

**EFFECT OF FINANCIAL RISK EXPOSURE ON FINANCIAL
PERFORMANCE OF COMMERCIAL BANKS IN KENYA**

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DECLARATION

Declaration by the Student

I declare that this dissertation is my original work and has not been previously published or submitted elsewhere for award of a degree. I also declare that this contains material written or published by other people except where due reference is made and author acknowledged.

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Dissertation Supervisor

DEDICATION

This research study is dedicated to my dear family headed with my wife Sandrine Ndikumana and my son Trevion Israel Ogello. My parents Mary Nasambu and Wilfred Mwozero with deep gratitude and appreciation for their support and understanding during my entire study period. They provided a good atmosphere for my studies and for this, I will forever be grateful.

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May the almighty Father in Heaven, bless you all.

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LIST OF ABBREVIATIONS AND ACRONYMS

CAMEL-	Capital Adequacy, Asset Quality, Management, Earnings and Liquidity
CBK-	Central Bank of Kenya
CIR-	Cost to Income Ratio
CR-	Credit Risk
LLP-	Loan Loss Provision
LQR-	Liquidity Risk
LTDR-	Liquidity Dependence Ratio
MR-	Market Risk
NIM-	Net Interest Margin
NPL-	Non- Performing Loans
ROE-	Return on Equity
ROA-	Return on Assets
ROI-	Return on Investment
POCL-	Percentage of Classified Loans
NIM-	Net Interest Margin
NPLR-	Non-Performing Loans Ratio

DEFINITION OF OPERATIONAL TERMS

Credit Risk	Credit risk is the risk faced by banks when a borrower defaults in honouring debt obligations on due date or at maturity Ayodele & Alabi (2014).
Financial Risk	Financial risk is the unexpected variability in returns which includes credit risk, liquidity risk, and market risk (Krause & Tse, 2016).
Financial Performance	Financial performance is a subjective measure of how well a firm can use assets from its primary mode of business and generate revenues (Ismail, 2010).
Liquidity Risk	Liquidity risk occurs when an individual investor, business or financial institution cannot meet its short-term debt obligations. Liquidity is the ability of a banking institution to finance an increase in assets and also meet its financial obligations at a fair cost without incurring any form of unexpected losses (Mohammed & Onyiego, 2018)
Market Risk	Risks that arise from a change in market price movements for example interest rate, inflation rate and foreign exchange rate (Kahihu, Wachira, & Muathe, 2021).

ABSTRACT

Risk exposure management is very crucial to any business in the industry that is trying to thrive given the current economic conditions. The banking sector is not left behind as it is constantly faced with a number of unavoidable risks that are not limited to borrowers defaulting on loans. Market forces for example change in interest rate and foreign exchange rate also pose as a threat to these institutions. The general objective of this study was to establish the effect of financial risk exposure on the financial performance of commercial banks in Kenya. The specific objectives were: to assess the effect of credit risk, liquidity risk and market risk exposure on financial performance of commercial banks in Kenya. This study was anchored on Risk Management Theory. Other theories included contingency theory and shift ability theory of liquidity which informed the study variables. The target population of the study was the entire population of 42 commercial banks in Kenya. Secondary data was obtained from annual supervision reports from the Central Bank of Kenya and financial statements from the respective commercial banks. The data was analyzed using descriptive and inferential statistics. The study conducted normality, multicollinearity, autocorrelation and heteroscedasticity diagnostic tests. A panel data model was used to empirically test the effect of financial risk exposure on financial performance of commercial banks in Kenya. The three null hypotheses developed in chapter one of the study were rejected at 5% level of significance. Findings revealed that financial risk exposure had a positive significant effect on financial performance of commercial banks in Kenya. Credit risk exposure had a positive significant effect on the financial performance of commercial banks in Kenya; market risk had a positive significant effect on financial performance of commercial banks in Kenya; while liquidity risk exposure had a negative significant effect on financial performance of commercial banks in Kenya. The study recommended the need for commercial banks to set up risk management strategies that minimize their exposure to various risks by setting provision for loan loss through adoption of the Loan Loss Provision by all commercial banks in order to mitigate from credit risk exposure; by having efficient risk management practices to ensure that commercial banks are able to minimize the effect of certain risks that they face; by ensuring that shareholder goal of wealth maximization is met, by attaining consistent profits that are distributed to them in the form of dividends. Finally, the study recommended that all business entities should practice risk management strategies in order to boost their performance either in a financial or operational perspective. Moreover, an establishment of comprehensive risk management of commercial banks should be made a prerequisite as it contributes to the overall risk management systems. The greatest contribution to the body of knowledge is that for a sound financial survival of commercial banks in Kenya, keen attention needs to be directed towards credit risk exposure, liquidity risk exposure and market risk exposure. Failure of which would sink commercial banks into liquidity, credit and market risks. To regulators and policy makers, the study will form the basis of the control policy framework to alleviate financial risks associated with commercial banks in Kenya and across the world.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Risk management is the process through which an organization identifies loss exposures facing it and selects the most appropriate techniques for treating such exposures (Gomez, 2020). The financial sector plays a huge role when it comes to a country's economy. Over the years, this has been attributed to the wide range of services that it provides including providing capital in terms of loan to small-scale and large-scale businesses. However, given the kind of environment that these financial institutions operate in, they are constantly faced with uncertainties and unavoidable risks. These uncertainties may arise when it is probable that borrowers will not pay the loans that they took. Further, these risks pose a threat to the financial performance of these institutions.

Risk management through institutions is the center of mitigating unpredictability in the business setting and in improving growth as well as performance (Thistlethwaite & Wood, 2018). Risk management is actually viewed as a primary variable for service competitiveness. It facilitates an organization to create a distinct technique to lessen the potential reductions and open a door for the profiteering of brand-new possibilities. According to Zou and Hassan (2017), the development as well as performance of both companies as well as service facilities hinge mainly on the identification as well as management of both inherent dangers, market risks and procedural risks (Chepkoech & Rotich, 2017).

Globally, in the United States, Wyman (2017) asserted that bank failures in the country have historically been caused by risks that are specific to the industry. The savings-and-loan crisis of the 1980s in the United States was a case of risk arising from the maturity-mismatching characteristic of banks' balance sheets. The collapse of Barings Bank in 1995, caused by Nick Leeson's "rogue trading," was a case of event risk, to which banks are also highly exposed. And the financial crisis of 2008 was a case of credit risk, of which banks carry more than any other kind of business. Consequently, a European study by Hummel, Laun, and Krauss (2021) investigated how environmental and social risks and topics are integrated in the banking sector. Despite banks' key role in steering financial flows towards sustainable development, little is currently known as to whether and how banks integrate environmental and social risks aspects into their management control systems and whether this integration translates into E&S performance. Hence, there is more reason to explore these risks as the

environment is always changing and there is need for the banking sector to adopt to these changes.

Regionally in Nigeria, a study by Ayodele and Alabi (2014) assessed risk management in the Banking Industry. The study revealed that there were risks in the likelihood of fraud and forgery, operational risk, market risk and system risk abound in the Nigeria banking operations which needed to be managed appropriately in order to improve performances and profitability of the banks. The study also identified that some of the risk management techniques put in place by the banks have really helped to reduce the various risks facing Nigerian banks. In Ghana, Mpeanin (2019) analysed credit risk management on Ghanaian banks. The study established that adequate capital affects the local bank's profitability positively. Additionally, the research established that cost per loan as well as non-performing loan negatively affect bank profitability. The study concluded that banks need to create reliable strategies for credit management.

Locally, there is a need to create proper financial risk management practices that will mitigate the effects of various risk. In 2015 and 2016, there were three commercial banks that were put under receivership by the Central Bank of Kenya. These included Dubai Bank, Imperial Bank and Chase Bank (Munywoki, 2017). This happened mainly due to lack of proper risk management of their credit and liquidity risks. Further, Musembi, Ali , & Kingi (2016) on liquidity risk determinants management and the financial performance of banks listed in the Nairobi Securities Exchange, found out that liquidity levels in bank institutions have an increased positive output in terms of financial performance for the listed commercial banks.

1.1.1Risk Exposure

When dealing with risks, it is important to understand how entities are exposed to risks and how they mitigate them; commonly referred to as risk management. "Risk management involves analyzing potential issues that could negatively impact key business initiatives or projects (Gómez-Fernandez-Aguado, et al, 2020). This practice is done in order to help organizations avoid or mitigate those risks. Risk management assesses the likelihood of an adverse event occurring and uncertainty of forecasted cash flow streams, the variance of portfolio or stock returns and possible future economic states (Baecke& Bocca, 2017). Risk monitoring activities entails gathering relevant information on risk by providing inputs to ongoing risk assessment and response processes (Muchelule, Iravo, Odhiambo & Noor, 2017).

Risk management plays an important role in helping the companies to strengthen the ability of the firm in planning their strategy in handling any risk (Zou & Hassan, 2017). The ground of risk management methods is to reduce direct as well as secondary expenses of financial grief, earnings dryness, and negative shocks in financial markets, in addition to enhance the decision-making process to select the very best expenditure possibilities (Callahan & Soileau, 2017; Zou & Hassan, 2017). Risk management makes it possible for agencies to lessen various types of expenses related to firms' working and also non-operational tasks. Risk management aids leading management to handle various forms of risk properly (Annamalah, Raman & Arvindan, 2018). Effective risk management aid to: reply to unforeseen risks, to make sure flexibility and also to take the benefits of options which consequently help with organizations to obtain competitive advantage (Armeanu, Georgeta, Stefan & Petrache, 2017).

The study focused on financial risk exposure on commercial banks. According to Githaiga (2015), financial risks refer to unexpected variability that affects returns. This unexpected variability may include credit risk, market risk and liquidity risk. Credit Risk Management policies of commercial banks comprise of decision-making structures associated with the reduction of exposures to credit asset classification and loan loss provisioning (Muriuki, 2017). Market risk encompasses the risk of financial loss resulting from movements in market prices. For example, changes in exchange rate and interest rates (Kahihu, Wachira, & Muathe, 2021). Liquidity risk in commercial banks is defined as the risk of being unable either to meet their obligations to depositors or to fund increases in assets as they fall due without incurring unacceptable costs or losses (Ismail, 2010).

1.1.2 Financial Performance

Financial performance is hinged on the ability of an entity to leverage sound investment and operational decision making to attain financial stability. It is the measure of an enterprise's achievement of its financial goals guided by its financial objectives and benchmarks. Banks, as the critical part of financial system, play an important role in contributing to a country's economic development. If the banking industry does not perform well, the effect to the economy could be huge and broad. Studies on performance of banking institutions are plenty. Results of these studies strongly suggest that bank profitability determinants vary across countries and also among regions of the world (Doliente, 2003).

Consequently, performance usually demonstrates an entity's strength and prosperity (Trivedi, 2010). A prosperous bank is more dominant in the industry as it receives more customers/account holders (Dymski, 2005). Scholars have established a number of ways to measure financial performance of various entities; revenues from operations, incomes, cash flows, marginal growth rates and ratios like capital and liquidity ratio. The proposed study will assess financial performance of Kenyan commercial banks using their return on asset (ROA) which is based on a ratio scale.

1.1.3 Commercial banks in Kenya

The banks in Kenya are regulated by the Central Bank of Kenya. According to the Central Bank of Kenya, there are 44 banks currently operating in the country. However, there are a total of 42 commercial banks in the country. The banking sector has remained resilient over the years despite challenges posed by various regulatory changes such as interest rate capping, the COVID-19 relief regulations by the CBK, and the economic upheaval caused by the pandemic. The Central Bank of Kenya is the main policy making body as it regulates monetary policy which is aimed at ensuring that there is financial stability in the country. The classification of banks in Kenya is primarily done through ownership. There are banks which belong to local companies and individuals whereas others belong to foreign organizations. The banks can also be classified based on their nature. There are both commercial banks as well as microfinance banks. CBK classifies the banks based on the assets which they hold. There are Tier 1 banks in the country which are large banks which have hundreds of billions in assets. These are banks which are stable and least likely to have collapses (Kahihu, Wachira, & Muathe, 2021). There are also Tier 2 banks which are the medium sized banks as well as Tier 3 which are the small banks.

