

**EFFECTS OF RISK MANAGEMENT ON FINANCIAL
PERFORMANCE OF BANKS IN KENYA 2016 - 2020**

BY

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**A RESEARCH PROJECT REPORT SUBMITTED IN PARTIAL
FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF
THE DEGREE OF MASTER OF SCIENCE (FINANCE), SCHOOL
OF BUSINESS, UNIVERSITY OF NAIROBI**

November 2021

DECLARATION


This research project is my original work and has never been presented in any other university/institution for examination.

Signature 

Date 29.11.2021

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This research project has been submitted with my authority as the university supervisor

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ACKNOWLEDGEMENTS

I thank the Almighty God for enabling me reach this far. Special appreciation goes to my supervisor Mr. Martin K. Odipo, my moderator Dr. Kennedy O. Okiro, Chairman Prof. Cyrus Iraya and the entire team of educators in the school of business, in the University of Nairobi. I acknowledge my fellow classmates with whom we shared a lot, my colleagues at the Teachers Service Commission for their encouragements and my beloved family that offered me special support throughout the study.

God bless you all.

DEDICATION

I dedicate this research project to my entire family and my super sister.

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ABBREVIATIONS

ANOVA	Analysis of Variance
CAR	Capital Adequacy Ratio
CRBs	Credit Reference Bureaus
CBK	Central Bank of Kenya
FX	foreign exchange
IMF	International Monetary Fund
LR	Liquidity Ratio
NPLs	Non - Performing loans
RMG	Risk Management Guidelines
ROA	Return on Assets
ROE	Return on Equity
ROI	Return on Investment
ROI	Return on Investment
SPSS	Statistical Package for the Social Sciences
TCT	Transaction cost theory
UAE	United Arab Emirates

ABSTRACT

This study assessed effects of risk management on financial performance of banks in Kenya from 2016 to 2020 study period. The study was guided by four specific objectives. These were to: analyze effect of operational risk on financial performance of banks Kenya, assess effects of credit risk on financial performance of banks Kenya, determine effect of market risk on financial performance of banks Kenya, and determine effects of liquidity risk on financial performance of banks Kenya. The Modern Portfolio, Transaction Cost, Liquidity Preference theories were adopted for this study. A census of all 39 commercial banks was adopted using their financial statements and CBK annual supervision reports to retrieve data. The data was analysed using mean, standard deviation, correlation coefficients, and multiple linear regressions. The data was presented in tables and supported by interpretation and followed discussion of the findings. Operational risk had the greatest negative effect on financial performance of commercial banks followed by credit risk, market risk, and lastly liquidity risk. This implies that an increase in each of these variables resulted in a decrease in commercial banks' performance during the study period. The study therefore recommends for banks to be more vigilant in identifying and meeting supervisory and regulatory requirements from the Central Bank of Kenya by enhancing training in their risk management departments and also ensure that they are insured to protect the institution from operational risks. Commercial banks are also advised to design attractive loan products for their consumers to promote more borrowing such as offering low interest rates to the majority of those who can afford certain loan limits.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

One of the significant risks that regulated financial institutions and commercial banks has to experience when operating in a market is credit risk, with the other two being operational and market risk (Basel, 2010). Liquidity risk is equally important. The 2008 financial recession revealed that there is need to comprehend credit risk and capacity to manage credit risks in the present global market. Credit risk has resulted to an increase in local and global financial institutions and the increase in commercial economy has influenced the function the banking sector's risk management.

Jamaat and Asgari (2010) asserted that banks today are more invested in how risk management is modelled as more risk-focused skills supervision are being created to expose managers to adequate training (Kithinji 2010). Using this perspective, the sector of banking and the small banks in particular trained to possess documented and formal risk management frameworks (De Juan, 1991). Jorion (2009) noted that a risk that is recognized as not risky as an unidentified risk; financial institution are then exposed to different risks such as political risk, interests rate risk, market risk, credit risk, operational risk, and foreign exchange risks (Yusuf, 2003).

The Basel Committee (2000) suggested that liberalized loaning, insufficient evaluation, and poor credit management of portfolios of dynamic economy leading to several problems for financial institutions. There is also worry on how difficult a form of risk that is increasingly dedicated, controlled, and concentrated their supervision must be (Seppala, 2000). Management of risk is described as a process in which a financial institution employs to have control of the financial vulnerabilities.

The risk management process consists of the basic steps of risk analysis, identification, assessment, risk audit monitoring, treatment, and control (Bikker & Metzmakers, 2005). Credit risk is perceived as the most important that commercial banks experience which indicates the supply the basics for emerging enterprise approaches new businesses procedures and emerging approaches of management of risk (Muriithi, Waweru, & Muturi, 2016). This has led to mispricing liquidity and credit risk, excess credit growth, and inadequate liquidity buffers facing banks.

1.1.1 Risk Management

The Government of Kenya has launched different plans on risk management. The forex bureaus, micro-finance institutions (MFIs), and commercial banks are supervised by the Central Bank of Kenya (CBK). From 2005, commercial banks have aimed to increasing their control systems and risk management systems (CBK, 2010). This came after the Risk Based Supervision and Risk Management Guidelines (RMG) which were meant to supervise of financial institutions. Despite these approaches in risk management, the degree on the effect on probability is not yet clear.

Morris (1987) found that risk management adoption was only successful by experiences of the large banks in management of risk policy implementation and adoption and their combined motivation with governments (Ochola, 2014). Nevertheless, this motivation may be influenced by poor policies by governments, other constraints and politics experienced by public agencies such as bureaucratic regulations, legislative needs, and lack of resources. This opened up the participation of political leaders in risk management were investigated.

The CBK (2005) as an entity has a precedence for commercial banks in using of different risk management approaches such as taking collateral, credit limits, loan selling, diversification, securitization, credit insurance, syndicate loans, and credit derivatives. These happened after the fall of many banks in the nineties which was from risk management which was shown by the high levels of NPF. Most of these loans were granted with no assessment on credit status and no security. The high incidence of NPF reduced the banks' profit by giving these loans. Nevertheless, the strict measures and controls adopted by Kenyan commercial banks; they are still making losses associated to risk management.

1.1.2 Financial performance

A subjective measure of how effective an organization uses its assets is referred to as financial performance from its main operations and creates revenues by making sure that available resources are utilized in the most efficient and effective approach (Terence, 1989). Brealy and Myers (2003) noted that financial performance explains the concerns of managerial performance, financial weakness and strengths, corporate efficiency, and credit worthiness of a firm. The motivation is to give maximum return for the firm on the capital used in the enterprise.

