallest.

Teimet (2021) conducted a research study to investigate the impact of bank size on the profitability of commercial banks in Kenya and to assess if there is a state of balance or imbalance between these two factors. Regression analysis was used to evaluate the direction and size of the associations, while the autoregressive distributed lag model was employed to determine the stability of equilibrium and the rate at which adjustment to equilibrium occurs. The study found that the size of a bank has a statistically significant beneficial impact on its return on assets. The research further discovered a significant correlation between the size of a bank and its profitability, both in the long-term and short-term. In addition, it was seen that the adjustment process towards equilibrium occurred at a rate of 95% within a year. The study further found a reciprocal relationship between bank size and profitability, suggesting that bank size and profitability mutually support and strengthen each other. The study determined that the size of a bank has a favourable impact on the profitability of commercial banks in Kenya. Banks consolidation and other expansion strategies can enhance bank profitability.

Ali and Puah (2018) conducted a study to answer the two critical questions. Does the size of a bank have any bearing on its reliability? Is the security of banks attributable to financing risk? Five Islamic banks and nineteen non-Islamic banks were included in the data set that covered the years 2007-2015. The study found that when measuring stability with the Z-score model, a larger bank is less stable, but when using the risk-adjusted return on assets (RAROA) and risk-adjusted equity-

to-asset ratio (RAEA), a larger bank is more stable. The findings show that across all three stability models, funding risk is positively associated with bank stability. The robustness check analysis showed that our findings held up even after controlling for inflation, financial development, and GDP. Bank stability is negatively affected by inflation and GDP, but positively correlated with financial growth in all three models.

2.4 Research Gap

The study identified the three research gaps from the empirical review: conceptual gaps, contextual gaps, and methodological gaps. Khaduli (2021), for instance, examined the effect of interest rate spreads and non-performing loans in Kenyan commercial banks. The study focused on interest rate spread and failed to show bank characteristics such as deposit base, liquidity risk, and leverage, whereas the current study focused on three variables of bank characteristics on commercial bank interest rate spread, presenting a conceptual gap. In a study conducted by Ali, Eldaw, Alsmadi and Almarashdeh (2019), the researchers examined the magnitude of deposits maintained by commercial banks in Sudan during a period spanning from 1970 to 2012. The research was conducted in Sudan, but the next study would be conducted in Kenya, highlighting a contextual gap.

Yakubu and Abokor (2020) conducted a research study on the main components that are responsible for the expansion of bank deposits in Turkey between the years 2000 and 2016The research was performed in a country that is considered to be more developed in comparison to the current study, which was conducted in Kenya, a country classified as underdeveloped. This presents a contextual difference between the two studies. In a research undertaken by Ebenezer, Islam, Yusoff, and Rahman (2019), the objective was to evaluate the significance of liquidity risk in determining the spreads of Chinese corporate bonds.. The study only looked at liquidity risk as

one of the measures of bank characteristics while the current study studied three bank characteristics which include; deposit base, liquidity risk and leverage. Mutumira (2019) studied the impact of capital adequacy on the financial performance of Kenyan insurance companies. The study was carried out in the insurance companies while the current study was carried out in commercial banks presenting a contextual gap.

2.5 Conceptual Framework

The framework serves as a research roadmap, guiding the investigation through key variables and their assumed relationships (Maxwell, 2012). The independent variables in this study are the deposit base, liquidity risk, capital adequacy, assets quality, and bank size, each reflecting core characteristics of commercial banks that could potentially influence the interest rate spread (Berger et al., 2001). Deposit Base: Deposits indicate the sum of money bank clients have stored with a banking institution. A larger deposit base may allow for more competitive loan offerings, influencing the interest rate spread (Demirgüç-Kunt & Huizinga, 1999). Liquidity Risk: This involves the ease with which a bank can meet its short-term financial obligations. A higher risk might necessitate a broader interest rate spread as a risk compensating measure (Diamond & Rajan, 2001). Capital Adequacy: This is a measure of a bank's financial strength in relation to its overall risk profile. Better-capitalized banks may maintain a smaller interest rate spread (Berger, 1995).

Assets Quality: Reflecting the financial health of the loans and assets that a bank holds, poor asset quality might compel a bank to increase its interest rate spread to mitigate potential loan losses (Kosmidou, 2008). Bank Size: This variable indicates the total assets of a bank. Larger banks may have more resources for risk management, thus enabling them to maintain a narrower interest rate spread (Levine, 2004). The dependent variable, the interest rate spread of commercial banks in Kenya, symbolizes the difference between the interest rates charged by banks on loans and those

paid on deposits. This spread is influenced by multiple factors, including those characteristics of banks identified as independent variables in this study (Maudos & Fernández de Guevara, 2004). Through this framework, the study aims to build a comprehensive understanding of how these various bank characteristics collectively impact the interest rate spread in the context of commercial banks in Kenya.

FIGURE 1: A Conceptual Framework

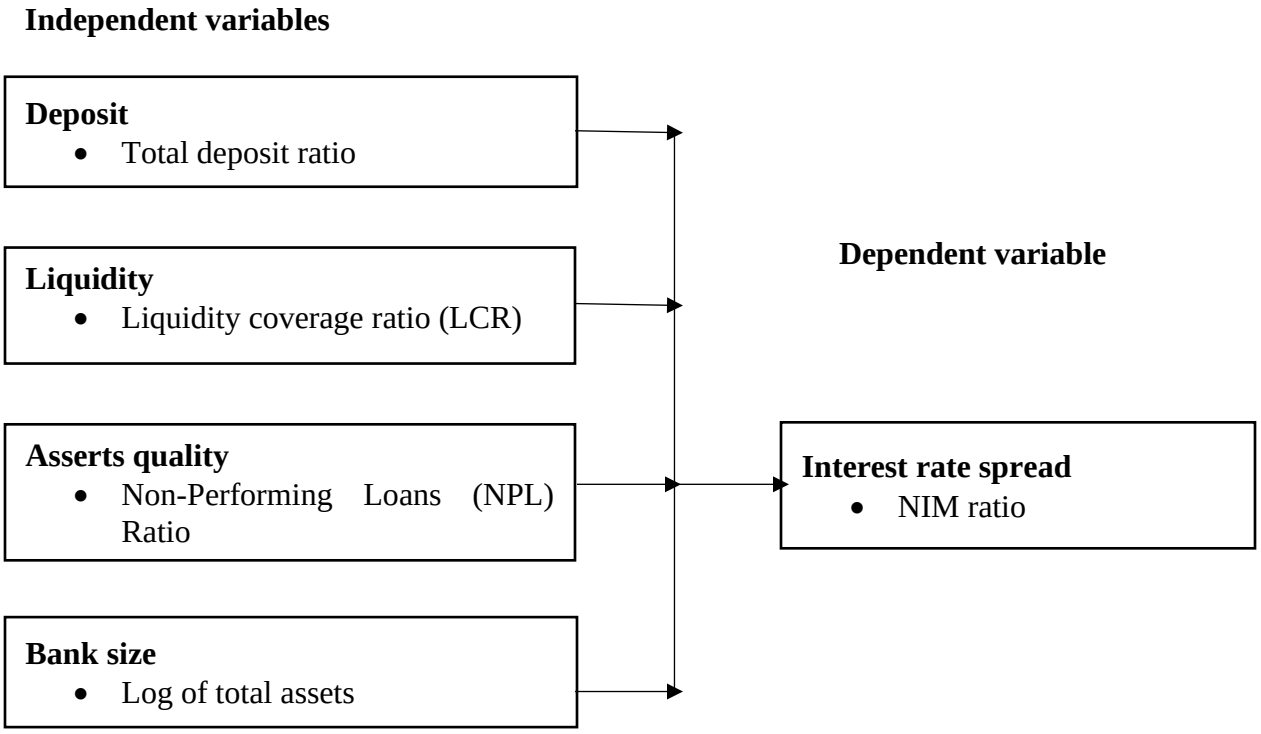


Figure 2.1 shows the independent variables and it's measures for instance, deposit was measured by; total deposits ratio. Liquidity was measured by; liquidity coverage ratio (LCR). Asserts quality was measured by the use of; return on equity and capital Adequacy Ratio (CAR). The bank size was measured using; total assets,. Lastly, the dependent variable interest rate spread was measured using; net interest margin (NIM).

2.6 Operationalization of Study Variables

The variable under investigation in this research is the interest rate spread, which serves as the dependent variable. The interest rate spread is defined as the disparity between the lending rate and the borrowing rate used by banks. The spread plays a crucial role in determining the profitability and risk management capabilities of a bank (Jefferis et al., 2020). The measurement of the interest rate spread in this research is conducted via the use of the Net Interest Margin (NIM) ratio. The Net Interest Margin (NIM) ratio assesses the disparity between the interest revenue earned and interest costs, relative to the quantity of interest-earning assets. In order to facilitate analysis, particularly given the substantial quantities involved, the dataset was subjected to a natural logarithm transformation to enhance interpretability (Pustejovsky, 2018). A greater net interest margin (NIM) is indicative of a broader differential between interest rates. Table 2.1 presents the manner in which the variables of the research have been defined and measured.

TABLE 1: Operationalization of Variables

Variable Type	**Variables**	**Specific Measure**	**Scale**	**Analysis**
Independent Variables	Deposit	Total Deposit Ratio (Total Deposits/Total Assets)	Ratio Scale	Descriptive
	Liquidity	Gross loans/total deposits	Ratio Scale	Descriptive
	Asset Quality	Non-Performing Loans (NPL) Ratio	Ratio Scale	Descriptive
	Bank Size	Natural log of total assets of the bank	Ratio Scale	Descriptive
Dependent Variable	Interest Rate Spread	Net Interest Margin (NIM) Ratio	Ratio Scale	Descriptive

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section presents the study's methodology, techniques, and data for testing the hypothesis. This covers things like the study's layout, its intended participants, its method of data gathering, its analysis, its diagnostic utility, and any relevant ethical considerations.

3.2 Research Design

Research designs can broadly be categorized into two types: descriptive and causal. Descriptive research aims to paint a comprehensive picture of a phenomenon or population by identifying variables and describing their characteristics or behaviors. In contrast, causal research seeks to establish cause-and-effect relationships between variables. The focus of this study is to explore how various bank characteristics, such as deposit base, liquidity risk, and bank size, influence the interest rate spread in Kenyan commercial banks. Given that the objective is not only to identify these characteristics but also to describe the nature and degree of their relationship with interest rate spreads, a descriptive research design is most appropriate. Unlike causal research, which could require manipulative experimentation, a descriptive approach allows for a more naturalistic observation of the phenomena, thereby maintaining the real-world context which is vital for the generalization of the findings (Bhattacherjee, 2012).

In addition, a descriptive approach, this study was incorporate explanatory research elements. While the descriptive aspect provided a snapshot of the variables and their interactions, the explanatory dimension deepened the understanding by elucidating the underlying relationships or interconnections among the variables. Specifically, it suoght to determine how bank characteristics

relate to the interest rate spread of Kenyan commercial banks. The unit of analysis in this study is individual commercial banks operating in Kenya. The focus was on these institutions' financial variables, such as interest rate spread, deposit base, liquidity risk, and bank size.