1.2 Statement of the problem

Kenya's financial sector has made strides towards the alleviation of risks. This has been seen by the adoption of the International Financial Reporting Standards-9 (IFRS-9) in July 2014 whose major aim was to enhance financial integrity in the banking sector (Caruso, D'Hulster, Kliatskova, & Ortiz, 2021). However, given the current economic environment and the prevalent COVID-19 pandemic economic shock, these banks are constantly exposed to unavoidable risks; including, credit risks, market risks and liquidity risks. For example, the credit risks that arise when a borrower cannot repay the loan that he took due to high interest rates, high rate of inflation, unemployment condition and high standards of living, among

others; translating the loan to a non-performing loan. Secondly, most commercial banks in Kenya have been facing liquidity problems due to over-relying on short-term sources of funds. This has resulted into a mismanagement of their asset-liability duration which has caused funding difficulties; accelerated by most commercial banks having an access of short-term liabilities against short-term assets. Short-term liabilities are customer deposits or short-term guaranteed investment contracts (GICs) that the bank needs to pay out to customers. Most of Kenyan commercial bank's assets are tied up in long-term loans or investments, pushing them into a mismatch in asset-liability duration. All these have posed bottlenecks to their financial performance.

Further, most commercial banks in Kenya have been facing market risks in various forms. For instance, they have been holding a large amount of equity which exposes them to equity risk. They have also been holding foreign exchange which exposes them to Forex risks. Similarly, commercial banks have been lending against commodities like gold, silver and real estate which have exposed them to commodity risks as well.

The repercussions of such in eventualities have been witnessed where some banks were put under receivership due to inadequate risk management policies. For instance, in October 2015, Imperial Bank was put under receivership by the Central Bank of Kenya majorly due to malpractices and irregularities in the bank. Consequently, in April 2016, Chase bank was put under receivership due to irregularities and liquidity difficulties and not being able to meet its financial obligations. Poor risks management has played a major role in the failure of commercial banks. Most of the non-performing loans have led to poor financial performance by commercial banks as they are unable to meet their financial targets (Owino, 2013).

Locally a study by Wanjohi (2017) assessed risk management practices on financial performance of commercial banks. The financial performance indicator was return on assets that was averaged for a period of 5 years (2008-2012) while information of financial risk management practices was obtained using a self-administered questionnaire. Multiple regression analysis was used to analyze the data. The study creates a methodological gap as the current study will solely rely on secondary data obtained from the Central Bank of Kenya and will use a panel data model for analysis.

Regionally, a study conducted in South Africa by Marozoa (2013) on liquidity risk and profitability of the banking sector. The study used primary data obtained from questionnaires and analyzed the data obtained using least square regression model on a selected number of

banks in South Africa. The proposed study will focus on Kenyan commercial banks and focus on financial risk management practices. Additionally, the current study used secondary data. The study created both conceptual and contextual gaps.

Numerous studies have been conducted based on effect of financial risk on financial performance of various entities without a universal agreement. Further, the studies did not use credit risk, liquidity risk and market risk exposure concurrently as independent variables. Moreover, prior studies did not cover the number of years that the current study covered. This created a vacuum against which the current study sought to bridge by establishing the effect of financial risk exposure on financial performance of commercial banks in Kenya.

1.3 Objectives of the study

1.3.1 General Objective

The general objective of the study was to assess the effect of financial risk exposure on the financial performance of Commercial Banks in Kenya.

1.3.2 Specific Objectives

The study was guided by the following specific objectives;

- i. To determine the effect of credit risk exposure on financial performance of Commercial Banks in Kenya.
- ii. To evaluate the effect of liquidity risk exposure on financial performance of Commercial Banks in Kenya.
- iii. To analyze the effect of market risk exposure on financial performance of Commercial Banks in Kenya.

1.4 Research Hypotheses

The proposed study tested the following hypotheses;

H₀₁: There is no significant effect of credit risk exposure on financial performance of Commercial Banks in Kenya.

H₀₂: There is no significant effect of liquidity risk exposure on financial performance of Commercial Banks in Kenya.

H₀₃: There is no significant effect of market risk exposure on financial performance of Commercial Banks in Kenya.

1.5 Significance of the study

1.5.1 Bank managers

The results obtained will determine the effect of financial risk exposure on the financial performance of commercial banks in Kenya. Hence, the outcome will matter to the management of these banks by providing them with information about the various approaches to financial risk management practices, the impact of financial risk management practices on bank performance, how to deal effectively with risk management issues and how to reduce risk exposure.

1.5.2 Policy Makers

The research will form the basis of the control policy framework to alleviate financial risks associated with commercial banks in Kenya for regulators and policy. The knowledge imparted through the study will be essential in developing and implementing the financial risk management frameworks required for commercial banks together with other related financial institutions. Therefore, the study sought to help the Central Bank of Kenya and other financial policy makers to assess the various aspects of financial risk management implementation in commercial banks and provide directives for their effective use in order to minimize risk exposure.

1.5.3 Scholars and Researchers

The study will provide a decent writing premise from which further studies and references will be drawn. The study will furnish researchers with bits of knowledge into the effect of financial risk exposure on the financial performance of commercial banks in Kenya. The aftereffects of the study would likewise help distinguish the current financial risk exposure gaps and propose new spaces of study with the goal that researchers, scholars and analysts will profit with the results of this study as they have a grasp of existing information on financial risk management and financial performance of Kenyan commercial banks.

1.6 Scope of the Study

The main objective of the study was to establish the effect of financial risk exposure on financial performance of commercial banks in Kenya. Conceptually, the study sought to establish the effect of financial risk exposure; credit risk exposure, liquidity risk exposure and market risk exposure on the financial performance of commercial banks in Kenya. Contextually, the current study was conducted in Kenya. The target population was the 42

Commercial Banks registered by the Central Bank of Kenya (2020) (Appendix I). Methodologically, the study adopted a descriptive research design with a census sampling method where the entire population comprising of all commercial banks in Kenya was assessed. Secondary data was obtained from annual CBK reports and the respective banks' financial statements. The data obtained was analyzed using a panel data model.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter highlighted existing literature based on the current study's variables; financial risk exposure and financial performance of commercial banks. The first part of the chapter focused on theories that informed the study variables. The second part assessed empirical literature based on the study variables. The third part highlighted the conceptual framework adopted by the proposed study. Finally, the final part focused on the measurement of the study variables.

2.2 Theoretical Review

This section outlines the theories on which the study is based on. Scholars believe that theories form foundation for various parameters used in the study (Eden & Ackermann, 2018). A theoretical review provides the researcher the mirror to view the world. The theoretical view of the current study is enriched by a number of theories that essentially informs the study variables. A theory is defined as an articulate statement that explains observed facts and organizes knowledge about the world. Every theory should contain three essential elements; including the what, how, and why (David, 1989).

2.2.1 Risk Management Theory

The Risk Management Theory was proposed by Vaughan (1997). The theory asserts that risk is made up of components of the individual or the association which is presented to misfortune, the asset or income whose obliteration or dispassion will cause monetary misfortune, and a danger that can cause the misfortune. This can be turned away by risk management model which comprises of risk identification, risk assessment, and risk prioritization followed by composed and prudent utilization of assets to limit, screen, and control the likelihood and effect of tragic occasions or to amplify the opportunities realization (Koulafetis, 2017).

The theory has been adopted in studies like Krause and Tse (2016); Bogodistov & Wohlgemuth (2017) in clarifying risk management in various financial sectors. Risks can emerge out of vulnerability in financial market sectors, project disappointments, lawful liabilities, credit risks, mishaps, regular causes and calamities just as intentional assault from an enemy, or occasions of dubious or erratic underlying driver. The instability of commercial banks increases with expanding exposure to financial risks (Khasawneh, 2016).

The systems to oversee risk regularly incorporate moving the risk to another party, staying away from the risk, lessening the adverse consequence or likelihood of the risk, or in any event, tolerating a few or the entirety of the potential or real results of a specific risk. Successful risk management can bring extensive advantages to all organizations, regardless of whether enormous or little, public or private (Fan & Stevenson, 2018). These advantages incorporate, unrivaled financial performance, better reason for procedural setting, improved service delivery, noteworthy upper hand with regards to competitors, less time spent firefighting and less unwanted surprises, improved probability of progress drive being accomplished, closer inward focus on doing the right things appropriately, more effective utilization of resources, diminished waste and extortion, and better incentive for cash, improved advancement and better management of unforeseen and upkeep exercises (Krause & Tse, 2016).

In risk management practice, if risks are left unmanaged, they can cause a negative impact on stake holder's value. Thus, it implies that great risk management upgrades shareholders value (Koulafetis, 2017). By making a decent control in risk management, it improves administration measure and along these lines improves adequacy. As indicated by Bogodistov and Wohlgemuth (2017), guaranteeing that an organization utilizes risk management initially implies making a methodology developed with well-articulated risk management practices and afterward implanting them. These risk management practices involve financial risks management, operational risk management, administration risk management, and strategic risk management.

The Risk Management Theory is the anchoring theory which informs all the study variables (market risk exposure, credit risk exposure and liquidity risk exposure). This is due to the fact that when organizations are able to identify the risks which they are exposed to or the risks that may arise, risk management becomes easier. Effective financial risk management structure upholds better dynamics in decision making which translates to good financial performance. This is in accordance with the current study on the effect of financial risk exposure on the financial performance of commercial banks in Kenya.

2.2.2 Contingency Planning Theory

Contingency Planning Theory was developed by Fiedler (1978) and it posits that no single planning style can be effective without parallel input from complementary or countervailing traditions. Contingency Planning Theory has been used by previous studies such as Kowalski (2018) to explain on risk planning. The theory combines ideas about risk and uncertainty in the

environment and external factors influencing work with context-specific features of leadership and decision-making. Fiedler believed there was a direct correlation to the traits of a leader and the effectiveness of a leader. According to Fiedler, certain leadership traits helped in a certain risk, crisis and so the leadership would need to change given the new set of circumstances.

The key basis of contingency planning is that, given that all dangers cannot be completely eliminated virtually, residual threats regularly remain (Lexander, 2017). Backup idea suggests that managers must change their management types to match the situations at hand. Ni, Rong, Wang and Cao (2019) sums up the concept as the best means to arrange relies on the nature of the setting to which the association must relate. In this case bank managers should be able to adopt to any financial risk that may arise; thus mitigating it. Contingency strategies to organizational structure are actually those which are actually based on the suggestion that the performance of an institution depends upon having a design that is appropriate to its own atmosphere (Otley, 2016).

Even with the company's very best attempts to stay clear of, stop or relieve all of them, risks are going to still take place. Particular conditions, combos of unfavorable events or even unanticipated hazards and vulnerabilities might conspire to bypass or even overwhelm even the very best info security controls made to ensure confidentiality, integrity as well as supply of information resources (Hinson& Kowalski, 2018). In the context of the research study, backup planning is specified as the totality of activities, managements, procedures, plans relating to major incidents and catastrophes.

The Contingency Planning Theory relevance and application to the current study is hinged on financial risk exposure (independent variables). This is based on the fact that for an exceptional financial risk, though unlikely, would have catastrophic consequences for commercial banks if not identified, monitored and responded to. Thus, the Contingency Planning Theory is of important in planning for the financial risk exposure with respect to commercial banks.

2.2.3 Shiftability Theory of Liquidity

Shiftability Theory of Liquidity was coined by Harold G, Moulton in 1915. The financial institutions can effectively protect themselves against massive deposit withdrawals by holding, as a form of liquidity reserve, credit instruments for which there exists a ready secondary market. The Shiftability Theory of Liquidity is based on the proportion that banks liquidity is maintained if it holds assets that could be shifted or sold to other lenders or investors for cash.

According to Ngwu, (2006), these assets can be shifted to the Central Bank for cash without material loss in case of necessity than relying on maturities to solve their liquidity problems.

This point of view contends that a bank's liquidity could be enhanced if it always has assets to sell and provided the Central Bank and the discount market stands ready to purchase the asset offered for discount. Thus, the theory recognizes and contends that shiftability, marketability or transferability of a bank's assets is a basis for ensuring liquidity. This theory further contends that highly marketable security held by a bank is an excellent source of liquidity.

The general consensus is that during the period of distress, a bank may find it difficult to obtain the desired liquidity since the confidence of the market may have seriously affected and credit worthiness would invariably be lacking (Ibe, 2013). However, for a healthy bank, the liabilities constitute an important source of liquidity. The suitability theory is important to the current study liquidity risk exposure on financial performance of commercial banks in Kenya.

2.3 Empirical Review

This part focused on identifying existing empirical studies on financial risk exposure in commercial banks and their financial performance. The key sub-sections highlighted include credit risk exposure, liquidity risk exposure and market risk exposure.

2.3.1 Effect of Credit Risk Exposure on Financial Performance

Credit exposure is a measurement of the maximum potential loss to a lender if the borrower defaults on payment. The main aim of business organizations is to make profits. These can be affected by many factors including credit risk. Credit risk is a calculated risk to doing business as a bank. Credit risk is determined by the Individuals with a debt-to-income ratio below 35% are considered as acceptable credit risks. Prior studies have reported mixed findings on the relationship between credit risk and financial performance of commercial banks in Kenya.

