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# Assessing the impact of COVID-19 on bank specific factors and credit risk management of Kenyan banks.

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**ASSESSING THE IMPACT OF COVID-19 ON BANK SPECIFIC  
FACTORS AND CREDIT RISK MANAGEMENT OF KENYAN BANKS**

**VALERIE WAKIINI MAINA**

**096445**

**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT  
OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF  
MASTER OF COMMERCE STRATHMORE UNIVERSITY**

**MAY 2024.**



## DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the dissertation contains no material previously published or written by another person except where due reference is made in the dissertation itself.

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Valerie Wakiini Maina

Approval

The dissertation of Valerie Wakiini Maina was approved by the following:

Dr Geoffrey Injeni

Supervisor

Strathmore University Business School

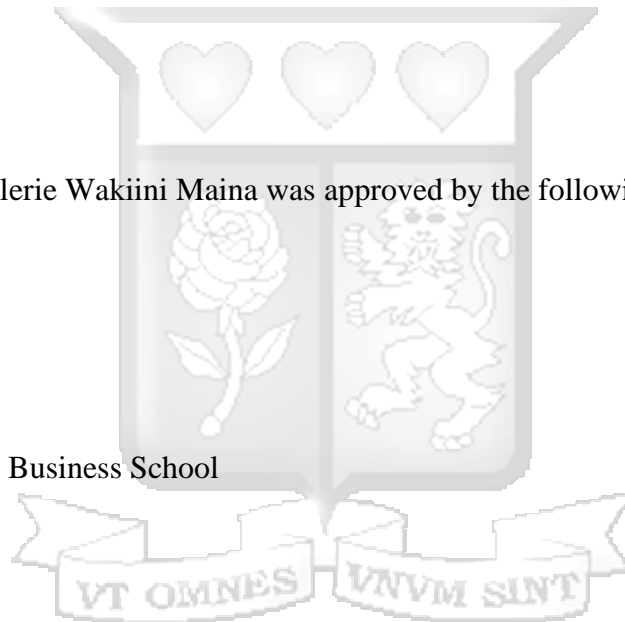
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Dr. Bernard Shibwabo

Director, Office of Graduate Studies



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I give thanks to God for my good health, for leading me through this entire process, and for His abundant and adequate grace. I would like to express my gratitude to Strathmore University and the Strathmore School of Business in particular for providing me with the chance to earn a Master of Commerce degree. Many thanks to Dr. Geoffrey Injeni, my supervisor, for his excellent advice and tolerance while I worked on this thesis.



## DEDICATION

I dedicate this research project to my parents for their support both financially and emotionally and for their prayers and motivation throughout the period of the study. To my closest friends, Sidi, Gitahi, Wangeci, Blessings and Chris for cheering me on and for the encouragement, thank you and May God bless you all.



## LIST OF ABBREVIATIONS

**CBK:** Central Bank of Kenya

**CRM:** Credit Risk Management

**KBA:** Kenya Bankers Association

**NPL:** Non-performing Loans



## ABSTRACT

The global financial crisis of 2007 – 2009 was considered the most serious global economic crisis until the COVID-19 pandemic hit in 2020. The COVID-19 pandemic added to the difficult operating environment which occasioned high default rates, hence an increase in credit risk. The main objective of the study was to determine the impact of COVID-19 on bank specific factors that influence credit risk management of commercial banks in Kenya. The bank specific factors studied are liquidity, bank size and age of the bank. There is little empirical evidence on how banks responded with regards to credit risk management during COVID-19 pandemic and studies have also failed to highlight whether the relationship between bank specific factors and credit risk management was the same before and after COVID-19 pandemic. This study was anchored on asymmetric information and credit risk theories. The research philosophy implemented in the study was the pragmatism philosophy and the research design implemented was mixed method research design which combines both qualitative and quantitative research methods. Questionnaires were used to collect primary data and administered through google forms while secondary data was sourced from the annual reports for the period 2019 to 2021. The study's target population was all the 39 commercial banks in Kenya. The study period was 2019 to 2021 since the study focuses on before and after COVID-19. The data analysis used descriptive statistics, diagnostic tests, correlation, and multiple regression analysis. The study established that bank size, age of the bank and ownership structure do not significantly influence credit risk management before and after COVID-19 except for liquidity ratio where a significant change was noted after COVID-19. The findings of this study can be used by banks' management and scholars to help them understand the relationship between bank specific factors and credit risk management. The study recommends that commercial banks in Kenya should take stringent measures in implementing credit assessment processes and comply with all established lending requirements to improve financial performance. The bank management should closely monitor the restructured loans and implement debt collection.

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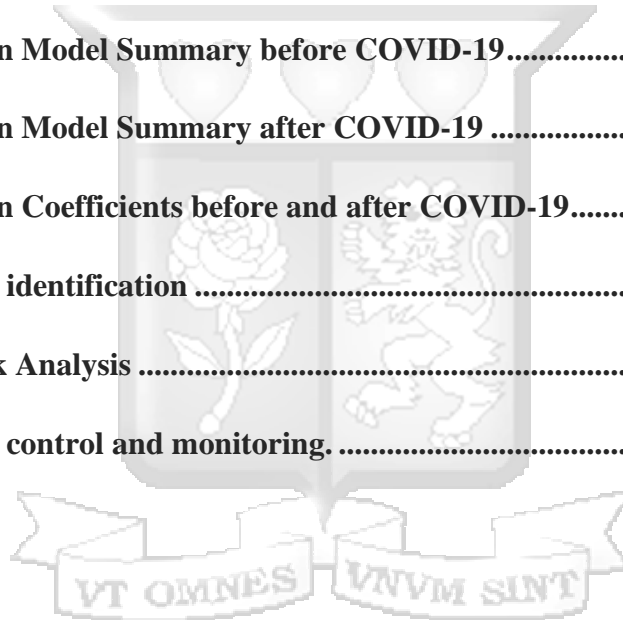
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# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the study

The global financial crisis of 2007 – 2009 was considered the most serious global economic crisis that began as a credit crisis in the United States and spread across the world. According to Moudud-Ul-Huq et al., (2020), the global financial crisis was primarily caused by credit risk. Banks are increasingly exposed to credit risk when engaging in financial instruments other than loans. (CBK, Risk Management Guidelines, 2013). The other crisis that had a significant impact on the world's economic, political, religious, social, and financial systems is the COVID-19- pandemic. WHO declared COVID-19 as a global pandemic on 11th March 2020 (Kiberia & Muathe, 2020) and in Kenya, the first COVID-19 case was confirmed on 12<sup>th</sup> March 2020. The COVID-19 pandemic has had a significant impact on the global economy, leading to unprecedented challenges for businesses, individuals, and governments.

The COVID-19 pandemic resulted in a significant decline in global gross domestic product . According to the International Monetary Fund, the global economy contracted by 3.3% in 2020 due to the pandemic(IMF, 2021). The COVID-19 pandemic was an unknown crisis that was categorized as a black swan event. This is a crisis that has a high impact but cannot easily be predicted. COVID-19 pandemic caused a sharp decrease in income worldwide, but it was not predictable. There have been concerns about how risk managers should deal with such crisis risks as the COVID-19 pandemic appeared (Stulz, 2023).

The COVID-19 outbreak not only put the world economy in danger but also sent a tremendous financial shockwave through the economy and negatively impacted the financial market (Elnahass, Trinh, & Li, 2021). The economic downturn brought on by COVID-19 endangered bank profitability, lowered bank revenue, and resulted in losses from borrowers who were unable to pay back their loans (Perkins & Gnanarajah, 2021). Due to the lockdown and mobility restrictions, borrowers who had gotten loans from commercial banks were unable to conduct their regular business, which resulted in a default on repaying the loan and the interest that had accrued, consequently leading to increase in non-performing loans (Colak & Oztekin, 2020). CBK therefore announced emergency actions by banks to restructure personal, Micro, Small and Medium Enterprises and corporate loans to assist

borrowers. This was done to help borrowers with current loans who had been negatively impacted by the pandemic (CBK, Bank Supervision Annual Report 2020, 2020).

In Kenya's banking industry, credit risk concerns are not new, but they became more pressing in the aftermath of the COVID-19 outbreak. Over the past years, non-performing loans (NPLs) have increased gradually, indicating a mix of regulatory, economic, and bank-specific restrictions (KBA, 2022). Non-performing loans not only affect the soundness of the banking sector but also slow down the pace of economic growth and in extreme cases, it could lead to the financial instability of the entire financial system. The NPL teaches banks fostering in wise lending that spits well individuals and provides future caution for policy and decision-makers to have a check and balances on NPLs.

Credit risk can be defined as the possibility that a counterparty or borrower won't complete their obligations as required, resulting in a loss of funds for the financial organization (Bhatt et al., 2023). The biggest and most obvious source of credit risk for most institutions is loans; however, there are numerous forms of credit risk present throughout a bank's operations, including in the banking book and in the trading book, as well as both on and off the balance sheet.

Credit risk management has been defined as a structured strategy to managing credit risk through risk assessment, creating risk-management strategies, and risk mitigation utilizing managerial resources (Deng, Rono, & Sang, 2020). Inadequate credit risk management techniques have been found to result in an increase in nonperforming loans, which tugs commercial banks' profit margins and creates a more difficult environment for banks. For the purpose of giving banks minimum guidance on risk management and developing a working framework appropriate for international best practices, the Central Bank of Kenya created risk management guidelines. These guidelines mandate that banks have a completely independent credit risk management that oversees capital adjustment and provision for escalating nonperforming loans (CBK, 2013).

Non-performing loans are the biggest contributors of credit risk in commercial banks and banks impose measures to mitigate and control credit risk. Non-performing loans are considered by the International Monetary Fund as loans whereby the borrower is in default and has not paid any of the principal or interest payments due within the allotted 90 days, and the borrower's future payments are highly uncertain (Ari, Chen , & Ratnovski, The Dynamics

of Non-Performing Loans during Banking Crises: A New Database, 2019). This trend is not unique to Kenya, as studies have shown that non-performing loans have also increased in other countries around the world. For example, research conducted in the United States after the 2008 global financial crisis revealed a decline in bank lending to small business firms, leading to increased interest rates and a decline in business operations (Thomas, 2023).

The COVID-19 pandemic was a threat that exposed commercial banks and the financial market to credit risk because of high default rates which led to increase in non-performing loans (OECD, 2021). The factors contributing to the rise in non-performing loans during the COVID-19 pandemic are multifaceted. These factors include widespread job losses and income reductions that have made it difficult for borrowers to meet their loan obligations. According to Central Bank of Kenya, non-performing loan to gross loan ratio have continued increasing with the ratio being at 12.5% in January 2019 to 14.45% in March 2021 and have consistently risen to 15.3% in 2023 (Omondi, 2023).

According to a research done by Kryzanowski, Liu, & Zhang, (2023), at how COVID-19 affected non-performing loans in China, it was discovered that during the crisis bank NPL ratios increased significantly even though the growth rate of total bank lending decreased. The increase in NPLs is attributed to the economic and financial turmoil related with COVID-19, which has impaired bank balance sheets, depressed credit growth, and delayed economic recovery (Ari, Chen, & Ratnovski, 2020). Credit risk could generate major liquidity issues for businesses and ultimately result in their bankruptcy. Adequate management of credit risk in financial institutions is critical for their survival and growth. Banks management must ensure that the procedures, procedures, and practices used to manage the risks of individual loans and portfolio segments are reliable (Nwude & Okeke, 2018).

The COVID-19 pandemic posed significant challenges to credit risk management in Kenya, as the economic disruptions caused by the pandemic have led to increased debt levels and a surge in non-performing loans. One of the key challenges in credit risk management during the pandemic was the high default rate among credit borrowers, which led to severe implications for negative listings at credit reference bureaus (CRBs) and aggressive loan recovery strategies. To address these challenges, the Central Bank of Kenya took several measures, including issuing Gazette Notice to remove negative listings by CRBs for amounts

less than Ksh 1,000 and prohibit non-performing loans from being listed by CRBs for a period of 12 months (CBK, Bank Supervision Annual Report 2020, 2020).

### **1.1.1 Bank specific factors and Credit Risk Management**

Effective credit risk management should contribute to the overall performance of a bank.

When borrowers do not default, banks take a risk and benefit financially (Munangi & Sibindi, 2020)). According to Siddique et al., (2022), bank specific factors are internal factors that can be controlled by banks. Effectively managing internal factors can lead to high profitability for a company. Mismanagement of these factors can have the opposite effect. It would significantly affect the firm's balance sheet and income statement (Ofori-Abebrese, Pickson , & Opare, 2016).

Credit risk management involves reducing and managing the likelihood that borrowers would default on loan payments (Shieler, Kalu, & Amu, 2017). Credit risk management is a method for controlling and reducing risk using managerial tools. Establishing a suitable credit risk environment, sound credit granting procedures, appropriate credit administration, measurement, monitoring, and control over credit risk policies and strategies that clearly define the scope and allocation of bank credit facilities as well as the method used to manage a credit portfolio is necessary (Mumbi & Omagwa, 2017).

Credit risk management has been operationalized differently by different authors. Nthiwa (2021) operationalized Credit risk management in terms of delinquency rate, value at risk and distance to default. Omagwa and Mumbi (2017) operationalized credit risk management in terms of loan appraisal process, lending requirements, debt recovery process and credit policy. Agaba et al., (2022) operationalized credit risk management as credit risk assessment, credit analysis and credit risk monitoring. This study focused on credit risk management practices such as credit risk appraisal, credit policy and credit risk monitoring.

Setting up solid, well stated policies, procedures, and restrictions is essential for managing credit risk. Credit policies lay the groundwork for lending and direct the institution's credit-granting activities (CBK, Risk Management Guidelines, 2013). A bank must create credit policies that serve as guidelines for choosing investments and loans and show the bank's tolerance for credit risk. Major factors influencing the number of debtors include the company's credit policies, which also indicate how well-positioned the manager is to trade with increased income and make wise investments in its debtors. (Mumbi & Omagwa, 2017).

Credit risk appraisal involves determining the borrower's capacity to pay back the loan considering the loan application. In the appraisal process, the risk level associated with a specific borrower is evaluated along with the borrower's creditworthiness and the stream of anticipated future cash flows (Ndero et al., 20). According to Agaba et al., (2022), credit risk monitoring entails a thorough evaluation of the performance of the entire loan portfolio on a regular basis, as well as a complete study of the entire loan portfolio that spots potential cases of impaired loans. Credit risk management in this study was measured by non-performing loan ratio.