In Kenya, all commercial banks are subject to the dictates of the Basel Committee and a nation's particular monetary authorities' regulations. The implementation of the Basel I, II, and III along with the CBKs supervision regulations, commercial banks are required to manage effectively all forms of risks that they experience (Basel, 2004). Formed in 1988, Basel I concentrated on credit risk nonetheless later followed to include integrates market risk. In 2004, Basel II was formed to meet the financial

invention and enhance the supervisory capital requirements to show the underlying risks and operational risks providing a risk-based supervision framework.

In 2010, Basel III incorporated tougher and new rules for liquidity and capital in the banking sector and addressed systematic and firm specific risks (Basel, 2004). Banks' profitability is a measure of the ability of a commercial bank to enhance their capital base or undertake risk. This indicator shows the measures and competitiveness on profitability and management quality as important terms used in this study. There are different measures of profitability of banks and this include return on equity (Saona, 2011), net interest margin (Naceut & Omran, 2011), and return on assets (Oladele et al., 2012),

1.1.3 Financial performance and risk management

According to Gold (1999), owners of business are asked to employ safe risk management activities when scheduling for the future so as not to misuse the company assets. The firms may not be able to survive with increased expense and loss ratios. Prevention of loss by taking preventive measures is a key indicator of profitability and significant in risk reduction (Jolly, 1997). Gold (1999) further noted that firms have the first-hand financial interest in loss reduction given the significance of risk management in how companies function; the efficiency of its risk management is anticipated to contribute to financial performance.

Vast literature (Santomero & Babbel, 1997; Pagano, 2001) argue that risk management is a concern for a company's financial performance making risk management is a critical function of organizations in making value for consumers and shareholders. The literature on corporate finance has associated the significance of managing risk with stockholder expansion suggestion. This implies that an

organisation will involve policies in risk management if it has a positive effect on values for shareholders (Al-Tamimi & Al-Mazrooei, 2007). Risk management should be adopted in financial institution operations so as to sustain financial performance and increase market share (Sinkey, 1992).

Notwithstanding this data, over time there has been an increase in the problems among financial institutions in emerging and also matured economies (Brownbridge & Harvey, 1998). The problems of banks are mostly financial distress and failures that have affected most banks and many of these institutions have met closure by regulatory and supervisory authorities (Brownbridge & Harvey, 1998). In the middle of these factors, risk management weaknesses have long been mentioned as the main determinant for problems facing financial issues (Richard et al., 2009).

The continued exposure to credit risk continues to be a significant problem for banks globally; supervisors of banks should be able to learn lessons from experiences in the past. The financial institution should have more knowledge in needing to control, monitor, identify, and measure credit risk in an aim to hold satisfactory capital against risks and these are adequate in compensation for incurred risks (Basel, 1999). Hardy and Pazarbasioglu (1999) believed the danger signs to look for financial crisis are measures for corporate and banking industry vulnerability. Hardy and Pazarbasioglu added that most present indicators to predict financial crises are related to the soundness of the financial industry first-hand.

1.1.4 Commercial banks in Kenya

The forty-three banks are regulated and supervised by the CBK. The CBK is mandated to formulate monetary policy to maintain and achieve stability in pricing and issuing currency. According to the CBK Act, the institution is mandated to give

stability by licensing, supervision, and regulation of financial institutions under its mandate. The CBK also gives settlement and clearing systems, payment oversight, proper and solvency function of the system and these efforts are aimed to implement and formulate foreign exchange policies and management of reserves.

The CBK provides regulatory and legal framework and gives prudential guidelines to govern the operations of financial institutions under its supervision. It also undertakes and licenses surveillances of the financial institutions to make sure compliance with regulations and laws. Yildim and Philippatos (2007) stated that the motivation driving banks towards enhancing the services quality, product increment by promoting and offering financial innovation is healthy competition. The state of competition has improved in recent times and this has resulted in better customer services to clients.

1.2 Research Problem

Risk management has been a challenge to financial institutions globally giving rise to the birth of Credit Rating Bureaus. It was expected that with the formation of CRBs, losses arising from defaults would be mitigated; however, different researchers have had convergent findings of commercial banks performance and risk management (Musyoki & Kadubo, 2012; Ogilo, 2012; Kaaya & Pastory, 2013). The reviewed literature indicated that research has adopted various measures of bank performance including return on equity (ROE), return on investment (ROI), and return on assets (ROA) and other proxies and these results to different results. These studies were done in the distant past. Despite much attention to credit risk among commercial banks, it is still a constraint owing to an increase in marginal loss that increase when there are defaults among borrowers. This study analyzes effects of risk management on banks' performance using different measurements such as Current Asset ratio,

policies and procedures, asset turnover ratio, credit risk analysis risk management policy and ROA.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of the study was to examine effect of risk management on performance of banks in Kenya.

1.3.2 Specific Objectives

The specific objectives of the study were:

- i. To analyze effect of operational risk on financial performance of banks Kenya
- ii. To assess effects of credit risk on financial performance of banks Kenya
- iii. To determine effect of market risk on financial performance of banks Kenya
- iv. To determine effects of liquidity risk on financial performance of banks Kenya

1.4 Value of the Study

The research aims to shed light on risk management in financial institutions and these findings are important for decision making intricate in the execution of risk management for their banks. The credit manager may benefit from the study in making operation, strategic, and tactical choices founded on consequences of a research rather than rely on error and trial. The study may be of significant to the Government for it to come up with improved appropriate policies and regulations to guides credit management. It helps the regulators comprehend the scope to increase the system and financial risks for policies. The study results may provide advice and information on the likely chances for future research.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The theoretical framework, determinants of financial performance, empirical literature review, gaps of the study, and conceptual framework are presented in this chapter.

2.2 Theoretical Framework

This section of the study focused on the review of theories that were used in the study and it aims to show how other researchers have used these theories in studying the association amongst financial performance and risk management. This study looks at modern portfolio, risk-adjusted return on capital and liquidity preference theories.

2.2.1 Modern Portfolio Theory

The Modern Portfolio Theory (MPT) was advanced in 1952 by Harry Markowitz and it's a theory that aims to determine the lowest degree of risk for an anticipated return. The MPT assumes that investors are likely to favor a collection with lesser levels of risks before those that have the same or higher level of risk (Markowitz, 1952). The MPT recommends that it is perceivable that to create a productive wilderness of good portfolios by offering the highest perceived expected return for a certain level of hazard. The theory proposes that it is not enough to take a grander normal hazard and return of in specific stock. By placing resources into more than one stock, a financial expert can be able to receive the enhancements rewards in a reduced hazard in the portfolio (Markowitz, 1952).

The risk in a portfolio of various personal stocks will be smaller than the risk present in attaining any one of the personal stocks provided the various stock risks that are not related directly. The MPT shows that investing is not about selecting stock but more about selecting the right mix of stocks among with the spread the risk. It further

assumes that every investor has access to similar sources of information for making decisions in investments and share the same views on expected return.