A study conducted by Muriuki (2017), assessed credit risk management on financial performance of Kenyan commercial banks. The study asserted that credit risk was the most vital risk in the banking sector and posed as a direct threat to solvency of the given financial institution. The variables used were credit risk management practices, top management, credit administration unit and credit policy within commercial banks to determine their respective financial performances. The study adopted a descriptive research design where it targeted credit administration and commercial bank managerial staff and used a semi-structured questionnaire as the data collection instrument. Further, cluster sampling method was used to sample the

respondents. It used multiple regression analysis to empirically assess the given study variables. The results obtained highlighted a positive significant influence of credit risk management practices, top management, and credit administration unit and credit policy on financial performance of commercial banks in Kenya. The current study created a conceptual gap as it used financial risk exposure as its independent variables like credit risk exposure, liquidity risk exposure and market risk exposure. Moreover, the prior study used a semi-structured questionnaire to obtain information on the study variables whereas the current study used secondary data obtained from the Central Bank of Kenya; thus, creating a methodological gap.

A study by Githaiga (2015), analyzed the effects of credit risk management practices on performance of commercial banks in Kenya. The study used Capital adequacy, Asset quality, Management, Earning and Liquidity (CAMEL) indicators to determine whether there existed a relationship between credit risk management and performance of commercial banks in Kenya. The study used a descriptive research design and obtained secondary data from Central Bank of Kenya. Multiple regression analysis was adopted. Findings revealed that there was a strong impact of the CAMEL indicators on financial performance of the banks. It also asserted a strong relationship between liquidity and adequacy management with Return on Asset (ROA). The current study used panel data analysis thus creating a methodological gap. Additionally, the current study did not focus on CAMEL indicators; it used credit risk exposure indicator as Non-Performing Loans Ratio.

A regional study conducted in Ghana by Mpeanin (2019) assessed credit risk management on seven indigenous banks. The study used the credit risk management indicators as cost per loan, adequate capital and non-performing loans while the performance indicator was profitability. The study relied on secondary data obtained from the annual reports of these banks for the period 2010-2016. The panel data obtained was analyzed using multivariate regression analysis and descriptive statistics. The study established that adequate capital affected the local bank's profitability positively. Additionally, the research established that cost per loan as well as non-performing loan negatively affected bank profitability. The study concluded that banks needed to create reliable strategies for credit management. The current study was different from this study as it was based on commercial banks in Kenya while the study focused on defunct indigenous banks in Ghana. The current study created a contextual gap brought about by the use of different variables and conceptual gap by the fact that the studies were conducted in different countries; Ghana against Kenya.

A global study carried out by Ekinici and Poyraz Turkey, (2019), analyzed credit risk management on deposit banks in Turkey. The study used secondary data which was obtained from statistical reports in Banks Association of Turkey the period 2005 to 2017 from 26 deposit banks in the country. Non-Performing Loans (NPLs) were used as credit risk indicators while Return on Asset (ROA) and Return on Equity (ROE) were used as financial performance indicators. Findings revealed a negative relationship between financial performance and credit risk management. The study created a contextual gap with the current study as it was undertaken in Turkey when compared with the current study which focused on Kenyan commercial banks. Consequently, a study by (Noor, Banik, & Das, 2018) in Bangladesh assessed impact of credit risk on profitability of state-owned commercial banks. The study focused on Percentage of Classified Loan (POCL) as an indicator of credit risk management whereas the profitability indicators were ROI, ROA and ROE. Regression analysis was adopted. The study found out that Percentage of Classified Loan had a negative significant relationship on Return on Investment. The current study brought out both contextual and contextual gaps.

A local study conducted in Kenya by Kithinji(2010) on the relationship between credit risk and profitability of commercial banks in Kenya. The study identified credit risk management as stringent, conservative, lenient and customized and globally standard credit risk management policies. Data non-performing loans and credit was collected from 2004 to 2008 with the amount of credit being measured by loans and advances to customers divided by total assets, non-performing was measured using non-performing loans divided by total loans and total profit was measured using ROTA (Return on Total Assets). A regression model was developed to explain the relationship between amount of credit, non-performing loans and profits during the study period. The R squared test indicated that 38.7% of profitability of commercial banks could be explained by amount of credit and non-performing loans. The adjusted R squared at -0.226 indicated that the amount of credit and non-performing loan did not explain the level of profit made by commercial banks. The study further ascertained that the model did not explain the relationship between profits, level of non-performing loans and amount of credit. The past study focused on only one variable which was credit risk. The current study, however, concentrated on the three aspects of financial risks which affects banks namely, credit risk exposure, liquidity risk exposure and market risk exposure on financial performance, of commercial banks in Kenya. Further whereas the focus of the current

study was on financial performance that of the past study was on profitability. This created both contextual and methodological gaps.

A global study conducted in Europe by Li and Zou (2014) conducted a study whose main objective was to determine the relationship between credit risk management and profitability of commercial banks in Europe and ascertain whether the relationship is stable or fluctuating. The study obtained annual and risk reports for the selected 47 largest commercial banks in Europe between the period of 2007 and 2012 from which they obtained information on return on assets (ROA), return on equity (ROE) which were used as proxies of profitability while non-performing loan ratio (NPLR) and capital adequacy ratio (CAR) were proxies of credit risk management. The research findings established that credit risk management did not have a positive effect on commercial bank profitability. As with regards to credit risk management NPLR had a significant relationship on both ROA and ROE while CAR had an insignificant relationship on both ROA and ROE. The researcher further established that there was a fluctuating relationship between profit and credit risk management during the period under investigation. The researchers recommended that managers ought to put more effort on credit risk management specifically to control non-performing loans. A contextual, conceptual and methodological gaps was created by the past study since the current study used financial risk exposures as independent variables, the study was conducted in Kenya as opposed to the past study which was carried out in Europe. The focus of the past study was profit and that of the current study was financial performance.

From the above studies, it is evident that prior studies produced conflicting findings. The studies created methodological, conceptual gaps, contextual gaps and theoretical gaps; a void which the current study has attempted to fill by assessing effect of financial risk exposure on the financial performance of commercial banks in Kenya.

2.3.2 Effect of Liquidity Risk Exposure on Financial Performance

Liquidity is the capability of a banking institution to finance an increase in assets and also meet its financial obligations at a fair cost without incurring any form of unexpected losses (Mohammed & Onyiego, 2018). The management of liquidity risk is a critical aspect for all financial institutions both locally and internationally. On this regard, each banking institution strives to maintain a favorable and specific range of liquidity on a regular basis. By definition, liquidity risk is the likelihood that the financial institution running out of cash in the instances

where cash is needed to meet withdraws or financial obligations (Mohammed & Onyiego , 2018).

One of the key considerations that is done by banking institutions is the interrelationship that exists between liquidity risk and the return on assets. A regional study conducted by Marozoa (2013) in South Africa revealed that there was a limited relationship between asset liquidity and profitability of the banking business. The study used primary data obtained from questionnaires and analyzed the data obtained using least square regression model on a selected number of banks in South Africa. Findings of the study revealed that the level of profitability of the firm tended to improve if a bank holds liquid assets to a certain extent. This is because if the bank holds too much liquid assets, it could lead to a diminished profitability. The current study was different as it was based on panel data model thus creating a methodological gap. Consequently, the study assessed liquidity risk, credit risk and market risk exposure effect on the financial performance of commercial banks in Kenya.

Regionally, Shukla and Mucheru (2017) conducted a study assessing the relationship and link between financial performance of banking institutions and liquidity management in Rwanda. The study randomly selected fourteen banks and assessed them using a multiple regression analysis. The study found out that there was an added advantage for banking institutions that held fewer liquid assets in terms of financial returns compared to those with more liquid assets. The management and striking of a balance on the amount of liquid assets a bank holds is key as the main challenge that many banks faced was that they focused on increasing profitability at the expense of asset liquidity management. The current study was conducted in Kenya, creating a contextual gap. Moreover, the study assessed how financial risk exposure affects financial performance of commercial banks; creating a conceptual gap. The use of multiple regressions by the past study against panel data by the current study further created o a methodological gap.

In a bid to assess the importance of managing liquidity risk and how it related to overall profitability for big banks, Graham and Bordeleau (2010) undertook a global research aimed at showing the effect of retaining liquid assets for large banks in US and Canada. The banks that were used for the study purposes were randomly selected by the authors across the two nations. The study and analysis that was done relied on the banks data between 1979 and 2009. From the study, it was found out that banks reported an improved financial return if they had kept an optimum level of liquid assets throughout the financial period. They also found out that

holding too much or too little liquid assets, had a negative impact on the bank's returns if all other factors were held constant (Graham & Bordeleau , 2010). The study revealed that regardless of the size of the bank, striking a balance liquidity risk management is key in overall financial profitability. The current study was conducted in Kenya, creating a contextual gap. Moreover, the study assessed how financial risk exposure affects financial performance of commercial banks; creating a conceptual gap.

A global study conducted in Bangladesh by Das, Chowdhury, Rahman&Dey (2015) assessed the link between liquidity risk management and profitability across randomly selected commercial banks for a period between 2011 and 2014 in Bangladesh. In the study, liquidity ratios and profitability ratios were key metrics that were used to assess the relationship between liquidity risk management and profitability. The study found out that in order to boost profitability of the banking companies in Bangladesh, it was prudent for the banks to install adequate and well thought liquidity risk measures. The current study was conducted in Kenya, creating a contextual gap. Moreover, the study assessed how financial risk exposure affects financial performance of commercial banks; creating a conceptual gap.

Locally, Musembi, Ali, and Kingi (2016) conducted a study in a bid to establish the effect of liquidity risk determinants management and the financial performance of banks listed in the Nairobi Securities Exchange. The study found out that liquidity levels in bank institutions have an increased positive output in terms of financial performance for the listed commercial banks, although the impact was not major or significant. The study further found out that liquidity levels are of key importance in assessing the financial performance of the commercial banks in Kenya that are listed in the Nairobi Securities Exchange. In the analysis, it was found out that an increase in the minimized liquidity ratios for the commercial banks could result in poor financial performance. The past study's focus was on liquidity levels unlike the current study was on liquidity risk exposure on commercial banks performance in Kenya. Further, the current study however, focused on three major financial risk exposures; credit risk exposure, liquidity risk exposure and market risk exposure.

A local study conducted by Maaka (2013) was pegged on two objectives: To investigate the liquidity faced by commercial banks in Kenya and to establish the relationship between liquidity risk and the performance of banks in Kenya. The study incorporated a correlation research design with data being gathered between 2008 and 2012 from annual reports obtained from the CMA and NSE with a sample of 14 banks being analyzed. A regression model was

developed with the dependent variable being PBT and the independent variables consisting of deposit, cash, liquidity gap and non-performing loans. The research findings established that profitability was negatively affected due to increase in liquidity gap and leverage. The level of customer deposit was found to positively affect banks profitability. Moreover, the study depicted a significant impact of all factors of liquidity risk on bank performance.

A regional study conducted by Konadu (2009) whose main objective was to determine the liquidity trends of selected banks so as to ascertain the profitability trend of the selected banks with the aim of analyzing and establishing the relationship between bank liquidity and profitability levels in Ghana. Data was collected between 2006 and 2009 from commercial banks listed at the Ghanaian Stock Exchange which included Standard Chartered Bank Ghana Ltd, SG-SSB Ltd and Cal Bank Ltd. The liquidity ratios used for the study were cash ratio, current ratio, quick ratio and net operating cash flow ratio whereas the profitability ratios consisted of net profit margin, return on assets, return on equity and net asset turnover. Trend analysis was adopted so as to achieve the set objective. The research findings established that there was no positive relationship between liquidity trend and profitability whereas a negative relationship existed between liquidity and bank profit in Ghana. A methodological gap was created as the current study adopted panel data model. Further conceptual and contextual gaps were created based on the continental and focus differences.

A global study conducted by Alshatti (2015) investigated the impact of bank liquidity management on profitability in Jordanian commercial banks during the years between 2005 and 2012 using data in the Amman Stock Market. A regression model was developed with profitability being measured by Return on Asset and Return on Equity. The study used investment ratio, net credit facilities/total assets, capital ratio, liquid ratio and quick acid ratio as independent variables. The research findings established that there was an effect of liquidity management and commercial bank profitability where the effect investment ratio and quick ratios on profitability was positive when measured by Return on Equity, the effect of capital ratios on profitability was positive as measured by Return on Asset while the effect of the other independent variables on ROA and ROE was negative. The researcher attributed the negative effect to increased volume of untapped deposits at the Jordanian commercial banks. The study created contextual gap; studies were conducted in different continents, methodological gap; a regression model versus panel data and different measurements of dependent variables.