Bank-specific factors are characteristics or attributes that are unique to individual banks and can influence their performance, risk profile, and competitiveness. These factors are internal to the bank and are under its control to some extent. This may include; asset quality, liquidity, profitability, size, age and management efficiency (Kiemo et al., 2019). Empirical evidence from previous studies has yielded inconsistent results about the relationship between bank specific factors and credit risk management. Antony and Suresh (2023) did a study on the determinants of credit risk of Indian banks. Credit risk was measured using non-performing loans ratio while the microeconomic variables included bank specific factors such as bank size, bank ownership, bank age, operational efficiency and bank diversification. The research study concluded that bank age and ownership type had a positive effect on credit risk, whereas bank size and operational efficiency have a negative impact on credit risk.

Siddique et al., (2022) conducted a study on the effect of credit risk management and bank specific factors on the financial performance of the South Asian commercial banks. The bank specific factors studied were liquidity ratio, cost-efficiency ratio and average lending rate. Credit risk management was measured by non-performing loans ratio and capital adequacy ratio. The results concluded that non-performing loans, cost-efficiency ratio and liquidity ratio have a significant negative relationship to financial performance while capital adequacy and average lending rate have a significant positive relation to the financial performance of the Asian commercial banks.

Aspal et al., (2019) did a study on the significance of bank specific and macroeconomic determinants on performance of Indian private sector banks. The study operationalized bank specific factors as asset quality, management efficiency, earning quality and liquidity. The study found that bank-specific internal characteristics such as capital adequacy, asset quality,

management efficiency and liquidity have varied effects on the financial performance of private sector banks in India. The correlation between bank performance and capital adequacy was found to be negative but not statistically significant. Additionally, the financial performance of banks is positively and significantly impacted by earning quality and liquidity management. Banks with higher operating profitability and superior liquidity management tend to report higher profits.

Ouma (2020) studied the effect of bank size components on credit risk of commercial banks in Kenya. He used liquidity as a control variable and found out that liquidity had a positive but insignificant effect on credit risk of commercial banks in Kenya. However, Cai and Zhang (2017) did a study to investigate how credit risk influences liquidity risk in Ukrainian banks. The study found that foreign and major banks have a stronger positive correlation between credit and liquidity risk. The study concluded that banks with high levels of non-performing loans may struggle to meet depositor withdrawal demands, resulting in decreased cash flow and depreciation of loan assets which creates liquidity risk.

Ofori-Abebrese et al., (2016) did a study on the effect of bank specific factors on loan performance of HFC Bank in Ghana. The bank specific factors examined were bank interest rate, bank's inefficiency ratio, return on assets, return on equity and bank loan loss provision. The study found that bank-specific factors influencing loan performance were loan interest rate, loan-to-asset ratio, and loan loss provision. These findings suggest that bank-specific factors significantly effect loan performance.

Tehulu and Olana (2014) studied bank-specific determinants of credit risk and focused on Ethiopian banks. The bank-specific determinants studied were bank size, profitability, capital adequacy, bank liquidity, operating inefficiency and ownership. Credit risk was measured by non-performing loans ratio. The research study concluded that bank size has a negative and significant impact on credit risk. Whereas operating inefficiency and ownership have positive and significant impact on credit risk. The results also concluded that bank liquidity, capital adequacy and profitability have a negative but statistically insignificant relationship with credit risk.

Alzoubi and Obeidat (2020) conducted a study on how size influences credit risk of Islamic banks. Bank size was measured as a logarithm of assets. The results showed that there was a negative relationship between the bank size and credit risk. The research concluded that

larger banks can reduce risks through diversification. The findings were consistent with Srairi (2013) studied ownership structure and risk-taking behaviour in conventional and Islamic banks. He focused on bank specific factors such as bank size, efficiency, loan growth and return on assets. The results showed that bank size has a negative relationship with credit risk.

However, Ouma (2020) did a study on the effects of bank size components on the credit risk of commercial banks in Kenya. The bank size components that he studied were asset base, shareholders equity and customer deposits. The study results revealed that asset base had a positive and significant effect on credit risk, while customer deposits had a positive and insignificant effect on credit risk among Kenyan commercial banks.

Bank specific factors in this study has been operationalized as liquidity, age of the bank and bank size and are important to study because they can significantly impact a bank's performance, risk profile, and ability to serve customers effectively. Liquidity, which measures a bank's ability to meet its short-term obligations, is crucial for maintaining stability and public confidence. Bank size can influence economies of scale, product diversification, and market power. Older banks may have more established customer relationships and brand recognition but could also be less adaptable to changing market conditions. The studies highlighted above provide inconsistent findings on them and this study aimed to research on the gaps found. This study aimed to find out the impact of COVID-19 on the relationship between these bank specific factors and credit risk management.

### **1.1.2 Commercial banks in Kenya**

A commercial bank is a company established with the aim of increasing the value of the capital invested in the company by its shareholders at a manageable risk level (Mwangi, 2012). Kenya's banking sector is made up of 39 banks in accordance with the CBK's annual report for 2021. Of the 39 banking institutions, 37 are privately owned, and two of which are majority-owned by the Kenyan government. Of the 37 privately held banks, 17 are foreign owned, while 20 are locally owned that is, the majority owners are based in Kenya. There are 20 commercial banks and 1 mortgage finance company among the 21 locally owned institutions.

Three peer groups comprise the Kenyan commercial banks, based on a weighted composite index. The index takes into account net assets, capital, reserves, number of deposit accounts,

and number of loan accounts. If a bank's weighted composite index is five percent or more, it is considered large; if it is less than one percent, it is considered small. Nine big banks with a combined market share of 74.76 percent, eight medium banks with a combined market share of 16.41 percent, and twenty-two small banks with a combined market share of 8.82 percent were present for the year that ended on December 31, 2021 (CBK, Bank Supervision Annual Report 2021, 2021).

The Central Bank of Kenya implemented policies to reduce the impacts of the COVID-19-pandemic, including the use of digital tools like mobile banking to lower the danger of COVID-19- transmission through handling banknotes and coins. Additionally, CBK gave banks the go-ahead to implement its preventative measures to maintain business continuity. Furthermore, the Monetary Policy Committee reduced the Central Bank Rate from 8.25 percent to 7.25 percent and from 7.25 percent to 7.00 percent, respectively, to encourage the banking industry to lower lending and deposit rates to help Kenyans get access to affordable credit. CBK also announced measures to protect borrowers from the pandemic's negative consequences, including bank relief for borrowers of personal and household debts (CBK, 2020).

## **1.2 Statement of the problem**

The COVID-19 pandemic has hugely affected the Banking sector across the globe to unheard of proportions, and therefore management of credit risk has never been so tough in the face of this pandemic. In the context of the Kenyan economy, commercial banks face a variety of uncertainties due to the economic turbulence courtesy of the pandemic, hence, there is a need to do an in-depth analysis of the variables impacting credit risk management in relation to the situation. In Kenya, the pandemic arrived at a time when the economy was already showing signs of stress. In the banking sector, this was signalled by tight liquidity and growth in non-performing loans. NPLs can be a significant strain on the financial system and hinder a bank's capacity to operate effectively hence the need to study credit risk management.

Research studies comparing credit risk management before and during the COVID-19 outbreak are still rare. Andana & Baskoro (2023) studied credit risk management strategies in the banking industry before and after COVID-19 in Indonesia. The study findings revealed that credit risk before COVID-19 was significantly different from the credit risk at the onset of COVID-19. The study fails to highlight the credit risk management practices implemented

due to the COVID-19 pandemic. Sinkala et al., (2022) studied the impact of COVID-19 on credit risk management in the banking industry for Commercial Banks in Zambia. The study established that Covid-19 had a negative impact on credit risk. Mathias (2021) studied the impact of COVID-19 on performance of Kenyan banks. The study revealed that COVID-19 led to an increase in the loans advanced and customer deposits but led to a decrease in profitability, leverage and liquidity. These studies however failed to highlight the impact of COVID-19 on the bank specific factors such as bank size and age of bank that may influence credit risk management of commercial banks in Kenya.

The gaps highlighted confirm that there was need for a comprehensive study that examines the interplay between bank-specific factors, credit risk management practices, and the performance of banks during the COVID-19 crisis. By addressing these research gaps, this study aimed to provide valuable insights into the role of bank-specific factors in shaping credit risk management strategies and outcomes during the COVID-19 pandemic. The research aimed at examining how COVID-19 impacted how bank specific factors specifically bank size, age of the bank and liquidity influence credit risk management. The study also aimed to highlight how COVID-19 impacted the credit risk management practices implemented by commercial banks in Kenya. Understanding how these COVID-19 impacted how these factors affect credit risk management practices of the banks in the midst of the COVID-19 pandemic is significant to strengthening the robustness of the banking industry of Kenya.

The study intends to shed light to credit risks problem; hence it contributes to the existing policy knowledge shaping the decisions of policymakers, regulators and banking professionals for more effective strategies and policies to reduce credit risks during crisis. Furthermore, the findings of this research could help grow the present pool of information on credit risk management in emerging markets, specifically during the COVID-19 pandemic, hence filling a wide gap in the literature.

### **1.3 Research Objectives**

The general objective of this study was to determine the impact of COVID-19 on bank specific factors that influence credit risk management of commercial banks.

The specific objectives were.

1. To examine the impact of COVID-19 on the influence of liquidity ratio on Credit risk management of commercial banks in Kenya
2. To establish the impact of COVID-19 on the influence bank size has on Credit risk management of commercial banks in Kenya.
3. To evaluate the impact of COVID-19 on the influence age of the bank has on Credit risk management of commercial banks in Kenya.
4. To evaluate the impact of COVID-19 on the credit risk management practices implemented by commercial banks in Kenya.

#### **1.4 Research Questions**

1. How did COVID-19 impact the relationship between liquidity ratio and credit risk management of commercial banks in Kenya?
2. How did COVID-19 impact the relationship between bank size and credit risk management of commercial banks in Kenya?
3. How did COVID-19 impact the relationship between age of the bank and credit risk management of commercial banks in Kenya?
4. What were the credit risk management practices commercial banks use before and after COVID-19 pandemic?

#### **1.5 Scope of the study**

This study sought to determine how COVID -19 Impacted the relationship between bank specific factors and credit risk management. This study focused on all commercial banks in Kenya. This is because COVID-19 had on borrowers and as a result the increase in non-performing loans which results to a high credit risk. The study's population was 39 commercial banks as reported by CBK in 2021. The respondents of the study were 26 out of 37 questionnaires administered to banks. The period of the study was 2019 to 2021. The time range was chosen based on the before COVID-19 was declared a pandemic which is 2019 and after it was declared a pandemic which was 2020 and 2021.

#### **1.6 Significance of the study**

##### **1.6.1 Banks' management**

The study findings may help banks' management better understand how bank specific factors affect credit risk management and the changes experienced during the COVID-19 pandemic. If there is a significant relationship between banks characteristics and credit risk management

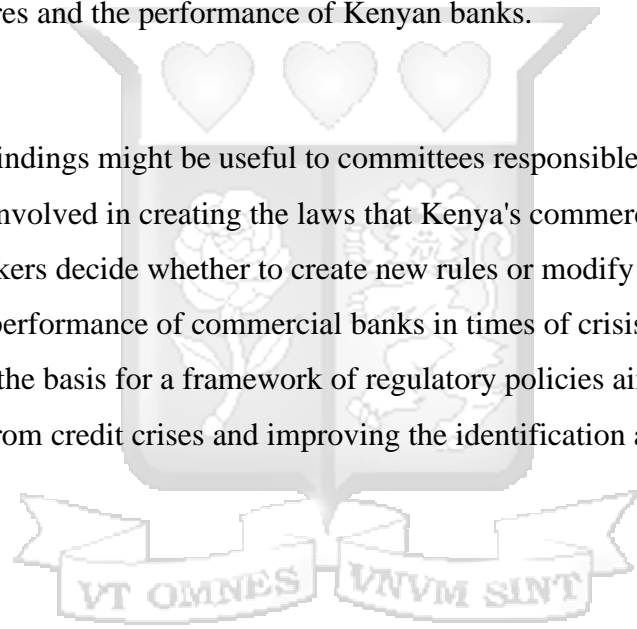
findings, chief risk officers should modify those practices to match the banks characteristics. The findings may also help banks to reevaluate their credit risk management to cushion themselves against another crisis. The findings of this study may enable bank executives understand how credit risk affect the bank performance and they may then adopt the appropriate credit risk practices.

### **1.6.2 Researchers and scholars.**

This study findings will also add to existing literature on credit risk management and the way it was affected by the COVID-19 pandemic. The findings may be that banks changed their credit risk management like the credit risk appraisal to be stricter or less lenient after COVID-19. These results will add to the body of knowledge regarding credit risk management procedures and the performance of Kenyan banks.

### **1.6.3 Regulators**

The study's research findings might be useful to committees responsible for monetary policy and CBK, which are involved in creating the laws that Kenya's commercial banks apply. It will help decision-makers decide whether to create new rules or modify the current ones in order to improve the performance of commercial banks in times of crisis or epidemic. The results will also form the basis for a framework of regulatory policies aimed at safeguarding the financial system from credit crises and improving the identification and measurement of credit risk exposures.



## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter reviewed theoretical literature on credit risk management including theory of asymmetric information and credit risk theory. It also undertakes empirical review of credit risk management and bank characteristics.

#### **2.2 Theoretical review**

Credit risk management is a structured method of handling uncertainties through risk assessment, creating management plans, and mitigating risk using managerial resources. Transferring the risk to a third party, avoiding the risk, minimizing its negative effects, and accepting some or all of its repercussions are some of the ways.

##### **2.2.1 Theory of Asymmetric Information.**

The theory of asymmetric information was introduced by Akerlof, Spence and Stiglitz in the 1970s. Information asymmetry defines relationships where an agent holds information while another does not hold it. According to the theory of asymmetric information, it may be complex to distinguish between good and bad borrowers, which may result into adverse selection and moral hazards problems. Therefore, the party with less knowledge about the particular object being transacted is in a position to decide whether to make the right or wrong decision regarding the transaction (Otieno & Nyagol, 2016).

This theory is relevant to this study with regard to credit risk management. Loans forms huge proportion of credit risk. The information asymmetry that exists because of the absence of a credit information exchange system fosters the growth of nonperforming loans in banks, which in turn leads to loan defaults (Otieno & Nyagol, 2016). Asymmetry in information about loans might take several forms. Banks' screening and monitoring efforts increase the dissemination of information, which provides incentives to hide unfavorable information. Additionally, the presence of a bank loan minimizes information asymmetry between businesses and outside investors through loan announcements (Maskara & Mullineaux, 2011). However, borrowers must give lenders with their information in a timely and accurate manner (Bhat & Desai, 2020)

Poor loan quality begins with the information processing system and gets worse during the stages of loan approval, monitoring, and regulating. As a result, banks prefer to choose credit seekers of high quality, and the primary method of vetting a potential borrower is by reviewing all accessible data. When banks share credit information about borrowers, the increase in lending to those with good credit may not be enough to make up for a potential decrease in lending to risky kinds. When lenders are unable to distinguish between good and bad borrowers, all borrowers will be charged a standard interest rate that takes into account their collective experience (Otieno & Nyagol, 2016).

