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# Effect of Credit Risk Determinants on Financial Performance of Commercial Banks in Kenya

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*Abstract:* **Credit remains one of the main sources of income for any banks globally. However, this exposes the banks and other financial institutions to credit risk as there is a possibility of non-payment of the loan by the borrowers as per the contractual obligations. Assessing and managing this risk is becoming a crucial factor for every commercial bank across the world. This study therefore, sought to determine the effect of credit risk determinants on the financial performance of commercial banks in Kenya. The data set comprised the 41 commercial banks in Kenya as of the year 2021. The determinants of credit risk for this study were Capital Adequacy (CA), Loan Loss Provision (LLP), Liquidity Risk (LR), and Asset Quality (AQ). The financial performance of the banks under study was measured by the Return on Assets (ROA) and Return on Equity (ROE). These ratios indicated the financial performance in terms of the profitability of the banks under study as far as the efficient utilization of assets of these banks, and the ability of the banks to utilize money invested by investors to create profit. The study used secondary data from the annual financial statements of the 41 commercial banks in Kenya for five years from the year 2017-to 2021 (panel data). Both correlation and inferential statistics designs were used to complete the resulted analysis from the Statistical Package for Social Sciences. Correlation and regression analyses were conducted to explain the effect of credit risk determinants on financial performance of commercial banks in Kenya. The study found that capital adequacy had a direct significant effect on financial performance of commercial banks in Kenya (p= 0.001, β= 0.164). Loan loss provision registered an indirect significant effect on the financial performance of commercial banks in Kenya (p= 0.000, β= -0.325). The study further found that liquidity risk had an indirect significant effect on financial performance of commercial banks in Kenya (p= 0.000, β= -0.568). The study also found that asset quality had a positive insignificant effect on financial performance of commercial banks in Kenya (p= 0.114, β= 0.089). Generally, the study concluded that credit risk determinants had a statistically significant effect on the financial performance of commercial banks in Kenya (R-square= 0.875, p-value= 0.000). The study recommends that the regulatory authority for the commercial banks, Central Bank of Kenya should enhance its oversight on the compliance of developed policies guiding the operation of commercial banks to enable them to continue with adequate financial performance.**

*Keywords:* **Capital Adequacy, Loan Loss Provision, Liquidity Risk, Asset Quality, financial performance.**

## 1. INTRODUCTION

### 1.1 Background of the study

In the current worldwide economy, banks mostly procure income from the premium charged on loans extended to their clients (borrowers). The interest rates charged by the banks on advances are generally higher than the interest these banks pay on the deposits received from their customers. These banks usually extend credits up to the point where they can no longer do so because of the reserve prerequisite limitation. Ongoing improvement in the business climate internationally

has brought the issue of credit risk management to the bleeding edge of senior management concerns (Cooper, 2000). The occurrence of the economic crisis in the 1980s forced the central bank governors of the G-10 countries to take proactive measures to safeguard the banks against the financial risks (BCBS, 2009).

Financial institutions have achieved great prominence in the global economic environment and their influence plays a predominant role in granting credit facilities. The likelihood of bringing about misfortunes arising as a result of default of advances or different types of credit by indebted individuals or counterparty are generally experienced in these financial institutions (Hamisu, 2011). Banks assume a significant part in the development and advancement of an economy through the financial services they provide. Their intermediation role can be supposed to be an impetus for economic growth. The soundness of execution of the financial business over the long run is a file of monetary solidness in any country, and the security of the financial area relies upon its profitability. The degree to which a bank extends credit to the public for productive activities speeds up the pace of a nation's economic growth and its drawn-out sustainability (Kolapo, Ayeni, Oke, 2012).