From the above studies, it is evident that prior studies created methodological, conceptual gaps, contextual gaps and theoretical gaps which the current study came in handy to bridge by assessing effect of financial risk exposure on the financial performance of commercial banks in Kenya.

2.3.3 Effect of Market Risk Exposure on Financial Performance

Banks face market risks in various forms. For instance, if they are holding a large amount of equity then they are exposed to equity risk. Also, banks by definition have to hold foreign exchange exposing them to Forex risks. Similarly banks lend against commodities like gold, silver and real estate which exposes them to commodity risks as well. Several studies have been conducted with respect to market risk and how it affects profitability and financial performance of commercial banks. Most of these studies findings lack universal agreements. For instance, a local study conducted in Kenya by Muriithi, Waweru and Muturi, (2016), assessed the effect of market risk on financial performance of commercial banks in Kenya. The study covered the period between year 2005 and 2014. Market risk indicators were degree of financial leverage, interest rate risk and foreign exchange exposure while the indicator of financial performance was return on equity. The study used the balance sheets components and financial ratios for 43 registered commercial banks in Kenya. Panel data techniques of random effects, fixed effects estimation and generalized method of moments (GMM) were used to purge time-invariant unobserved firm specific effects and to mitigate potential endogeneity problems. The pairwise correlations between the variables were carried out. F- test was used to determine the significance of the regression while the coefficient of determination, within and between R², were used to determine how much variation in dependent variable is explained by independent variables. The results obtained asserted that financial leverage, interest rate and foreign exchange exposure have negative and significant relationship with bank profitability. The study recommended that commercial banks were required to consider ways of mitigating the market risks by using financial instruments such as financial derivatives and be active in derivatives markets. These may reduce their interest rate risk and foreign currency risk exposure. The current study focused on financial risk exposure on the financial performance of Kenyan commercial banks. Could the findings of this study be replicated in the current study?

Another local study conducted in Kenya by Kahihu, Wachira and Muathe (2021) assessed market risk on financial performance of Micro-Finance Institutions (MFIs) in Kenya. The indicators of market risk used were interest rate risk, financial leverage risk, inflation rate risk and foreign exchange risk. The study adopted a non-experimental research design and used a

census sampling method where all the 13 registered MFIs in Kenya were analyzed. Secondary data for the period 2014-2018 was obtained from the MFIs annual audited financial reports. This was analyzed using multiple linear regression techniques. The findings obtained revealed that interest rate and financial leverage risk had a positive significant effect on the financial performance of MFIs in Kenya while foreign exchange risk was found to have a negative significant effect on the financial performance of MFIs. Consequently, inflation rate risk was found to have no significant effect on the financial performance of MFIs. The current study focused on financial risk exposure on the financial performance of commercial banks in Kenya. This created a conceptual gap as the variables used were different. A contextual gap was further created as the focus was commercial banks versus Small and Medium Enterprises (SMEs) in Kenya.

A global study conducted by Kassi, et.al (2019) assessed the effect of market risk on the financial performance of 31 non-financial companies listed on the Casablanca Stock Exchange (CSE) over the period 2000–2016. The indicators of financial performance were return on assets, return on equity and profit margin while market risk indicators were gearing ratio, book to market ratio and leverage. The study adopted an Ordinary Least Squares method (OLS) model, the system-GMM, the difference-GMM and the random effects model for analysis. The findings revealed that various measures of market risks have a negative significant effect on the non-financial companies' performance. On the other hand, tangibility ratio, firm's age, firm's size, cash holdings ratio and the debts to assets ratio positively affect the performance of the non-financial companies. The study concluded that market risks should be mitigated through strategies that are appropriate for example insurance. The current study was conducted in Kenya, creating a contextual gap. Moreover, the study assessed how financial risk exposure affects financial performance of commercial banks; creating a conceptual gap.

A regional study conducted in Ugandan study by Mpora (2006) assessed market risk and financial performance of selected commercial banks. The market risk indicators used were interest rate, inflation rate, exchange rate and income distribution while financial performance was measured based on customer loans within the commercial banks in the country. Additionally, the study focused on the savings mobilization by commercial banks and the impact of macro-economic factors on customer's demand and deposits. The study adopted a longitudinal research design where secondary data from the period 2001-2005 was obtained from Bank of Uganda and Uganda Bureau of Statistics. The Pearson's correlation coefficient was used to evaluate the strength of the relationship between the independent and dependent

variables. Findings revealed that due to the high risks commercial banks encounter in extending loans to the private sector, there was a decline in retention of their assets over the five years. The results showed a positive significant relationship between exchange rate, interest rate, access to finance, and loans availed to customers between 2001 and 2005. The current study was conducted in Kenya, creating a contextual gap. Moreover, the study assessed how financial risk exposure affects financial performance of commercial banks; creating a conceptual gap and contextual gap. Could the findings of this study be replicated in a Kenyan context?

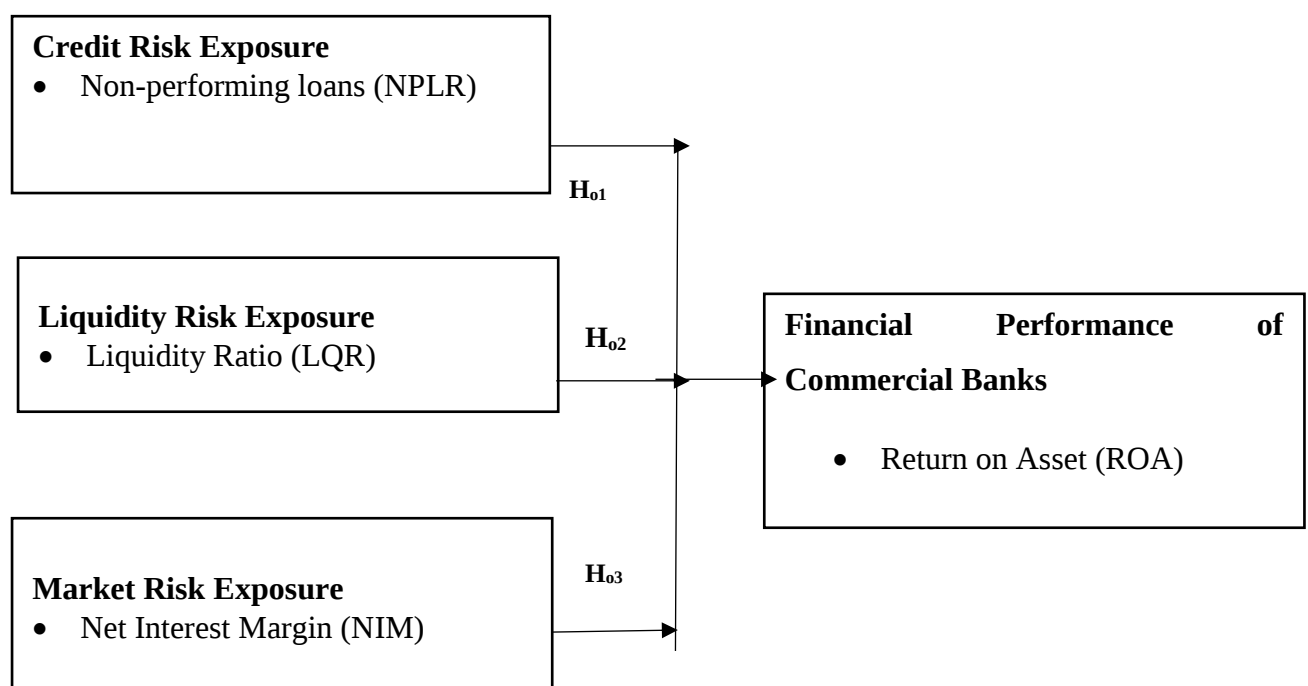
2.4 Conceptual Framework

The conceptual framework model was developed from literature review and it sheds light on the interrelationship among the key variables in a study. In a conceptual framework, it is assumed that when the independent variable is manipulated it causes an effect on the dependent variable (Cooper & Schindler, 2014). The dependent variable synonymously used with criterion variable is expected to be affected by manipulation of an independent variable. According to Kothari, (2004), a dependent variable is one that depends upon or is a consequence of the other variable, while the variable that is precursor to the dependent variable, is termed as the independent variable. The independent variables in this research are credit risk exposure, liquidity risk exposure, and market risk exposure. The dependent variable is financial performance of commercial banks. The figure below shows the conceptual framework.

Independent Variables

Dependent Variable

(Financial Risk Exposure)



Source: Researcher (2021)

Figure 2.1: Conceptual Framework

2.5 Measurement of Study Variables

Operationalization of study variables ensured that variables are strictly defined into measurable factors allowing for their measurement empirically and quantitatively (Saunders & Tossey, 2015). Operationalization of the study variables was important as it allowed the researcher to measure the variables quantitatively and thus enabled the testing of the formulated hypotheses (Cooper & Schindler, 2014). The variables of this study include financial performance as the dependent variable, and financial risk exposure (credit risk exposure, liquidity risk exposure and market risk exposure) as the independent variable. Table 2.1 presents a summary of the operationalized study variables.

Table 2.1 Operationalization of the Study Variables

Variable	Type	Indicator(s)
Credit Risk Exposure	Independent	Ratio of non-performing loans to total loans(NPLR)
Liquidity Risk Exposure	Independent	Ratio of total loans to total deposit (LTDR)
Market Risk Exposure	Independent	Ratio of net interest income to total assets(NIM)
Financial Performance	Dependent	Ratio of Net profit to Total Assets (ROA)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter highlighted the research methodology that the study adopted. The research design, target population, sample size, sampling procedure, research instrument, data analysis techniques and diagnostic tests were discussed.

3.2 Research Design

Research design refers to a strategy that is used to achieve objectives in research (Schoonenboom & Johnson, 2017). A research design is a plan documenting course of actions for data collection and processing field data and presentation of outputs. A good design must fulfil the objectives of the research in an efficient manner. Formally, it is a framework for reporting results of a study. Moreover, research design is influenced by two main aspects namely type of data and type of study.

The current study adopted a descriptive research design. Considering that the study sought to assess the effect of financial risk exposure on financial performance of commercial banks, descriptive design was deemed the best framework. This is majorly because it enabled the researcher to relate financial risk exposure and financial performance of commercial banks. since it will enable us to relate shareholding and firm performance. A descriptive research design purposes to ascertain whether there is a link between explanatory and regressor variables and also tells whether the link is statistically significant or not(Cooper & Schindler, 2014).With regards to this, a descriptive research design proved worthwhile when one needs to define if study variables are negatively or positively related. In addition, descriptive design entails collection of data about phenomenon without manipulating data but rather as it is. In this current study, data was collected from the participating entities; commercial banks. The relationship between variables was reported as observed without any manipulation.

3.3 Target Population

A collection of all units for which a study is based on is called a target population. A target population is a universe of living or non-living units that a particular study or research makes inferences on (Taherdoost, 2017). Pertaining to this study, the target population will be all commercial banks in Kenya. According to the Central Bank of Kenya, CBK (2020), there are 42 commercial banks.

3.4 Sampling and Sampling Procedure

A sample is defined as a small portion that is used to represent the target population (Taherdoost, 2017). Sample size refers to the units in the sample. Sampling is necessary especially when census is not feasible. Sampling procedure refers to the strategy used to come up with a sufficient sample size. Considering the small number of commercial banks in Kenya, the study adopted a census sampling method. Census technique is appropriate where a researcher needs to attain high levels of accuracy and reliability (Cooper & Schindler, 2014). Furthermore, the technique is preferable when the subjects in the population are few. Unlike other sampling methods, where a subset of target population is selected for inclusion and enumeration, a census method generally has minimal sampling errors.

3.5 Research Instrument

The proposed study relied heavily on secondary data obtained from the specific banks and records from the Central Bank of Kenya. A secondary data sheet was prepared in Excel where the researcher keyed in measures of each variable for every commercial bank. There are three independent variables (credit risk exposure, liquidity risk exposure and market risk exposure). The dependent variable is financial performance. The study will obtain data for every commercial bank for a period of 6 years (2015-2020). The period was deemed appropriate since most studies done on the issue concentrated more on earlier years. To keep abreast with the changing economic times, the period was deemed appropriate.

3.6 Data Collection Procedure

The process of getting the field data began with authority to conduct the research from the graduate school. The second phase entailed making use of data from the commercial banks and the supervisory reports which are provided by the Central Bank of Kenya and are publicly available. Data was also obtained from the audited financial statements made available on the websites of these banks. Additionally, there are supervisory annual reports which are provided by the CBK and the Capital Market Authority which the researcher requested. Some of the information required was not publicly available.