This theory has been applied by researchers who have studied topics on credit risk management. Siddique et al., (2022) used the theory of asymmetric information in their study on the effect of credit risk management and bank specific factors on the financial performance of the South Asian commercial banks. According to Siddique et al., (2022), non-performing loans are linked to information asymmetry, principle agency theory, and credit default theory. Asymmetric information on large non-performing loans (NPLs) might lead to bankruptcies or financial statements being distributed unevenly. This theory is relevant since it helps understand credit risk management with regards to credit analysis and monitoring.

### **2.2.2 Credit Risk Theory**

Credit Risk Theory was introduced by Melton (1974) and explains that the circumstances leading to risk occurrence are caused by changes in an organization's asset base. This theory refers to the various mathematical models used to quantify and manage credit risk in financial institutions. It typically involves the use of statistical models and financial tools to analyze credit risk and develop strategies for managing it. These may include credit scoring models, credit portfolio analysis, and stress testing, among others.

This theory has been adopted by researchers because it plays a significant part in credit management, that is managing credit risk and operating costs. This theory's application states that before making a loan, banks should take the borrower's capacity for repayment into account. According to Merton (1974), there is a connection between credit risk and the firm's capital structure. The Merton model offers a structural relationship between a company's assets and default risk. If a company's assets are worth less than its existing debt, it is deemed to be in default. In this case, the shareholders receive nothing while the lenders receive payment equal to the value of the asset.

This theory also states that the management must keep an eye on all the information, including ongoing creditworthiness checks on the borrower, and make sure they follow the contract's requirements (Nasieku & Musa, 2019). Additionally, it describes how financial organizations like commercial banks might manage uncertainties that develop during the credit servicing term. A loss in the firm assets may be due to default or events beyond the firm's control, as well as industry-specific factors (Ndal, 2018). Asset base in banking relates to loans borrowed by customers. Therefore, according to this theory, credit risk has an adverse effect on the profitability of a firm.

Credit portfolio management is the other area where credit risk theory is emphasized. Similarly, credit risk theory connects the capital structure of an organization, a company's assets, and the function of bank management in managing credit risk (Mrindoko, Macha, & Gwahula, 2020). This model has been widely used by banks, insurance companies, and other financial institutions for credit risk management. According to this theory's application, banks should take a borrower's ability to repay the loan into account before approving the loan (Mrindoko, Macha, & Gwahula, 2020).

This theory has been adopted by other researchers in their studies including Wanjiru (2017) who applied credit risk theory in her study whose main objective was to investigate the effect of credit risk control on financial performance of commercial banks in Kenya. Nasieku and Musa (2019) also applied credit risk theory in their research on effects of credit risk management on loan performance of commercial banks in Kenya. Kahuthu (2016) also used credit risk theory in her research on effect of credit risk management practices on growth of Saccos' wealth in Nakuru town. This theory applies to this research study because it focuses on credit risk management and the nonperforming loan rates brought about by bank customers may default on loans more frequently because of the pandemic's impact on their customers' ability to conduct business.

### **2.3 Empirical review of Credit Risk Management of commercial banks**

Studies both locally and internationally have been done on credit risk management and bank specific factors. Few studies have also studied the impact of COVID-19 on credit risk management in the banking industry. Andana & Baskoro (2023) study analyzed banking performance indicators linked to credit risk, such as capital, bank size, net interest margin, return on asset, return on equity, and credit growth in an effort to better understand

macroeconomics before and during the COVID-19 pandemic. The research focused on the Indonesian banking industry and the period of review was as 2019 before the COVID-19 pandemic and 2020 when the COVID-19 pandemic occurred. The research employed a quantitative approach based on multiple regression analysis and a descriptive approach. The results revealed that credit risk before COVID-19 was significantly different from the credit risk at the onset of COVID-19. Other variables, such as capital ratio, bank size, net interest margin, return on equity, and credit growth, had no effect or contributed in a significant way to the increase or decrease in credit risk.

Sinkala et al., (2022) researched on the effect of COVID-19 on credit risk management in banking industry of Zambia. The population was 19 commercial banks of Zambia and 6 of them were sampled for the study. The study's primary data was acquired through an online questionnaire. The data was examined using descriptive statistics and factor analysis. The review period lasted from 2020 to 2021. The analysis discovered that there was an upsurge in non-performing loans during the start of the epidemic. However, the banks' restructuring of these debts contributed to a reduction in the number of non-performing loans. The researchers recommended that commercial banks develop a strategy to communicate with borrowers as soon as they show signs of distress, and that any difficulties be addressed appropriately.

Wardhani, Rosalina, Elvany and Awaluddin (2021) researched on banking financial performance during COVID-19 examining the effects of the guiding principles, specifically return on equity, net profit margin, total asset turnover, and return on assets. Companies in the banking industry that were listed on the Indonesia Stock Exchange for the 2019–2020 study's population. To gather as many as 23 banking companies, this study's sample was selected using a purposive selection technique. Wilcoxon signed-rank test was used to examine the data in this analysis. The test's findings indicate that there was no change in the sector's financial performance during COVID-19.

Nwude and Okeke (2018) analyzed impact of credit risk management on the performance of selected Nigerian banks. The dataset for the years 2000–2014 was generated from the annual reports and financial statements of the five selected deposit money institutions, and an ex-post facto research design was applied. Three hypotheses were proposed and tested using an ordinary least squares regression model. The findings indicate that credit risk management had a significant and favorable influence on the deposit money banks' return on equity, return

on assets, and total loans and advances. The study encouraged bank executives to make greater efforts to control non-performing loans by closely assessing borrowers' ability to repay. The regulator's monitoring capabilities should be strengthened in this regard.

Noumanath (2014) investigated how managing credit risk affects the financial performance of commercial banks in Senegal. The study employed a descriptive research methodology, multiple regression modeling, using secondary data obtained from publicly available financial reports. In his study, he looked at the credit risk management systems Ecobank Senegal had implemented and discovered that these systems not only improved the financial performance of the bank but also allowed for resource efficiency and improved the bank's standing in the market.

Mutua (2014) used a regression model to analyze the relationship between the financial performance of Kenyan commercial banks and credit risk management. This model combined secondary and primary data from questionnaires and other secondary sources, such as published financial reports, with data from the secondary sources. The results showed that non-performing loans, loans advances, risk identification, and risk analysis all significantly impacted the financial performance of Kenyan commercial banks.

## **2.4 Measures of Bank specific factors**

The banking system's solvency and stability are essential for the financial system to function properly. In essence, commercial banks and other financial service providers lend money to governments, corporations, and individuals, but the majority of their revenue comes from loans made to customers. Banks should set up and oversee their lending procedure to guarantee good financial performance (Rahman & Mazlan, 2014). Liquidity, bank size, and bank age are the variables of bank specific factors.

### **2.4.1 Liquidity ratio and Credit risk management**

According to Hartanto, Diana and Fathoni (2018), liquidity ratio is a ratio that measures a company's ability to fulfil its short-term obligations. Liquidity ratio is not only concerned with the capacity of a company to meet its short-term obligations but also with regard to the company's potential to convert current assets into cash (Tang & Wang, 2011). Liquidity risk is a risk arising from a bank's inability to meet its obligations when they come due without incurring unacceptable losses. Liquidity risk management is crucial for financial institutions,

including commercial banks, as it affects their financial performance and the quality of their loan portfolio (Maaka, 2013).

Management has a duty to address the inquiries that include how much liquid cash should be maintained, when the firm will require the cash, how economical it is to keep that level of liquid cash, and how safe the cash is at the company's safe. (Muriungi, 2018). Proper credit risk management ensures that risk resulting from default from borrowers is minimized, which in turn contributes to banks being able to remain liquid. Central Bank of Kenya compels commercial banks to preserve a least cash balance with them as an emergency supply against other liabilities and depositors. Liquidity is measured using different parameters by researchers. Husna and Satria (2019) measured liquidity in terms of current ratio which is the ratio of current assets to current liabilities while Durrah et al (2016) measured liquidity in terms of the quick ratio which is current assets less inventory and current liabilities. Liquidity ratio is measured by total customer deposit/total loan (Vaita, 2017).

Limited studies have been done establishing the relationship between liquidity and credit risk management. Siddique et al., (2022) studied the effect of credit risk management and bank specific factors on the financial performance and found out that liquidity has a negative relationship with financial performance but Aspal et al., (2019) in the study of significance of bank specific and macroeconomic determinants on performance of Indian private sector banks found a positive relationship between liquidity and financial performance. The studies, however, fail to highlight the relationship between liquidity and credit risk management and on how COVID-19 impacted this relationship.

Cai and Zhang (2017) looked at how credit risk influences liquidity risk in Ukrainian banks. They sampled Ukrainian banks covering the period from Q1 2009 to Q4 2015 and found out that credit risk and liquidity risk are positively correlated. According to their research, banks with a high percentage of non-performing loans may be unable to satisfy depositors' requests for withdrawals, which might reduce cash flow, cause loan asset depreciation, and ultimately raise liquidity risk.

Githaiga (2013) carried out a study investigating the effect of credit risk management on financial performance of commercial banks in Kenya. She studied liquidity as a measure of bank performance and found out that liquidity ratio does not have a significant effect on financial performance. The study however fails to highlight the relationship between liquidity

and credit risk management. Ouma (2020) studied the effect of bank size components on credit risk of commercial banks in Kenya. He used liquidity as a control variable and found out that liquidity had a positive but insignificant effect on credit risk of commercial banks in Kenya.

#### **2.4.2 Bank size and credit risk management**

Bank size is one of the control variables used to evaluate the performance of the banking system, as shown by total assets. Typically, the size of the bank is utilized to identify any potential scale-related economies or diseconomies. Larger banks are more diversified, allowing them to lower their credit risk based on their capacity to diversify both their financing and asset portfolios (Alzoubi & Obeidat, 2020). This variable adjusts for cost variations in product and risk diversification in accordance with the financial institution's size. This is incorporated to account for the possibility that big banks might have more diverse loan and product offerings (Bhattarai, 2015).

In most of the finance literature, the natural logarithm of a bank's total assets is used as a stand-in for the size of the bank. The Central Bank of Kenya categorizes commercial banks in Kenya in 3 Tiers and a weighted composite index is being used. Net assets, customer deposits, capital, reserves, the number of deposit accounts, and the number of loan accounts are all included in the index. A bank is categorized as a large bank if its weighted composite index is 5 percent or higher. A small bank has a weighted composite index of less than 1%, and medium banks have a weighted composite index of between 1% and 5% (CBK, 2021).

Ouma (2020) did a study on the effects of bank size components on the credit risk of commercial banks in Kenya. The bank size components that he studied were asset base, shareholders equity and customer deposits. The research population was 42 commercial banks as of December 2019 and the period of analysis was between 2015 to 2019. The study results revealed that asset base had a positive and significant effect on credit risk, while customer deposits had a positive and insignificant effect on credit risk among Kenyan commercial banks. The results further indicated that shareholders' equity had a negative and significant effect on credit risk among commercial banks in Kenya.

Tehulu and Olana (2014) carried out a study on bank specific determinants of credit risk in Ethiopian commercial banks. The quantitative research approach was adopted for the study. A balanced panel data of 10 commercial banks both state-owned and private owned for the

period 2007 through 2011 was analyzed using random effects GLS regression. The regression results revealed that credit growth and bank size have negative and statistically significant impact on credit risk.

Anju (2012) did a study on impact of size on credit risk management of commercial banks in India. The objective of the study was to examine the extent to which bank size impacts the choice of credit risk management strategies such as credit risk policy, organization, operations and systems. The study population was 35 commercial banks of India and the period of study was during 2007 to 2008. The research results revealed a positive significant association was observed between the size of bank and the credit risk management. It was discovered that large banks often stressed the features of specialization and centralization while developing their CRM strategy. The results also showed that all of the sample banks, regardless of size, generally used a combination of credit risk avoidance, credit risk reduction, and credit risk control strategies.

#### **2.4.3 Age of the bank and credit risk management**

The age of the bank is how long a bank has been in operation. According to D'Amato and Falivena (2020), age is an essential demographic indicator or variable for firms. The age of a company affects its relationships with stakeholders, experience, goodwill, reputation, and market share in the sector. Older companies improve their business processes and accumulate knowledge, skills, and expertise through time, which helps them cut costs and perform better. This viewpoint backs up the liability of newness theory. According to the idea of the liability of newness, younger enterprises are at a disadvantage to older firms. Due to their lack of experience and external connections, younger businesses are more likely to fail (D'amato & Falivena, 2020)

Rahman and Yilun's findings from 2021 support this theory by showing that firm performance declines with firm age. Nonetheless, in line with the life cycle hypothesis, businesses and people both have a greater propensity to lose their capacity for innovation and competition with time. Organizational rigidity and managers' rent-seeking activities are prominent causes of firm aging, which in turn leads to the performance of older organizations declines as they accumulate knowledge, skills, and expertise through time and optimize their business processes (Isidro and Sobral 2015). Mishra et al. (2021), and Arora (2022) all make the argument that firm performance rises with firm age in agreement with this theory.

Antony and Suresh (2023) did a study on the determinants of credit risk in Indian banks. The objective of the study was to examine the micro and macroeconomic variables that affect credit risk. Age of the bank was among the variables studied. The data population was 31 Indian banks and the period of study was between 2012 to 2021. The study found out that age of the bank positively affects credit risk. They found out that older banks tend to take lower credit risk.

Siddique et al., (2022) studied the effect of credit risk management and bank specific factors on the financial performance of the South Asian commercial banks. Secondary data was obtained from 19 commercial banks, 10 in Pakistan and 9 in India, over a 10-year period from 2009 to 2018. Age of the bank was used as a control variable. The study concluded that age has a negative relationship with credit risk management and other bank specific factors.

#### **2.4.4 Bank Ownership Structure and credit risk management**

The traditional agency theory contends that corporate risk-taking is influenced by the ownership structure of banks. According to Ellul (2019) ownership denotes the presence of a significant institutional investor. Agency costs and bank risk-taking, according to Barry et al., (2011), may differ based on the ownership structure. Liu et al., (2019) conducted research to investigate the effects of interaction between ownership structure and ownership concentration on credit risk of Chinese banks from 2003-2018. They found out that government owned banks have a high level of credit risk compared to privately owned banks. This is because government owned banks are characterized by political connections, increasing credit risk since loans to state-owned businesses may be directed toward social rather than economic goals, making it challenging for state-owned businesses to repay the loans.