3.3 Target population

The word "population" encompasses all individuals, elements, or groups that fulfil the requirements for being studied as a whole, from which a representative sample is selected for in-depth analysis (Bryman & Bell, 2011). The target population refers to the whole set of individuals or entities from whom research data is collected in order to make conclusions. The inclusion criteria were applied to all licenced commercial banks in Kenya that have been operational from 2018 to 2022. The CBK (2022) states that there are 42 licenced commercial banks in Kenya, as listed in Appendix I.

3.4 Sampling and Sampling Procedure

Due to the limited size of the study target population, all the commercial banks were included. Census makes an effort to map out all the parts of a set and then measures some property of those parts (Maxfield & Babbie, 2017). A census is a method of quantitative research that counts the number of people in a population of interest. Further, data gathering involves every unit of the study population, therefore it is seen as a thorough census of the entire population. The data derived from a census is more trustworthy and precise than that gathered from a random selection. The sample for this research consisted of 42 Kenyan commercial banks that were both licenced and active over the period from 2016 to 2022.

3.5 Data Collection Procedure

This study made use of secondary panel data. The use of panel data was influenced by the fact that this study included all Kenyan commercial banks that were in operation between 2018 and 2022. Secondary data on deposit base, liquidity risk, leverage with bank size on interest rate spread of commercial banks was obtained for this research study from Kenyan commercial banks' financial statements and CBK bank supervision reports. To collect secondary data for the study, a data extraction tool was used. According to Bryman (2013), data extraction entails retrieving all types and formats of data from unstructured data sources.

3.6 Data Processing and Analysis

Panel data was created from the secondary data. Panel data is a type of multi-dimensional data that consists of observations collected over time. In addition, panel data consists of several observations of the same persons or businesses collected throughout time and space. Over the course of five years, 42 commercial banks participated in this study. In addition, statistical analysis was performed using STATA version 14, utilizing both inferential and descriptive statistical methods. Inferential statistics employed regression models to understand the influence of independent variables on the dependent variable, while descriptive statistics summarized the basic features of the dataset. Frequency counts, averages, percentages, and dispersion metrics (such the standard deviation) are all part of the descriptive statistics that was compiled. The use of regression analysis for inferential statistics. Both tabular and graphical representations of the study's findings was presented. Panel regression model that was use in the study is shown;

$$Yit=\beta_0+\beta_1X_1it+\beta_2X_2it+\beta_3X_3it+\beta_4X_4it+uit$$

Where:

Y= Interest Rate Spread is the dependent variable representing the interest rate spread for bank.

X_1=Deposit

X_2=Liquidity

X_3=AssetsQuality

X_4=BankSize

$\beta_0,\beta_1,\beta_2,\beta_3,\beta_4$ are the coefficients to be estimated, which showed the effect of each independent variable on the dependent variable.

uit is the error term for bank i at time t, which captures all other factors affecting interest rate spread that are not included in the model.

3.7 Diagnostic Tests

Diagnostic tests such as tests for normality, stationarity, heteroscedasticity, autocorrelation, and multicollinearity was performed on the collected data to ensure the suitability and reliability of the regression model used.

3.7.1 Test of Normality

In addition to a qualitative visual check, this quantitative assessment of normalcy provides further insight. There is a comparison made between the sample scores and made-up scores that have the same mean and standard deviation as the real data. The null hypothesis assumes the sample distribution is normal. Since the mean and standard deviation are both 0, the distribution cannot be called natural under the appropriate conditions. If the test turns out to be substantial, then there is an issue with the distribution. The linear model in the thesis was completed under the assumption of a normal distribution. For this type of investigation, the sample size is enough. If the sample

size of a study was fewer than 2000, the Kolmogorov-Smirnov test was used instead of the Shapiro-Wilk test. If the P-value is more than 0.05, then the residual was asymptotically normal, and vice versa.

3.7.2 Test on Stationary

According to Van Ark, Inklaar, and McGuckin (2003), a standard time series exhibits constant statistical features throughout time, including mean, variance, and autocorrelation. The condition exhibits a uniform value across all points in the series. In this study, the investigator conducted a root test to examine the presence of stationary properties in the data. Furthermore, a time series plot was used to provide insights into the general levels and fluctuations of the series. This approach examines the null hypotheses, which indicate that the data lack stationarity, and suggests alternative hypotheses when the p-value is below 0.05. In instances when the data does not exhibit discernible patterns, hence negating the presence of initial level static, seasonality, or variance shifts, it is possible to use differentiation or parameter transforms such as logarithmic or square root transformations to get stable outcomes.

3.7.3 Test on Heteroscedasticity

Homoscedasticity is a basic term within the framework of the linear regression model. Duin and Loog (2004) claim that every observation has an identical probability distribution. This implies that the variance of each error term remains constant across all values of the explanatory variable. Heteroscedasticity is the term used to describe a situation where the variances of nonconstant variables are not equal. The Breusch-Pagan and Cook-Weisberg tests were used by the researchers to identify potential heteroscedasticity concerns. This experiment illustrates the significance of the P-value within a 95% confidence interval, indicating that the obtained P-value is not statistically

significant (higher than 0.05). Although the value of p may be considered inconsequential, it is important to note that heteroscedasticity does not have an impact on the P-value.

3.7.4 Tests of Autocorrelation

Autocorrelation may lead to bias, resulting in the generation of false estimates. Moreover, the presence of serial correlation often indicates a relationship between the stochastic random errors seen in consecutive time periods (Lobato, Nankervis & Savin, 2001). To assess this, the current work used the Breusch-Godfrey LM test, which is a statistical test for autocorrelation in the errors of a regression model. Furthermore, in regression analysis, residuals from the specific model being examined are often used, and a test statistic is derived from these residuals. Based on the null hypothesis, there is a lack of serial relationship.

3.7.5 Test of Multicolinearity

Multicollinearity is a phenomenon that occurs when there is a precise linear connection between certain explanatory variables inside a regression model. Multicollinearity is the term used to describe the existence of relationships among predictor variables. According to Kraha et al. (2012), the presence of multicollinearity leads to an inflation of standard errors and confidence intervals, which in turn leads to unstable estimations of individual predictor coefficients. The use of variance inflation factors (VIF) was employed in this research to evaluate the presence of multicollinearity. Variance Inflation Factor (VIF) values over 10 suggest the existence of Multicollinearity.

3.7.6 Hausman Test

The Hausman Test was another important diagnostic tool used in this study, especially because panel data was collected from Kenyan commercial banks from 2018 to 2022. This test is especially useful in determining whether to use a fixed-effects or a random-effects model to analyze the

relationship between bank characteristics (such as deposit levels, liquidity, asset quality, and bank size) and interest rate spreads in these institutions (Wooldridge, 2010). The Hausman Test is a decision-making tool for selecting the best model to analyze data. It examines whether the unique characteristics of each bank (for example, its size or liquidity levels) should be treated as constant and unique to that specific institution, necessitating the use of a fixed-effects model, or if these characteristics can be random and generalizable across banks, necessitating the use of a random-effects model. The coefficient estimates generated by the fixed-effects and random-effects models are compared in the test. A p-value is calculated based on this comparison. If this p-value is greater than 0.05, the random-effects model is thought to be more appropriate for the analysis. If the p-value is less than 0.05, a fixed-effects model would be preferable (Gujarati, 2003). The use of the Hausman Test is consistent with the study's rigorous methodological approach. It acts as a safeguard to ensure that the chosen model provides the most reliable and accurate means of achieving the research objectives, thereby increasing the validity of the study's findings (Hausman, 1978).

3.8 Ethical Consideration

The ethical considerations of the study included the norms and standards that the researcher adheres to throughout the many stages of the research process, including prior to, during, and subsequent to the study. Mugenda and Mugenda (2009) assert that researchers must diligently safeguard against instances of publishing or falsification during the course of their study and in its aftermath. The researcher shall guarantee that any researchers or admissions whose work was used in this study are appropriately cited and recognised in line with the education standards of KCA University. In order to establish the credibility of the study, the researcher pursued official authorisation from relevant Kenyan authorities. In order to proceed, it is necessary to get an ethical

clearance letter from the Graduate School of KCA University, along with a NACOSTI Data Collection Permit.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This section outlines the methods used to analyze the data collected for this study, which aims to determine the effect of various bank characteristics on the interest rate spread in commercial banks in Kenya. The section begins with descriptive statistics to summarize key features of the variables studied. Diagnostic tests are then presented, followed by the findings from the linear regression analysis. Finally, the results of hypothesis testing are discussed, where null hypotheses are either accepted or rejected in accordance with the study's specific objectives.

4.2 Descriptive Statistics

The descriptive statistics for the variables used in the study are presented in Table 2.

TABLE 2: Descriptive Statistsics

Variable	Obs	Mean	Std. Dev.	Min	Max
Interest Rate Spread	340	0.053857	0.0192	0.00139	0.13727
Deposit Levels	340	0.750229	0.098833	0.16599	0.914499
Liquidity	340	0.785735	0.269203	0.09345	2.203198
Asset Quality	340	0.134255	0.11496	-0.00645	0.683196
Bank Size	340	17.61286	1.313282	14.8884	20.59249

From the analysis, the results indicate a mean interest rate spread across the banks of 0.053857 with a standard deviation of 0.0192. The spread of interest rates varied within a range, having a minimum of 0.00139 and reaching a maximum of 0.13727. In terms of deposit levels, the average mean was 0.750229 with a standard deviation of 0.098833. Liquidity levels across the banks

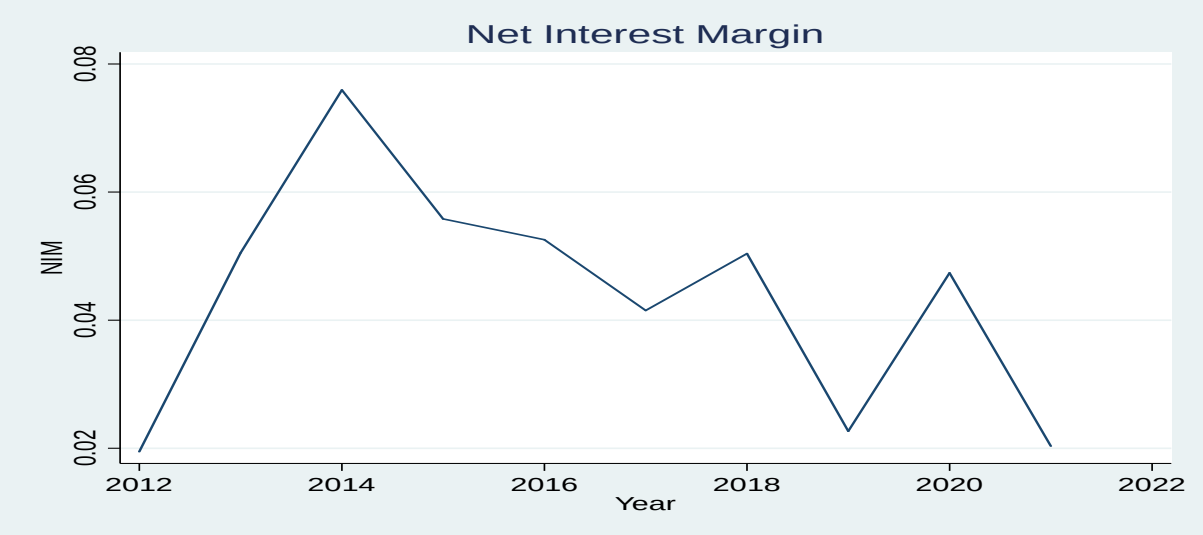
showed an average mean of 0.785735 and a standard deviation of 0.269203, indicating a wider variation. The quality of assets had an average mean of 0.134255 and varied with a standard deviation of 0.11496. Interestingly, the asset quality had a negative minimum value of -0.00645, highlighting potential areas for investigation. Lastly, the average size of the banks was 17.61286, with a standard deviation of 1.313282, suggesting that the banks in the study were relatively similar in size. The smallest bank had a size value of 14.8884 while the largest reached 20.59249.