Credit risk is the exposure faced by banks when a borrower (customer) defaults in honoring debt obligations on the due date or at maturity (Ekinci, R., & Poyraz, G. 2019). As indicated by Basel (1999), credit risk is the likelihood that a borrower of a bank or counterparty debt holder will neglect to meet its commitments as per concurred terms. At the point when the borrowers neglect to reimburse the advance or interest, it turns out to be bad. Bad loans are one of the superb reasons for losses in banks. Credit risk is the biggest component of risk in the books of most banks which if not oversaw more smartly, may cause inescapable financial instability by jeopardizing the entire banking system (Jackson and Perraudin, 1999).

Hennie (2003) states that despite innovations in the financial services sector over the years, credit risk is still the major single cause of bank failures, for the reason that more than 80 percent of a bank's balance sheet generally relates to this aspect of risk management. The consultative paper issued by Basel (1999) additionally calls attention that the significant reason for serious banking problems continues to be directly due to the loose credit standards for borrowers and counterparties, poor portfolio risk management, and so on. All such proof demonstrates the very fundamental role credit risk management plays in the whole banking risk management approach as well as the sustainable success of the organization.

Credit creation is the principal income-producing activity of the banks. Thus, sufficient management of loan handling is basic for the development and endurance of the banks any other way, the credit action might prompt financial distress. The CBK supervision report (2014) indicated that there was a reduction in the banking sector's capital adequacy, which is measured by the ratio of total capital to total risk-weighted assets in the same year. The rising level of non-performing loan rates in banks' books, poor loan processing, undue interference in the loan granting process, and credit rates among other things are connected with poor and ineffective credit risk management that adversely affect banks' performance. It is therefore significant to analyze whether the credit risk indicators are affecting the financial performance of the banks in the study endeavoring to make an unassuming contribution to the literature on credit risk.

Loans address the biggest resource class for banks, which are funded by deposits by bank customers (Federal Reserve Bank of San Fransisco, 2004). Accordingly, the risk of non-repayment of loans by borrowers would prompt the chance of non-payment of deposits by the banks as and when requested by the depositors/savers. Credit risk subsequently represents the most serious risk for banks as their center of action is the provision of credit to their customers in their capacity as financial intermediaries.

The commercial banks in Kenya are exposed to different types of risks, which could in turn essentially influence the performance and activity of these banks. Credit risk is perhaps one of the most significant risks that banks face, taking into account the fact that extending credit is one of the fundamental sources of income for these commercial banks. In this manner, these risks affect the profitability of the banks (Li and Zou, 2014). While financial institutions have faced difficulties over the years for different reasons, the significant reason for banking problems continues to be directly connected to lax credit standards for borrowers and counterparties, poor portfolio risk management, or lack of attention to changes in the economic or other circumstances that can prompt a crumbling in the credit standing of a bank's counterparties (Ndegwa, 2017). This experience is common in both G-10 and non-G-10 countries (BCBS, 2000). The likelihood of incurring losses coming about because of default advances or other forms of credit by debtors known as credit risks are mostly encountered in the financial sector, particularly by institutions such as banks, (Hamisu, 2011).

The banking industry thinks about loaning as their most significant function for the utilization of funds. In relation to this, and in most cases, the larger portion of a bank's net income is from credits (loans and advances) to their clients. Since the major portion of the net benefit of the industry is earned from credits (loans), the administration of loan portfolios truly influences the profitability of banks (Wei-shong & Kuo-chung, 2006). The greatest credit risk facing the banking and financial industry in the Kenyan economy is the risk of customers or counterparty default. In a review connected to this assertion, during the 1990s when the number of players in the banking sector expanded significantly in the Nigerian economy, the banks saw rising non-performing credit portfolios. This significantly contributed to financial distress in the banking sector. Also identified was the presence of predatory borrowers in the banking system whose mode of operation involves the relinquishment of their debt obligations in certain banks just to contract new obligations in different banks, (Hamisu, 2011). Accordingly, credit risk turns into a main pressing issue for the financial business since it overally affects the financial benefit of these banks as it influences their biggest resource class, that is to say, the advances (loans). From the cases above, it's evident that financial institutions still face difficulties connected with credit risk despite being one of the major contributors to Kenya's economy. Hence, there is a need to layout banks' attributes delivering them powerless against credit risk, and the impact this risk has on the financial performance of these commercial banks in the Kenyan economy.