However, private owned banks tend to be more cautious and effective at determining the credit risk posed by businesses before approving loans. Brahmaiah (2022) did a study on credit risk management practices of Indian banking industry and established that private sector banks have better credit risk management as compared to that of public sector banks. The study also highlighted that risk management procedures and techniques used by public and private banks are not significantly different from one another. Public and private banks' policies and processes for credit risk assessment, analysis, evaluation, monitoring, regulating, and credit risk management tend to be similar.

## **2.5 Credit Risk Management Practices.**

The fourth objective of the study is to evaluate the practices of credit risk management and find out if they were changed during COVID-19. Loans taken out prior to the COVID-19 pandemic as well as loans requested by prospective borrowers to cover unexpected declines in income after the pandemic's breakout were both affected by weakened creditworthiness. In this new economic reality, banks that extend credit faced increased risk (International Monetary Fund, 2020). The early pandemic experience made banks and other lending institutions aware of the fact that different industries were affected by the crisis in different ways, and it led them to pay more attention to the finances and business models of individual households and companies.

Banks had to reassess the way they appraise whether a consumer could repay a loan. The whole banking industry underwent adjustments because of the global COVID-19 outbreak. It appeared that sustaining profitability, controlling credit risk and risk costs, as well as adjusting to dropping interest rates, were the three fundamental changes in banks' operations in the new pandemic reality. Credit risk management underwent substantial changes during the global COVID-19- outbreak. The credit risk management practices operationalized in this study are credit risk analysis, credit monitoring and credit policy.

### **2.5.1 Credit Risk Analysis**

Credit risk assessment involves examining and evaluating both qualitative and quantitative indications of the borrower's financial situation. Banks must have documented procedures in place regarding the credit approval process, the approval authorities of people or committees, and the basis for such judgments. According to Gakure et al., (2012), the board of directors ought to exercise approval authority.

The Central Bank of Kenya has risk management guidelines that focus on broad principles and are intended to control the application of more specific lending practices and processes inside banks. According to Mutwiri's 2003 study, banks are typically expected to manage their credit risk through proper customer and credit risk analysis with the aid of the 6 Cs in order to avoid unnecessarily high levels of bad debts. The study also examined the relationship between the use of the 6 C's credit risk appraisal model and the amount of non-performing loans of commercial banks in Kenya. The ability, capital, character, collateral, conditions, and control are the six Cs. (Mutangili, 2009). A borrower's creditworthiness

projected future cash flows, and level of risk are all evaluated as part of the appraisal process Ndero et al., (2019).

Internal risk ratings are a crucial instrument for managing and keeping an eye on credit risk. In order to enable prompt identification of changes in risk profiles, the bank's internal risk rating system should be sensitive to indications of a possible or actual deterioration in credit risk. Credits with falling ratings should be monitored more closely and with greater vigilance; for example, credit officers should visit these accounts more frequently and put them on a watchlist that is regularly reviewed by senior management. (settlements, 2000)

The risk of loss from a certain borrower's inability to make payments as agreed upon is summarized by credit rating. Internal ratings are a crucial component of successful credit risk management for major development banks with many borrowers. For banks' individual credit exposures, risk ratings serve as the principal summary indicator of risk. Risk ratings are primarily provided by risk rating agencies such as Metropol licensed by Central Bank of Kenya (Kibet, 2017). The CBK requires banks to have an internal risk rating system to monitor the quality of individual credits which allow for a more precise assessment of the entire credit portfolio's characteristics, concentrations, problem credits, and the sufficiency of loan loss reserves (CBK, Risk Management Guidelines, 2013).

### **2.5.2 Credit Monitoring**

An institution must measure and identify potential material risk indicators in order to monitor risk efficiently. As part of these efforts, risk is monitored utilizing IT systems that give a current loan trail from the application stage through distribution and recovery. This makes it easier to make quick decisions and take prompt managerial action if a loan loss is possible (Nдалу, 2018).

Reviewing and reporting credit structures is a necessary component of effective risk management because it enables accurate risk detection, evaluation, and the implementation of control actions. Credit monitoring helps to ensure that financial institutions identify errors early so that corrective action can be taken (Al-Tamimi & Al-Mazrooei, 2007). Since management controls alone cannot ensure an effective risk monitoring system, controls are developed at multiple levels. As a result, management will assign a certain team to oversee internal operations and monitor risks. In banking, these controls are with the credit risk and debt recovery department.

Recovery entails pursuing non-performing debts and attempting to persuade the loanee to pay down the outstanding loan balance. Although some customers would go to extreme lengths to make themselves inaccessible to the financial institution, the role of loan recovery is typically not an easy one (Nдалu, 2018). Majority of financial institutions have a department dedicated to debt recovery that keeps track of non-performing loans and makes efforts to collect them before they are no longer recoverable.

According to principles of credit risk management, keeping a bank's credit risk exposure within bounds set by senior management and the board of directors is the aim of credit risk management. The application and enforcement of internal controls, operating rules, and other protocols. Banks must make sure the function of extending credit is effectively managed and that credit exposures are kept within ranges that are consistent with regulatory requirements and internal controls. For policies, procedures, and limit exceptions to be reported promptly to the appropriate level of management for action, banks should create and implement internal controls and other procedures.

### **2.5.3 Credit Policy**

Banks are guided in the process of providing credit by credit policies. The general guidelines that oversee the process of extending credit to bank customers are known as credit control policies. Establishment of sound and well-defined policies, procedures and limits is vital in the management of credit risk. These should be well documented, duly approved by the board and strictly implemented by management. Credit policies establish the framework for lending and guide the credit-granting activities of the institution (CBK, Risk Management Guidelines, 2013)

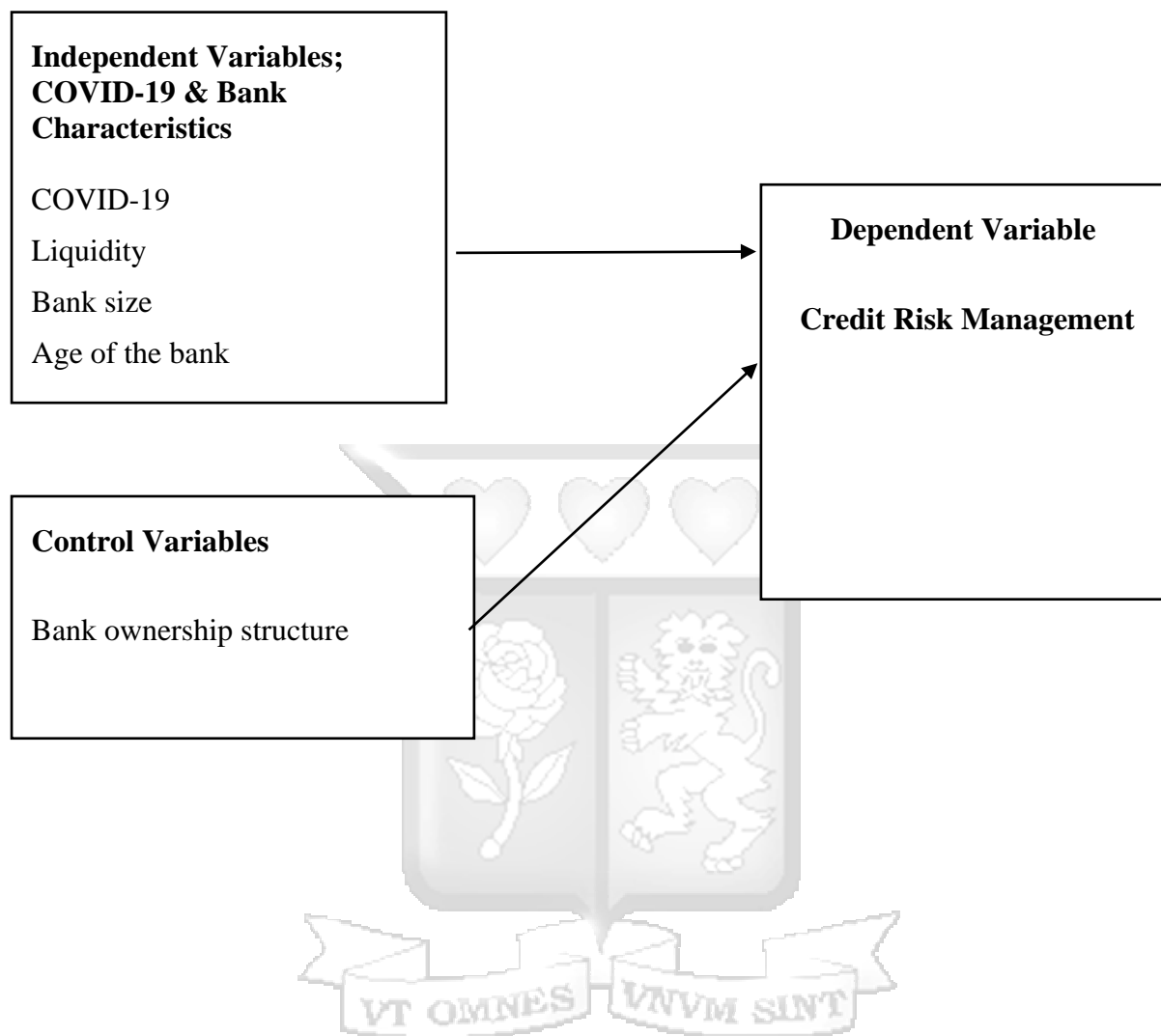
The credit policy sets the guidelines for who can access credit, when to do so, and why, together with information on repayment plans and required collateral (Kithinji, 2010). A credit control policy includes the process for determining each potential applicant's risk assessment and evaluation. Establishment of sound and well-defined policies, procedures and limits is vital in the management of credit risk. These should be well documented, duly approved by the board and strictly implemented by management. Credit policies establish the framework for lending and guide the credit-granting activities of the institution.

According to Kithinji (2010), incorrect credit policies, fluctuating interest rates, extensive bank licensing, inadequate institutional capacity, bad loan underwriting, irresponsible

lending, poor credit assessment, and poor credit evaluation are the key contributors of credit risk. Due to these, there are more defaults and non-performing loans. The lending policy should be in line with the overall bank strategy, and it should consider the current credit policy, industry standards, the overall state of the economy, and the current business environment.



## 2.6 Conceptual Framework



## 2.7 Operationalization of study variables.

Variable	Definition	Measurement	Source
Credit Risk Management	Credit risk policy, appraisal, and monitoring	Credit risk ratio = Nonperforming loans/ Loans and advances	(Andana & Baskoro, 2023)
COVID-19 pandemic		Dummy variable where 0 is period before COVID-19 was declared a pandemic (2019) and 1 the period after COVID-19 was declared a pandemic (2020 & 2021)	(Kayugi, 2020)
Liquidity ratio	Company's ability to fulfil its short-term obligations	Liquidity ratio = Total liquid assets/ Current Liabilities	(CBK, Risk Management Guidelines, 2013)
Bank size	The number of Total assets	Logarithm of Total assets	(Alzoubi & Obeidat, 2020)
Age of the bank	How long a bank has been operating	Years of operation	(D'amato & Falivena, 2020)
Bank Ownership structure	The shareholders of the bank	Public vs Private banks	(Brahmaiah, 2022)

## 2.8 Summary of Literature Review and research gap

The research study was anchored between two underlying theories: theory of asymmetric information and credit risk theory. Empirical studies on credit risk management in banking in various countries, from Indonesia to Zambia, reveal how the imposition of COVID-19 pandemic leads to very dynamic challenges for banking. Moreover, the review covers the credit risk management measures like credit risk analysis, monitoring and policy formation as it gives the weight to the development of the strong policies, internal control and systematic risk assessment methodology that help to reduce the credit risk exposure. Conceptual outline of the study framework and operationalization of study variables are basic steps on the road to grasping and evaluating credit risk management processes in commercial banks.

Despite the fact that there have been extensive credit risk management and bank characteristic studies, there is a gap in the literature about the specific response of Kenyan commercial banks to COVID-19. Previous researches have examined how bank-specific factors like liquidity, size, age, and ownership structure affect banks. However, the studies are limited in addressing how these factors could influence the unique problems caused by the pandemic amid Kenya's banking sectors. The comprehension of how Kenyan banks adjust their credit risk management techniques under the influence of COVID-19-caused disruptions is vital in building an ability to withstand and achieve financial stability. Consequently, more research on the subtle impact of COVID-19 on the credit risk management practices of Kenyan banks will be required in order to provide this gap in the literature.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

The main aim of this study was to determine the impact of COVID-19 on the bank specific factors that influence credit risk management. Therefore, this chapter considered the credit risk management that is credit policy and credit assessment methods as well as liquidity ratio, bank size and age of the bank before and after COVID-19. The chapter begins by explaining the research design, then the target population used, the sample design procedures and the methods of data collection. The chapter then concludes with the techniques and procedures used in analysis of data.

#### **3.2 Research Philosophy**

According to Creswell (2013), research philosophy is the foundation upon which data is gathered, examined, and applied. This study adhered to pragmatism philosophy which accepts concepts to be relevant only if they support action. According to pragmatism research philosophy, the most important factor of the research philosophy is the research question. It makes an effort to balance subjectivism and objectivism, values and facts, precise and thorough information. It accomplishes this by taking into account theories, hypotheses, and research findings in their practical implications in particular situations as well as their roles as tools of thought and action (Saunders, Lewis, & Thornhill, 2019).

Pragmatism defines research as a process in which ideas and interpretations (theory) are forecasts from people's interactions with their surroundings and from their prior experiences and acts. Using pragmatism, the researcher typically uses several concepts to explain what is happening (Sumara & Kuang Renyu, 2021). This research philosophy was relevant to this study because it helps understand how the variables interacted with one another in response to the COVID-19 pandemic. The structured questions of the questionnaire are to help understand how banks adapted their credit risk management practices as a result of the COVID-19 pandemic.

#### **3.3 Research Design**

Research design has been defined as the plan used to answer the research questions by providing an outline of how data will be collected, the procedures and techniques that are used to analyse the data (Bryman & Bell, 2011). The research design implemented in this

study was a mixed methods research design specifically the convergent parallel method. The convergent parallel mixed method design is applied when quantitative and qualitative data is collected and analyzed separately. The aim of this design is to produce sets of data that are mutually exclusive yet inform one another.