4.3 Trend Analysis

4.3.1 Trend Analysis Interest Rate Spread

Interest Rate Spread was measured in terms of percentage change in Interest Rate Spread. Figure 2 presents trend analysis of the percentage change in Interest Rate Spread for the duration ranging from 2012 and 2022.

FIGURE 2: Trend Analysis Interest Rate Spread



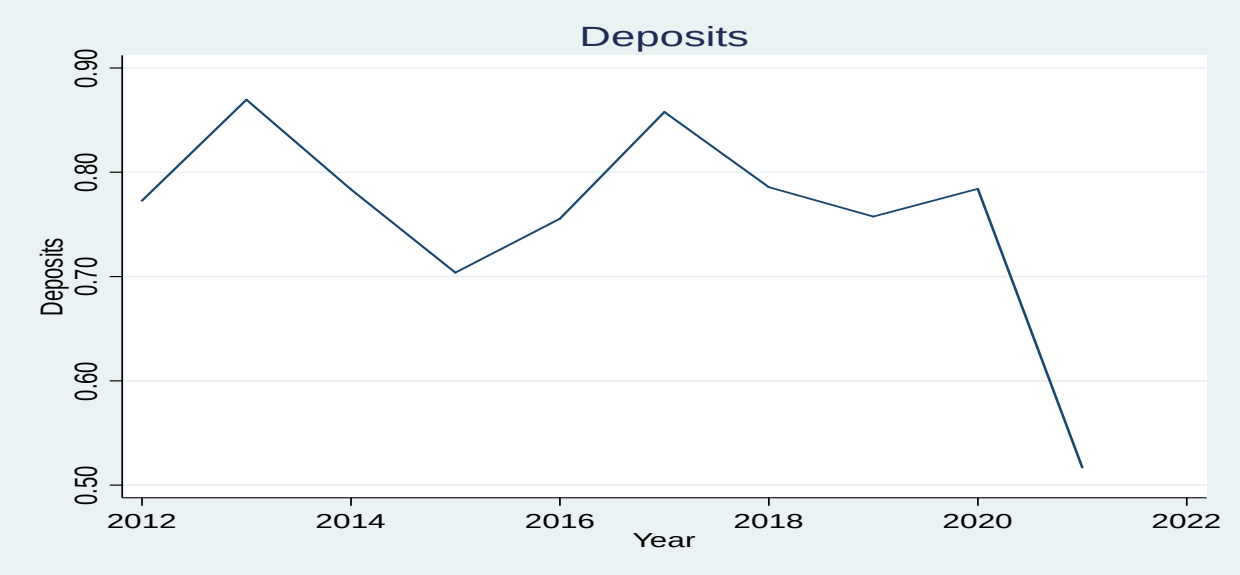
Based on the graph, from 2012 to 2014, there was a significant rise in the Net Interest Margin, reaching its highest point in 2014. From 2014 to 2016, there was a significant decrease in NIM, indicating that the disparity between the income gained by banks from loans and the interest paid

by them for deposits became less during this time. From 2016 to 2018, the net interest margin (NIM) had a modest rise before stabilising for a brief period of time. From 2018 to 2020, there was a further decrease in NIM, which signifies a decline in the profitability obtained from lending operations. From 2020 to 2022, the NIM experiences a little rise followed by a significant decline, ultimately reaching one of its lowest points in 2022, comparable to the levels seen in 2012. Therefore, the Net Interest Margin had substantial volatility across the span of 10 years, with prominent peaks in about 2014 and valleys in 2016 and 2022. This may suggest fluctuations in economic situations, changes in regulations, rivalry among banks, or a confluence of these and other variables across the years.

4.3.2 Trend Analysis for Deposit Levels

Deposit Levels was measured in terms of percentage change in Deposit Levels. Figure 3 presents trend analysis of the percentage change in Deposit Levels for the duration ranging from 2012 and 2022.

FIGURE 3: Trend Analysis for Deposit Levels

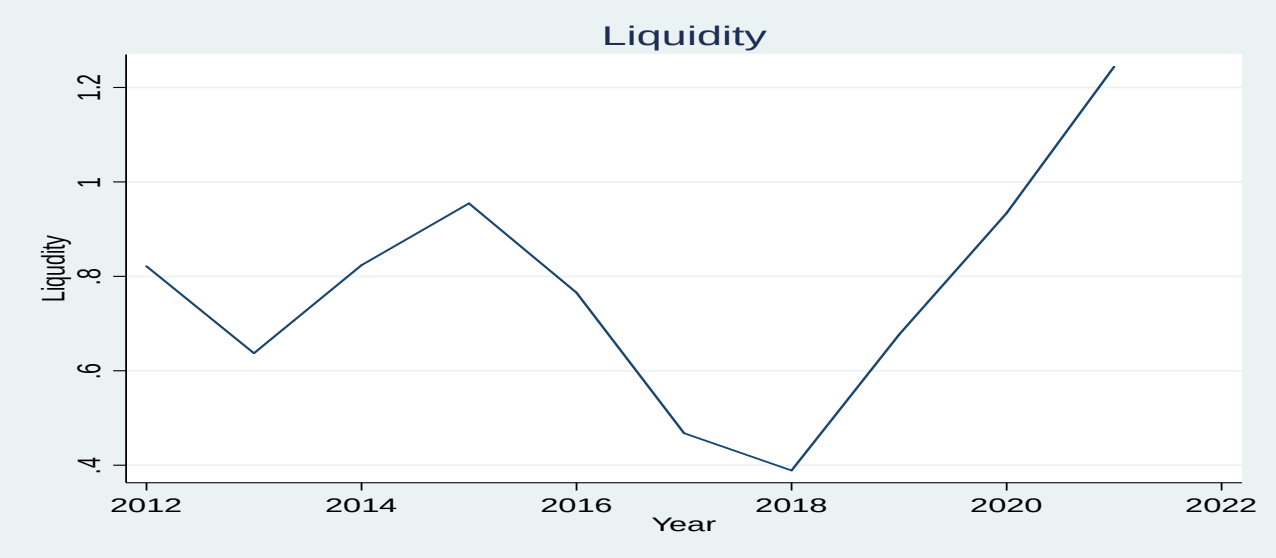


Based on the graph, there was a decrease in deposit levels from 2012 to about mid-2013. However, deposits had a rebound in late 2013, ultimately approaching the initial levels by 2014. From 2014 to 2016, there was a rise in deposit levels, reaching their highest point in 2016. This might suggest a period of economic stability or heightened trust in the banking industry, leading to a greater influx of deposits from people and corporations. From 2016 to 2018, there was a period of stability in deposit levels lasting almost two years, characterised by little swings. From 2018 to 2020, there was a progressive decrease in deposit levels starting from the highest point in 2016, with a significant reduction in 2020. From 2020 to 2022, there is a noticeable and significant decrease in deposit levels, ultimately reaching their lowest point in 2022. There are many possible causes for this, including economic recessions, decreased trust in institutions, or foreign influences impacting the financial industry. Therefore, deposits had a general increase trend from 2012 to 2016, while the later part of the decade saw a decline, with a notable fall in 2022. To comprehend the fundamental reasons for these changes, a more thorough examination of the economic and financial environment at that period would be necessary.

4.3.3 Trend Analysis for Liquidity

Liquidity was measured in terms of percentage change in Liquidity. Figure 4 presents trend analysis of the percentage change in Liquidity for the duration ranging from 2012 and 2022.

FIGURE 4: Trend Analysis for Liquidity



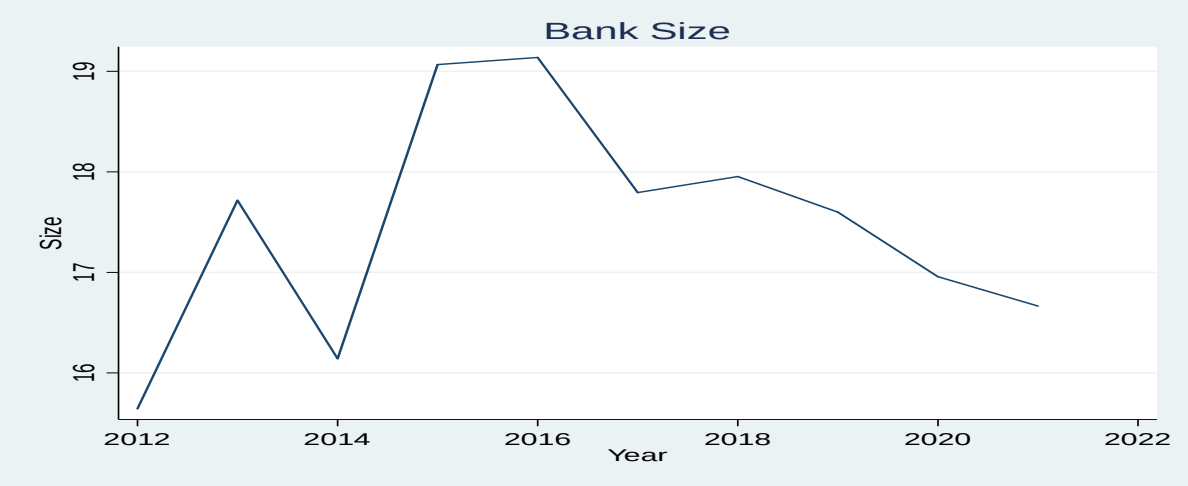
Based on the graph, there was a decrease in deposit levels from 2012 to about mid-2013. However, deposits had a rebound in late 2013, ultimately approaching the initial levels by 2014. From 2014 to 2016, there was a rise in deposit levels, reaching their highest point in 2016. This might imply a period of economic stability or heightened trust in the banking industry, leading to a greater influx of deposits from people and corporations. From 2016 to 2018, there was a period of stability in deposit levels lasting almost two years, characterised by little swings. From 2018 to 2020, there was a progressive decrease in deposit levels starting from the highest point in 2016, with a significant reduction in 2020. From 2020 to 2022, there is a noticeable and significant decrease in deposit levels, ultimately reaching their lowest point in 2022. There are many possible causes for this, including economic recessions, decreased trust in institutions, or foreign influences

impacting the financial industry. Therefore, deposits had a general increase trend from 2012 to 2016, while the later part of the decade saw a decline, with a notable fall in 2022.