Banks are aware of how credit can influence financial performance from which banks are in an active pursuit of quantitative methods to risk management. Commercial banks have made great strides in development of tools that can estimate risks in credit in a collection setting. Financial institutions do also transfer risk by utilizing credit derivatives in an efficient fashion while being able to maintain customer relationship. The mix of these developments has increased progress in risk management over the past years (Saunders & Cornett, 2007).

A credit risk and loan review rating structure enable management of commercial banks to differentiate changes in personal credits or portfolios drifting in a favorable approach. The outcomes of its concern loan identity, credit rating system, and loan review, and management makes needed changes to collection approaches or surge the regulation of credit in a fitting manner (Saunders & Cornett, 2007). Therefore, commercial banks should diversify business to avoid concentration to particularly borrowers, industries or sectors of the economy.

Overconcentration in lending for property development (mortgage) or on personal loans or corporate loans is something that should be avoided but an optimum mix that maximizes return on a certain degree of overall risk. It is a requirement to have a significant part of a collection in liquid bonds and stocks to meet spending requirements and capital calls. The enthusiastic and new investors in illiquid choice investments in some situations forget this principle (Saunders & Cornett, 2007).

2.2.2 Transaction Cost Theory

The Transaction Cost Theory (TCT) was proposed by Williamson (1988) and its main tenet is that there is a need to govern exchange agreements and to make sure that transaction costs are positive and organized. Transaction costs are perceived positive when people are limited in their capacity to plan for their future; this implies their lack of knowledge to predict accurately and plan for the future. Moreover, it is difficult for parties in a contract to negotiate about their plans owing to the difficulty linked with creating a common understanding of the situation of the environment with which they have limited or no experience (Williamson, 1988).

It is often hard for negotiating parties to communicate their plans in a means that an uninformed third party would mediate between them. This makes all contracts to effectively and actually incomplete thus leading positive transaction costs. The literature on transaction costs identifies that there is a cost of thinking about all the various outcomes that can occur during the course of the contractual planning and relationship and how to address them. Moreover, there are costs of negotiating with others about these plans and writing down plans in a way that they can be enforced in a dispute.

The availability of these transaction costs reduces the ability of the parties to write a contract that is complete. In the presence of contracts that are incomplete and agency problems, structure of governances is identified as a means for creating choices that have not been explained in the first contract. The governance structures are utilized to allocate the remaining rights of control over an organization's material assets. Governance structures are thus utilized to reduce the agency cost coming from contracts that are incomplete.

The TCT implies that organizations use strategies that are motivated by the need to reduce transaction costs. Thus, the reduction in transaction costs further increases the continued effect of adopting a certain strategy recognized in terms of service quality improved. TCT explains the banks' financial decisions on expenditure by considering the relative advantages of performing intra firm transactions in comparison to inter-organizational market transactions (Black, 2002). In TCT, the unit of activity is the unit of analysis which is the transaction, with its participants. In such a scenario, the organization has to make a decision if to invest in a specific digital strategy or not, given that it is capital intensive (Bakeri, Bakar, & Abdoulaye, 2010).

The transaction costs hypothesis is an assumption that firms strive to reduce the expenses of trading assets with environment and that firms aims to reduce bureaucratic expense of trade inside the firm. Firms behave in this way by measuring the trading asset expenses with the setting in contradiction of bureaucratic expenses of performing exercises in-house (Klomp et al., 2016). The TCT hypothesis examines markets and institutions as different forms of planning and sorting out monetary exchanges.

The TCT has been criticized in that it remedies are wrong as well as being as a hazard for corporate administrators owing to rationale and assumptions on which it is based. Associations are not less important substitutes for organizing well-organized connections when marketplaces fall short; they have favorable situations for administering specific types of monetary exercises though a rationale that is varied from those of a market (Batiz-Lazo & Woldesenbet, 2006). In the current study, given that the study seeks to find out how repayment of amounts lent impact the bank

performance in Kenya and which are influenced by transaction costs arising from the lending activities of the banks.

2.2.3 Liquidity Preference Theory

The Liquidity Preference Theory (LPT) was advanced by Keynes (1936) who argued of a converse association among inflation and unemployment and that governments are mandated to change fiscal policy to make sure there is a balance between the two. The LPT refers to demand of money as measured using liquidity by proposing that a financial expert asks a high loan premium or cost on protections with long haul developments which result in more serious hazards, since each factor being at equilibrium, speculators lean towards money or other deep fluid property (Rindfleisch, 2019).

Ventures that are progressively fluid are easier to sell faster for full esteem. Cash or money is the most fluid resource and for the happiness of financial experts is to forfeit great liquidity and that means they may offer a high pace of return in agreeing to have their money tied up for longer periods. The exchange idea expresses that individual prefer liquidity to make sure they have adequate money in their hands for basic everyday needs. In the end, people have an extreme interest for liquidity to cover their monetary commitments (Remneland-Wikhamn & Knights, 2012).

The great expenses of living mean high interest rates for liquidity/money to meet those daily needs. Individuals may also have a theoretical process. In a situation when financing costs are low, interest for money is increased as individuals use the clutch or money until the costs of loans rise. The LPT implies to financial experts their overall hesitance to focus on tying up speculation capital in the present motivated by a fear of passing up a greater open door in the future. In a case where interest rates are

high, financial experts surrender liquidity in return for high loan costs; when these fees are rising and costs of security are falling, financial experts may sell their low paying purchase and securities for more lucrative securities or hold the money and wait for higher rates of return (Rindfleisch, 2019).

Center liquidity alludes to the money and other monetary resources that banks have that can be exchanged easily and paid out as a major aspect of operational income. Examples are money, government treasury securities, and currency market reserves. Liquidity hazard occurs when a personal investor, money or business-related foundation cannot be able to fulfill monetary obligation commitments. In a situation when the market improves, a home may sell over its stated cost. If the seller needs the money in a market that is down, they sell the home for a less price and lose cash in the exchange. Due to liquidity chance, financial experts need to think on if they can cover their momentary obligation commitments into money before putting resources into long haul illiquid resources (Prasad & Shivarajan, 2015).

Financial specialists, administrators and loan bosses utilized liquidity measurement sizes when selecting the level of liquidity hazard into a suggestion. They frequently analyze momentary fluid and liabilities assets recorded on the organization's budget summaries. In the event that an enterprise has a large amount of liquidity hazard, it must sell resources, discover new methods or earn extra income to decrease the inconsistency amongst obligation commitments and money that is accessible. Liquidity alludes to the comfort of holding money. Everybody in this world likes to have cash with him for various purposes. This establishes the interest of how much cash to hold (Ogiriki & Andabai, 2014).