Combining qualitative and quantitative approaches can help understand complex problems better. This multi-method approach allows the researcher to get results that are broader and more comprehensive and creates a complete picture (Petsch, 2017). The variables of this study were collected using questionnaires and analysis of quantitative data e.g., liquidity ratio. The purpose of the convergent parallel mixed method study design was to identify how credit risk management practices, the qualitative data, informed how COVID-19 affected the relationship between bank specific factors and credit risk management.

### **3.4 Population**

Population refers to all people or items with the similar characteristics that one wishes to study (Zikmund et al., 2011). The target population of this study was commercial banks in Kenya. As per CBK (2021) there were 39 banks in Kenya as at the end of 2021. This research involved all the 39 Chief Risk Officers of banks in Kenya. There was no sampling method used since the study reviewed all the 39 commercial banks.

### **3.5 Data Collection**

Data was collected from primary and secondary data sources. Questionnaires were employed to gather primary data. Credit risk management techniques, which include credit risk assessment, identification, control, and monitoring procedures, were included in the questionnaire. (Raju & Harinarayana, 2016). Kauna (2016) used structured questionnaires in the form of a Likert scale of 1-5 and administered to credit risk managers of banks.

In this study, questionnaires had structured questions and were administered to Chief Risk Officers of the 39 commercial banks. The questionnaire was administered using an online survey tool that is google forms. Online survey tools have become common data collecting instruments. Google forms is a tool provided by Google and freely available on the web for anyone to create and use questionnaires (Raju & Harinarayana, 2016). The questionnaires were meant to help understand how COVID-19 impacted the credit risk management practices used by commercial banks.

The bank's published financial statements provided secondary data about the bank's financial performance. for period before and after COVID-19 pandemic. The period of study was 2019 to 2021. 2019 was the year before COVID-19 was declared a pandemic in Kenya and 2020 and 2021 was the period during the COVID-19 pandemic. The

### 3.6 Data Analysis

Data analysis involves systematic application of statistical tools to process data into meaningful information (Lewis-Beck & Michael, 1995). Saunders et al., (2016) emphasized on the importance of analysing data as raw data conveys little or no information. The data analysis was done through multiple regression analysis and descriptive statistics like the standard deviation and the mean to ascertain the character and magnitude of the connection among the study variable. Mwangi (2010) used multiple regression model to analyze data on her study on effect of credit risk management on the financial performance of banks in Kenya. Mathias (2021) used diagnostic tests to check the assumptions of the regression model which checked whether the data was normally distributed.

Data was collected and analysed using XLSTAT tool in Microsoft Excel and Stata/IC tool. XLSTAT tool is an analysis and statistic add-in for Excel and it includes analysis tool like regression analysis, (linear, logistic, nonlinear), multivariate data analysis, correlation tests, parametric and non parametric tests.

#### Regression Analysis

A multiple regression model was adopted to ascertain the relation amongst the variables. The dependent variable is Credit Risk Management. The independent variable is COVID-19 and bank specific factors which are liquidity ratio, bank size and age of the bank while the control variable is bank ownership structure i.e. public vs private. This study adopted an event study methodology where the variables were studied before and after the occurrence of an event (COVID-19). The factors were analysed using a regression equation for both periods before and after COVID-19.

The regression equation is as follows:

$$Y = \alpha + \beta_1 LIQ + \beta_2 SIZE + \beta_3 AGE + \sum \beta_i CONTROLS + \epsilon.$$

Y= Credit risk management

$\alpha$  = Constant

LIQ= Liquidity ratio

Size= Bank Size

Age = Age of the bank

$\sum\beta_1$ CONTROL= Bank ownership structure

$\epsilon$  = Error

### **3.7 Research Quality**

Research quality is defined as the degree to which measurement tools achieve their goals (Mugenda & Mugenda, 1999). Validity and reliability were ensured to ensure the quality of the research in this study. The degree to which any measuring process produces the same results after several tries is referred to as reliability. The research conducted a pilot test on the instrument before administering it to respondents. The researcher distributed questionnaires to ten (10) respondents who did not participate in the primary data collection process. Pilot testing was undertaken to assess the research tool's reliability, substance, and criteria validity. Ochiko (2021) used validity as a metric to determine how accurately data obtained using a certain instrument reflected a given domain or concept's content.

#### **3.7.1 Diagnostic tests.**

To check the assumptions of the regression model, diagnostic tests were done. They included normality, multicollinearity, heteroskedasticity and variance inflation factors. Normality tests assume that the dependent's variable is normally distributed and closer to the mean and Shapiro-wilk test was used to establish that. Multicollinearity and serial correlation were done to check whether the variables had linear relationship. Variance inflation factor was used. Heteroscedasticity test was done to check whether the error term has remained constant over time. This was tested using Breusch Pagan test. Research authors such as Nthiwa (2021) and Mathias (2021) used Shapiro-wilk test, multicollinearity and heteroscedasticity tests to carry out diagnostic tests.



## CHAPTER FOUR

### DATA ANALYSIS, PRESENTATION, AND INTERPRETATION

#### 4.1 Introduction

The main objective of this study was to determine the impact of COVID-19 on the bank specific factors that influence credit risk management. This chapter presents analysis and findings of primary and secondary data collected as set out in the research methodology. Primary data was collected through structured questionnaires to mainly understand the credit risk management banks use and if they changed after COVID-19. Respondents were asked to rate on a five-point Likert scale how much they practiced each variable. Secondary data was collected from financial statements of banks and analysed using multiple regression analysis and descriptive statistics methods. The scope of the study was 2019 to 2021 with 2019 being the year before COVID-19, 2020 and 2021 was during the COVID-19.

#### 4.2 Response rate.

The target population for this study constituted 39 commercial banks as of December 2021. However, 2 banks were acquired by other banks and data could not be collected. These were Spire bank which was acquired by Equity bank in 2023 and First community bank which was acquired by Somalia's Premier Bank in 2023. Data on Bank of India Kenya was not available for the year 2019 to 2021 and it therefore was dropped due to the missing data.

The key respondents in this study were chief risk officers and risk managers of commercial banks in Kenya. The respondents were selected because they interact and implement credit risk management. The study population was 37 banks since 2 banks were acquired by other banks and 26 banks responded giving a response rate of 70.2%.

#### 4.3 Bank Specific Factors and Credit Risk Management

##### 4.3.1 Descriptive statistics

The main objective of this study was to establish how COVID-19 affected the relationship between bank specific factors and credit risk management. This study used the credit risk ratio to quantify credit risk management. The descriptive statistics of the variables included in the regression models are summarized in the table below. It represents the variables of commercial banks in Kenya for period 2019 – 2021.

**Table 4.4 Pre-COVID Descriptive Analysis**

Statistic	Credit risk Management	Liquidity ratio	Bank Size	Age of the bank	Ownership
No. of observations	36	36	36	36	36
Minimum	0.000	-0.230	0.000	0.000	0.000
Maximum	1.065	0.793	8.829	108.000	1.000
Median	0.134	0.452	7.551	35.000	0.000
Mean	0.217	0.437	7.487	37.972	0.361
Standard deviation	0.239	0.229	1.412	24.525	0.487

The researcher sought to establish the status of the variable data used in the period before Covid-19. The pre-COVID-19 period is the year 2019 before COVID-19 was declared a pandemic. From the findings, the commercial banks showed Credit Risk Management had a mean of 0.217 and a standard deviation of 0.239. The findings showed that liquidity ratio of the Kenyan banks before Covid-19 averaged at 0.437 with a standard deviation of 0.229. Bank size had a mean of 7.487 and a standard deviation of 1.412. The average age of banks is 37.972 with a standard deviation of 24.525. The ownership structure of most banks is privately owned and are 24 banks and the rest 12 banks are public listed banks.

**Table 4.5 Post-COVID Descriptive Analysis.**

Statistic	Credit risk management	Liquidity ratio	Bank Size	Age of the bank	Ownership
Nbr. of observations	72	72	72	72	72
Minimum	0.006	0.172	7.018	1.000	0.000
Maximum	1.357	3.622	8.943	110.000	1.000
Median	0.156	0.538	7.638	36.000	0.000
Mean	0.221	0.622	7.810	39.444	0.361
Standard deviation	0.241	0.544	0.590	24.388	0.484

The researcher established the status of the variable data used after Covid-19. The post-COVID-19 period is the years 2020 and 2021 after COVID-19 was declared a pandemic. From the findings, the commercial banks showed Credit Risk Management had a mean of 0.221 and a standard deviation of 0.241. The findings showed that liquidity ratio of the Kenyan banks after COVID-19 averaged at 0.622 with a standard deviation of 0.544. Bank size had a mean of 7.810 and a standard deviation of 0.590. The average age of banks was 39.444 with a standard deviation of 24.388. The ownership structure of most banks is privately owned and are 24 banks and the rest 12 banks are public listed banks.

The descriptive findings show that credit risk management had a mean of 0.217 before COVID-19 and 0.221 after COVID-19. Liquidity ratio had a mean of 0.437 before COVID-19 and a mean of 0.622 after COVID-19. Bank size had a mean of 7.487 before COVID-19 and a mean of 7.810 after COVID-19. Age of the bank had a mean of 39.972 before COVID-19 and a mean of 39.44 after COVID-19. From the results, it is noted that liquidity had a noticeable change in how it influences credit risk management after COVID-19.

#### 4.4 Diagnostic Tests

To ascertain the model's viability, several diagnostic tests were done. They included normality, multicollinearity, heteroskedasticity and variance inflation factors.

##### 4.4.1 Normality tests

The Shapiro-Wilk test was used to perform a normality test in order to determine whether the data that were gathered assumed a normal distribution. If the value was more than 0.05, the data was considered to have a normal distribution.

**Table 4.6 Shapiro-wilk test**

Variable	Obs	W	P-value	Alpha
CRM	108	0.68586	<0.0001	0.05
Liquidity	108	0.522	<0.0001	0.05
Bank Size	108	0.622	<0.0001	0.05
Age of the bank	108	0.929	<0.0001	0.05
Ownership	108	0.608	<0.0001	0.05

The data is assumed to follow a normal distribution (null hypothesis), while the alternative hypothesis is that it does not. Based on the findings, the alternative hypothesis was accepted and the null hypothesis was rejected because the computed p-value was less than the significance level  $\alpha=0.05$ . This indicates that a normal distribution is not followed by the data.

##### 4.4.2 Multicollinearity test

A perfect or nearly perfect linear relationship between independent variables is known as multicollinearity. The degree of data variance inflation was examined using the variance inflation factor (VIF).

**Table 4.7 Multicollinearity test**

Statistic	Tolerance	VIF
CRM	0.6439014	1.55303
Liquidity	0.6214223	1.60921
Bank Size	0.7590896	1.31737
Age	0.6026358	1.65938
Ownership	0.6328185	1.58023

The conclusions in table 4.7 indicate that all the variables have a VIF value of less than 10 and a tolerance above 0.2 suggesting that multicollinearity did not exist.

#### **4.4.3 Heteroskedasticity Test**

The Breusch–Pagan test was used to examine for heteroskedasticity. The test assumes that the error term is constant over time. An error term that is not constant over time is indicated by a significance value of less than 5%. If the significance value is more than 5%, it is considered that the error term will remain constant throughout time.

Breusch-Pagan test:	
LM (Observed value)	5.1439
LM (Critical value)	11.0705
DF	5.0000
p-value (Two-tailed)	0.3986
alpha	0.0500

From results, the Breusch–Pagan statistics shows a significance value of 0.3986 which is above 0.05. The researcher assumes that the error term is constant over time, hence, no heteroskedasticity in the data.

#### **4.5 Correlation analysis**

The study sought to find the correlation between dependent variable and independent variables using Pearson’s correlation analysis. The significance level was set at 5% with a 2-tailed test. The results are therefore summarized in the tables below.

**Table 4.8 Correlation analysis before COVID-19 Pandemic**

Variables	Credit Risk Management	Liquidity ratio	Bank Size	Age of the bank	Ownership
Credit Risk Management	<b>1</b>	-0.237	0.062	0.028	-0.075
Liquidity ratio	-0.237	<b>1</b>	0.443	0.061	-0.182
Bank Size	0.062	0.443	<b>1</b>	0.475	0.053
Age of the bank	0.028	0.061	0.475	<b>1</b>	0.539
Ownership	-0.075	-0.182	0.053	0.539	<b>1</b>

**Table 4.9 Correlation analysis after COVID-19 Pandemic**

Variables	Credit risk management	Liquidity ratio	Bank Size	Age of the bank	Ownership
Credit risk management	<b>1</b>	0.723	-0.145	-0.004	-0.077
Liquidity ratio	0.723	<b>1</b>	-0.047	0.058	-0.222
Bank Size	-0.145	-0.047	<b>1</b>	0.480	0.644
Age of the bank	-0.004	0.058	0.480	<b>1</b>	0.539
Ownership	-0.077	-0.222	0.644	0.539	<b>1</b>

\* Correlation is significant at the 0.05 level.

The Pearson's correlation scale is used to measure the strength of the association. A value in the range of 0.0–0.3 indicates no correlation, a value in the range of 0.3–0.5 indicates a weak correlation, a value in the range of 0.5–0.7 indicates a fair correlation, and a value in the range of 0.7 and 1 indicates a strong correlation. A perfect correlation between the variables is shown by a correlation value of 1. The type of correlation positive or negative is indicated by the size of the association (+ or -).

The correlation coefficients between bank specific factors variables and credit risk management are as follows. The correlation coefficient between credit risk management and liquidity before COVID-19 was -0.237 which implies a negative insignificant relationship, but after COVID-19 pandemic, the correlation coefficient was 0.723 which translates to a positive significant relationship. The study findings revealed a positive insignificant relationship between credit risk management and bank size of 0.062 before COVID-19 but a correlation coefficient of -0.145 after COVID-19 which implies no correlation. It was also established that before COVID-19 the relationship between Credit risk management and age of the bank was positive but insignificant with a correlation coefficient of 0.027 but after

COVID-19 the relationship was negative and insignificant with a correlation coefficient of -0.04. The relationship between ownership structure of the bank and credit risk management was found to be negative and insignificant implied by the correlation coefficient of -0.075 and -0.077 before and after COVID-19 respectively.

#### 4.6 Regression Analysis

The relationship between bank specific factors and credit risk management in response to COVID-19 pandemic was evaluated through a multiple linear regression analysis. The analysis is represented by regression summary model that indicates the degree to which the predictor variables influence the dependent variable, Anova table that presents the analysis of variance, assessing the dependability of the model constructed to explain the relationship and regression coefficients, providing the coefficient elucidating the degree to which the independent variables influence the dependent variable. Table 4.4 and table 4.5 displays the summary of the regression model and Anova table before and after COVID-19. Table 4.6 gives the coefficient explaining the extent at which the independent variables influence the dependent variable.