3.7 Data Analysis and Presentation

The main aim of the study was to determine the effect of financial risk exposure on financial performance of Commercial Banks in Kenya. The study conducted both descriptive and inferential statistics. Descriptive statistics was based on measures of central tendencies

(means), measures for dispersion (standard deviations) and minimum and maximum value of the constraints. These statistics offer insights on trends of data.

Inferential statistics on the other hand, used panel data regression to test the developed research hypotheses. In this study, data was collected from the 42 commercial banks from the period 2015 to 2020. Thus, the panel variable will be commercial bank one to commercial bank 42 while the time variable will be year 2015 to 2020. The section that follows highlighted the step-by-step discussion of data analysis.

3.7.1 Analytical Models

In this study, data analysis was undertaken using the steps adopted in panel data analysis. The study will use STATA version 14 in data analysis. The function linking the hypothesised relationship between financial risk exposure and financial performance of commercial banks was shown as:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \varepsilon_{it},$$

Y: financial performance of commercial banks in Kenya

X₁: Credit risk

X₂: Liquidity risk

X₃: Market risk

β₀: constant efficient,

β₁, β₂, and β₃: are the Beta coefficients

t is time variable, 2015 to 2020

i is panel variable, 1-42 for each commercial bank in Kenya

ε is the error term.

The current study tested the hypotheses at 95% confidence interval. This means a p-value of less than 0.05 would lead to rejection of null hypothesis in favour of alternative hypothesis for a particular test. Data analysis was done using STATA version 14 as it was a good tool with various modules for transformation of data depending on what was required. Data analysis result was presented in tables.

3.8 Diagnostic Tests

Regression analysis is fitted under certain assumptions with key emphasis on residuals and behaviour of predictors. The diagnostic tests undertaken included autocorrelation, multicollinearity, normality and heteroscedasticity. Further, the model to be used was specified by use of Hausman test.

3.8.1 Autocorrelation

Autocorrelation exists when error terms in past periods influences the error terms in subsequent periods thus reducing the efficacy of model estimates (Meijer, Oczkowski, & Wansbeek, 2021). In regression analysis, the strength of the model and fitness of estimates is based on the assumptions that errors terms are not correlated. Autocorrelation measures residual correlations. In spite of autocorrelation not resulting to inconsistency in estimates, it does lead to falsification of standard errors and poses a chance of rejection of null hypothesis wrongly. More so, existence of autocorrelation overrates the model fitness and strength of coefficients estimates. This will be tested using the Wooldridge test of autocorrelation.

The null hypothesis in this case was set as; there is no autocorrelation in the panel data set linking financial risk exposure and financial performance in Kenyan commercial Banks. The null hypothesis was to be rejected if the p-value for the Wooldridge statistics obtained will be less than 0.05 (Meijer, Oczkowski, & Wansbeek, 2021).

3.8.2 Multicollinearity

In a situation whereby one explanatory variable has a linear relationship with another input variable or more in a data set, the situation is known as multicollinearity (Daoud, 2017). What this means is that the model estimates outputs are incorrect since there is a high correlation among the predictors. Moreover, multicollinearity indicates that a predictor can be predicted by another explanatory variable quite accurately thus complicating the overall model efficacy linking predictors and regressor variable in multiple regression analysis. Multicollinearity may not affect model summary predictive power but reduces the significance of the estimates.

The study will use Variance Inflation factor (VIF) and tolerance in testing for multicollinearity. VIF shows how predictive accuracy of explanatory variable is inflated by other explanatory variables. As a rule of thumb, VIF of less than 10 is considered fit but the best case would be 1. Tolerance is a reciprocal of VIF thus it is best when it is more than 0.1 (inverse of VIF 1) (Melo & Kibria, 2020). Additionally, mean VIF will be computed crucial as it shows the overall multicollinearity for the predictors.

3.8.3 Normality

Normality is a situation where a data set has features of normal distribution in which the observations are all symmetrical since most observations are distributed around the mean score on both ends (Cain, Zhang, & Yuan, 2016). Normality is an assumption that must not be violated in regression analysis. Normality is equally important in testing for hypothesis in data analysis since it depicts probability function of population parameters in linear regression estimates.

This study tested normality in two aspects; visual inspection using histogram and by use of Jarque Bera Statistics of Skewness and Kurtosis. In usual cases, a skewness of -3 to +3 indicates that data is skewed towards the mean. A kurtosis of -10 to +10 indicates that the tail on distribution is not heavy (does not have outliers) and thus data has a normal distribution (Mishra, et al., 2019). Moreover, both skewness and kurtosis are used together and therefore the two conditions must be met simultaneously for normality to exist.

3.8.4 Heteroscedasticity

A situation where there is an equal residual is known as heteroscedasticity (Arvantis, 2018). In this respect, heteroscedasticity is an occurrence where there is unequal variance in error terms in a regression analysis. In regression analysis, it is assumed that error term for a specific dependent variable should have equal variance (homoscedastic) especially in adjacent periods. Moreover, heteroscedasticity reduces the consistency of predicting the dependent variable in all observations of the dependent variables in a data set.

A data set that has heteroscedasticity has wrong standard errors and therefore the resultant model estimates are not reliable. Thus, heteroscedasticity leads to wrong rejection or wrong acceptance of hypotheses. The proposed study tested for heteroscedasticity using Modified Wald Test. The null hypothesis is set to absence of heteroscedasticity; the data set linking risk exposure and performance of commercial banks is not homoscedastic. The null hypothesis will be rejected if the p-value for modified Wald test is less than 0.05. This would mean that data set is homoscedastic and therefore standard errors are not incorrect (Arvantis, 2018).

3.8.5 Model Specification

In panel data analysis, it is a requirement for one to decide whether to use a fixed effects model or random effects model. Fixed effects model is appropriately used where observations are considered as time invariant within the population and further that the dependent variable is a function of the input factors or covariate only (Bollen & Brand, 2010). In fixed effects model,

it is assumed that at least some influence of factors to dependent are time invariant which then means that unobserved input variables are time invariant.

On the other hand, random effects indicate that some factors are random over time and that the dependent variable's observation could be influenced by the explanatory factors or by other random factors (Baltagi, Kao, & Liu, 2017). In random effects model, the unobserved time variant influences are eliminated thus improving the regression efficacy.

Moreover, random effects model indicates that there are at least some factors, either to be estimated or not to be estimated model are known to change over time. The study will use the Hausman test to specify on the model to report results as fixed effects or random effects models. Ideally, a Hausman test statistic with a p-value of less than 0.05 indicates that a fixed effect model is the best (Baltagi, Kao, & Liu, 2017).

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND INTERPRETATION

4.1 Introduction

This chapter presents the results and interpretations of the study, which is guided by the set research objectives. Data analysis was performed using statistical, descriptive, and panel regression analysis. Descriptive analysis was used to address the nature of the variables assessed while regression analysis was used to determine the impact of financial risk exposure on performance of Commercial Banks in Kenya. The section also highlights the diagnostic tests that were used to assess if the panel data model used was a perfect fit for the data.

4.2 Response Rate

The study had identified forty-two commercial banks to be assessed on the effect of risk exposure on their financial performance. However, the data obtained was from thirty-nine commercial banks. Three banks were excluded; Imperial Bank and Chase Bank are under receivership while Charterhouse Bank Ltd is under liquidation. Thus, the response rate is given by;

$$\frac{\text{Actual responses}}{\text{Expected responses}} = \frac{39}{42}$$
$$= 92.8\%$$

The response rate which was at 92.8% was quite high and was deemed appropriate according to Mugenda and Mugenda (2003). Mugenda & Mugenda (2003) argued that a 50% reaction rate is adequate for generalization and 60% is good, while a 70% response rate is an outstanding. The high response rate in this study, therefore, implied that the study used instruments and procedures that were clear, precise and within the acceptable number.

4.3 Descriptive Statistics

The study had three independent variables and one dependent variable; credit risk exposure, liquidity risk exposure, market risk exposure and financial performance respectively. Various measurements were identified to measure these variables. It is worth noting that the study had two hundred and thirty-four (234) observations, the number of banks assessed was thirty-nine given by (n) and the number of years was six given by (T). The mean, standard deviation,

minimum and maximum values of the measures were also highlighted. This section highlights each of them;

4.3.1 Credit Risk Exposure

Credit risk exposure was identified as one of the independent variables and it was measured as a ratio of non-performing loans to total loans (NPLR).

Table 4.1 Summary Statistics of Credit Risk Exposure

Variable		Mean	Std. Dev.	Min	Max	Observations
NPLR	Overall	.1698811	.1516534	.0009001	.8860294	N = 234
	Between		.0777197	.0560887	.3908767	n = 39
	Within		.1307212	-.1240867	.6650338	T = 6

The number of observations was two hundred and thirty-four (234), the number of banks assessed was thirty-nine given by n and the number of years was six given by T. The mean of the Non-Performing Loan Ratio is given by 0.1699. This ratio is quite low, this means that these outstanding loans pose as a low risk to the bank. The standard deviation for the overall ratio is given by 0.1516 while between the 39 banks was given by 0.0777 while the standard deviation within the years is given by 0.1307. The standard deviation values are quite low which means that both the overall, in between banks and within the 6-year period assessed the NPLR has not deviated far from the mean. Consequently, the minimum overall ratio is 0.0009 while the maximum is 0.886. The minimum value between banks is 0.0560 while the maximum is 0.3909. The minimum value within the years is given by -0.124 while the maximum within the years is given by 0.665.

4.3.2 Liquidity Risk Exposure

Liquidity risk exposure was identified as one of the independent variables and it was measured as a ratio of total loans to total deposits (LTDR).

Table 4.2 Summary Statistics of Liquidity Risk Exposure

Variable		Mean	Std. Dev.	Min	Max	Observations
LTDR	Overall	1.58977	4.424912	.0272405	52.70358	N = 234
	Between		1.852761	.2963576	9.544486	n = 39
	Within		4.027504	-7.66238	44.74887	T = 6

The number of observations was two hundred and thirty-four (234), the number of banks assessed was thirty-nine and the number of years was six. The mean of the Liquidity ratio was given by 1.58977. This ratio is quite high, this means that Kenyan commercial banks give out

more loans compared to the deposits that they have. This poses as a high risk to the bank. The standard deviation for the overall ratio is given by 4.4249 while between the 39 banks was given by 1.8527 while the standard deviation within the years is given by 4.0275. The standard deviation values are quite high which means that both the overall, in between banks and within the 6-year period assessed the LTDR has deviated far from the mean. This implies that the liquidity ratio of the bank changes frequently over time depending on the mount of loans given and the number of deposits in the respective commercial banks. Consequently, the minimum overall liquidity ratio is 0.02724 while the maximum is 52.7036. The minimum value between banks is 0.2963 while the maximum is 9.5445. The minimum value within the years is given by -7.6624 while the maximum within the years is given by 44.748.

4.3.3 Market Risk Exposure

Market risk exposure was identified as one of the independent variables and it was measured as a ratio of net interest income to total assets (NIM).

Table 4.3: Summary Statistics of Market Risk Exposure

Variable		Mean	Std. Dev.	Min	Max	Observations
NIM	Overall	.1633121	.0664651	-.3558858	.3826607	N = 234
	Between		.0288419	.0801215	.2450927	n = 39
	Within		.06003	-.272695	.412672	T = 6

The number of observations was two hundred and thirty-four (234), the number of banks assessed was thirty-nine and the number of years was six. The mean of the Net Interest Margin was given by 0.1633. Though the ratio is quite low, it is positive. This simply implies that the commercial Banks in Kenya are operating efficiently, they are able to make profits. This is a motivating factor for investors to invest in various financial services being offered by the banks. The standard deviation for the overall ratio is given by 0.0665 while between the 39 banks was given by 0.0288 while the standard deviation within the years is given by 0.06003. The standard deviation values are quite low which means that both the overall, in between banks and within the 6-year period assessed the NIM has not deviated far from the mean. Consequently, the minimum overall liquidity ratio is -0.356 while the maximum is 0.383. The minimum value between banks is 0.0801 while the maximum is 0.245. The minimum value within the years is given by -0.272 while the maximum within the years is given by 0.413.

4.3.4 Financial Performance of Commercial Banks

Financial Performance was identified as the dependent variable of the study and it was measured as a ratio of net profit to total assets (ROA).