4.3.4 Trend Analysis for Bank Size

Bank Size was measured in terms of percentage change in Bank Size. Figure 5 presents trend analysis of the percentage change in Bank Size for the duration ranging from 2016 and 2022.

FIGURE 5: Trend Analysis for Bank Size



Based on the graph illustrating the trend in bank size, the following findings were deduced: 2012-2014: In 2012, there was a significant reduction in the size of banks, which was then followed by a swift expansion until 2014. This implies that there may be notable mergers or changes in banking activities during this timeframe. From 2014 to 2016, the size of the bank reached its maximum and remained stable at this level until 2016. This suggests a period of consistent expansion or stability within the banking industry. From 2016 to 2018, there was a gradual decrease, suggesting a possible reduction in the size of banks. There are other factors that might contribute to this, including regulatory influences, economic circumstances, or unique occurrences inside the banking sector. 2018 to 2022: There is a significant decrease in the size of banks starting

in 2018 and continuing until 2022. This ongoing decline may suggest the consolidation of many smaller banks, the shrinking of bigger banks, or a mix of both. Thus, the graph illustrates several phases of exponential expansion, consistency, and contraction in the magnitude of banks across the span of ten years. The alterations in question may be attributed to economic factors, regulatory changes, mergers and acquisitions, as well as particular strategic choices made by banks.

4.3 Diagnostic Tests

To adequately evaluate the effect of different bank characteristics on the interest rate spread of commercial banks in Kenya, it is essential to adhere to the prescribed criteria set forth in the classical linear regression model (CLRM). In accordance with the perspectives put forth by Verbeek (2012), failure to adhere to these criteria can result in distorted and unreliable estimations of the parameters under consideration. In order to achieve this objective, the study conducted various diagnostic tests that are crucial for the implementation of the linear regression model. The tests encompass various aspects including multicollinearity, stationarity, heteroscedasticity, normality, and the Hausman Test.

4.3.1 Normality Test

According to the underlying assumptions of the linear regression model, normality indicates that the dataset used in the study is derived from a source that follows a normal distribution. The presence of non-normality in a dataset has the potential to result in erroneous conclusions (Wooldridge, 2013). The study utilised the Shapiro-Francia test as a means to effectively assess the normality of the data. The null hypothesis posits that the dataset is sampled from a source that follows a normal distribution, with a significance level of 5%. According to Ghasemi and Zahediasl (2012), when dealing with sample sizes that are larger than 30, concerns related to non-normality can typically be disregarded.

TABLE 3: Shapiro-Wilk Normality Test

Variable	Obs	W	V	z	Prob>z
Interest Rate Spread	340	0.98307	4.032	3.293	0.001
Deposit Levels	340	0.8683	31.359	8.136	0.000
Liquidity	340	0.93534	15.395	6.456	0.000
Asset Quality	340	0.83797	38.58	8.626	0.000
Bank Size	340	0.96136	9.2	5.24	0.000

Based on Table 3, which shows the Shapiro-Wilk Normality Test results, the p-values (represented as "Prob>z") for all variables are less than the 0.05 significance level. This implies that we would reject the null hypothesis, which means that the data for each variable did not come from a normally distributed population. Interest Rate Spread (0.001), Deposit Levels (0.000), Liquidity (0.000), Asset Quality (0.000), and Bank Size (0.000) all have p-values less than 0.05. This usually means that the data for any of these variables is not normally distributed. However, Ghasemi and Zahediasl (2012) point out that when sample sizes are larger than 30, concerns about non-normality are often overlooked.

4.3.2 Heteroscedasticity Test

Heteroscedasticity describes a situation where the variances of the residuals differ across observations (Rosopa et al., 2013). For a reliable evaluation of the linear regression model, it is essential that the error terms across all observations be constant, or homoscedastic. The presence of heteroscedasticity can result in biased estimates of confidence intervals and p-values. To examine this, the study employed the Breusch-Pagan test.

TABLE 4: Heteroscedasticity Test

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity		
H_o: Constant variance		
Variable: fitted values		
chi2(4)	=	51.60
Prob > chi2	=	0.0000

The study was conducted with a significance level of 5%. The null hypothesis states that the variances of the residuals exhibit homoscedasticity, meaning they remain constant. According to the findings presented in Table 4, a p-value of 0.0000 was observed, suggesting the existence of heteroscedasticity. In order to tackle this matter, the utilisation of robust standard errors was employed, as they are impervious to the effects of heteroscedasticity (Wooldridge, 2013).

4.3.3 Multicollinearity Test

Multicollinearity is a condition where two or more explanatory variables used in a study are highly correlated, as discussed by Wooldridge (2013). When multicollinearity is present, it can lead to misleading confidence intervals and inaccurate p-values. The results of the multicollinearity test are presented in Table 5.

TABLE 5: Multicollinearity Test

Variable	**VIF**	**1/VIF**
Liquidity	1.63	0.612749
Deposit Levels	1.53	0.655211
Asset Quality	1.16	0.860633
Bank Size	1.06	0.941819
Mean VIF	1.35	

The Variance Inflation Factor (VIF) for each variable, as shown in Table 5, is well below the commonly cited threshold of 10, indicating that multicollinearity is not a concern in this dataset. The VIF values for Liquidity (1.63), Deposit Levels (1.53), Asset Quality (1.16), and Bank Size (1.06), in particular, all show low levels of correlation with one another. This is supported further by the mean VIF of 1.35. These findings support Wooldridge's (2013) assertion that VIF values less than 10 are generally acceptable, thereby confirming the model's dependability and robustness.

4.3.4 Stationarity Test

Recent findings in the field of econometrics have revealed that a significant number of time series data exhibit non-stationarity, which contradicts previous assumptions made by researchers. According to Wooldridge (2013), stationarity is required for a dataset used in the estimation of a regression model. This is critical in order to avoid spurious regression results caused by non-stationary series. The investigation used the Fisher-type (Phillips-Perron) unit-root test with a significance level of 5% to assess the series' stationarity.

TABLE 6: Stationarity Test

Variables	t-Statistic (adjusted)	P-value	Comment
Deposit Levels	9.150	0.000	No Unit Root
Liquidity	3.200	0.000	No Unit Root
Asset Quality	7.420	0.000	No Unit Root
Bank Size	5.630	0.000	No Unit Root
Interest Rate Spread	8.190	0.000	No Unit Root

The finfings of the stationarity test, specifically the Fisher-type (Phillips-Perron) unit-root test, are presented in Table 6. The null hypothesis for this test posits that all variables exhibit no unit roots. The p-values for the variables of Deposit Levels, Liquidity, Asset Quality, Bank Size, and Interest

Rate Spread were all found to be statistically significant, as they were below the commonly used threshold of 0.05. Therefore, it can be concluded that none of the research variables displayed any unit root problems.

4.3.5 Autocorrelation Test

This research aimed at evaluating the presence of autocorrelation within the collected data by employing the Wooldridge test. The primary aim of this study was to ascertain whether there was evidence of serial correlation in the residuals across time. The findings of this examination are succinctly outlined in the following section.

TABLE 7: Autocorrelation Test

Wooldridge test for autocorrelation
H_0: no first-order autocorrelation
F (1, 33) = 14.437
Prob > F = 0.0006

The null hypothesis for this test posited the lack of autocorrelation in the dataset. The F-test resulted in a p-value of 0.001, indicating a lack of statistical significance at the 5% level. Therefore, the null hypothesis is deemed to be accepted. Based on the examination of the dataset, it can be inferred that there is a lack of substantiating evidence for the presence of serial correlation within the residuals.

4.3.6 Hausman Test

In the context of panel data analysis within this study, the choice between fixed effects and random effects models held significant importance. To make this crucial decision, the Hausman test was

conducted to assess the differences in coefficient estimates between the two models. The results of the Hausman test are summarized in Table 8.

TABLE 8: Hausman Test

	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
Deposit Levels	-0.00551	0.0044261	-0.00994	0.004756
Liquidity	0.004755	0.0108169	-0.00606	0.002056
Asset Quality	-0.00911	-0.0296001	0.020488	0.003609
Bank Size	-0.01168	-0.0010924	-0.01059	0.001727

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

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 41.62

Prob>chi2 = 0.0000

The Hausman test was used to ascertain the most appropriate model, either fixed effects or random effects, for panel data analysis. The test assesses if there is a consistent difference in coefficients between the two models. The table examined four variables: Deposits_Assets, LIQ (Liquidity), ASQ (Asset Quality), and size (Bank Size). The findings displayed the coefficients obtained from both the fixed effects (b) and random effects (B) models, together with the disparities and standard errors. The chi-square statistic for the test is 41.62, and the p-value (Prob>chi2) is 0.0000, indicating a significant difference compared to the alpha value of 0.05. The null hypothesis, which posits that there is no systematic difference in coefficients, is thus refuted. Based on the available

information, the research determines that a fixed effects model is the most suitable option for future investigation.

4.4 Correlation Analysis

Correlation analysis explores the relationships among the key variables of the study. Table 9 illustrates the relationships between Bank Characteristics (Deposit Levels, Liquidity, Asset Quality, Bank Size) and Interest Rate Spread.

TABLE 9: Correlation Analysis

	Interest Rate Spread	Deposit Levels	Liquidity	Asset Quality	Bank Size
Interest Rate Spread	1.000				
Deposit Levels	0.0826	1.000			
Liquidity	0.0864	-0.587	1.000		
Asset Quality	-0.2773	-0.1729	0.3045	1.000	
Bank Size	0.3405	0.0327	-0.0827	-0.2403	1.000

The results from this study revealed various correlations between Bank Characteristics and Interest Rate Spread: A weakly positive association was found with Interest Rate Spread (r=0.0826). This indicates that as deposit levels increase, the interest rate spread also tends to slightly increase. A weakly positive connection was observed with Interest Rate Spread (r=0.0864). This suggests that higher liquidity is related to a slightly higher interest rate spread. There is a moderately negative connection with Interest Rate Spread (r=-0.2773). This implies that better asset quality is associated with a lower interest rate spread. A moderately positive association with Interest Rate Spread was found (r=0.3405). This indicates that larger bank size is linked to a higher interest rate spread.

These findings resonate with existing literature. For instance, Khaduli (2021) reported that lending rates have a considerable and favorable impact on banks' non-performing loans, aligning with the positive connection between deposit levels and interest rate spread. Ebenezer et al. (2019) noted that liquidity risk decreases return on equity, consistent with the observed relationship between liquidity and interest rate spread. Wambugu and Mungai (2019) found that asset quality affects commercial banks' performance, supporting the association between asset quality and interest rate spread in this study. Kirimi, Kariuki, and Ocharo (2022) highlighted the moderating effect of bank size on the relationship between net interest margin and financial stability, in line with the positive correlation between bank size and interest rate spread observed here.