**Table 4.10 Regression Model Summary before COVID-19**

Source	SS	df	MS	Number of obs	=	36
Model	1.19797396	4	.29949349	F(4, 31)	=	10.48
Residual	.885601714	31	.028567797	Prob > F	=	0.0000
				R-squared	=	0.5750
				Adj R-squared	=	0.5201
Total	2.08357567	35	.059530734	Root MSE	=	.16902

The coefficient of determination (R square value) from the table is 0.5750. This suggests that liquidity ratio, bank size, age of the bank and ownership structure account for 57.5% of the credit risk management of commercial banks. From the table above, the adjusted R square is 0.52 which measures the reliability of the results. This means that bank specific factors influence credit risk management by 52%.

The results of Anova table identify the significance of the model to the study. The significant value determines whether the model is to be accepted or rejected. The table presents the Prob > F statistic of 0.000 which is used to test the significance of the relationship between the dependent and the independent variables. The model's significant value was less than 0.05

( $P < 0.05$ ) which meant that the model was statistically significant to explain the relationship between bank specific factors and credit risk management before COVID-19

**Table 4.11 Regression Model Summary after COVID-19**

**ANOVA table and model summary**

Source	SS	df	MS	Number of obs	=	72
Model	2.40878464	4	.602196161	F(4, 67)	=	23.47
Residual	1.7188143	67	.025653945	Prob > F	=	0.0000
				R-squared	=	0.5836
				Adj R-squared	=	0.5587
Total	4.12759895	71	.058135196	Root MSE	=	.16017

The coefficient of determination (R square value) from the table is 0.583. This suggests that liquidity ratio, bank size, age of the bank and ownership structure account for 58.3% of the credit risk management of commercial banks. Given this, the variability resulting from additional factors not covered in the current study is 41.7%. From the table above, the adjusted R square is 0.5587 which measures the reliability of the results. This means that bank specific factors influence credit risk management by %.

The results of Anova table explain the significance of the model to the study. The significant value determines whether the model is to be accepted or rejected. The table presents the F statistic of 23.474 which is used to test the significance of the relationship between the dependent and the independent variables. The model's significant value was less than 0.05 ( $P < 0.05$ ) which meant that the model was statistically significant to explain the relationship between bank specific factors and credit risk management after COVID-19.

The regression analysis was  $Y = \alpha + \beta_1 LIQ + \beta_2 SIZE + \beta_3 AGE + \sum \beta_i CONTROLS + \epsilon$ . Y is credit risk management measured, COVID-19 is the independent variable, where 0 is before and 1 represents the period after pandemic. LIQ is bank liquidity, BSize is bank size, Age is age of the bank are also independent variables while the control variable is bank ownership structure. The regression analysis was done in two parts: before COVID-19 and after COVID-19

**Table 4.12 Regression Coefficients before and after COVID-19**

The regression coefficients before COVID-19 as shown below;

creditrisk	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
liquidity	.3496248	.0547575	6.38	0.000	.2379463	.4613034
banksizelogofassets	-.1009879	.0655379	-1.54	0.133	-.2346532	.0326774
ageofthebank	-.0008803	.0014405	-0.61	0.546	-.0038181	.0020576
ownership	.1688213	.0865235	1.95	0.060	-.0076445	.3452871
_cons	.7657057	.484292	1.58	0.124	-.2220144	1.753426

The regression model before COVID-19 was  $Y = 0.765 + 0.345LIQ - 0.10BSize - 0.00Age + 0.168OWN$

Regression coefficients after COVID-19 as shown below:

creditrisk	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
liquidity	.3489853	.036872	9.46	0.000	.2753884	.4225821
banksizelogofassets	-.1107238	.0432279	-2.56	0.013	-.1970071	-.0244405
ageofthebank	-.0009214	.0009644	-0.96	0.343	-.0028464	.0010036
ownership	.1602227	.0573311	2.79	0.007	.0457894	.274656
_cons	.8475803	.3204637	2.64	0.010	.2079322	1.487228

The regression model after COVID-19 was  $Y = 0.848 + 0.349LIQ - 0.110SIZE - 0.000AGE + 0.160 OWN$

#### 4.7 Impact of COVID-19 on liquidity and credit risk management

The first objective of the study was to identify the impact of COVID-19 on the relationship between liquidity and credit risk management. The results are shown below:

**Table 4.13 Liquidity and credit risk management before and after COVID-19**

Results before COVID-19:

#### ANOVA Table and Model summary

Source	SS	df	MS	Number of obs	=	36
Model	1.07826382	1	1.07826382	F(1, 34)	=	36.47
Residual	1.00531185	34	.029567996	Prob > F	=	0.0000
				R-squared	=	0.5175
				Adj R-squared	=	0.5033
Total	2.08357567	35	.059530734	Root MSE	=	.17195

### Coefficients

creditrisk	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
liquidity	.3170546	.0525028	6.04	0.000	.2103561 .4237531
_cons	.0252229	.042949	0.59	0.561	-.0620599 .1125058

Results after COVID-19:

Anova Table and model summary

Source	SS	df	MS	Number of obs	=	72
Model	2.15660337	1	2.15660337	F(1, 70)	=	76.59
Residual	1.97099557	70	.02815708	Prob > F	=	0.0000
				R-squared	=	0.5225
				Adj R-squared	=	0.5157
Total	4.12759895	71	.058135196	Root MSE	=	.1678

Coefficients

creditrisk	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
liquidity	.3205938	.0366323	8.75	0.000	.247533 .3936545
_cons	.0220191	.0301716	0.73	0.468	-.0381562 .0821943

The model summary contains the coefficient of determination R2 which explains the extent to which the independent variable accounts for the variance in dependent variable. R2 value before COVID-19 was 0.5175 and after COVID-19 was 0.5225 meant that liquidity accounted for 5% change before COVID-19 but 51.75% changes in credit risk management after COVID-19. The results of Anova table divulge the significance of the model to the study. The significant value state whether the model is to be accepted or rejected. The model's significant value was 0.00 before and after COVID which meant that the model was

statistically significant to explain the relationship between liquidity and credit risk management after COVID-19

#### 4.8 Impact of COVID-19 on bank size and credit risk management.

The second objective of the study was to identify the impact of COVID-19 on the relationship between bank size and credit risk management. The results are shown below:

**Table 4.14 Bank size and credit risk management before and after COVID-19**

Results before COVID-19:

Source	SS	df	MS	Number of obs	=	36
Model	.019856428	1	.019856428	F(1, 34)	=	0.33
Residual	2.06371925	34	.060697625	Prob > F	=	0.5711
				R-squared	=	0.0095
				Adj R-squared	=	-0.0196
Total	2.08357567	35	.059530734	Root MSE	=	.24637

Coefficients

creditrisk	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
banksizelogofassets	-.0404559	.0707322	-0.57	0.571	-.1842011	.1032893
_cons	.5336738	.5527499	0.97	0.341	-.5896491	1.656997

Results after COVID-19:

#### ANOVA Table and model summary

Source	SS	df	MS	Number of obs	=	72
Model	.087273805	1	.087273805	F(1, 70)	=	1.51
Residual	4.04032514	70	.057718931	Prob > F	=	0.2229
				R-squared	=	0.0211
				Adj R-squared	=	0.0072
Total	4.12759895	71	.058135196	Root MSE	=	.24025

**Coefficients**

creditrisk	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
banksizelogofassets	-.0594701	.0483633	-1.23	0.223	-.1559275 .0369874
_cons	.6858962	.3787691	1.81	0.074	-.069535 1.441327

The model summary coefficient of determination R2 reveal the extent to which bank size account for the variance in credit risk management. R2 value 0.095 before COVID-19 and 0.0211 after COVID-19 meant bank size accounted for 9.5% and 2% changes in credit risk management after COVID-19 respectively. The results of Anova table identify significance of the model to the study. The significant value establishes whether the model is to be accepted or rejected. The model's significant value was more than 0.05 before and after COVID-19.

#### 4.9 Impact of COVID-19 on age of the bank and credit risk management

The third objective of the study was to identify the impact of COVID-19 on the relationship between the age of the bank and credit risk management. The results are shown below:

**Table 4.15 Age of the bank and credit risk management before and after COVID-19**

Results before COVID-19:

#### ANOVA Table and model summary

Source	SS	df	MS	Number of obs =	36
Model	.001060387	1	.001060387	F(1, 34) =	0.02
Residual	2.08251529	34	.06125045	Prob > F =	0.8961
				R-squared =	0.0005
				Adj R-squared =	-0.0289
Total	2.08357567	35	.059530734	Root MSE =	.24749

#### Coefficients

creditrisk	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
ageofthebank	.0002241	.0017035	0.13	0.896	-.0032379 .0036862
_cons	.209668	.0781208	2.68	0.011	.0509074 .3684286

Results after COVID-19:

## ANOVA Table and model summary

Source	SS	df	MS	Number of obs	=	72
Model	.000063785	1	.000063785	F(1, 70)	=	0.00
Residual	4.12753516	70	.058964788	Prob > F	=	0.9739
				R-squared	=	0.0000
				Adj R-squared	=	-0.0143
Total	4.12759895	71	.058135196	Root MSE	=	.24283

## Coefficients

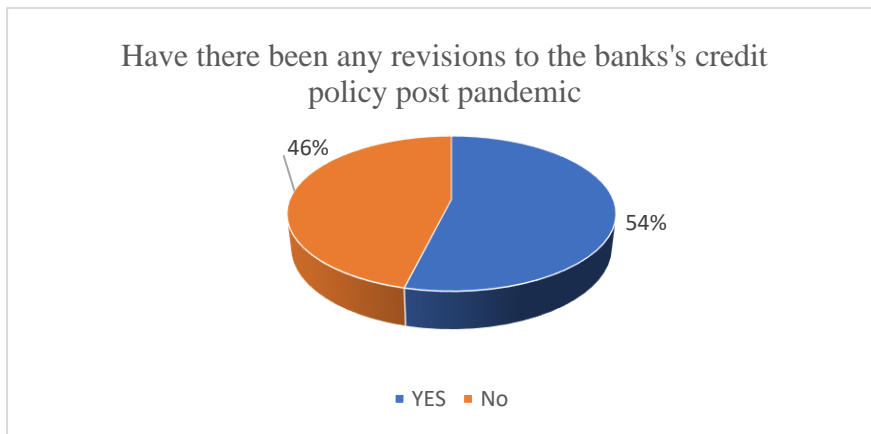
creditrisk	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ageofthebank	-.0000389	.0011816	-0.03	0.974	-.0023956	.0023179
_cons	.2229774	.0546936	4.08	0.000	.1138946	.3320603

The model summary coefficient of determination R2 reveal the extent to which age of the bank account for the variance in credit risk management. R2 value 0.0008 before COVID-19 and 0.000 after COVID-19 meant bank size accounted for 0% changes in credit risk management after COVID-19 respectively. The results of Anova table identify significance of the model to the study. The significant value establishes whether the model is to be accepted or rejected. The model's significant value was more than 0.05 before and after COVID-19.

### 4.8 Credit risk management in response to COVID-19

The fourth objective of the study was to evaluate the impact of COVID-19 on the credit risk management practices implemented by commercial banks in Kenya. Questionnaires were used to collect this data. The results of the study also revealed that 54% of banks revised their credit risk policy while 46% of banks did not.

**Figure 4.1 Revisions to Credit policy in response to COVID-19**



Respondents were also asked to rate various statements on credit risk management where the data on the variables was collected using a five-point Likert scale of 1-5 where 5 = To a very great extent 4 =To a great extent 3 = To a moderate extent 2 = To a little extent 1 = Not at all. The study tried to find the extent in which banks use credit risk identification in credit risk management. The results are presented in table 4.1.

**Table 4.1 Credit risk identification**

Credit risk identification practices	To a very great extent	To a great extent	N	Mean	Std Dev
Comprehensive analysis of present and future risks	23	3	26	4.88462	0.31949
Quantification of the organizations risk profile	26	0	26	5	0
Identification of credit risk sources	26	0	26	5	0
Reviewing of the credit risk environment	26	0	26	5	0
Evaluation of company’s operations	19	7	26	4.73077	0.44356

From the findings, respondents agreed that quantification of the bank’s risk profile, identification of credit risk sources and review of the credit risk environment are vital during credit risk identification with a mean of 5 and a standard deviation of 0. The study also revealed that respondents rated to a great extent that analysis of present and future risks and all business operations and support services are practices considered during credit risk identification, with a mean of 4.884 and 4.730 respectively.

The respondents were also asked to determine the extent to which they apply the following credit risk analysis practices to ensure that credit risk appraisal is properly done, using a five-point Likert scale and results presented based on mean and standard deviation by table 4.2.

**Table 4.2 Credit Risk Analysis**

Credit Risk Analysis practices	To a very great extent	To a great extent	N	Mean	Std Dev
Review of credit history of the borrower	26	0	26	5	0
Analysis of credit risk-based decisions	18	8	26	4.69231	0.46154
Screening of clients before advancing credit	26	0	26	5	0
Credit risk information sharing	21	5	26	4.80769	0.39411

The results demonstrated that respondents rated highly with a mean score of 5.0 and standard deviation of 0 the statement that they review the credit history of the borrowers and screen the clients before advancing credit. Analysis of credit risk-based decisions such as were rated to have a mean of 4.692 with a standard deviation of 0.4615 while credit risk information sharing was considered to a great extent with a mean of 4.8076 and a standard deviation of 0.3941.

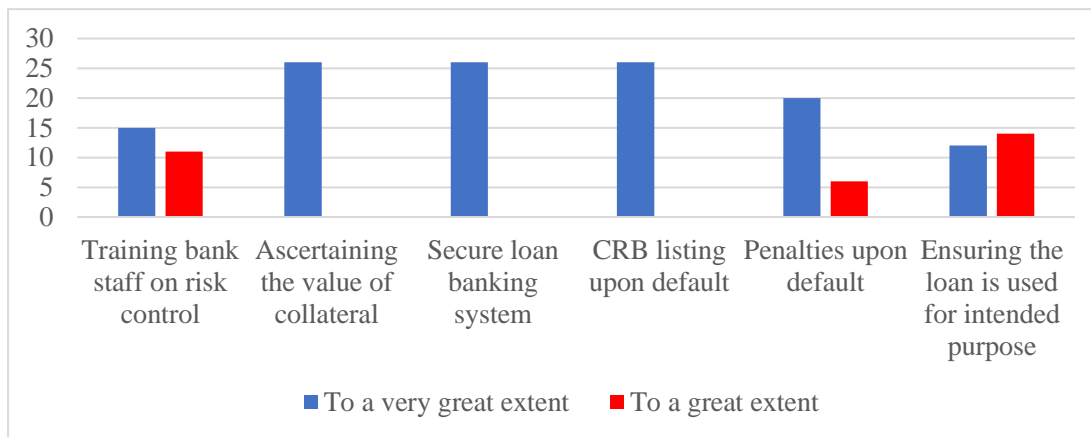
The study also pursued the extent to which credit risk control and monitoring practices are used in credit risk management. Respondents confirmed that ascertaining the value of collateral, having a secure loan banking system and listing defaulters on CRB are considered to a very great extent in credit risk control with a mean of 5 and a standard deviation of 0. Respondents ascertained that training bank staff on risk control, penalties upon default and ensuring the loan is used for intended purpose is considered at a great extent in credit risk control with a mean of 4.5769, 4.6923 and 4.8077.