2.3 Determinants of financial performance

Petria, Capraru, and Ihnatov (2015) assessed determinants of profitability of banks in twenty-seven European Union (EU) nations from 2004 to 2011 and categorized these factors into external (macroeconomic) and internal factors (bank-specific). The findings indicated that management efficiency, liquidity and credit risk, economic growth, business diversification, and market competition had an effect on both measures of profitability.

In a study that assessed the financial causes of bank financial performance in Jordan from 2012 to 2016, Malahimm and Al Khatib (2018) identified macroeconomic and microeconomic variables ROA of banks. No connection among banks' ROA with macroeconomic and microeconomic variables was found. In South African research, Lawa, Zogli, and Dlamini (2017) measured the influence of macroeconomic, industry specific and bank specific factors in a sample of large banks from 1995 to 2013. The findings elaborated that capital adequacy, GDP, NPLs, and market prices were important determinants of large South African banks. Nalianya and Miroga (2020) examined the factors influencing listed commercial banks performance establishing that operational expenses, capital adequacy, leverage, and liquidity all had significant effects on ROA.

2.4 Empirical Literature

In Malaysia, Saeed (2015) examined impact of risk management on bank performance retrieving data from 2005-2013 and analyzed by generalized least squares (GLS) the results revealed that there existed relationship between ROE and credit risk, operational risk, and liquidity risk. Moreover, credit risk and operational risks were related to ROA while liquidity risk had no relationship with ROA.

In Nigeria, Faduye and Oye (2020) analyzed the commercial banks' ROA from 2008 to 2017 based on their management practice on operational risks using net-to-income ratio as a proxy. It was found that having effective operational risk management habits resulted in profitability for banks. In the Cameroon setting, Isoh, Ambang, and Nchang (2020) analysed management of operational risks methods on mainstream banks' ROA from a sample of employees. The data revealed that controlling and monitoring risks, reporting and training, and practicing operational risk management internally resulted in an increase in profitability. This study opined that financial performance increases with the implementation of internal operational risk management strategies.

In the Tanzanian setting, Lyambiko (2015) aimed to provide a description of operational risks among banks. Using secondary data on the operation efficiency, insolvency risk, and credit risk while performance was proxied by ROA. The findings confirmed that all the three indicators had an effect on commercial banks. In Kenya, Kamau, Gatawa, and Mwambia (2015) conducted research on operational risk effect on health of three banks using data from 2008 to 2017 applying senior management and board oversight, operational risk management practices, and operational risk exposures as the explanatory variables. The findings indicate a negative effect of operational risk on profitability of banks.

In the context of the United Arab Emirates (UAE), Al-Tamimi (2010) measure the extent to which NPLs ratio affected financial performance from 2013 to 2019. The results revealed that cost-to-income ratios and NPLs affected profitability of banks while loans-to-deposit ratio, liquidity ratio, and CAR had a marginal insignificant effect on ROA.

In research done in Pakistan, Shahid, Gul, and Naheed (2015) examined association among financial performance and credit risk in Pakistan collecting data from twenty-four banks from 2010 to 2017 and found evidence to show profitability of banks was largely affected negatively by credit risk. In a South African research, Lawrence and Doorasamy (2019) did a comparative assessment on credit risk effects on performance among small and big banks from 2008 to 2017. The evidence was that NPLs ratio had an effect on ROA for small banks.

In Kenya, Muriithi et al. (2016) research estimated the association among ROE and credit risk from 2005 to 2017 using asset quality, loan and advance ratios, risk weighted assets, loan loss provision as credit risk indicators. The findings indicated that there was a negative significant effect with profitability of banks. In Turkey, Ekinci, (2015) investigated the credit risk effects adopting interest rate risk as a proxy and performance was measured by return of bank index and bank stocks from 2002 to 2015. The study adopted the generalized autoregressive conditional heteroscedastic approach by using weekly data. The findings from the data indicated that credit risk had positive effects on return of bank index.

In an investigation done in Tehran, Abdellahi, Mashkani and Hosseini (2017) investigated the influence of liquidity, market, and credit risk on ROI. The findings revealed that market risk had positive effect on ROI; liquidity, credit, and market risk had positive effects on ROE. In the Uganda's banking sector, Mpora (2006) assessed association among market risk and commercial banks' performance from 2001-2005. The findings indicated that local banks had negative association among market risks and performance. Additionally, results revealed that increase in market risk does not improve the banks efficiency and it further reduces the capital adequacy.

In Kenya, Namasake (2016) conducted an assessment of commercial banks' financial performance from 2010 to 2015 using foreign exchange, interest rate risk, and financial leverage and ROE as proxies. The findings revealed that foreign exchange, interest rate, and financial leverage had negative and significant effects of profitability. In a Taiwan research, Chen, Shen, Kao, and Yeh (2018) assessed sway of liquidity ratio on performance of banks from 1994 to 2006 finding that liquidity risk lowered the profitability of banks due to high costs of funding.

In a study done among Iraqi commercial banks, Al-Husainy and Jadah (2021) considered liquidity risk and credit risk effects ROA of commercial banks from 2010 to 2020. This paper especially focuses on Iraqi commercial private Banks. The findings illustrated liquidity risk had positive significant association with bank profitability. In a study done in Jordan, Saleh, Afifa, and Murray (2020) investigated effects of liquidity banks' profitability from 2010 to 2018 finding that all these variables affected profitability of banks. Maaka (2013) examined liquidity risk and ROA from 2008-2012 finding that leverage and liquidity gap had negative outcome on banks' profitability.

2.5 Gap for the study

The empirical evidence shows that there is vast literature on the association amongst risk management and banks' financial performance. However, there are different measures that have been used in each of these studies. This study goes further and uses selected variables for risk management which have not been included in one study consecutively and examine their combined effect in the local context. This is a research gap that the study identified and aims to fill.