4.5 Model Fit

This section covers the empirical model results for the panel data analysis carried out to determine the relationships between Bank Characteristics (Deposit Levels, Liquidity, Asset Quality, Bank Size) and Interest Rate Spread. In addition, this section discusses the findings of the study based on the empirical models fitted using the data collected. Lastly, the section also addresses the diagnostic tests performed during the analysis.

4.5.1 Regression Model

To examine the effect of Bank Characteristics on Interest Rate Spread, various regression models were fitted. The study focused on panel data, encompassing a broad range of variables over multiple periods. Therefore, the data had both the cross-sectional aspect, covering different banks, and the time series aspect, covering multiple periods, thus being panel data. The study estimated Fixed Effects model of regression models for the panel data.

4.5.2 Feasible Genealirised Least Square

Based on the Hausman Test results, the FGLS was found to be the most appropriate regression model for this study. The Fixed Effects model generally assumes that time is invariant, implying that the group means across the panels are held constant. First, the Fixed Effects model was estimated without the moderating variable. The outcomes from this model serve to establish the basic relationships between Bank Characteristics and Interest Rate Spread.

TABLE 10: Fixed Effect Model

Interest Rate Spread	**Coef.**	**Std. Err.**	**z**	**P>z**	**[95% Conf.**	**Interval]**
Deposit Levels	0.041358	0.011499	3.6	0.000	0.01882	0.063896
Liquidity	0.022596	0.004366	5.18	0.000	0.01404	0.031152
Asset Quality	-0.04441	0.008626	-5.15	0.000	-0.06132	-0.0275
Bank Size	0.004325	0.000722	5.99	0.000	0.00291	0.005739
_cons	-0.06513	0.017148	-3.8	0.000	-0.09874	-0.03152

The resulst shows that holding all other variables constant, the results show that a one-unit increase in Deposit Levels increases the Interest Rate Spread by 0.041358 units. This implies that higher deposit levels help to increase the interest rate spread among the banks in this study. We use the z-value and the corresponding p-value to determine the significance of the effect of Deposit Levels on Interest Rate Spread. The z-value is 3.6, which is greater than the z-distribution's critical value of 1.96. Furthermore, the corresponding p-value is 0.000. This implies that the effect of Deposit Levels on Interest Rate Spread is significant at a 5% level of significance. Similarly, all else being equal, a one-unit increase in Liquidity results in a 0.022596 unit increase in Interest Rate Spread. This relationship has a z-value of 5.18 and a p-value of 0.000, indicating a significant effect at a 5% level of significance. Holding other variables constant, a one-unit improvement in Asset

Quality results in a 0.04441 unit decrease in Interest Rate Spread. The z-value is -5.15 and the p-value is 0.000, indicating that the effect is statistically significant at the 5% level. Lastly, if all other factors remain constant, a one-unit increase in Bank Size corresponds to a 0.004325 unit increase in Interest Rate Spread. The z-value is 5.99 and the p-value is 0.000, indicating a significant effect at 5% significance. As a result, at a 5% level of significance, all of the bank characteristics considered—deposit levels, liquidity, asset quality, and bank size—have statistically significant effects on interest rate spread.

4.6 Hypothesis

Based on the results of the Fixed Effects model and the research hypotheses, here's an interpretation:

H01: Relationship between deposit and interest rate spread

The p-value for Deposit Levels is 0.000, below the commonly used threshold of 0.05. Therefore, we reject the null hypothesis H01, concluding that there is a significant relationship between deposit levels and interest rate spread of commercial banks in Kenya. This aligns with the findings of previous studies that emphasized the role of deposits in affecting various financial metrics in banks. These findings resonate with existing literature. For instance, Ilamoya and Omar (2022) noted that high interest paid on deposits attracts more deposits, affecting the financial performance of commercial banks, which aligns with the effect of deposit levels on interest rate spread in this study. Terefe (2019) found that factors like bank branches, exchange rate, and nominal gross domestic product have a significant positive effect on commercial banks' deposit growth, supporting the idea that deposit factors can impact interest rate spreads. Ali et al. (2019) reported that deposits were positively affected by credit and interest rates, consistent with the observed relationship between deposit levels and interest rate spread in this study. Haddawee, Ali and

Flayyih (2020) highlighted that saving deposits made the most significant contribution to profitability, in line with the varying impacts that different types of deposits may have on interest rate spread

H02: Relationship between liquidity and interest rate spread

The p-value for Liquidity is 0.000, also below the 0.05 threshold. Hence, we reject the null hypothesis H02 and conclude that there is a significant relationship between liquidity and interest rate spread. This finding supports the view that liquidity plays an essential role in determining the interest rate spread, as seen in various studies. These findings are consistent with previous research. For example, in their study of ASEAN-5 banks, Ebenezer et al. (2019) discovered that liquidity risk significantly reduces return on equity, which is consistent with the observed relationship between liquidity and interest rate spread in this study. Another study by Karakas and Melek (2022) found a negative relationship between liquidity and profitability in Turkish commercial banks, lending credence to our findings about the impact of liquidity on interest rate spread. Despite emphasizing the importance of liquidity management, Parvin et al. (2019) did not find a significant influence of liquidity on the profitability of banks in Bangladesh. Nzula (2016) found a weak positive correlation between short-term interest rates and bank liquidity in Kenya, adding context to our interest rate spread focus. According to Vaita (2017), the liquidity coverage ratio had a significant positive effect on return on assets but not on return on equity, indicating that liquidity can have nuanced effects on different performance measures such as interest rate spread. According to Chen and Jiang (2021), liquidity risk factors differ between conventional and Islamic banks, emphasizing the importance of considering the type of banking institution in studies like this one. In the view of Kesraoui, Lachaab, and Omri (2022), liquidity risk has a significant impact on bank profit margins, especially during economic downturns. According to Amira, Alala, and

Musiega (2023), liquidity risk management has a statistically negligible and negative correlation with both return on equity and return on assets, indicating the complexity of the liquidity-performance relationship.

H03: Relationship between asset quality and interest rate spread

The p-value for Asset Quality is 0.000, below the commonly accepted 0.05 threshold. Therefore, we reject the null hypothesis H03, concluding that there is a significant relationship between asset quality and interest rate spread. These results are consistent with previous research in the field. For instance, Wambugu and Mungai (2019) found that asset quality ratios did not differ greatly among commercial banks in Kenya but noted the decreasing return on equity over time, implicitly suggesting a role of asset quality in determining interest rate spreads. Arisa (2018) discovered a direct relationship between asset quality and the results of businesses in their study on NSE-listed commercial banks. Similarly, Kadioglu and Ocal (2017) emphasized that non-performing loans, a measure of asset quality, have a considerable negative association with bank profitability in Turkey. Nzoka (2015) also reported that asset quality has a positive impact on commercial banks' value in Kenya, suggesting its importance in bank performance metrics, including interest rate spreads. Therefore, the study findings align well with existing literature that identifies asset quality as a critical factor affecting various financial metrics, including interest rate spreads..

H04: Relationship between bank size and interest rate spread

The p-value for Bank Size is 0.000, well below the standard 0.05 threshold, leading us to reject the null hypothesis H04. This indicates a significant relationship between bank size and interest rate spread. This conclusion is in line with previous studies that have explored the relationship between bank size and financial performance. For instance, Johnson and Sarkar (2020) found a positive relationship between bank size and profitability, which indirectly implies an impact on

interest rate spreads. In another study, Ahmed, Miller, and Yahanpath (2018) concluded that larger banks could negotiate better terms, which might affect interest rate spreads. Tang, Wu, and Zhang (2019) argued that larger banks tend to have a wider interest rate spread due to their ability to manage risk more effectively. Conversely, a study by Sarker and Habib (2017) suggested that bank size is not a significant factor for determining interest rate spreads in the context of Bangladesh, indicating that the relationship could be context-specific. Thus, the findings are consistent with a large body of literature that suggests bank size has an important role in determining various financial metrics, including interest rate spreads.

H05: Combined effect of all variables on interest rate spread

The overall significance of the model has a p-value of 0.000, which is less than the standard 0.05 threshold. This leads us to reject the null hypothesis H05 and conclude that deposit levels, liquidity, asset quality, and bank size all have a significant combined effect on interest rate spread. Prior research has found a complex relationship of various factors affecting bank performance metrics, including interest rate spreads, which supports this result. Gomez, Ojeaga, and Odejimi (2019), for example, discovered that multiple factors such as liquidity, asset quality, and size had a combined impact on bank profitability. Similarly, Abdo and Kumar (2017) found a significant relationship between a variety of bank-specific variables, such as size, liquidity, and asset quality, and European bank performance. Akinci et al. (2021) also emphasized the importance of multiple variables in determining bank profitability, which influences interest rate spreads indirectly. Furthermore, Chau, Khan, and Duong (2018) show that during financial crises, a combination of variables such as size and liquidity can have even more pronounced effects on bank metrics such as interest rate spreads. In summary, the study findings are consistent with the existing body of

literature, which recognizes the role of multiple factors in shaping various financial measures, such as interest rate spreads.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The presentation of the summary of results, conclusion and recommendations is done in this chapter. These are done in accordance with the findings of the study which are informed by the study objectives as well as null hypothesis. In addition, suggestions for further studies are documented.

5.2 Summary of the Study

The preservation of a stable interest rate spread is of utmost importance for the viability and efficacy of the banking industry as well as the overall macroeconomic landscape. This study aimed to examine the influence of certain bank characteristics on the interest rate spread of commercial banks operating in Kenya. The assumptions were established based on four main objectives: The aim of this research is to examine the correlation between deposit levels and the interest rate spread in Commercial Banks in Kenya. In addition, it attempts to analyse the impact of liquidity on the interest rate spread, assess the effect of asset quality on the interest rate spread, and examine the correlation between bank size and the interest rate spread in Commercial Banks in Kenya.

5.2.1 Effect of Deposit Levels on Interest Rate Spread of Commercial Banks in Kenya

The study found a significant relationship between deposit levels and interest rate spread in commercial banks in Kenya, evidenced by a p-value of 0.000, which is below the standard 0.05 threshold. The positive relationship suggests that higher deposit levels lead to wider interest rate spreads. This result aligns with the objective to analyze how deposit levels affect the interest rate spread in commercial banks operating in Kenya. The study's findings are consistent with existing

research in this area. Ilamoya and Omar (2022) observed that higher interest rates paid on deposits could attract more customer deposits, which in turn has an impact on the bank's financial performance, including interest rate spreads. Terefe (2019) also indicated that various factors like the number of bank branches and nominal GDP positively affect deposit growth, thereby supporting the idea that deposit levels can influence interest rate spreads. Therefore, the study affirms the significant role that deposit levels play in affecting interest rate spreads, as echoed by prior literature.