Table 4.4: Summary Statistics of Financial Performance

Variable		Mean	Std. Dev.	Min	Max	Observations
ROA	Overall		.1736882	-.427067	1.719565	N = 234
	Between		.0665899	-.1400798	.2947183	n = 39
	Within		.1607126	-.2405775	1.478513	T = 6

The number of observations was two hundred and thirty-four (234), the number of banks assessed was thirty-nine and the number of years was six. The mean of Return on Assets was given by 0.0536. This value is quite low, which implies that though these commercial banks are operating, their profitability is quite low. The standard deviation for the overall ratio is given by 0.173 while between the 39 banks was given by 0.0665 while the standard deviation within the years is given by 0.1607. The standard deviation values are quite low which means that both the overall, in between banks and within the 6-year period assessed the ROA has not deviated far from the mean. The variability in their profitability in the six years was not big. Consequently, the minimum overall ROA is -0.427 while the maximum is 1.719. The minimum value between banks is -0.14 while the maximum is 0.294. The minimum value within the years is given by -0.2406 while the maximum within the years is given by 1.4785.

4.4 Diagnostic Tests Results

The section highlights the various results for the diagnostic tests done. The main objective of the diagnostic tests was to ascertain whether the panel analysis model adopted was the best fit for the data obtained. The diagnostic tests done included; autocorrelation, normality, multicollinearity and heteroscedasticity.

4.4.1 Autocorrelation Results

The study adopted the Wooldridge test of autocorrelation to test for autocorrelation on the dataset obtained. The null hypothesis in this case was set as; there is no autocorrelation in the panel data set linking financial risk exposure and financial performance in Kenyan commercial Banks.

Table 4.5: Autocorrelation Summary Statistics

Wooldridge test for autocorrelation in panel data	
H0: no first-order autocorrelation	
F (1, 38) =	461.476
Prob > F =	0.0000
The null hypothesis was rejected since the p-value for the Wooldridge statistics obtained was 0.000 which was less than 0.05(Meijer, Oczkowski, & Wansbeek, 2021).	

4.4.2 Multicollinearity Test Results

The study used the Variance Inflation factor (VIF) and Tolerance to test for multicollinearity. VIF shows how predictive accuracy of explanatory variable is inflated by other explanatory variables.

Table 4.6: VIF Summary Statistics

Variable	VIF	1/VIF(Tolerance)
LTDR	1.06	0.944351
NIM	1.05	0.956245
NPLR	1.01	0.986439
Mean VIF	1.04	

The VIF statistics for all variables assessed; liquidity ratio (1.06), net interest margin (1.05) and non-performing loans ratio (1.01) was less than 10. The mean VIF value was also less than 10 (1.04). This implies that the explanatory variables used were not highly correlated. The null hypothesis on the non-existence of multicollinearity was not rejected since the VIF values were less than 10 and the Tolerance values were more than 0.1 (Melo & Kibria, 2020).

4.4.3 Normality Test Results

The study used the Jarque Bera Statistics of Skewness and Kurtosis to test for normality. For a normally distributed dataset, the skewness value ranges from -3to +3 while the kurtosis value ranges from -10 to +10.

Table 4.8 Jarque Bera Summary Statistics

Variable	Observations	Pr (Skewness)	Pr (Kurtosis)	Adj (Chi²) (2)	Prob>chi²
ROA	234	0.001	0.000	13.27	0.000
NIM	234	0.000	0.002	14.35	0.000
NPLR	234	0.002	0.001	17.89	0.000

LTDR	234	0.001	0.010	13.98	0.000
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The statistics obtained above showed that all variables used (Return on Assets, Net Interest Margin, Non-Performing Loans ratio and Liquidity ratio) were normally distributed. Therefore, the null hypothesis developed on the non-existence of normality was rejected.

4.4.4 Heteroscedasticity Test Results

The study used Modified Wald Test to test for heteroscedasticity. The null hypothesis was set to the absence of heteroscedasticity.

Table 4.9 Heteroscedasticity Test Summary Statistics

Modified Wald Test for heteroscedasticity	
H0: no heteroscedasticity	
F (1, 38) =	1341.276
Prob > F =	0.002

The table above shows the summary statistics of the heteroscedasticity test done. The results obtained had a p-value of 0.002 which was less than 0.05. Thus, the null hypothesis developed on the absence of heteroscedasticity was rejected. This implied that the data set obtained was homoscedastic in nature.

4.4.5 Model Specification Test

In order to specify which panel data model was appropriate, the study adopted the Hausman Test. This was to specify whether to use a fixed effect or a random effect model(Bollen & Brand, 2010).

Table 4.10 Summary Statistics for Hausman Test

		Chi-Sq. Statistic	Chi-Sq. d.f.	Sig.
		2.49	3	0.4773
Variable	Fixed Effect	Random Effect	Difference	S. E
NPLR	.0785528	.0046193	.0739335	.0493701
LTDR	-.0052492	-.0065595	.0013103	.001429
NIM	.150976	.1386909	.0122852	.0911635

The null hypothesis was set as there is no systematic difference between the coefficients. The p-value obtained 0.4773 was more than the significant 0.05; which implied that there was a

systematic difference between the coefficients. Based on these results, the panel data model to be adopted was the Random Effect Model.

4.6 Panel Regression Analysis

The study adopted a random effect panel regression model to test the following developed hypotheses;

H₀₁: There is no significant effect of credit risk exposure on financial performance of Commercial Banks in Kenya.

H₀₂: There is no significant effect of liquidity risk exposure on financial performance of Commercial Banks in Kenya.

H₀₃: There is no significant effect of market risk exposure on financial performance of Commercial Banks in Kenya.

The results obtained from the random effect panel model were as shown in table 4.11 below;

Table 4.11 Regression Model Summary Statistics

Random-Effects Regression				Number of obs. = 234		
Group Variable: bank				Number of groups = 39		
R-Squared:						
Within = 0.3211				Obs. Per group:		
Between = 0.3724				Min = 6		
Overall= 0.3272				Avg = 6.0		
				Max =6		
				Wald chi2(3) = 6.44		
				Prob > chi2 = 0.0220		
corr(u_i, X) = 0						
(assumed)						
ROA	Coeff.	Std. Error	Z	P> z	[95% Conf. Interval]	
NPLR	.046193	.074993	3.06	0.031	-.1423643	.1516028
LTDR	-.065595	.0026269	-2.50	0.013	-.011708	-.0014109
NIM	.1386909	.1737919	4.80	0.025	-.4793168	.2019351

-Constant	.406598	-	.0324279	3.25	0.010	-.0228978	.1042173
sigma_u 0							
sigma_e	.1748284						
rho 0 (fraction of variance due to u_i)							
Y= 0.406+ 0.0461X _{1it} - 0.0655X _{2it} +0.1386X _{3it}							

Y: financial performance of commercial banks in Kenya

X₁: Credit risk

X₂: Liquidity risk

X₃: Market risk

t is time variable, 2015 to 2020

i is panel variable, 1-39 for each commercial bank in Kenya.

It is worth noting that all coefficients were significant at 0.05 level of significance; their p-values were less than 0.05.

The results summarized in table 4.11 show the effect of financial risk exposure on financial performance of commercial banks in Kenya. There were three parts of the results with the first part highlighting how good of a fit the random effect panel model was and the second part highlighted the coefficients of the variable. The last part highlighted the variance.

Based on the results, the study obtained the R-squared values for within the years, between banks and overall. The results showed that 32.11% variation in commercial banks financial performance within the 6 years was attributed to financial risk exposure (credit risk exposure, liquidity risk exposure and market risk exposure). They also showed that 37.24% variation in commercial banks financial performance between the 39 banks was attributed to financial risk exposure (credit risk exposure, liquidity risk exposure and market risk exposure). Consequently, 32.72% variation in commercial banks financial performance overall was attributed to financial risk exposure (credit risk exposure, liquidity risk exposure and market risk exposure). The Wald test statistic of 6.44 was significant at 0.05 since its p-value was less than 0.05. This meant that the random effect model adopted was a perfect fit for the data obtained.

4.6.1 Hypothesis Testing

The study set out to test the developed hypotheses around the effect of financial risk exposure on financial performance of commercial banks in Kenya. The following are the results obtained from the regression analysis done.

The first hypothesis highlighted that *credit risk exposure had no significant effect on financial performance of commercial banks in Kenya*. Results of the study revealed that *credit risk exposure had a positive and significant effect on financial performance of commercial banks in Kenya*. A unit change in credit risk exposure increased the financial performance of commercial banks by 0.046193. The coefficient was significant since the p-value obtained (0.031) was less than 0.05. The null hypothesis developed was rejected.

The second hypothesis highlighted that *liquidity risk exposure had no significant effect on financial performance of commercial banks in Kenya*.

Results revealed that liquidity risk exposure had a negative and significant effect on financial performance of commercial banks in Kenya. A unit change in liquidity risk exposure decreased the financial performance of commercial banks by 0.065595 units. The coefficient was significant since the p-value obtained (0.013) was less than 0.05. The null hypothesis developed was rejected.

The third hypothesis highlighted that *market risk exposure had no significant effect on financial performance of commercial banks in Kenya*. Results of the study revealed that market risk exposure had a positive and significant effect on financial performance of commercial banks in Kenya. A unit change in market risk exposure increased the financial performance of commercial banks by 0.1386909 units. The coefficient was significant since the p-value obtained (0.025) was less than 0.05. The null hypothesis developed was rejected.

4.7 Discussion of Findings

The following section discusses the results of the study in line with the research objectives and hypotheses formulated in chapter one of the study. These were based on conceptual and empirical literature. Panel data model was used to test the hypotheses. Further the section discusses the results of the study to show the extent of agreement to prior studies.

4.7.1 The Effect of Credit Risk Exposure on Financial Performance of Commercial Banks in Kenya

Results of the first hypothesis revealed that credit risk exposure had a positive and significant effect on financial performance of commercial banks in Kenya. The result concurred with Gizaw *et al.*, (2015) who conducted a study on the impact of credit risk on profitability of commercial banks in Ethiopia. Findings established that credit risk management had a positive effect on the profitability of commercial banks. Findings of a study by Muriuki (2017) produced similar results, the study assessed credit risk management on financial performance of Kenyan commercial banks. The results obtained highlighted a positive significant influence of credit risk management practices, top management, and credit administration unit and credit policy on financial performance of commercial banks in Kenya.

A study conducted by Githaiga (2015), was in agreement. The study analyzed the effects of credit risk management practices on performance of commercial banks in Kenya. Findings revealed a strong impact of the CAMEL indicators on financial performance of the banks.

Mixed sentiments were shared by Ghanaian study; Mpeanin (2019) on the assessment of credit risk management on seven indigenous banks. The study established that adequate capital affects the local bank's profitability positively. However, the research established that cost per loan as well as non-performing loan negatively affect bank profitability.

On the other hand, other studies produced contradicting results from those obtained by the current study. For example, a study by Ekinci and Poyraz (2019), analyzed credit risk management on deposit banks in Turkey. Findings revealed a negative relationship between financial performance and credit risk management.

A study by (Noor, Banik, & Das, 2018) in Bangladesh assessed impact of credit risk on profitability of state-owned commercial banks. Finding also produced conflicting results that Percentage of Classified Loan (POCL) had a negative significant relationship on ROI. More contradicting results were reported by Li and Zou (2014) study, on the relationship between credit risk management and profitability of commercial banks in Europe. The research findings established that credit risk management did not have a positive effect on commercial bank profitability. As with regards to credit risk management NPLR had a significant relationship on both ROA and ROE while CAR had an insignificant relationship on both ROA and ROE.

4.7.2 The Effect of Liquidity Risk Exposure on Financial Performance of Commercial Banks in Kenya.

The results of hypothesis testing revealed that liquidity exposure had a significant negative effect on financial performance of commercial banks in Kenya.

These findings were at par with (2013) who found that there was an inverse relationship between leverage levels and commercial banks in Kenya and Mwangi (2014) found inverse significant relationship between holding liquid assets and commercial banks. The findings differ from that of Agabada and Osuji (2013) who conducted a study on the efficacy of liquidity management and bank performance in Nigeria. The research indicated that there was a significant positive relationship between efficient liquidity management and bank performance.

Other studies which produced similar results with the current study included: A study conducted by Marozoa (2013) in South Africa revealed that there was a limited relationship between asset liquidity and profitability of the banking business. Shukla and Mucheru (2017) conducted a study assessing the relationship and link between financial performance of banking institutions and liquidity management in Rwanda. The study found out that there was an added advantage for banking institutions that held fewer liquid assets in terms of financial returns compared to those with more liquid assets.

Graham and Bordeleau (2010) undertook research aimed at showing the effect of retaining liquid assets for large banks in US and Canada. Findings reported an improved financial return if they had kept an optimum level of liquid assets throughout the financial period. They also found out that holding too much or too little liquid assets, had a negative impact on the bank's returns if all other factors were held constant (Graham & Bordeleau , 2010). Konadu (2009) assessed the relationship between bank liquidity and profitability levels in Ghana. Findings established that there was no positive relationship between liquidity trend and profitability whereas a negative relationship existed between liquidity and bank profit in Ghana.