**Table 4.3 Credit risk control and monitoring.**

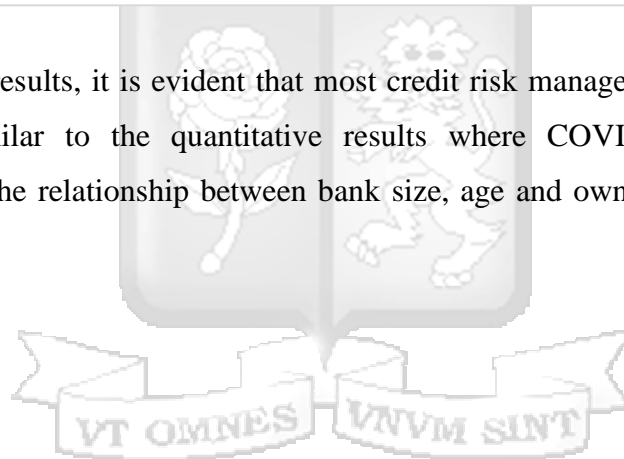
Credit Risk control and monitoring	To a very great extent	To a great extent	N	Mean	Std Dev
Training bank staff on risk control	15	11	26	4.57692	0.49405

Ascertaining the value of collateral	26	0	26	4.69231	0.46154
Secure loan banking system	26	0	26	5	0
CRB listing upon default	26	0	26	4.80769	0.39411
Penalties upon default	20	6	26	4.769231	0.421325
Making certain the loan is utilized for its intended reason	12	14	26	4.461538	0.498519

**Figure 4.3 Credit risk control and monitoring**



From the qualitative results, it is evident that most credit risk management practices did not change. This is similar to the quantitative results where COVID-19 showed to not significantly change the relationship between bank size, age and ownership with credit risk management.



## **CHAPTER FIVE**

### **DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter includes an overview of the main findings of the research as well as conclusions, limitations and recommendations discovered during the research. It also provides areas that were pointed out in the study that need further research.

#### **5.2 Summary of findings.**

The study was undertaken with the aim of evaluating the impact of COVID-19 on bank specific factors influencing credit risk management of commercial banks in Kenya as well as understanding the credit risk management practices implemented by banks with response to COVID-19 pandemic. The selected variables that represented bank specific factors were liquidity ratio, bank size, age and ownership structure of the banks.

Questionnaires were used to collect primary data that focused on credit risk management in banks in response to COVID-19. Secondary data was collected from financial statements and annual reports of respective commercial banks of Kenya. Publications of Central Bank of Kenya also provided insight as to how commercial banks responded to COVID-19. The target population was 39 commercial banks as at December 2021. The period of study was 2019 to 2021 where 2019 represented the year before COVID-19 was declared a pandemic and 2020 -2021 was the year during the pandemic. Descriptive statistics were employed to investigate the study's objective, with regression analysis being used to examine the relationship between the variables and correlation analysis being used to examine the association between the variables.

The study established that bank specific factors did not influence credit risk management of commercial banks before COVID-19 but there was a significant influence after COVID-19 pandemic. Before COVID-19 pandemic, liquidity had a negative insignificant relationship with credit risk management. However, after COVID-19, a positive significant relationship between the variables was noted. The study findings revealed a positive insignificant relationship between credit risk management and bank size before COVID-19. The results were consistent with Khan et al., (2012) who found a positive relationship between size of the bank and credit risk in domestic banks. However, this study found out that there was no correlation between bank size and credit risk management after COVID-19 pandemic. This

may be because all banks regardless of size took the same measures to cushion themselves against the effects of COVID-19.

The research study also revealed a positive but non-significant relationship between age of the bank and credit risk management before COVID-19 but after COVID-19, the study findings revealed no correlation between age of banks and the credit risk management implemented. The relationship was negative and insignificant before and after COVID-19. The study investigated whether public and private banks used different credit risk management, but it was noted that all banks implemented the same practice.

The study established that all banks have credit risk policies for effective management of credit risk. The central bank of Kenya requires all banks to have a credit risk policy that define the parameters for lending and direct the banks' credit-granting operations. The study revealed that credit risk policies are reviewed annually by the board credit committee or board risk committee. The credit risk committee is responsible for implementing credit risk management policies and examining credit proposals in compliance with CBK guidelines. After COVID-19, Banks reviewed their retail lending policies and policy initiatives aimed at ensuring continued growth in the retail lending book considering any mitigating relevant risks.

The researched study confirmed that banks use a credit risk appraisal system to a greater extent and the appraisal methods include reviewing the credit history of a borrower, analyzing credit risk-based decisions and screening of clients before advancing credit. The same practices were applied before and after COVID-19. Credit risk monitoring practices used by banks include training bank staff on credit risk policy and risk controls, secure loan banking system, penalties upon default and CRB listing upon default. However, after COVID-19 hit the banking sector, the CBK announced that banks should restructure clients' loans to help them cope with the tough economic times brought by the pandemic. This restructuring provided time to build additional capital and liquidity buffers to take them through the pandemic period and beyond. The measure expired in March 2021 and by the end of February 2021, loans totalling Ksh. 1.7 trillion had been restructured, making up 57% of the gross loans made by the banking industry (CBK, 2021).

The perspectives of chief risk officers and risk managers on credit risk management in response to COVID-19 changed and influenced decisions to make the credit lending process

stricter, hence reducing credit risk if another pandemic were to hit. The general perspective is that the policies are conducive to the current environment and will well cover the institution from the current risks involved in lending. Many banks are now experienced and better prepared to react and support their customers should the world experience another pandemic situation like COVID-19. According to most risk managers, the credit risk evaluation process has not largely changed due to COVID-19. The pandemic mainly affected customers' ability to service their debt. The key credit risk evaluation parameters of CAMPARI or CAMEL remain relevant even post Covid. However, banks are well prepared to respond to a pandemic situation should it occur in the future.

### **5.3 Discussion of research findings**

#### **5.3.1 Liquidity**

The first objective of the study was to examine the impact of COVID-19 on the influence of liquidity ratio on Credit risk management of commercial banks in Kenya. The study established that liquidity ratio had a negative and insignificant relationship with credit risk management before COVID-19. The change was attributed to a change in credit monitoring practice in that banks restructured customers' loans so that they could cushion customers against the effects of the COVID-19 pandemic. This translated to an increase in the flow of deposits and liquid assets and a significant change to liquidity ratios. The findings agreed Tehulu and Olana (2014) who found an insignificant relationship with credit risk before COVID-19. This study however found a positive significant relationship with credit risk management after COVID-19. This means that a unit change in liquidity led to a unit change in credit risk management of commercial banks after COVID-19.

This could be attributed mostly to increase in liquidity ratio since measures were put by Central bank of Kenya to increase the liquidity levels of banks. The banking sector average liquidity ratio as of December 2020 stood at 54.5 percent as compared to 49.7 percent registered in December 2019. The increase in the ratio was mainly related to stronger growth in total liquid assets compared to the growth in total short-term liabilities. The findings were consistent Okpala et al., (2019) and Cai and Zhang (2017) who found a positive and significant relationship between liquidity and credit risk management. Omaliko (2021) also found that COVID-19 had a significant impact on liquidity of firms in Nigeria.

### **5.3.2 Bank Size**

The second objective of the study was to examine the impact of COVID-19 on the influence of bank size on Credit risk management of commercial banks in Kenya. The study findings revealed a positive and insignificant relationship between credit risk management and bank size before COVID-19, but it was noted that there was a negative weak correlation between the two variables after the pandemic. The findings concur with Anju (2012) and Srairi (2013) who established a positive relationship between credit risk management and bank size before COVID-19. The findings however defer with Tehulu and Olana (2014) who found a negative relationship between bank size and credit risk.

The results are also consistent with Alzoubi and Obeidat (2020) who conducted a study on how size influences credit risk of Islamic banks. Bank size was measured as a logarithm of assets. The results showed that there was a negative relationship between the bank size and credit risk. The findings were consistent with Srairi (2013) studied ownership structure and risk-taking behavior in conventional and Islamic banks. The results stated that bank size has a negative relationship with credit risk.

### **5.3.3 Age of the Bank**

The third objective of the study was to examine the impact of COVID-19 on the influence of age of the bank on Credit risk management of commercial banks in Kenya. The findings as well indicated that the age of the bank had a positive relationship with credit risk management before COVID-19 but a negative relationship with credit risk management after COVID-19. However, the relationship for both periods was not significant. All banks, despite how long they have been in operation, experienced adverse effects of COVID-19 and took similar credit risk management measures. The study also established that ownership structure does not influence the credit risk management banks choose to implemen

The findings deferred from the study done by Antony and Suresh (2023) who did a study on the determinants of credit risk in Indian banks. The study found out that age of the bank positively affects credit risk. They found out that older banks tend to take lower credit risk. This study findings however agreed with Siddique et al., (2022) who studied the effect of credit risk management and bank specific factors on the financial performance of the South Asian commercial banks. The study concluded that age has a negative relationship with credit risk management and other bank specific factors.

#### **5.3.4 Bank ownership structure**

Bank ownership structure was a control variable in the study. The empirical study showed that the ownership structure of commercial banks whether private or public banks had a negative and insignificant influence on credit risk management that commercial banks in Kenya implement. The findings are consistent with (Brahmaiah, 2022) who established that the credit risk management procedures and techniques used by public and private banks are not significantly different from one another. Credit risk policies and processes for credit risk assessment, analysis, evaluation, monitoring, regulating, and credit risk management tend to be similar in private and public banks.

#### **5.3.5 Credit risk management practices in response to COVID-19.**

The fourth objective of the study was to evaluate the impact of COVID-19 on the credit risk management practices implemented by commercial banks in Kenya. The study established that all banks have credit risk policies as required by the central bank of Kenya. The study revealed that credit risk policies are reviewed annually by the board credit committee or board risk committee. The study also revealed that most commercial banks examine their credit policies every year or every half-year. The study also found that regular meetings, credit manuals, training sessions, and monitoring are effective ways to inform staff members about credit policies. The survey also showed that frequent training and credit manuals were the most widely used tools for educating staff members about credit regulations.

54% of the banks reviewed revised their credit risk policies after COVID-19 pandemic hit. In order to help borrowers during the COVID-19-induced economic shock, several revisions were put into place. These included placing a greater emphasis on secured lending, restructuring loans, extending current credit lines, and suspending the listing of loan defaulters on credit reference bureaus (CRBs). However, some of the changes, including the loan restructuring, were made to aid consumers in getting through the COVID-19 pandemic and were set to expire in December 2021. The findings are consistent with Wahogo (2023) who revealed that bank implemented credit management policies and procedures to deal with rising bad loans during COVID-19.

The study sought to determine the extent to which credit risk identification is important in credit risk management. From the study findings, majority of the respondents agreed that it is important to quantify bank's risk profile which is the evaluation of the ability of a bank to

take up risks, identification of credit risk sources and reviewing the credit risk environment are important practices in credit risk identification. The study found out that there was no change in credit risk identification before and after COVID-19.

The study established that all respondents implement the same credit risk analysis techniques before and after COVID-19. Improvement on credit policies guided the credit risk appraisal system where the review includes financial statements, credit agency information, industry information and in some cases references from other credible sources. Research findings revealed that the primary goal of credit evaluation is to decide whether to accept or reject credit advice. It entails assessing loan applications to determine the borrower's capacity to make payments. The findings of this study are consistent with Bhatt et al., (2023) who highlighted that credit risk analysis is important in managing credit risk.

The study also pursued the extent to which credit risk control and monitoring practices are used in credit risk management. Respondents confirmed that ascertaining the value of collateral, having a secure loan banking system and listing defaulters on CRB are considered to a very great extent in credit risk control. However, after COVID-19, CBK communicated the suspension of sharing of negative credit information on credit facilities that became non-performing from April 2020 for six months to September 2020 (CBK, Bank Supervision Annual Report 2020, 2020). Therefore, banks did not list defaulters on CRB during this period and provided guidance to banks to restructure loans of clients affected by the pandemic and not to blacklist clients whose loans became nonperforming during the COVID-19 pandemic. The findings were consistent with Wanjagi (2018) who established that risk control has a great influence on the performance of commercial banks where credit control affects the level of credit rationing. Therefore, a lack of proper assessment to a borrower's loan repayment capability leads to default.

This study established that the banks reviewed/restructured their loan books up to an average of 20% of their loan books after COVID-19. According to CBK (2020), a total of 401,498 loan accounts valued at Ksh.1.63 trillion were restructured in all economic sectors between March and December 2020. This accounted for 54.2 percent of banking sector gross loans of Ksh.3.0 trillion as at December 2020. The study ascertained that training bank staff on risk control, penalties upon default and ensuring the loan is used for intended purpose is considered at a great extent in credit risk control both before and after COVID-19.

Through the debt-relief measures, customers applied for restructuring their loans, expanding existing credit lines, and extending loan tenures to keep them financially afloat. The rate of loan default rose during COVID-19. Banks implemented these credit risk controls to deal with bank loans. The central bank of Kenya also announced that loans that were performing but became non-performing during COVID-19 would not lead to a blacklisting of the borrowers. Kwabi (2015) revealed that negligence in credit monitoring, poor appraisal system and lack of effective credit management policy are some factors that affect loan repayment. It was recommended that strategies should be put in place to reduce loan default among borrowers.

#### **5.4 Conclusions**

The overall study objective was to identify the impact of COVID-19 on the relationship between bank specific factors and credit risk management. The findings indicated that before COVID-19, bank specific factors did not significantly influence credit risk management strategies but there was a significant relationship between the variables after the COVID-19 pandemic.