**1.2 Statement of the Problem**

The credit risk in commercial banks has been on the public eye with respect to crises facing worldwide financial institutions today. Reviewing the causes of global financial crisis, the Euro zone crisis and the fall of world greatest institutions such as Enron boils come to the question of how best is credit risk being managed. The magnitude of the financial crisis clearly demonstrates how critical commercial banks have been connected to the economy, worldwide (Agenello and Sousa, 2011). The banks provide financial intermediary services to their respective customers. Through this, the banks lend some amounts in form of loans to the borrowers hence getting these banks exposed to credit risk as there is a possibility of failure of the borrowers to repay these loaned amounts plus the interests thereon as agreed. This may make a bank incur heavy losses. The exposure of these commercial banks to the high risk in credit facilities affects their performance which can eventually lead to the collapse of these banks if not addressed expeditiously (Masinde, 2014).

The amount of non-performing loans in the Kenyan banking sector has been increasing for the past years, and the continuation of this trend can adversely affect the profitability of these banks in the short run and their sustainability in long run. The interest capping rate has further compounded the bank problems of non-performing loans because of the inability to charge higher interest rates as compensation for the higher risks (CBK Annual Supervision Report, 2020).

Different relevant studies have been carried out worldwide within the context of banking crises.

Kargi (2012) investigated the relationship between the performance of Nigerian banks and credit risk management in the study. The data used for the study were collected for the period between 2004-and 2008. The research found a significant and negative relationship between the performance of banks and credit risk management in the banks under study. It concluded that the profitability of the bank is negatively influenced by loans and advances, non-performing loans, and deposits. Felix and Claudine (2014) investigated the relationship between bank performance and credit risk management in emerging economies in their study. In the study, the variables of return on equity (ROE) and return on assets (ROA) are used to represent the bank's performance. The ratio of non-performing loans to total loans was also used to represent the credit risk. As a result of the analysis, it was concluded that performance indicators are negatively related to non-performing loans (which were used as a measure of credit risk).Mekasha (2001) investigated credit risk management and its impact on the performance of Ethiopian Commercial Banks. The researcher used 10 years of panel data from the selected commercial banks for the study, to examine the relationship between ROA and loan provision, non-performing loans, and total assets. The study revealed that there is a significant relationship between bank performance and credit risk management.

The majority of the studies which have been reviewed by the researcher concluded that there is a negative relationship between credit risk and financial performance. Other groups of studies suggest that other factors apart from credit risk impact on bank's performance. Some studies in the literature show that credit risk has a positive effect on the financial performance of banks. These studies have conflicting findings. In addition, and to the best knowledge of the researcher, the latest study on this topic in the Kenyan economy analyzed data up to the year 2017. Therefore, there are no research findings on this topic with the help of recent data in the context of Kenyan economy. Thus there exists a gap that necessitates this study. Therefore, this study attempted to find the relationship which exists between the credit risk

determinants and financial performance of commercial banks in Kenya and compare the findings with the relevant previous studies. In doing so, the researcher also wishes to establish whether the time difference pose any significant difference in the findings as compared to the previous studies in Kenya. This research answered the question, "how does credit risk determinants affect the financial performance of the commercial banks in Kenya." The research attempted to address both how efficient these commercial banks use their assets to generate revenue (using ROA), and how well these banks are managing their available resources and assets to net higher profits (using ROE).

### 1.3 Objectives of the Study

#### 1.3.1 General Objective

The general objective of this study is to determine the effect of credit risk determinants on the financial performance of commercial banks in Kenya.