However, other studies produced conflicting results. A study by Musembi, Ali, and Kingi (2016) on the effect of liquidity risk determinants management and the financial performance of banks listed in the Nairobi Securities Exchange. The study found out that liquidity levels in bank institutions have an increased positive output in terms of financial performance for the

listed commercial banks. Maaka (2013) carried out a study to establish the relationship between liquidity risk and the performance of banks in Kenya. The research findings established that profitability was negatively affected due to increase in liquidity gap and leverage.

4.7.3 Effect of Market Risk on Financial Performance of Commercial Banks in Kenya

Result from the hypothesis testing revealed a significant positive effect of market risk on financial performance of commercial banks in Kenya.

The findings are at par with Ugandan study by Mpora (2006) that assessed market risk and financial performance of selected commercial banks. The results showed a positive significant relationship between market risk and financial performance. Kassi, et.al (2019) assessed the effect of market risk on the financial performance of 31 non-financial companies listed on the Casablanca Stock Exchange. The findings revealed that tangibility ratio, firm's age, firm's size, cash holdings ratio and the debts to assets ratio positively affect the performance of the non-financial companies.

However, other studies produced conflicting results from the current study. For example, Muriithi, Waweru and Muturi, (2016), assessed the effect of market risk on financial performance of commercial banks in Kenya. Findings produced conflicting results; that financial leverage, interest rate and foreign exchange exposure have negative and significant relationship with bank profitability. Kahihu, Wachira and Muathe (2021) assessed market risk on financial performance of Micro-Finance Institutions (MFIs) in Kenya. The findings obtained revealed that interest rate and financial leverage risk had a positive significant effect on the financial performance of MFIs in Kenya while foreign exchange risk was found to have a negative significant effect on the financial performance of MFIs. Consequently, inflation rate risk was found to have no significant effect on the financial performance of MFIs. Kassi, et.al (2019) assessed the effect of market risk on the financial performance of 31 non-financial companies listed on the Casablanca Stock Exchange. The findings revealed that various measures of market risks have a negative significant effect on the non-financial companies' performance.

Therefore, based on the results obtained, the panel regression equation obtained was as follows;

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of findings of the research on the effect of financial risk exposure (credit risk exposure, market risk exposure and liquidity risk exposure) on the financial performance of commercial banks in Kenya. Precisely, the chapter contains the findings summary, conclusions, limitations, recommendations and the suggested areas for further study. All the itemized headings are discussed as per the general and specific objectives of the study.

5.2 Summary

After obtaining secondary data from thirty-nine commercial banks in Kenya for a 6-year period (2015-2020) from CBK's annual supervision reports, panel data analysis was done. The data collected was arranged using a data sheet in Excel and analysed in STATA version 14. Diagnostic tests were also done to affirm the right model to use where a generalized random effect model was deemed appropriate to analyse the effect of financial risk exposure (credit risk exposure, market risk exposure and liquidity risk exposure) on the financial performance of commercial banks in Kenya. Credit risk exposure was measured using non-performing loans ratio, liquidity risk exposure was measured using liquidity dependency ratio,

market risk exposure was measured using net interest margin and the financial performance of banks was measured using Return on Assets. The results obtained showed that there was a significant effect of financial risk exposure on financial performance of commercial banks in Kenya.

5.2.1 Credit Risk Exposure and Financial Performance

The first specific objective of the study was to evaluate the effect of credit risk exposure on financial performance of commercial banks in Kenya. The results of the study revealed the presence of positive and significant relationship between the two variables. Correlation analysis too showed a positive and weak strength between the two variables. Further, analysis demonstrated that a unit change in credit risk exposure caused the financial performance of Kenyan commercial banks to increase by 0.046193units.

5.2.2 Liquidity Risk Exposure and Financial Performance

The second specific objective of the study was to evaluate the effect of liquidity risk exposure on financial performance of commercial banks in Kenya. Results obtained from the hypothesis testing revealed that liquidity risk exposure had a negative and significant effect on financial performance of commercial banks in Kenya. Correlation analysis also confirmed the regression analysis of a negative and weak relationship between liquidity risk exposure and financial performance. The analysis highlighted that a unit increase in liquidity risk exposure management led to a decrease in commercial banks' financial performance by 0.065595 units.

5.2.3 Market Risk Exposure and Financial Performance

The third specific objective of the study sought to find out the effect of market risk exposure on financial performance of commercial banks in Kenya. Results from the analysis showed that there was a positive and significant relationship. Correlation analysis revealed a positive but weak relationship between market risk exposure and financial performance of commercial

banks. In addition, a unit change in market risk exposure increased the financial performance of commercial banks (ROA) by 0.1386909 units.

5.3 Conclusions

In summary, the research presented in this chapter has provided insights into how different components of financial risk exposures, credit risk exposure, liquidity risk exposure and market risk exposure affect the financial performance of commercial banks in Kenya. The chapter presented a summary of findings where all the null hypotheses formulated in chapter one of the study were rejected at 5% level of significance.

The chapter also presents a summary of conclusions, contribution to knowledge, recommendations, limitations of the study and recommendations for further studies which highlighted the study gaps.

In conclusion, findings brought to light the importance of hedging against the financial risks including; credit risks, liquidity risks and market risks and thus improving the financial performance of commercial banks in Kenya. The greatest contribution to the body of knowledge is that for a sound financial survival of commercial banks in Kenya, keen attention needs to be directed towards credit risk exposure, liquidity risk exposure and market risk exposure. Failure of which would sink commercial banks into liquidity, credit and market risks.

The study sought to examine whether financial risk exposure (credit risk exposure, market risk exposure and liquidity risk exposure) had an effect on the financial performance of commercial banks in Kenya. From the analysis, the overall outcome reveals that commercial banks evidently face a number of financial risks that tend to undermine their financial performance. For their financial performance to be improved, financial risk exposure should be identified soon enough in order to mitigate the risks effectively.

The study highlighted the importance of the liquidity risk exposure in influencing the income statement of the commercial banks in Kenya. The study concluded that managers ought to increase the earning of their company (deposits) and keep an open eye on items that are likely to alter the liquidity of their banks. More importantly, the loan proportion given by banks need

to be maintained at a manageable level so as to boost their financial performance in cases of short falls. The findings from chapter four led to the rejection of the null hypothesis on the insignificance of liquidity risk exposure on the financial performance of commercial banks in Kenya. Consequently, banks need to be watchful of the way they issue long term loans to their customers since a properly managed liquidity will yield better returns to the bank.

Further, the study led to a conclusion that the null hypothesis developed in chapter one on the insignificance of the effect of credit risk exposure on the financial performance of banks was rejected. If banks are able to monitor their loans so as to ensure that they do not become non-performing, they are able to increase their financial performance. This goes a long way in ensuring that customers do not default on making loan repayments. Loans are one of the major ways through which commercial banks are able to make profit.

The current study was ebbed on the contingency theory of risk management. All commercial banks ought to devise measures aimed at the level of risk exposure and consequently increase their financial performance (ROA).

5.4 Recommendations

One of the major roles that commercial banks play is the creation of credit, which as highlighted in the current study exposes the banks to unforeseen risks. This may arise when customers fail to honour their loan obligations. Thus, there is need for commercial banks to set a provision for these loans. An attempt has been made by the adoption of the Loan Loss Provision by all commercial banks in order to mitigate from credit risk exposure.

The study asserted the necessity to have efficient risk management practices around risk monitoring, risk identification, risk mitigation and risk management implementation strategies. This would go a long way in ensuring that commercial banks are able to minimize the effect of certain risks that they face. In doing so, these banks would be able to improve their financial performance. Consequently, to ensure shareholder goal of wealth maximization

is met, commercial banks need to attain consistent profits that are distributed to them in the form of dividends. To do this, risk management practices need to be adhered to effectively.

Commercial banks are not the only institutions that face risks, other businesses for example insurance firms face risks too. Therefore, the study recommends that all business entities should practice risk management strategies in order to boost their performance either in a financial or operational perspective. Moreover, an establishment of comprehensive risk management of commercial banks should be made a prerequisite as it contributes to the overall risk management systems.

5.6 Suggestion for Further Studies

The study focused only on three components of financial risk exposure (credit risk exposure, liquidity risk exposure and market risk exposure), there are other components of risk exposures for example operational risks that commercial banks are exposed to risks. Other studies need to incorporate these risks. Different measures of financial performance for example Return on Equity should be used as the study concentrated on Return on Assets only.

The study was conducted within a six-year period; other studies should consider widening the scope to more years and use other methods of analysis such as regression analysis, correlation analysis, and time series analysis apart from the panel data model that the study used. This would give a different perspective from what the study has.

Future researchers should consider conducting studies in both commercial and non-commercial banks in Kenya. This would give a true picture of the financial performance of all banks in Kenya.

Limitations of the Study

There were a lot of limitations which the researcher encountered while undertaking this research. However, these did not compromise the quality of the research work. The limitations were used as a basis for suggestions future research areas. The limitations included:

Conceptual Limitation: Whereas there are many factors which can affect the financial performance of commercial banks such as non-performing loans, rate of adaptability to technological advancements, the study concentrated on the three variables namely, Credit risk, Liquidity risk and market risk on financial performance of Commercial banks.

Contextual Limitation: Whereas financial performances of other entities such as manufacturing sector, insurance, SACCOs, Small and Medium Enterprises (SMEs) are of significance to the economic growth of any economy, the current study concentrated only on commercial banks in Kenya. However, a study in the commercial banks was found suitable given the high rate of default coupled with the high standard of living. Despite the limitation, the quality of the result was not compromised.

Methodological Limitation: Whereas financial performance of firms can be measured using various models such as regression analysis, correlation analysis, the current study adopted panel data model. However, this did not compromise the results of the study. Panel data was found more suitable for a secondary data carried out over a given period of time.

Theoretical Limitation: Whereas more theories could have been used in this study such as agency theory, signalling theory, among others. Despite the limitation, the current study used Risk Management Theory, Contingency Planning Theory and Shiftability Theory. The theories used were found to be most suitable as they informed the study variables.

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APPENDICES

Appendix I: Commercial Banks in Kenya

COMMERCIAL BANKS IN KENYA
1. UBA Kenya Bank Ltd

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

39. Bank of Africa Kenya Ltd
40. Afrika Investment Bank
41. African Development Bank Group
42. African Banking Corporation

Source: Central Bank of Kenya (2020)

Appendix II: Data collection sheet

Bank	Total Assets	Total Loans	Total Deposits	Non- Performing Loans	Net Interest Income
1.					
2.					
3.					
4.					
5.					
6.					
7.					

Appendix III: Data Collected

BANK	YEAR	Non-Performing Loans Ratio	Liquidity Dependency Ratio	Net Interest Margin	Return on Assets
1	2015	0.059482	0.932649	0.172929	0.365933
1	2016	0.075953	0.964874	0.160447	0.056425
1	2017	0.075953	0.837524	0.160162	0.049443
1	2018	0.083033	0.845982	0.157287	0.050481
1	2019	0.069095	0.809122	0.137339	0.049212
1	2020	0.122624	0.921786	0.146729	0.031102
2	2015	0.119588	0.466063	0.145225	0.515473
2	2016	0.113497	0.477855	0.137831	0.059982
2	2017	0.113497	0.443576	0.152327	0.056806
2	2018	0.071277	0.768188	0.138166	0.055603
2	2019	0.073862	0.606148	0.137755	0.051177
2	2020	0.12042	0.70783	0.129854	0.025404
3	2015	0.035849	0.629077	0.138986	0.772858
3	2016	0.065053	0.679646	0.171561	0.051497
3	2017	0.065053	0.616625	0.178217	0.043105
3	2018	0.066568	0.72785	0.167324	0.043073
3	2019	0.11241	0.714855	0.149317	0.043722
3	2020	0.16849	0.778404	0.146513	0.028899
4	2015	0.020253	0.104472	0.174748	0.465517
4	2016	0.014054	0.108457	0.162216	0.040231
4	2017	0.014054	0.085619	0.156367	0.03683
4	2018	0.071181	0.831909	0.133368	0.035141
4	2019	0.078388	0.358274	0.171453	0.028227
4	2020	0.138603	0.701725	0.172289	0.02071
5	2015	0.073273	0.195109	0.164692	0.253818
5	2016	0.089055	0.204123	0.175427	0.051
5	2017	0.089053	0.182025	0.159226	0.033354