The study noted that Central Bank of Kenya introduced other credit risk measures to help banks cope during COVID-19 pandemic and hence the performance of banks was attributed to these measures as well. The Central Bank of Kenya reduced the Central Bank Rate from 8.25 percent to 7.00 percent, to encourage the banking industry to lower lending and deposit rates and help Kenyans access affordable credit. Other measures included elimination of transfers of charges between mobile money wallets and bank accounts and increase of daily transaction limits. However, these measures applied from March 16, 2020, to December 31, 2020.

The study has established that there were a few changes to credit risk management such as restructuring of loans, review of credit policy and debt monitoring. However, the credit risk appraisal system remained the same even after the pandemic. Chief risk officers and risk managers highlighted that the policies and systems put in place are enough to counter credit risk concerns should another pandemic happen. This study provided empirical data for policy makers in formulating appropriate policies and possible solutions of credit risk management in commercial banks.

The findings are consistent with the theory of asymmetric information since the credit analysis and monitoring practices used by banks are meant to reduce information asymmetry and reduce non-performing loans. However, due to COVID-19, a lot of borrowers faced income challenges which led to default of their loans and hence rise in the number of non-performing loans.

The study validates the theories of asymmetric information and credit risk theory.

### **5.5 Recommendations**

The findings of this study can be used by banks' management to help them understand the relationship between bank specific factors and credit risk management. Banks should continuously review their credit policies and sensitize their staff so as to reduce credit risk. The study has helped shed light on the measures' banks used to mitigate the effects of COVID-19 pandemic.

The study recommends that commercial banks in Kenya should take stringent measures in implementing credit assessment processes and comply with all established lending requirements to improve financial performance. The bank management should closely monitor the restructured loans and implement debt collection measures to recover from the non-performing loans. This will contribute to the profitability and overall performance of commercial banks in Kenya.

Researchers and other academics may find the study useful because it will give them with empirical studies to use in their own research, particularly those who have studied credit risk management. In particular, the study helped to clarify how COVID-19 altered credit risk management procedures, which in turn contributed to the advancement of both knowledge and practice in this area.

### **5.6 Limitations of the study**

The study was limited to commercial banks only but did not consider microfinance institutions, SACCOs and other credit lending institutions. The data used was only from those organizations whose information is available in public domain and from their website. Data from 3 banks could not be found and was omitted from the analysis.

Secondly this study focused on the period 2019 to 2021. To find consistent results long time series data is required. It was also a challenge for respondents to give feedback since some banks were not willing to participate in the research.

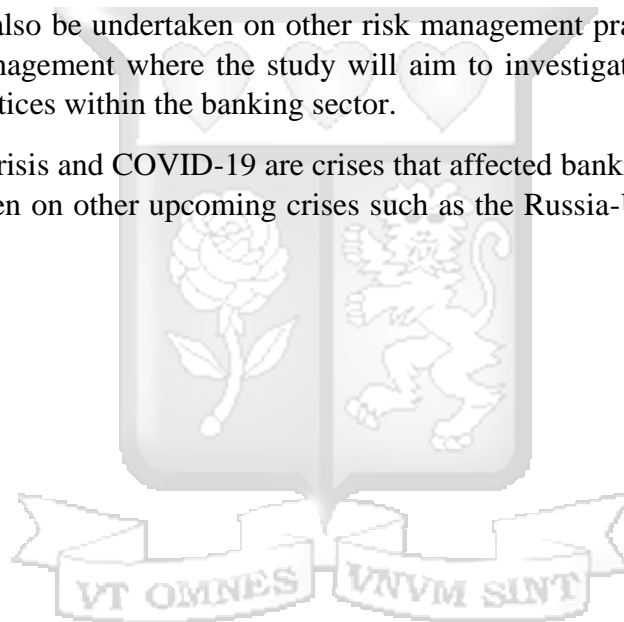
Lastly, A multiple regression model was used to analyze the variables of this study and the model has its own limitations like misleading results which cause the value of the variables to change so the research outcome could be inaccurate. Other bank specific factors could be included in the regression model to give more accurate results.

### **5.7 Suggestions for Further Research**

Further research can be done by including more variables such as rate of non-performing loans, capital adequacy ratios and their relationship with credit risk management.

Further research can also be undertaken on other risk management practices like operational and liquidity risk management where the study will aim to investigate the awareness about risk management practices within the banking sector.

The global financial crisis and COVID-19 are crises that affected banking sector and research study needs to be taken on other upcoming crises such as the Russia-Ukraine war and Israel Palestinian crisis.



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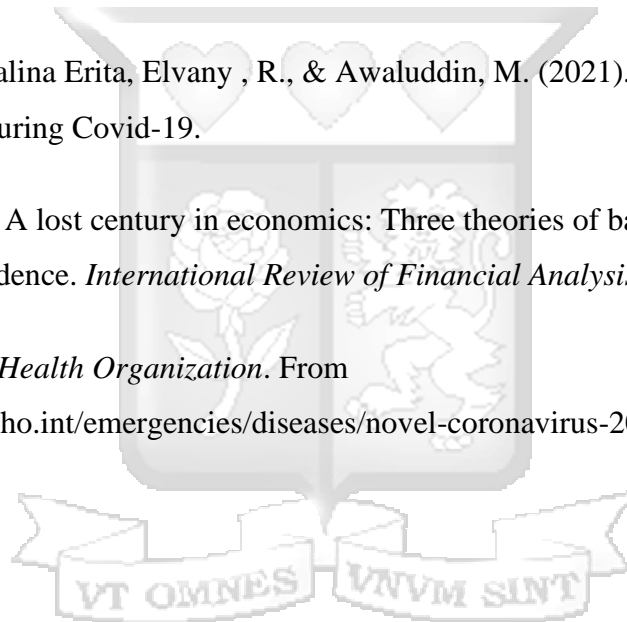
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## APPENDICES

### Appendix A: Letter of Introduction

Ole Sangale Rd, Madaraka Estate,  
P.O Box 59857 00200, Nairobi, Kenya.  
Cell: +254 703 414/6/7, Twitter: @SBSKenya

Email: [info@sbs.ac.ke](mailto:info@sbs.ac.ke) or visit [www.sbs.strathmore.edu](http://www.sbs.strathmore.edu)



8<sup>th</sup> January 2024

To Whom It May Concern,

#### **RE: FACILITATION OF RESEARCH – VALERIE MAINA**

This is to introduce Valerie Maina who is a Master of Commerce (MCOM) Student at Strathmore University Business School, admission number MCOM/096445. As part of our MCOM Programme, Valerie is expected to do applied research and undertake a project. This is in partial fulfilment of the requirements of the MCOM course. To this effect, Valerie would like to request appropriate data from your organization.

Valerie is undertaking a research paper on “**Bank specific factors influencing credit risk management of commercial banks in Kenya in response to Covid-19.**” The information obtained shall be treated confidentially and shall be used for academic purposes only.

Our MCOM Programme seeks to establish links with industry, and one of these ways is by directing our research to areas that would be of direct use to industry. We would be glad to share our findings with you after the research, and we trust that you will find them of great interest and of practical value to your organization.

We appreciate your support and shall be willing to provide any further information if

required. Yours sincerely,

A handwritten signature in black ink, appearing to read 'Njoki Kiagiri'.

Njoki Kiagiri  
Manager – Graduate  
Programmes Strathmore  
University Business School.

Association of African  
Business Schools



Strathmore Business School is a Proud member of;



EFMD



## Appendix B: SU-ISERC Approval and NACOSTI permit.



26<sup>th</sup> December 2023

Ms Maina Valerie,  
valerie.wakiini@strathmore.edu

Dear Ms Maina,

### **RE: Bank Characteristics that Influence CRM Practices of Commercial Banks in Kenya in Response to COVID-19**

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-master** research proposal. Your application reference number is **SU-ISERC1932/23**. The approval period is from **26<sup>th</sup> December 2023 to 25<sup>th</sup> December 2024**.

This approval is subject to compliance with the following requirements:

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

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

Yours sincerely,

**Mr Ambrose Rachier,**  
**Chairperson; SU-ISERC**





REPUBLIC OF KENYA

Ref No: 889681

RESEARCH LICENSE



This is to Certify that Miss. Valerie Wakini Maina of Strathmore University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Mombasa, Nairobi on the topic: Bank Characteristics that influence credit risk management practices of commercial banks in Kenya in response to Covid-19 for the period ending : 12/January/2025.

License No: NACOSTI/P/24/32448

889681

Applicant Identification Number

Walton

Director General

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

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REPUBLIC OF KENYA

Ref No: 889681

RESEARCH LICENSE



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License No: NACOSTI/P/24/32448

889681

Applicant Identification Number

Walter Mwangi

Director General

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

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## **Appendix C: Letter of Introduction to Research Participation.**

### Bank specific factors influencing credit risk management of commercial banks in Kenya in response to COVID-19

Dear participant,

I cordially invite you to participate in the research of the title above in commercial banks. I am currently enrolled in the Master of Commerce Program at Strathmore Business School, and I am in the process of writing my master's thesis, in partial fulfilment of the requirement of the master's study. The aim of the research is to understand if banks changed their perspectives on credit risk management during COVID 19 and if bank specific factors influenced any changes with regards to the practices.

Your extensive experience and expertise in credit risk management make your perspective highly valuable to the success of my thesis. To gather insights, I have developed a questionnaire that covers key aspects, and your participation and input will contribute significantly to the depth and richness of the study. This email therefore is to request your support in the research by completing the questionnaire. Your participation in this research project is completely voluntary with no known risks. Your responses will remain confidential and anonymous. No one other than the researcher will know your individual answers to this questionnaire.

The questionnaire is designed to be concise and should not take more than 10 minutes to complete. I have also attached a letter of introduction from the University for your information and records, NACOSTI research license and a participant information sheet and consent form. Kindly, return the questionnaire as soon as you have completed answering all the questions. Thank you for your assistance in this important endeavor.

Yours sincerely,



Valerie Maina  
Research student.



## Appendix D: Questionnaire

The information contained in this confidential questionnaire is being gathered for the final study project. The researcher vows that the study will not reveal the identities of the respondents.

Instructions: Please check the appropriate answers or fill in the blanks. Do not write your name or any other form of identification on the questionnaire.

1. Name of the bank.....
2. Who is responsible for formulating the Credit risk management in the bank?
3. What credit risk management does the risk committee implement on behalf of the bank?
4. Does the bank have a credit risk policy and how regularly is it reviewed?
5. Are employees made aware of credit policy and how?
6. Which of the following methods apply to your organization in relation to the validation processes employed in credit risk management?  
 Internal and external audit ( ) Risk management reviews ( )  
 - Management certification ( ) Control risk self assessment ( )
7. To what extent does the bank engage in the following credit risk identification practices to ensure that credit risk identification is done? 5. To a very great extent 4. To a great extent 3. To a moderate extent 2. To a little extent 1. Not at all

	1	2	3	4	5
Comprehensive analysis of present and future risks					
Quantification of the organizations risk profile					
Identification of credit risk sources					
Reviewing of the credit risk environment					
Evaluation of every aspect of company operations and assistance					

Others (specify)

.....

8. To what extent does the bank implement the following credit risk analysis practices to ensure that credit risk appraisal is properly done? 5. To a very great extent 4. To a great extent 3. To a moderate extent 2. To a little extent 1. Not at all

	1	2	3	4	5
Review of credit history of the member or borrower					
Analysis of credit risk-based decisions					
Screening of clients before advancing credit					
Credit risk information sharing					

9. To what extent does the bank implement effective credit risk control procedures to prevent failure to achieve obligations and objectives?

5. To very great extent 4. To a great extent 3. To a moderate extent 2. To a little extent 1. Not at all

	1	2	3	4	5
Training bank staff on risk control					
Ascertaining the value of collateral					
Secure loan banking system					
CRB listing upon default					
Penalties once default					
Making certain the loan is utilized for its					

intended reason					
-----------------	--	--	--	--	--

Others

(specify

.....

10. In your opinion, how did the credit risk management in your organization change after COVID-19 pandemic?

Credit risk management practice	YES	NO	If yes, share the area of change and indicate if short or long term? If no, explain why there was no change.
Have there been any revisions to the lending institution's credit policy post-pandemic?			
How has the pandemic influenced the financial analysis process for evaluating borrower creditworthiness? Are there any additional factors considered now?			
Has there been a reassessment of the bank's loan portfolio in light of the COVID-19- pandemic?			
Have there been any modifications to the credit evaluation criteria used to assess borrower creditworthiness?			
Has the bank enhanced its monitoring and reporting mechanisms to track the performance and risk of the loan portfolio during and after the pandemic?			

11. From the perspective of your organization's Chief Risk Officer (CRO) or equivalent role, what are their views on the changes made to credit policy and risk management practices post-pandemic? Please provide insights into their observations and any recommendations they have made.

### Appendix E: Data Collection Sheet

This data collection sheet was used to collect secondary data of commercial banks in Kenya.

DATA	2019	2020	2021
Total Assets			
Total Gross Loans			
Total customer deposits			
Net Income			
Liquidity ratio			
Age of the Bank			
Shareholding structure – private vs public			

### Appendix F: List of commercial banks in Kenya.

This is the list of commercial banks as of December 2021 from the Central Bank Supervision annual report 2021.

1. Absa Bank Kenya Plc
2. Access Bank (Kenya) Plc
3. African Banking Corporation Limited
4. Bank of Africa Kenya Limited
5. Bank of Baroda (Kenya) Ltd
6. Bank of India

7. Citibank N.A Kenya
8. Consolidated Bank of Kenya Ltd
9. Co-operative Bank of Kenya Limited
10. Credit Bank Limited
11. Development Bank of Kenya Ltd.
12. DIB Bank Kenya Limited
13. Diamond Trust Bank (K) Ltd.
14. Ecobank Kenya Limited
15. Equity Bank Kenya Limited
16. Family Bank Limited
17. First Community Bank Ltd
18. Guaranty Trust Bank (Kenya) Limited
19. Guardian Bank Limited
20. Gulf African Bank Limited
21. Habib Bank AG Zurich
22. HFC Ltd
23. I&M Bank Ltd
24. Kingdom Bank Kenya Ltd
25. KCB Bank Kenya Limited
26. Mayfair CIB Bank Limited
27. Middle East Bank Kenya Limited
28. M Oriental Bank Limited
29. National Bank of Kenya Ltd
30. NCBA Bank Plc
31. Paramount Bank Limited
32. Prime Bank Ltd
33. SBM Bank (Kenya) Ltd
34. Sidian Bank Limited
35. Spire Bank Ltd
36. Stanbic Bank Kenya Limited
37. Standard Chartered Bank Kenya Limited
38. UBA Kenya Bank Limited
39. Victoria Commercial Bank Limited