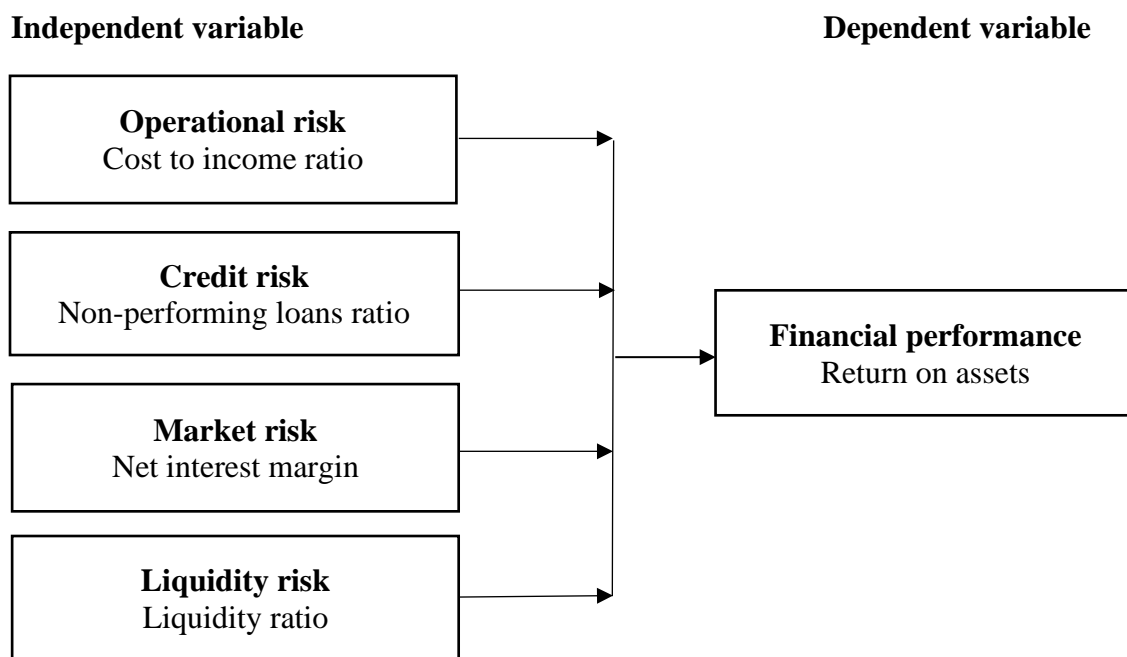
2.6 Summary of Literature Review

The literature review began with an introduction to the theoretical framework on which the study was based. The theories used were the modern portfolio, transaction cost, and liquidity preference theories. Determinants of financial performance of banks were presented followed by an empirical review of studies from the global, regional, and local perspective on the relationship between variables.

2.7 Conceptual Framework

A conceptual framework is a map of variables and concepts that is used in research to measure the objectives (Oso & Onen, 2007). It is a pictorial demonstration of the theory portrayed as a model showing the connection among variables. For each of the variables, indicators or proxies to measure these variables are shown in Figure 2.1.

Figure 2.1: Conceptual framework



Source: Author (2021)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the descriptive research is explained along with the thirty-nine commercial banks justified as the target population and the sample as selected using census sampling. Secondary data use is also justified and variables for the study are described and means of analysis explained.

3.2 Research design

A research design refers to a system of a situation that describes how data will be collected for a specific purpose in research (Kombo & Tromp, 2006). A descriptive survey design was adopted for this study. Secondary data was used to collect information on the variables. The descriptive approach is appropriate for this study as it does not manipulate the variables but examines the association amid these variables.

3.3 Population

Mugenda and Mugenda (2019) explain that as a group of objects/cases and individuals with similar features that can be observed and are unique from another set of population. Conversely, a target population is one aimed to generalize their findings. A census survey of 39 licensed banks (Appendix 1) in the period 2016 to 2020 will be used. The unit of analysis is 39 commercial banks while the risk management officers are the units of observation. The population for the study is thus 39 banks.

3.4 Sample Design

The procedure of selecting a part of units so as to arrive at a conclusion on the whole group is referred to as sampling (Orodho, 2005). Sampling is recommended in cases where it is impossible to gather data from the entire group. The researcher adopted

employed census sampling to incorporate all 39 banks as the sample size for the study.

3.5 Data Collection

Secondary data was retrieved from the Central Bank of Kenya (CBK) annual supervision reports as well as the financial statements and audit reports of the commercial banks. Financial performance measured by ROA, liquidity risk was measured by liquidity ratio, market risk was measured by net interest margin, operational risk was measured by cost to income ratio, and credit risk was measured by NPLs ratio.

3.6 Data Analysis

An MS Excel spreadsheet was used to capture data and then transferred to a statistical package for analysis which was STATA 13. Descriptive statistics including mean and standard deviation will be used. Pearson's correlation coefficient and multiple linear regressions where the proposed regression equation was presented as thus;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where:

β_0 = Y intercept

β_1, \dots, β_4 = beta coefficients of independent variables

Y = Financial performance

X_1 = Operational risk

X_2 = Market risk

X_3 = Credit risk

X_4 = Liquidity risk

ε = Error term

The data was presented in tables and supported by interpretation and discussions from the researcher.

3.7 Diagnostic test

The data was checked for normality using statistical methods using the Kolmogorov-Smirnov and Shapiro-Wilk tests. Multicollinearity refers happens when explanatory variables exhibit high correlations among them and this results to spurious regression whose findings cannot be deemed stable or reliable and this then can affect their influence on the response variable. The variance and inflation and tolerance values for the variables were calculated to determine if there is any multicollinearity.

The concept of autocorrelation estimates the interaction of observations among various periods of time such as financial performance and the independent variables of this study and aims to determine if there is trend or pattern in a time series. In this case, the Durbin Watson statistic was used to determine the autocorrelation in the data. This refers to a setting in which the error term is similar along all the values of the explanatory variables. The response variable of financial performance was placed on the Y-axis and the independent variables on the X-axis.

Tests of significance are done to reject or accept claims founded on data from research and is a formal procedure that consist of comparisons collected data or hypothesis and the claim that is being investigated. The significant test results are presented in form of a probability that estimates how data and the claim agree. An F-test in regression compares the matching of a regression linear model which aims to evaluate several coefficients at the same time. In this case, the researcher used F-test analysis of variance (ANOVA).

CHAPTER FOUR: DATA ANALYSIS, RESULTS, AND DISCUSSION

4.1 Introduction

In this chapter, findings are presented, interpreted, and discussed in different subsections including the response rate, data validity, descriptive statistics, correlation and multiple regression analysis and discussion of findings.

4.2 Response rate

The sample size for the study was 39 commercial banks and all these firms data for each of the variables for the study period from 2016 – 2020 which resulted in a total of 780 observations and this represented 100.0 % of a response rate.

4.3 Descriptive statistics

Table 4.1 shows the summary statistics which indicate a mean of 52.74 cost-to-income ratio among the banks during the study period. The NPL ratio for the study period had a mean value of 12.26 and a high of 14.5. The highest net interest margin in the study period was 8.8 and the lowest score was 5.6. in terms of liquidity ratio, the banks showed recorded the highest score of 54.5 and mean of 47.36. The mean ROA registered during the study period was 2.84 with the highest being recorded at 3.5 and the lowest being 2.1.

Table 4.1: Summary statistics

Variables	N	Min	Max	Mean	Std. Dev.
Cost-to-income ratio	39	45.8	60.0	52.74	5.3524
Non-Performing loans ratio	39	9.3	14.5	12.26	1.873
Net interest margin	39	5.6	8.8	6.86	1.3346
Liquidity ratio	39	40.3	54.5	47.36	5.5053
Return on assets	39	2.1	3.5	2.84	0.564

4.4 Data validity

Diagnostics tests conducted included checking for normality, multi-collinearity, autocorrelation, and homoscedasticity.