5	2018	0.075878	0.710391	0.169486	0.03641
5	2019	0.074391	0.771466	0.117824	0.032109
5	2020	0.074448	0.891237	0.118986	0.021961
6	2015	0.04386	0.724957	0.114407	0.114402
6	2016	0.070897	0.619588	0.149235	0.036359
6	2017	0.070897	0.555094	0.160331	0.030465
6	2018	0.126401	0.621128	0.159246	0.032543
6	2019	0.107037	0.657605	0.156211	0.039225
6	2020	0.14178	0.687279	0.154106	0.021536
7	2015	0.101616	0.033835	0.15709	0.201673
7	2016	0.188062	0.027241	0.130266	0.036007
7	2017	0.046179	0.215453	0.137549	0.040858
7	2018	0.076482	0.638033	0.12312	0.031315
7	2019	0.072468	0.688963	0.18103	0.032341
7	2020	0.118995	0.706017	0.173075	0.022278
8	2015	0.023764	0.384879	0.142267	0.128443
8	2016	0.046179	0.329291	0.147575	0.033725
8	2017	0.046699	1.350868	0.138053	0.031321
8	2018	0.139145	0.680797	0.145383	0.037558
8	2019	0.146191	0.737506	0.184915	0.036497
8	2020	0.125591	0.733071	0.184519	0.021995
9	2015	0.083174	0.935947	0.168753	0.155854
9	2016	0.046699	2.317536	0.187141	0.036615
9	2017	0.437028	0.511115	0.190396	0.064877
9	2018	0.11198	0.668316	0.167302	0.034702
9	2019	0.162662	0.647959	0.133035	0.02815
9	2020	0.14627	0.654028	0.131219	0.018154
10	2015	0.161473	0.702152	0.177123	0.227203
10	2016	0.437026	0.661419	0.159562	0.052713
10	2017	0.120416	0.050059	0.15008	0.029437
10	2018	0.072853	0.737075	0.159529	0.030669
10	2019	0.475795	0.554068	0.160092	0.0394

10	2020	0.353572	0.540251	0.160402	0.03295
11	2015	0.148871	0.05046	0.087106	0.376823
11	2016	0.120411	0.073314	0.095523	0.001407
11	2017	0.028504	0.3635	0.186202	0.023387
11	2018	0.405822	0.668121	0.165957	0.045873
11	2019	0.173064	0.578069	0.224799	0.050247
11	2020	0.148801	0.712362	0.214296	0.033923
12	2015	0.063866	0.446342	0.220166	0.016699
12	2016	0.028504	0.451977	0.189972	0.058389
12	2017	0.02947	0.081902	0.205401	0.052563
12	2018	0.156033	0.736424	0.233818	0.052358
12	2019	0.08985	0.44746	0.104482	0.024981
12	2020	0.123986	0.630016	0.207921	0.025673
13	2015	0.021768	0.08495	0.146902	0.819251
13	2016	0.029472	0.082638	0.171576	0.046751
13	2017	0.297154	0.040081	0.064107	0.047236
13	2018	0.201969	0.445897	0.060238	0.02126
13	2019	0.270934	0.753272	0.197235	0.025438
13	2020	0.258127	0.371308	0.094101	0.014577
14	2015	0.272637	0.075743	0.165347	0.334785
14	2016	0.297136	0.096809	0.181743	0.009117
14	2017	0.287992	0.635785	0.187577	0.025864
14	2018	0.06067	0.760773	0.226649	0.024387
14	2019	0.073871	0.654666	0.157348	0.017148
14	2020	0.108643	0.630956	0.14529	0.014637
15	2015	0.237225	0.808261	0.134229	0.203797
15	2016	0.287994	0.982287	0.14357	0.021223
15	2017	0.197531	0.216628	0.168108	0.032673
15	2018	0.056636	0.807272	0.21042	0.015246
15	2019	0.691086	0.504802	0.248341	0.018867
15	2020	0.441376	0.645909	0.237631	0.008213
16	2015	0.192811	0.213843	0.122633	0.134873

16	2016	0.197538	0.209215	0.165814	0.035752
16	2017	0.080855	0.186517	0.205276	0.006731
16	2018	0.045273	0.780232	0.170767	0.00878
16	2019	0.03005	0.410956	0.087134	0.015082
16	2020	0.028193	0.467249	0.074872	0.00592
17	2015	0.069708	0.176375	0.132105	0.184976
17	2016	0.080852	0.242603	0.150333	-0.00029
17	2017	0.126808	0.189999	0.160365	0.021862
17	2018	0.314716	0.65804	0.098205	0.007999
17	2019	0.108909	0.466969	0.10862	0.009219
17	2020	0.17568	0.401583	0.112022	0.006226
18	2015	0.099877	0.212854	0.14422	0.16213
18	2016	0.126815	0.262886	0.199442	0.045697
18	2017	0.229253	1.184861	0.120454	0.006326
18	2018	0.386232	0.605332	0.160556	0.007356
18	2019	0.030513	0.6002	0.167828	0.009008
18	2020	0.065993	0.617584	0.151382	0.008811
19	2015	0.120417	1.639093	0.170363	0.186633
19	2016	0.05919	3.67469	0.155065	-0.06131
19	2017	0.05919	3.554315	0.156262	0.008111
19	2018	0.020943	0.440175	0.117656	0.006592
19	2019	0.216656	0.442047	0.097191	0.008757
19	2020	0.162811	0.933278	0.178015	0.011903
20	2015	0.172287	1.003099	0.26915	0.176925
20	2016	0.189056	0.907034	0.282468	0.022249
20	2017	0.189056	0.904885	0.311604	0.008723
20	2018	0.097399	0.66744	0.137243	0.007091
20	2019	0.362179	0.959963	0.176203	0.008319
20	2020	0.397666	1.025052	0.293888	0.010011
21	2015	0.576201	1.203743	0.156875	0.427369
21	2016	0.112435	5.171653	0.161131	0.027765
21	2017	0.100049	8.980808	0.14111	0.014428

21	2018	0.0009	0.775997	0.184402	0.010273
21	2019	0.227282	0.98352	0.302868	0.008615
21	2020	0.155958	0.784966	0.120645	0.005299
22	2015	0.019704	0.701719	0.200816	0.278955
22	2016	0.021105	0.577605	0.133651	0.009901
22	2017	0.112435	5.95727	0.215971	0.012442
22	2018	0.215931	0.613399	0.134069	0.009214
22	2019	0.208534	0.507154	0.131965	0.006929
22	2020	0.114508	0.680936	0.133562	0.003904
23	2015	0.122182	1.268099	0.128615	0.224862
23	2016	0.195634	1.745227	0.22586	0.03553
23	2017	0.195636	1.362547	0.127399	0.008184
23	2018	0.103376	0.820167	0.333807	0.011539
23	2019	0.082813	0.584831	0.128626	0.007603
23	2020	0.115178	0.623602	0.116901	0.003217
24	2015	0.325769	0.741586	0.175425	0.121229
24	2016	0.158913	0.607888	0.185327	0.00297
24	2017	0.158907	0.588353	0.178583	0.012375
24	2018	0.210543	0.561118	0.13071	0.007701
24	2019	0.189327	0.740646	0.151898	0.007012
24	2020	0.208031	0.661085	0.121791	0.003104
25	2015	0.125675	0.592454	0.188476	0.223632
25	2016	0.12462	0.530284	0.174073	0.036517
25	2017	0.124623	0.452118	0.151914	0.010967
25	2018	0.400091	0.535688	0.159383	0.006665
25	2019	0.070328	0.932837	0.123958	0.006617
25	2020	0.047474	0.950095	0.117742	0.003565
26	2015	0.072258	0.84104	0.179317	0.289058
26	2016	0.203963	1.81342	0.176835	0.009745
26	2017	0.203958	0.800098	0.150288	0.010062
26	2018	0.215686	0.653447	0.141211	0.007323
26	2019	0.462071	0.616303	0.139269	0.004901

26	2020	0.360829	0.802909	0.139037	0.003327
27	2015	0.044441	1.327056	0.167857	0.057605
27	2016	0.07408	1.037069	0.189334	0.009721
27	2017	0.074077	0.907696	0.098445	0.003554
27	2018	0.1089	0.715884	0.160798	0.008469
27	2019	0.696225	0.696743	0.167277	0.005226
27	2020	0.761985	0.467854	0.093452	0.002552
28	2015	0.066977	1.05034	0.135807	0.221576
28	2016	0.057477	1.889168	0.228315	0.006678
28	2017	0.064802	1.331548	0.184238	0.005245
28	2018	0.086226	0.762672	0.157976	0.008418
28	2019	0.098816	0.596561	0.077919	0.003437
28	2020	0.127703	0.594956	0.120418	0.002294
29	2015	0.103667	0.956446	0.142985	0.252315
29	2016	0.081945	0.758882	0.10409	0.006349
29	2017	0.081944	1.25298	0.179534	0.000646
29	2018	0.212106	0.638891	0.071085	0.00589
29	2019	0.28701	1.663792	0.257195	0.004197
29	2020	0.336979	1.225873	0.221984	0.001103
30	2015	0.48629	0.844534	0.110381	1.719565
30	2016	0.048628	8.470864	0.150598	0.040869
30	2017	0.048628	18.58556	0.268773	0.002152
30	2018	0.251063	0.762265	0.141795	0.001543
30	2019	0.253216	0.737279	0.139359	0.003706
30	2020	0.240474	0.765221	0.16811	0.000475
31	2015	0.20563	0.874171	0.11614	0.254576
31	2016	0.257265	1.062285	0.10081	0.003592
31	2017	0.257277	1.351002	0.286282	-0.00801
31	2018	0.104508	1.134711	0.187365	3.33E-05
31	2019	0.096408	0.87266	0.245522	-0.0019
31	2020	0.234048	0.957931	0.323749	0.000471
32	2015	0.372074	0.971333	0.251515	0.1913

32	2016	0.038955	16.58722	0.131659	0.002608
32	2017	0.33761	1.245157	0.207091	-0.08371
32	2018	0.216565	0.994598	0.291488	-0.00936
32	2019	0.241957	0.869259	0.168549	-0.00474
32	2020	0.045677	0.357062	0.236504	-0.00955
33	2015	0.120748	1.332233	0.114247	0.430744
33	2016	0.169727	1.763526	0.196164	0.039415
33	2017	0.038955	16.00252	0.07937	-0.03074
33	2018	0.342071	0.849561	0.188453	-0.02615
33	2019	0.173202	0.727916	0.170258	-0.03504
33	2020	0.170747	1.551466	0.042467	-0.00856
34	2015	0.528343	1.884711	0.148684	0.197922
34	2016	0.069929	24.19614	0.201572	-0.00336
34	2017	0.208474	1.641918	0.136824	-0.03262
34	2018	0.586377	0.757026	0.071778	-0.0216
34	2019	0.090064	0.908592	0.195106	-0.04866
34	2020	0.122097	0.674648	0.214657	-0.02654
35	2015	0.440752	1.050309	0.193012	0.302003
35	2016	0.131158	6.685625	0.198138	-0.00965
35	2017	0.133684	4.184888	0.184467	-0.03279
35	2018	0.122616	0.780827	0.170628	-0.03109
35	2019	0.400457	0.470516	0.22352	-0.05751
35	2020	0.103417	0.822548	0.142558	-0.05277
36	2015	0.141727	1.222759	0.145924	0.645259
36	2016	0.096908	2.40546	0.295506	-0.02792
36	2017	0.169729	2.123692	0.106566	-0.05929
36	2018	0.104225	1.186547	0.176812	-0.03514
36	2019	0.439679	0.855842	0.136546	-0.09392
36	2020	0.708388	0.41306	0.167956	-0.06091
37	2015	0.368694	1.211322	0.263653	0.17161
37	2016	0.323076	1.555315	0.174416	-0.05198
37	2017	0.069929	52.70358	0.33236	-0.32146

37	2018	0.045935	0.589314	0.148753	-0.05591
37	2019	0.003752	0.292335	0.120203	-0.09492
37	2020	0.014222	0.915044	0.115587	-0.08737
38	2015	0.020789	0.383927	0.135316	0.242636
38	2016	0.022066	1.605764	0.382661	-0.17282
38	2017	0.131158	13.68605	0.226909	-0.01985
38	2018	0.443553	1.013759	0.370406	-0.07528
38	2019	0.108354	0.664025	0.035411	-0.13318
38	2020	0.025514	0.646052	0.139253	-0.12388
39	2015	0.886029	1.117718	0.143812	0.053592
39	2016	0.109059	14.2105	0.227784	0.057705
39	2017	0.096909	8.022005	0.329481	-0.02683
39	2018	0.718213	0.070171	0.216004	-0.10484
39	2019	0.127561	0.761037	-0.08047	-0.42707
39	2020	0.407489	0.66305	-0.35589	-0.39304

Source Researcher (2021)