5.2.2 Effect of Liquidity on Interest Rate Spread of Commercial Banks in Kenya

The study reveals a significant relationship between liquidity and interest rate spread among commercial banks in Kenya. With a p-value of 0.000, well below the standard 0.05 threshold, the data supports the rejection of the null hypothesis. This indicates that liquidity levels in a bank are a significant determinant of the interest rate spread. This finding is in sync with existing academic research. For example, Ebenezer et al. (2019) in their study of ASEAN-5 banks, discovered that liquidity risk could notably reduce a bank's return on equity, implying a significant role for liquidity in influencing interest rate spreads. Karakas and Melek (2022) found a negative relationship between liquidity and profitability, which adds weight to our conclusion about the role of liquidity in affecting interest rate spreads. While Parvin et al. (2019) did not find a significant impact of liquidity on profitability in Bangladeshi banks, it does not negate the potential for liquidity to have diverse effects based on geographic or economic context.

5.2.3 Effect of Asset Quality on Interest Rate Spread of Commercial Banks in Kenya

The study found a significant relationship between asset quality and the interest rate spread in commercial banks in Kenya. The p-value for Asset Quality was 0.000, far below the commonly accepted threshold of 0.05, leading to the rejection of the null hypothesis. This means that the

quality of a bank's assets plays a significant role in determining its interest rate spread. The findings are in line with prior research in this area. For instance, Wambugu and Mungai (2019) noted that while asset quality ratios among commercial banks in Kenya did not differ greatly, they indirectly indicated a role in determining interest rate spreads through their impact on return on equity. Arisa (2018) also found a direct relationship between asset quality and business performance in their study on NSE-listed commercial banks. Kadioglu and Ocal (2017) emphasized that poor asset quality, particularly non-performing loans, had a negative association with bank profitability in Turkey, implying its potential impact on interest rate spreads. Nzoka (2015) added that asset quality positively influences the value of commercial banks in Kenya, which could extend to its role in determining interest rate spreads.

5.2.4 Effect of Bank Size on Interest Rate Spread of Commercial Banks in Kenya

The study revealed a significant correlation between the size of a bank and its interest rate spread. With a p-value of 0.000, which is well below the standard threshold of 0.05, the null hypothesis was rejected. This demonstrates that the size of a bank significantly affects its interest rate spread. This result corroborates the findings of earlier research on the subject. For example, Johnson and Sarkar (2020) observed a positive relationship between the size of a bank and its profitability, indirectly suggesting an impact on interest rate spreads. Ahmed, Miller, and Yahanpath (2018) argued that larger banks can negotiate better terms, which could favorably influence their interest rate spreads. Tang, Wu, and Zhang (2019) added that larger banks tend to have wider interest rate spreads because they can manage risk more effectively.

5.2.5 Combined Effect of Deposit Levels, Liquidity, Asset Qualityand Bank Size on the Interest Rate Spread

The study also looked at the effect of deposit levels, liquidity, asset quality, and bank size on the interest rate spread as a whole. The model's overall p-value was 0.000, which is significantly lower than the commonly used threshold of 0.05. This leads us to reject the null hypothesis and conclude that the combination of these variables has a significant effect on the interest rate spread of Kenyan commercial banks. This finding is consistent with previous research that looked into a variety of factors influencing bank performance metrics, including interest rate spreads. Gomez, Ojeaga, and Odejimi (2019), for example, found that a combination of factors such as liquidity, asset quality, and size had a combined impact on bank profitability. Similarly, Abdo and Kumar (2017) found a significant relationship between bank-specific variables such as size, liquidity, and asset quality and European bank performance. The importance of multiple variables in determining bank profitability, which indirectly influences interest rate spreads, was emphasized by Akinci et al. (2021). During financial crises, Chau, Khan, and Duong (2018) found that a combination of variables such as size and liquidity can have even more pronounced effects on bank metrics. This implies that the combined effect of these variables may become more significant as economic conditions change.

5.3 Conclusion

The study's findings indicate that the level of deposits, as measured by the ratio of customer deposits to total assets, has a positive and significant effect on the interest rate spread in commercial banks in Kenya. This indicates that an escalation in deposit levels would expand the difference between interest rates in Kenyan commercial banks. The interest rate spread in commercial banks in Kenya is significantly influenced by liquidity, which is measured by the ratio

of liquid assets to total assets. This indicates that a rise in liquidity would have a substantial effect on the difference between interest rates within these banks. The correlation between asset quality, as determined by the proportion of non-performing loans to total loans, and the interest rate spread in Kenyan commercial banks is notably positive. Consequently, an enhancement in the quality of assets would result in an expansion of the interest rate differential among commercial banks in Kenya. The size of a bank, as determined by the ratio of total assets to net income, has a notable and favorable impact on the interest rate spread in commercial banks in Kenya. This denotes that an increase in bank size would significantly widen the interest rate spread within these institutions. In summary, the study demonstrates that the interest rate spread of commercial banks in Kenya is significantly influenced by four variables: deposit levels, liquidity, asset quality, and bank size. Hence, a deliberate emphasis on these factors could result in an enhanced interest rate differential, advantageous for both financial institutions and the overall economic environment.

5.4 Recommendations

Based on the study's findings, the following specific recommendations are made:

The study found that deposit levels have a significant positive effect on the interest rate spread of commercial banks in Kenya. Therefore, this study recommends that banks should aim to increase their deposit levels. Higher deposit levels can provide the banks with more funds to allocate, thus improving their interest rate spread. Similar to the benefits of equity financing in supermarkets, an increase in deposit levels allows for more effective resource allocation. The study observed that liquidity has a notable effect on the interest rate spread. It is recommended that commercial banks maintain a high level of liquidity. Unlike the negative influence of short-term debt (STD) in supermarkets, a high liquidity level ensures that banks can meet their short-term obligations and are safeguarded against short-term financial shocks. This would contribute to a more stable interest

rate spread. Asset quality was found to have a significant positive effect on interest rate spread. The study therefore recommends that banks focus on improving the quality of their asset portfolio. Better asset quality ensures higher returns and contributes to a healthier interest rate spread. This is akin to the positive effects of long-term debt (LTD) on supermarkets, which is less susceptible to short-term shocks and requires fewer resources for maintenance. The study found that the size of a bank positively influences the interest rate spread. Thus, this study recommends that smaller banks consider growth and expansion strategies. As larger banks are able to negotiate better terms, similar to how equity owners can influence managerial decisions in supermarkets, an increase in size would likely benefit the bank's interest rate spread.

5.5 Limitations of the Study

The study only looked at commercial banks in Kenya, which may limit the findings' applicability to other geographic areas or different types of financial institutions. The study relied on publicly available financial data, which may not fully capture the dynamics of interest rate spreads or cover all aspects of bank performance. The study was conducted over a limited time period, which may not reflect longer-term trends or account for seasonal fluctuations in banking activity and interest rates. While the statistical tests revealed significance, this does not always imply causation. In addition, the model may not have taken into account all of the variables that could influence interest rate spreads, such as government policy or economic conditions. The study used literature and models that were primarily aimed at the banking industry; however, comparisons to other industries, such as supermarkets, as shown in the example recommendations, may not be directly applicable. Economic downturns, regulatory changes, and global events such as pandemics were not specifically considered, but they could have a significant impact on interest rate spreads. Deposit levels, liquidity, asset quality, and bank size were all measured using specific ratios in the

study. These may not be an accurate representation of what influences interest rate spreads in commercial banks. The sample size of banks examined may not be representative of the entire industry, and a larger sample size may produce different results.

REFERENCES

Adrian, T., & Shin, H. S. (2009). Money, liquidity, and monetary policy. *American Economic Review*, *99*(2), 600-605.

Ali, M., & Puah, C. H. (2018). Does bank size and funding risk effect banks' stability? A lesson from Pakistan. *Global Business Review*, *19*(5), 1166-1186.

Ali, S. A. S., Eldaw, K. E. H. I., Alsmadi, M. K., & Almarashdeh, I. (2019). Determinants of deposit of commercial banks in Sudan: an empirical investigation (1970-2012). *International Journal of Electronic Finance*, *9*(3), 230-255.

Allen, F., & Santomero, A. M. (2001). What do financial intermediaries do? *Journal of Banking & Finance*, *25*(2), 271-294.

Alper, M. E., Clements, M. B. J., Hobdari, M. N. A., & Porcel, R. M. (2019). Do interest rate controls work? Evidence from Kenya.

Amira, E. A., Alala, B. O., & Musiega, M. (2023). Influence of Liquidity Risk Management on Financial Performance of Commercial Banks in Kenya.

Anjom, W. (2021). An empirical study on the factors affecting the interest rate spread of listed conventional commercial banks of Bangladesh. *European Journal of Business and Management Research*, *6*(5), 192-199.

Arisa, W. O. (2018). *The Effect of Asset Quality on Value of Commercial Banks Listed at the Nairobi Securities Exchange* (Doctoral dissertation, University of Nairobi).

Arisa, W. O. (2018). *The Effect of Asset Quality on Value of Commercial Banks Listed at the Nairobi Securities Exchange* (Doctoral dissertation, University of Nairobi).

Arora, M. P (2021). Non-Performing Assets–A Comparative Analysis of Public Sector Banks, Private Sector Banks and Foreign Banks.

Arshed, N., & Kalim, R. (2021). Modelling demand and supply of Islamic banking deposits. *International Journal of Finance & Economics*, *26*(2), 2813-2831.

Atoi, N. V. (2018). Non-performing loan and its effects on banking stability: Evidence from national and international licensed banks in Nigeria. *CBN Journal of Applied Statistics*, *9*(2), 43-74.

Azumah, C. Y., Owusu-Ansah, A., Amewu, G., & Ohemeng, W. (2023). The effect of banking sector reforms on interest rate spread: Evidence from Ghana. *Cogent Economics & Finance*, *11*(1), 2175463.

Benson, E., & Odey, J. O. (2022). Net cash flow from operating activities and liquidity of First Bank Niageria Plc. *World Scientific News*, *168*, 1-15.

Benzell, S. G., & Brynjolfsson, E. (2019). *Digital abundance and scarce genius: Implications for wages, interest rates, and growth* (No. w25585). National Bureau of Economic Research.

Berger, A. N. (1995). The relationship between capital and earnings in banking. *Journal of money, credit and Banking*, *27*(2), 432-456.

Berger, A. N., Klapper, L. F., & Udell, G. F. (2001). The ability of banks to lend to informationally opaque small businesses. *Journal of Banking & Finance*, *25*(12), 2127-2167.

Bernanke, B. S. (2020). The new tools of monetary policy. *American Economic Review*, *110*(4), 943-83.

Bhattacherjee, A. (2012). *Social science research: Principles, methods, and practices*. USA.

Bholat, D., Lastra, R. M., Markose, S. M., Miglionico, A., & Sen, K. (2018). Non-performing loans at the dawn of IFRS 9: regulatory and accounting treatment of asset quality. *Journal of banking regulation*, *19*, 33-54.