4.4.1 Normality

So as to check for normality in the data, the study adopted the Kolmogorov-Smirnov and Shapiro-Wilk statistical tests were done. Table 4.2 showed that *p*-values were greater than 0.05 which means that the data represented a normal distribution.

Table 4.2: Tests of Normality

Variables	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Operational risk	0.243	39	0.063	0.907	39	0.074
Credit risk	0.169	39	0.057	0.908	39	0.064
Market risk	0.136	38	0.073	0.953	38	0.109
Liquidity risk	0.338	39	0.059	0.551	39	0.091
Financial performance	0.192	39	0.301	0.887	39	0.101

4.4.2 Homoscedasticity

In checking for homoscedasticity, the Breusch-Pagan test was conducted which revealed that the significance of the test was < 0.05 which means that there is no homoscedasticity in the data as shown in Table 4.3.

Table 4.3: Breusch-Pagan test

chi2(1) = 11.52

Prob > chi2 = 0.0001

4.4.3 Autocorrelation

The study conducted a Durbin-Watson test to determine whether there was any autocorrelation present in the data. Table 4.4 shows that the score was 2.29 which are acceptable as the DW test statistics is between 0 and 4 from which indicates positive autocorrelation and thus the data meets the threshold.

Table 4.4: Durbin-Watson

Variables	Durbin-Watson	P- value
Overall model	2.29	0.037

4.4.4 Multi-collinearity

Table 4.5 shows the VIF and tolerance values that are used to determine the level of collinearity among the variables. The VIF values are all less than and ten which implies that there is no multicollinearity present.

Table 4.5: Collinearity Statistics

Variables	Tolerance	VIF
Cost-to-income ratio	0.353	2.836
Non-performing loans ratio	0.364	2.747
Net interest margin	0.948	1.055
Liquidity ratio	0.906	1.104
Return on assets	0.924	1.082

4.5 Correlation analysis

Table 4.6 show that there was an inverse relationship between the variables implying that negative and statistically significant association between operational risk with financial performance of commercial banks as shown by a correlation coefficient of - 0.182 and a p value of 0.026. These findings are also observed for credit risk ($r = -$

0.327, $p = -0.024$), the market risk ($r = -0.122$, $p = 0.024$), and liquidity risk ($r = -0.217$, $p = 0.019$) in that order. This means that an increase in the dependent variables corresponds with a decrease in financial performance.

Table 4.6: Correlations

Variables		Operational risk	Credit risk	Market risk	Liquidity risk
Operational risk	Pearson Correlation	1			
	Sig. (2-tailed)				
Credit risk	Pearson Correlation	.792**	1		
	Sig. (2-tailed)	0			
Market risk	Pearson Correlation	-0.108	-0.172	1	
	Sig. (2-tailed)	0.52	0.301		
Liquidity risk	Pearson Correlation	-0.243	-0.122	-0.126	1
	Sig. (2-tailed)	0.136	0.461	0.452	
Financial performance	Pearson Correlation	-0.182	-0.327	-0.122	-0.217
	Sig. (2-tailed)	0.026	0.024	0.006	0.019
	N	39	39	39	39

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

4.6 Regression Analysis

A multiple regression analysis was conducted and the model summary, ANOVA, and coefficients results are presented in this section. Table 4.7 shows the findings from the model summary which shows that the coefficient of determination ($R^2 = 0.037$) was 0.236 which means that the four independent variables explained 23.6 % of variation in financial performance.

Table 4.7: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.486a	0.236	0.364	4.454

The findings from the ANOVA results show that the F statistic ($F = 4.738$) was positive and the significance level was less than 0.05 ($p = 0.037$) which means that the model was statistically significant in explaining the influence of liquidity, risk analysis, management efficiency, monitoring and control on financial performance of commercial banks as seen in Table 4.8.

Table 4.8: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	33.186	4	8.296	4.738	.037 ^b
	Residual	371.226	33	11.249		
	Total	404.412	37			

a Dependent Variable: Financial performance

b Predictors: (Constant), liquidity, risk analysis, management efficiency, monitoring and control

The results from the coefficients indicate negative and statistically significant effects of the independent variables on financial performance of banks as presented in Table 4.9. A unit increase in operational risk would result in a - 2.487 effect in financial performance and this was significant at the 95 % confidence level ($p = 0.010$). A unit increase in credit risk would result in a - 1.315 effect in financial performance and this was significant at the 95 % confidence level ($p = 0.018$). A unit increase in market risk would result in a -1.012 effect in financial performance and this was significant at the 95 % confidence level ($p = 0.035$). A unit increase in liquidity risk would result in a - 0.921 effect in financial performance and this was significant at the 95 % confidence level ($p = 0.016$). Operational risk had the greatest effect on financial performance followed by credit risk, market risk, and liquidity risk respectively.

Table 4.9: Coefficients^a

	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	5.884	4.677		1.258	0.021
Operational risk	-2.487	1.512	-0.462	-1.645	0.010
Credit risk	-1.315	1.046	-0.348	-1.257	0.018
Market risk	-1.012	1.025	-0.082	-0.987	0.035
Liquidity risk	-0.921	2.082	-0.077	-0.442	0.016

a Dependent Variable: Financial performance

The proposed regression equation thus becomes;

$$\text{Financial performance} = 5.884 + X_1-2.487 + X_2-1.315 + X_3-1.012 + X_4-0.921$$

Where:

Y = Financial performance

X₁ = Operational risk

X₂ = Market risk

X₃ = Credit risk

X₄ = Liquidity risk

4.7 Discussion of Research Findings

The findings indicated that the four independent variables had negative and significant effects on ROA from 2016 to 2020. In objective one, the findings revealed that operational risk had greatest effect on financial performance indicating that an increase in operational risk resulted in reduced financial performance of commercial banks. This means that it is in the bank's self-interest to undertake measure to reduce operational risks.

This finding agrees with past studies such as that of Saeed (2015) who revealed that operational risks were related to ROA. Similarly, Faduye and Oye (2020) revealed that sound operational risk management practices impact positively on the financial performance of banks explaining that adopting operational risk management practices would be able to contribute to reducing the negative effects on financial performance. This finding also agrees with others in Kenya such as that of Kamau et al (2015) study which also indicated a negative effect of operational risk on performance of tier II and III banks implying an increase in operational risks resulted in reduced financial performance. In another study, Isoh et al. (2020) concluded that financial performance increases with the implementation of internal operational risk management strategies.

In objective two, findings revealed that credit risk had second greatest effect on financial performance where an increase in credit risk resulted in - 1.315 effects on financial performance. This result corroborates other studies that found similar results. Shahid et al. (2015) found evidence to show that credit risk had negative effect on banks' financial performance. In Kenya's context, the findings agree with Muriithi et al. (2016) revelation that there was a negative significant effect with profitability of banks.