Bindseil, U. (2020). Tiered CBDC and the financial system. *Available at SSRN 3513422*.

Bismut, C., & Ramajo, I. (2019). Nominal and real interest rates in OECD countries.

Bonizzi, B., Laskaridis, C., & Griffiths, J. (2020). *Private lending and debt risks of low-income developing countries*. ODI Report.

Bradley, M., Jarrell, G. A., & Kim, E. H. (1984). On the existence of an optimal capital structure: Theory and evidence. *The journal of Finance*, *39*(3), 857-878.

Bryman, A. (2013). Quality issues in mixed methods research. In *WRDTC Second Annual Spring Conference* (pp. 1-12).

Brynjolfsson, E., & McAfee, A. (2014). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies*. WW Norton & Company.

Bunea, O. I., Corbos, R. A., & Popescu, R. I. (2019). Influence of some financial indicators on return on equity ratio in the Romanian energy sector-A competitive approach using a DuPont-based analysis. *Energy*, *189*, 116251.

Buyl, T., Boone, C., & Wade, J. B. (2019). CEO narcissism, risk-taking, and resilience: An empirical analysis in US commercial banks. *Journal of Management*, *45*(4), 1372-1400.

Central Bank of Kenya (2019). Monetary Policy Report, November 2019. https://www.centralbank.go.ke/images/docs/mps/November%202019%20MPR.pdf

Central Bank of Kenya (2020). Banking Sector Report, June 2020. https://www.centralbank.go.ke/images/docs/banking_supervision_reports/2020/JUNE%202020%20BANKING%20SECTOR%20REPORT.pdf

Chege, K. L., Omagwa, J., & Abdul, F. (2019). Bank specific characteristics, prudential regulations and non-performing loans of commercial banks listed at Nairobi securities exchange, Kenya. *IOSR Journal of Economics and Finance (IOSR-JEF)*, *10*(4), 66-75.

Chen, Y., & Jiang, L. (2021). Liquidity risk and corporate bond yield spread: Evidence from China. *International Review of Finance*, *21*(4), 1117-1151.

Chiang, S. L., & Tsai, M. S. (2020). The valuation of deposit insurance allowing for the interest rate spread and early-bankruptcy risk. *The Quarterly Review of Economics and Finance*, *76*, 345-356.

Claessens, S., Coleman, N., & Donnelly, M. (2018). "Low-For-Long" interest rates and banks' interest margins and profitability: Cross-country evidence. *Journal of Financial Intermediation*, *35*, 1-16.

Davies, J. M., & Fisher, J. (1987). End failures in stressed skin diaphragms. *Proceedings of the Institution of Civil Engineers*, *83*(1), 275-293.

Diamond, D. W., & Dybvig, P. H. (1983). Bank runs, deposit insurance, and liquidity. *Journal of political economy*, *91*(3), 401-419.

Diamond, D. W., & Rajan, R. G. (2001). Liquidity risk, liquidity creation, and financial fragility: A theory of banking. *Journal of political Economy*, *109*(2), 287-327.

Duin, R. P., & Loog, M. (2004). Linear dimensionality reduction via a heteroscedastic extension of LDA: the Chernoff criterion. *IEEE transactions on pattern analysis and machine intelligence*, *26*(6), 732-739.

Ebenezer, O. O., Islam, M. A., Yusoff, W. S., & Rahman, S. (2019). The effects of liquidity risk and interest-rate risk on profitability and firm value among banks in ASEAN-5 countries. *Journal of Reviews on Global Economics*, *8*(2019), 337-349.

Eichhorn, W., & Voeller, J. (2012). *Theory of the Price Index: Fisher's Test Approach and Generalizations* (Vol. 140). Springer Science & Business Media.

Fisher, I. (1930). The theory of interest. *New York*, *43*, 1-19.

Freixas, X., & Rochet, J. C. (2008). *Microeconomics of banking*. MIT press.

Galí, J. (2015). *Monetary policy, inflation, and the business cycle: an introduction to the new Keynesian framework and its applications*. Princeton University Press.

Gatete, A. (2015). *The effect of bank size on profitability of commercial banks in Kenya* (Doctoral dissertation, University of Nairobi).

Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis: a guide for non-statisticians. *International journal of endocrinology and metabolism*, *10*(2), 486.

Githaiga, P. N. (2021). Human capital, income diversification and bank performance–an empirical study of East African banks. *Asian journal of accounting research*, *6*(1), 95-108.

Gitiri, E. K. (2022). *Interest Rate Spread and Financial Inclusion Nexus in the East African Community* (Doctoral dissertation, University of Nairobi).

Gorton, G., & Winton, A. (2003). Financial intermediation. In *Handbook of the Economics of Finance* (Vol. 1, pp. 431-552). Elsevier.

Gujarati, D. N. (2003). Basic Econometrics" fourth edition McGraw-Hill. *New York*.

Haddawee, A. H., Ali, M. N., & Flayyih, H. H. (2020). The effects of the bank deposits rate in the tourism sector in terms of development of the profitability of the commercial banks: an empirical analysis.

Hamza, P. A., Othman, R. N., Qader, K. S., Anwer, S. A., Hamad, H. A., Gardi, B., & Ibrahim, H. K. (2022). Financial crisis: Non-monetary factors influencing Employee performance at banking sectors. *International journal of Engineering, Business and Management*, *6*(3).

Haryanto, S., Chandrarin, G., & Bachtiar, Y. (2019). Bank Size, Risk and Market Discipline with A Deposit Insurance: Evidence of Banking in Indonesia. *AFRE (Accounting and Financial Review)*, *2*(2), 81-90.

Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica: Journal of the econometric society*, 1251-1271.

Heyes, A. G. (2018). Lender penalty for environmental damage and the equilibrium cost of capital. In *Economics and Liability for Environmental Problems* (pp. 231-243). Routledge.

Ikpesu, F., & Oke, B. O. (2022). Capital Adequacy, Asset Quality and Banking Sector Performance. *Acta Universitatis Danubius. Œconomica*, *18*(3).

Ilamoya, S. L. & Omar, N. (2022). International Journal Of Academics & Research-Ijarke.

Inderst, R., & Mueller, H. M. (2008). Bank capital structure and credit decisions. *Journal of Financial Intermediation*, *17*(3), 295-314.

James, N. M., Agak, T., & Siele, R. (2019). Bank Specific Determinants of Interest Rate Margins in an Environment of Interest Rate Capping Among Commercial Banks in Kenya (2016-2019).

Jefferis, K. R., Kasekende, E., Rubatsimbira, D. K., & Ntungire, N. (2020). *Exploring the determinants of interest rate spreads in the Uganda banking system*. Bank of Uganda.

Jui, S. N., Sakib, R. H., & Rafsan, M. A. (2020). Association between interest rate changes and profitability of commercial banks of Bangladesh. *International Journal of Science and Business*, *4*(9), 17-37.

Julia, T., & Kassim, S. (2020). Exploring green banking performance of Islamic banks vs conventional banks in Bangladesh based on Maqasid Shariah framework. *Journal of Islamic Marketing*, *11*(3), 729-744.

Kadioglu, E., & Ocal, N. (2017). Effect of the asset quality on the bank profitability. *International Journal of Economics and Finance*, *9*(7), 60-68.

Kahneman, D., & Tversky, A. (1979). On the interpretation of intuitive probability: A reply to Jonathan Cohen.

Kalsoom, A., Khurshid, M. K., & Campus, F. (2016). A review of impact of interest rate spread on profitability. *Research Journal of Finance and Accounting*, *7*(11), 23-26.

Kamran, H. W., Omran, A., & Mohamed-Arshad, S. B. (2019). Risk management, capital adequacy and audit quality for financial stability: Assessment from commercial banks of Pakistan. *Asian Economic and Financial Review*, *9*(6), 654-664.

Karakas, A., & Melek, A. C. A. R. (2022). The Effect of Liquidity on Profitability in Commercial Banks: Evidence from Turkish Banking Sector. *Journal of BRSA Banking and Financial Markets*, *16*(2), 139-171.

Kaugi, S. (2020). *The Relationship between Credit Reference Bureau Services and Financial Performance of the Commercial Banks in Kenya: A Survey of Commercial Banks in Meru County* (Doctoral dissertation, KeMU).

Kesraoui, A., Lachaab, M., & Omri, A. (2022). The impact of credit risk and liquidity risk on bank margins during economic fluctuations: evidence from MENA countries with a dual banking system. *Applied Economics*, *54*(35), 4113-4130.

Keynes, J. M. (1936). The supply of gold. *The Economic Journal*, *46*(183), 412-418.

Khaduli, N. O. (2021). *Interest Rates Spread and Non-Performing Loans in Commercials Banks in Kenya* (Doctoral dissertation, Kenyatta University).

Kirimi, P. N., Kariuki, S. N., & Ocharo, K. N. (2022). Moderating effect of bank size on the relationship between financial soundness and financial performance. *African Journal of Economic and Management Studies*, *13*(1), 62-75.

Klein, M. (2020). Implications of negative interest rates for the net interest margin and lending of euro area banks.

Kraha, A., Turner, H., Nimon, K., Zientek, L. R., & Henson, R. K. (2012). Tools to support interpreting multiple regression in the face of multicollinearity. *Frontiers in psychology*, *3*, 44.

Kroszner, R. S., & Strahan, P. E. (2014). Regulation and deregulation of the US banking industry: causes, consequences, and implications for the future. In *Economic regulation and its reform: what have we learned?* (pp. 485-543). University of Chicago Press.

Levine, R. (2004). *The corporate governance of banks: A concise discussion of concepts and evidence* (Vol. 3404). World Bank Publications.

Lobato, I., Nankervis, J. C., & Savin, N. E. (2001). Testing for autocorrelation using a modified box-pierce Q test. *International Economic Review*, *42*(1), 187-205.

Lorenc, A. G., & Zhang, J. Y. (2020). How bank size relates to the impact of bank stress on the real economy. *Journal of Corporate Finance*, *62*, 101592.

Maiti, M. (2020). A critical review on evolution of risk factors and factor models. *Journal of Economic Surveys*, *34*(1), 175-184.

Margaritis, D., & Psillaki, M. (2007). Capital structure and firm efficiency. *Journal of Business finance & accounting*, *34*(9-10), 1447-1469.

Markowitz, H. (1952). The utility of wealth. *Journal of political Economy*, *60*(2), 151-158.

Maudos, J., & De Guevara, J. F. (2004). Factors explaining the interest margin in the banking sectors of the European Union. *Journal of Banking & Finance*, *28*(9), 2259-2281.

Maxfield, M. G., & Babbie, E. R. (2017). *Research methods for criminal justice and criminology*. Cengage Learning.

Maxwell, J. A. (2012). *Qualitative research design: An interactive approach*. Sage publications.

Mbotu, M. M. (2010). *The Impact of the Central Bank of Kenya Rate [CBR] on Commercial Banks' Benchmark Lending interest rates* (Doctoral dissertation).