The findings revealed that market risk had the third greatest effect on financial performance showing that an increase in market risk resulted in a -1.012 effect on performance of commercial banks. This result is in disagreement with Mpora (2006) study which revealed that market risk did not improve banks' efficiency and reduced capital adequacy. Namasake's (2016) study found negative and significant effects of market risk on profitability of commercial banks in Kenya. The results also

corroborate those of Abdellahi et al. (2017) study in Iran which found that market risk had negative and significant effects on commercial banks' financial performance.

In objective four, findings revealed that liquidity risk had the least effect on financial performance as an increase in liquidity ratio resulted in a – 0.921 effect on financial performance of commercial banks. This finding agrees with most research that found similar results. These include Saleh et al. (2020) finding that liquidity risk affected profitability of banks negatively. Al-Husainy and Jadah (2021) findings also illustrated liquidity risk had negative significant association with bank profitability. In their study, Chen et al. (2018) also revealed that liquidity risk lowered the profitability of banks due to high costs of funding but increasing the net interest margins of banks. In Kenya, Maaka (2013) established that leverage and liquidity gap as indicators of liquidity had a negative effect on banks' financial performance. However, there is evidence of studies that found the opposite. For instance, Saeed (2015) found that liquidity risk had no relationship with commercial banks' financial performance.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

A summary of findings is presented in this chapter followed by the conclusions of the study along with the recommendations for implementation and for further research.

5.2 Summary of Findings

The correlation coefficient results revealed that there was a negative and significant association between the four independent variables and financial performance. The linear regression analysis revealed that risk management proxies used in this study 23 % of change on commercial banks on financial performance and the was statistically significant ($p = 0.037$). The results from the regression coefficients indicate that there were negative and significant effects of the four risk management measures on financial performance of commercial banks.

5.3 Conclusion

The study concludes that their operation risk had a negative effect on financial performance of commercial banks. Credit risk, the study concludes has a negative effect on commercial banks' performance. It is this study's conclusion that market risk has a negative effect on commercial banks' performance. The study also concludes that commercial banks' performance was affected negatively by liquidity.

5.4 Recommendations

1. The study therefore recommends for banks to be more vigilant in identifying and meeting supervisory and regulatory requirements from the Central Bank

of Kenya by enhancing training in their risk management departments and also ensure that they are insured to protect the institution from operational risks.

2. The study recommends for commercial banks to grant loans based on the borrowers' capacity to repay the loan and ensuring that private and organizational borrowers are not listed on any of the credit reference bureaus (CRBs) regulated by the Central Bank of Kenya.
3. The study recommends that commercial banks should tailor attractive loan packages for their consumers to promote more borrowing such as offering low interest rates to the majority of those who can afford certain loan limits.
4. The study recommends for commercial banks to build and maintain strong relations with their creditors and continuously monitor the present credit facilities to make sure that they meet regulation and requirements.

5.5 Limitations of the Study

The study was limited to secondary data sources and this means that there was no primary data used in this study which could be useful to explain in-depth the influence of the variables on performance of commercial banks. Secondly, the data was limited to the financial indicators of performance and therefore lacked a holistic picture of performance in organizations provided by non-financial indicators.

5.6 Areas of further study

This study focused on the effect of risk management on financial performance of commercial banks. The risks considered were operational, credit, market, and liquidity risks. There is need for future studies to compare the effect of financial and non-financial risks on performance of commercial banks.

REFERENCES

- Abdellahi, A. A., & Mashkani, A. J., & Hosseini, S. H. (2017). The effect of credit risk, market risk, and liquidity risk on financial performance indicators of the listed banks on Tehran Stock Exchange. *American Journal of Finance and Accounting*, 5(1), 20-30.
- Al Zaidanin, J. S., & Al Zaidanin, O. J. (2021). The impact of credit risk management on the financial performance of United Arab Emirates commercial banks. *International Journal of Research in Business and Social Science*, 10(3), 303-319.
- Al-Husainy, N. H. M., & Jadah, H. M. (2021). The Effect of Liquidity Risk and Credit Risk on the Bank Performance: Empirical Evidence from Iraq. *iRASD Journal of Economics*, 3(1), 58-67.
- Al-Tamimi, H. (2010). Factors Influencing Performance of the UAE Islamic and Conventional National Banks. *Global Journal of Business research*, 4(2),1-9.
- Al-Tamimi, H., & Al-Mazrooei, M. (2007). Banks' Risk Management: A Comparison Study of UAE National and Foreign Banks. *The Journal of Risk Finance*, 8(4), 394-409.
- Bakeri, A., Bakar, A., & Abdoulaye, K. (2010). *Collection development for the digital age: The case of Malaysia*. International Conference on Asian Digital Libraries. Berlin, Heidelberg: Springer.
- Batiz-Lazo, B., & Woldesenbet, K. (2006). The dynamics of product and process innovation in UK banking. *International Journal of Financial Services Management*, 1(4), 400-421.
- Bikker, J. A., & Metzmakers (2005). Bank provisioning behavior and procyclicality. *Journal of international financial markets, institutions and money*, 15(2), 141-157.
- Brownbridge, M., and Harvey, C. (1998) *Banking in Africa: the Impact of Financial Sector Reform since Independence*. Oxford, UK: James Currey.
- Chen, Y-K., Shen, C-H., Kao, L-F., & Yeh, C-Y. (2009). Bank Liquidity Risk and Performance. *Review of Pacific Basin Financial Markets and Policies*, 21(1), 1-40.

- De Juan A. (2003). From Good Bankers to Bad Bankers: Ineffective Supervision and Management Determination as Major Elements in Banking Crisis. *Journal of Banking Regulation*, 4(3), 237–246.
- Ekinci, A. (2015). The Effect of Credit and Market Risk on Bank Performance: Evidence from Turkey. *International Journal of Economics and Financial Issues*, 6(2), 427-434.
- Faduye, O. S., & Oye, D. (2020). Impacts of Operational Risk Management on Financial Performance: A Case of Commercial Banks in Nigeria. *International Journal of Finance & Banking Studies*, 9(1), 22-35.
- Gold, G. (1999). The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets. *Review of Economics and Statistics*, 47(1), 13-37.
- Isoh, A. V. N., Ambang, E. M., & Nchang, N. D. (2020). Assessing the Impact of Operational Risk Management on Financial Performance of Selected Mainstream Commercial Banks in Cameroon. *International Journal of Research in Commerce and Management Studies*, 2(2), 1-17.
- Jamaat, A., & Asgari, F. (2010). Credit risk management in banking system with data mining approach. *Quarterly magazine of quantity studies in management*, 1(3), 115-126.
- Jolly, K. (1997). Counterparty Credit Risk Modelling: Risk Books. London, UK: Incisive Media.
- Jorion P. (2009). Risk management lessons from the credit Crisis. *European Financial Management*, 15(5), 923 - 933
- Kaaya, I., & Pastory, D. (2013). Credit Risk and Commercial Banks Performance in Tanzania: A Panel Data Analysis. *Research Journal of Finance and Accounting*, 4(16), 55-62.
- Kamau, R. W., Gatauwa, J., & Mwambia, F. (2015). The Effect of Operational Risk Management on Financial Performance of Commercial Banks: A Case of Tier Two and Three Commercial Banks in Kenya. *The International Journal of Business & Management*, 6(9), 231-241.
- Keynes, J. M. (1936). *The General Theory of Employment, Interest and Money*. London, UK: Macmillan.

- Kithinji, A. (2010). *Credit Risk management and profitability of commercial banks in Kenya*. Unpublished research project. University of Nairobi. Nairobi. Kenya.
- Lawa, E., Zogli, J. K-L., & Dlamini, B. I. (2017). The Determinants of Bank Performance in South Africa: A Panel Data Analysis. *Journal of Economics*, 8(2), 94-108.
- Lawrence, B., & Doorasamy, M. (2019). The Impact of Credit Risk on Performance: A Case of South African Commercial Banks. *Global business review*, 20(3), 769–794.
- Lyambiko, M. R. (2015). *The Effect of Operational Risk Management Practices On The Financial Performance In Commercial Banks In Tanzania*. Unpublished research project. University of Nairobi. Nairobi. Kenya.
- Maaka, Z. A. (2013). *The Relationship between Liquidity Risk and Financial Performance of Commercial Banks in Kenya*. Unpublished research project. University of Nairobi. Nairobi. Kenya.
- Malahimm, S. S. M., & Al Khatib, A. Y. (2018). Determinants of Financial Performance for the Banks Sector in Jordan. *Innovare Journal of Business Management*, 6(1). 13-19.
- Markowitz, H. (1952). Portfolio selection. *Journal of Finance*, 7(1), 77–91.
- Mpora, B. E. K. (2006). *The Market Risk and Financial Performance of Selected Commercial Banks in Uganda*. Unpublished thesis. Kampala International University. Kampala. Uganda.
- Mugenda, O. & Mugenda, A. (2019). *Research Methods – Quantitative Qualitative Approaches* (3rd Ed.). Nairobi. ACTS Press.
- Muriithi, J. G., Waweru, K. W., & Muturi, W. M. (2016). Effect of Credit Risk on Financial Performance of Commercial Banks Kenya. *IOSR Journal of Economics and Finance*, 7(4), 72-83.
- Musyoki, D., & Kadubo, A. S. (2012). The impact of credit risk management on the financial performance of banks in Kenya for the period 2000-2006. *International Journal of Business and Public Management*, 2(2), 72-80.
- Myers, C. S., & Brealey, R.A. (2003). *Principles of Corporate Finance*. New York, NY: McGraw-Hill.
- Nalianya, S. N., & Miroga, J. (2020). Determinants of financial performance of commercial banks in Kenya: Case of listed banks on the Nairobi Securities

- Exchange (NSE). *The Strategic Journal of Business & Change Management*, 7(3), 880 – 897.
- Namasake, W. K. (2016). *The Effect of Market Risk on the Financial Performance of Commercial Banks in Kenya*. Unpublished research project. University of Nairobi. Nairobi. Kenya.
- Ochola, J. O. (2014). *The Effect Of Credit Information Sharing On The Cost Of Credit Of Commercial Banks In Kenya*. Unpublished research project. University of Nairobi. Nairobi. Kenya.
- Ogilo, F. (2012). The Impact of Credit Risk Management on Financial Performance of Commercial Banks in Kenya. *DBA Africa Management Review*, 3(1), 22-37
- Ogiriki, T., & Andabai, P. W. (2014). Liquidity Preference Theory: A Comparison of William Baumol's and James Tobin's Propositions. *African research review*, 8(4), 143-152.
- Pagano, M. S. (2001). How Theories of Financial Intermediation and Corporate Risk Management Influence Bank Risk-taking Behavior. *Financial Markets, Institutions and Instruments*, 10(5), 277-323.
- Petria, N., Capraru, B., Ihnatov, I. (2015). Determinants of banks' profitability: evidence from EU 27 banking systems. *Procedia Economics and Finance*, 20, 518-524.
- Prasad, A., & Shivarajan, S. (2015). Understanding the role of technology in reducing corruption: A transaction cost approach. *Journal of Public Affairs*, 15(1), 22–39.
- Remneland-Wikhamn, B., & Knights, D. (2012). Transaction cost economics and open innovation: Implications for theory and practice. *Creativity and Innovation Management*, 21(3), 277–289.
- Richard, P. J., Devinney, T. M., Yip, G. S., & Johnson, G. (2009). Measuring organizational performance: towards methodological best practice. *Journal of Management*, 35(3), 718-804.
- Rindfleisch, A. (2019). Transaction cost theory: past, present and future. *Academy of Marketing Science Review*, 10(5), 1-14.
- Saeed, M. H. (2015). *Examining the Relationship between Operational Risk, Credit Risk and Liquidity Risk with Performance of Malaysia Banks*. Unpublished Thesis. Universiti Utara Malaysia. Changlun, Malaysia.

- Saleh, I., Afifa, M. A., & Murray, L. (2020). The effect of credit risk, liquidity risk and bank capital on bank profitability: Evidence from an emerging market. *Cogent Economics & Finance*, 8(1), 1-13.
- Santomero, A., & Babbel, D. (1997). *Financial Markets, Instruments and Institutions*. New York, NY: McGraw-Hill.
- Saunders, A., & Cornett, M. M. (2008). *Financial Institutions Management: A Risk Management Approach*. Irwin, UK: McGraw-Hill.
- Seppala, J. (2000). *The term structure of real interest rates: Theory and evidence from U.K. Index-Linked Bonds*. University of Illinois at Urbana. Champaign.
- Shahid, M. S., Gul, F., & Naheed, K. (2015). Credit Risk and Financial Performance of Banks: Evidence from Pakistan. *NUML International Journal of Business & Management*, 14(1), 144-155.
- Sinkey, J. F. (2002), *Commercial Bank and Financial in the Financial-Services Industry*. New York, NY: Prentice Hall.
- Williamson, O. E. (1988). *The Economics of Transaction Costs*. Cheltenham, UK: Edward Elgar.
- Yildirim, H. S., & Philippatos, G. C. (2007). Efficiency of Banks: Recent Evidence from the Transition Economies of Europe, 1993–2000. *The European Journal of Finance*, 13(2), 123-143.

APPENDIX I: COMMERCIAL BANKS SAMPLED

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