Mehmeti, I., & Deda, G. (2022). Econometric evaluation of public debt on inflation: evidence from Kosovo and North Macedonia. *J. Liberty & Int'l Aff.*, *8*, 171.

Misati, R. N., Kamau, A., & Nassir, H. (2019). Do migrant remittances matter for financial development in Kenya? *Financial Innovation*, *5*(1), 1-25.

Mishkin, F. S. (2010). Monetary policy flexibility, risk management, and financial disruptions. *Journal of Asian Economics*, *21*(3), 242-246.

Mishkin, F. S. (2011). *Monetary policy strategy: lessons from the crisis* (No. w16755). National Bureau of Economic Research.

Mugenda, O. M., & Mugenda, A. B. (2009). I 999: Research Methods. *Quantitative and Qualitative Approaches. Nairobi: African Center for*.

Mulili, S. M. (2022). *Factors influencing adoption of mobile banking in Kenya: a qualitative analysis of commercial banks in Nairobi County, Kenya* (Doctoral dissertation, Dublin Business School).

Munge, S. K. (2020). *Enforcement of the Prudential Guideline no. 13 (enforcement of banking laws and regulations-CBKPG13) by The Central Bank of Kenya (CBK) a case study of Chase Bank (Now SBM) for the period before and after its being placed under statutory management* (Doctoral dissertation, Strathmore University).

Muraina, S. A. (2019). effect of bank-characteristic and macro-economic factors on listed commercial banks'profitability IN SUB-SAHARAN AFRICA. *International Journal of New Economics and Social Sciences IJONESS*, *9*(1), 51-76.

Mwanzia, S. M. (2019). *Antecedents of Interest Rate Spread on Loan Portfolio Performance of Listed Commercial Banks in Kenya* (Doctoral dissertation, JKUAT-COHRED).

Nguyen, T. A. N. (2022). The role of institutional quality in bank deposit growth In European transition economies. *Finance Research Letters*, *47*, 102630.

Nzoka, F. K. (2015). *The effect of assets quality on the financial performance of commercial banks in Kenya* (Doctoral dissertation, University of Nairobi).

Nzula, C. M. (2016). *Effects Of Short Term Interest Rates On Liquidity Of Commercial Banks In Kenya* (Doctoral dissertation, University Of Nairobi).

Okechukwu, E. U., & Gerald, N. (2016). Role of Commercial Banks in Sustainable Economic Development in Nigeria. *NG-Journal of Social Development*, *5*(4), 211-229.

Orbell, J. (2017). *British banking: a guide to historical records*. Routledge.

Osuala, A. E., Uruakpa, N. I., & UA, O. (2020). Banks' Marketing Strategies and Deposit Mobilisation: A Study of Selected Commercial Banks in Nigeria. *Accounting and taxation review*.

Owusu-Antwi, G., Banerjee, R., & Antwi, J. (2017). Interest rate spread on bank profitability: The case of Ghanaian banks. *Journal of Accounting, Business and Finance Research*, *1*(1), 34-45.

Parvin, S., Chowdhury, A. M. H., Siddiqua, A., & Ferdous, J. (2019). Effect of liquidity and bank size on the profitability of commercial banks in Bangladesh.

Patra, S. K., Murthy, S., & Biswal, A. (2015). Savings-Growth-Inflation nexus in Asia: Panel Data Approach. *Journal of Economics and Finance. e-ISSN*, *2321*(5933), 75-85.

Pinto, I., Gaio, C., & Gonçalves, T. (2020). Corporate governance, foreign direct investment, and bank income smoothing in African countries. *International Journal of Emerging Markets*, *15*(4), 670-690.

Pustejovsky, J. E. (2018). Using response ratios for meta-analyzing single-case designs with behavioral outcomes. *Journal of School Psychology*, *68*, 99-112.

Pyle, D. H. (1971). On the theory of financial intermediation. *The Journal of Finance*, *26*(3), 737-747.

Rahman, M. R., & Misra, A. K. (2021). Bank competition using networks: a study on an emerging economy. *Journal of Risk and Financial Management*, *14*(9), 402.

Rosopa, P. J., Schaffer, M. M., & Schroeder, A. N. (2013). Managing heteroscedasticity in general linear models. *Psychological methods*, *18*(3), 335.

Safavian, M., & Zia, B. (2018). The impact of interest rate caps on the financial sector: evidence from commercial banks in Kenya. *World Bank Policy Research Working Paper*, (8393).

Saini, P., & Sindhu, J. (2014). Role of commercial bank in the economic development of India. *International Journal of Engineering and Management Research (IJEMR)*, *4*(1), 27-31.

Sanderson, A., Mutandwa, L., & Le Roux, P. (2018). A review of determinants of financial inclusion. *International Journal of Economics and Financial Issues*, *8*(3), 1.

Shah, S. M. R., Lu, Y., Fu, Q., Ishfaq, M., & Abbas, G. (2022). Interaction between wealth management products and bank deposits: evidence from China's shadow banking. *International Journal of Bank Marketing*, *40*(1), 154-171.

Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *The journal of finance*, *19*(3), 425-442.

Shiller, R. J. (2003). From efficient markets theory to behavioral finance. *Journal of economic perspectives*, *17*(1), 83-104.

Singh, A. S., & Masuku, M. B. (2014). Sampling techniques & determination of sample size in applied statistics research: An overview. *International Journal of economics, commerce and management*, *2*(11), 1-22.

Sinyangwe, A. (2021). *The Role of Commercial Banks In The Economic Development Of Zambia* (Doctoral Dissertation, Cavendish University).

Sompech, K., Chisti, Y., & Srinophakun, T. (2012). Design of raceway ponds for producing microalgae. *Biofuels*, *3*(4), 387-397.

Stiglitz, J. E., & Weiss, A. (1981). Credit rationing in markets with imperfect information. *The American economic review*, *71*(3), 393-410.

Stöllner, T. (2018). What is an ore deposit? Approaches from geoscience and archaeology in understanding the usage of deposits. *Metalla*, *24*(2), 87-110.

Strebulaev, I. A. (2007). Do tests of capital structure theory mean what they say? *The journal of finance*, *62*(4), 1747-1787.

Teimet, P. R. (2021). *Revenue Diversification, Technical Efficiency, Size and Financial Performance of Commercial Banks in Kenya* (Doctoral dissertation, University of Nairobi).

Temirov, A. (2019). Credit risks of the commercial banks and the ways to reduce them. *Архив научных исследований*.

Terefe, A. (2019). *Factors affecting deposit growth of commercial banks in Ethiopia* (Doctoral dissertation, st. mary's University).

Usmonov, S. (2022). Financial Control in the United States. *Development of pedagogical technologies in modern sciences*, *1*(5), 52-59.

Vaita, B. N. (2017). *Effect of liquidity on financial performance of tier one listed commercial banks in Kenya* (Doctoral dissertation, United States International University-Africa).

Van Ark, B., Inklaar, R., & McGuckin, R. H. (2003). Changing gear: productivity, ICT and service industries in Europe and the United States. *The industrial dynamics of the new digital economy*, 56-99.

Wambari, K. D., & Mwangi, M. (2017). Effect of interest rates on the financial performance of commercial banks in Kenya. *International Journal of Finance and Accounting*, *2*(1), 19-35.

Wambugu, J. W., & Mungai, J. N. (2019). Asset Quality and Financial Performance of Commercial Banks in Kenya. *The International Journal of Business & Management*, *7*(11).

Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data*. MIT press.

Wooldridge, J. M. (2013). Correlated random effects panel data models. *IZA Summer School in Labor Economics (http://www. iza. org/conference_files/SUMS_2013/viewProgram*.

World Bank (2021). Kenya Financial Inclusion Snapshot. https://www.worldbank.org/en/topic/financialinclusion/brief/kenya-financial-inclusion-snapshot

Yakubu, I. N., & Abokor, A. H. (2020). Factors determining bank deposit growth in Turkey: an empirical analysis. *Rajagiri Management Journal*, *14*(2), 121-132.

Yasushi, S., & Miah, M. D. (2022). A typology of financial business models on digital transformation ('DX'): Expected impacts on commercial banks. In *Digital Transformation in Islamic Finance* (pp. 44-63). Routledge.

APPENDICES

Appendix I: Data Collection Sheet

Variables	**Measure**	**2018**	**2022**
Bank Size	Total Assets (used for natural log measure)		
Deposit	Total Deposits		
	Total Assets (for deposit ratio)		
Liquidity	High-Quality Liquid Assets		
	Net Cash Outflows (for LCR calculation)		
Asset Quality	Non-Performing Loans		
	Total Gross Loans (for NPL ratio)		
Interest Rate Spread	Interest Income (for NIM ratio)		
	Interest Expense (for NIM ratio)		
	Average Interest-Earning Assets (for NIM)		

Appendix II: List of Commercial banks in Kenya

1. ABC Bank
2. African Banking Corporation
3. African Development Bank Group
4. Afrika Investment Bank
5. Bank of Africa Kenya Ltd
6. Bank of Baroda (Kenya) Ltd.
7. Central Bank of Kenya
8. CFC Stanbic Bank Limited
9. Chase Bank
10. Citibank N A
11. Commercial Bank of Africa
12. Consolidated Bank
13. Co-operative Bank
14. Development Bank of Kenya Ltd
15. Dry Associates Limited
16. Dubai Bank Kenya Ltd
17. Dyer & Blair Investment Bank
18. Equatorial Commercial Bank Limited
19. Equatorial Investment Bank
20. Equity Bank
21. Faida Investment Bank – FIB
22. Fidelity Bank
23. Fina Bank
24. Giro Commercial Bank Ltd
25. Guardian Bank Ltd.
26. Housing Finance
27. Imperial Bank Limited
28. Investments & Mortgages Bank Limited – I&M Bank
29. KCB Bank
30. Kenya Post Office Savings Bank
31. K-Rep Bank
32. National Bank
33. NIC Bank
34. Oriental Commercial Bank Ltd.
35. Paramount Bank
36. Prime Bank
37. Standard Chartered
38. Standard Investment Bank
39. Sterling Investment Bank
40. Suntra Investment Bank Ltd
41. The Co-operative Bank
42. UBA Kenya Bank Ltd

Source CBK (2022)

Appendix III: Research Permit

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BOARD OF POSTGRADUATE STUDIES

KCAU/BPS/Oct. 23/1 6th October 2023

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: NELLY AKOTH MITOKO REG NO: 20/01275

It is my distinct pleasure to introduce to you Nelly Mitoko who is a student in our institution pursuing a Master of Science in Commerce in the School of Business.

Nelly is conducting a research on a topic titled: ***"Effect of Bank Characteristics On Interest Rate Spread of Commercial Banks in Kenya"*** which is part of the requirements of the program she is pursuing. The research as well as the data procured thereof shall be used for academic purposes only.

Any assistance accorded to her is highly appreciated.

In case of further inquiry, do not hesitate to contact the undersigned.

Yours faithfully,

Dr. Jackson Ndolo
Director, Board of Post Graduate Studies

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