#### 1.3.2 Specific Objectives

The specific objectives of this study include:

- To examine the effect of capital adequacy on the financial performance of commercial banks in Kenya.
- To determine the effect of loan loss provision on the financial performance of commercial banks in Kenya.
- To establish the effect of liquidity risk on the financial performance of the commercial banks in Kenya.
- To assess the effect of asset quality on the financial performance of commercial banks in Kenya.

### 1.4 Research Questions

- What is the effect of capital adequacy on the financial performance of commercial banks in Kenya?
- What is the effect of loan loss provision on the financial performance of commercial banks in Kenya?
- What is the effect of liquidity risk on the financial performance of commercial banks in Kenya?
- What is the effect of asset quality on the financial performance of commercial banks in Kenya?

### 1.5 Significance of the Study

This study is of great importance to the individuals and groups as discussed below:

#### 1.5.1 Commercial banks

The study will add value to the existing body of knowledge on credit exposure by commercial banks. As these banks are expanding into other regions thereby increasing their customer base, they have to devise models to manage the credit risks which will be associated with this entrance into new markets.

There is also the increased regulation by the CBK especially the capping of the interest rates. This will enable these commercial banks to move away from the traditional idea of covering up the higher risk by increasing their interest rates as there is a fixed maximum interest rate by the CBK. Therefore, effective credit risk management will be crucial for these commercial banks.

The study will also be of much assistance to the commercial banks in assisting them assess the credibility of the borrowers to assist in the elimination of the buildup of bad and doubtful debts

#### 1.5.2 Policymakers

The study will help the policymakers in formulating and implementing policy with the objective of monitoring and reducing the credit risks to protect its various public by posing restrictions to the borrowing since this risk affects the largest asset class of the banks (Loans).

#### 1.5.3 The investors

The study will enable potential investors to understand the dividend policies expected from commercial banks by use of the information about their levels of credit risks. It would be possible to estimate the dividend decision expected from the reported bad and doubtful debts due to their effect on the profitability and hence the Earnings Per Share (EPS).

### 1.5.4 Researchers

The study will offer more insights for different researchers for more studies as they will be able to acquire the information regarding the existing gaps in determining the correlation that exists between the credit risk and the profitability of the commercial banks across the world. Future research students may fill up the gap in the areas not covered and thereby contributing to the frontier of knowledge in this area of credit risk in financial institutions.

### 1.6 Scope of the Study

The study was done on the commercial banks in Kenya. This study covered a duration between the years 2017-2021 which is equivalent to five years, to determine the effect of credit risk determinants on the financial performance of commercial banks in Kenya. Therefore, the population of the study was all the 41 commercial banks in Kenya as of 2021.

## 2. LITERATURE REVIEW

### 2.1 Theoretical Review

The theoretical review can be defined as a set of linked ideas that facilitates a better understanding of the content of a research project (Mwaurah, 2013).

This chapter involves an exploration of the theories that inform the relationships of the variables under study. The theories that were considered in this study included financial distress theory, credit market theory, agency theory, and loan pricing theory.

### 2.1.1 Financial Distress Theory

This theory was formulated by Edward I Altman in 1968. The financial distress theory is based on the concept that net cash flows relative to current liabilities should be the primary standard to be used to describe a company's financial distress condition.

When a firm's business deteriorates to the point where it cannot meet its financial obligation, the firm is said to have entered a state of financial distress. The first signals of financial distress are violations of debt payments and failure or reduction of dividends payouts (Olawale, 2015). The firm has enough to pay its creditors as long as the cash flows exceed the current debt obligations. The key factor in identifying firms in financial distress is their inability to meet contractual debt obligations. However, substantial financial distress effects are incurred well before default.

This theory was applied by Olawale L. (2015) in his research about the effect of credit risk on financial performance of commercial banks. The theory was useful for the study as it proved that in the case of commercial banks, the inability to provide cash to depositors and loans to borrowers as and when on-demand may constitute a liquidity crisis, which results from credit risk in banks. In this study, it was noted that credit risk needs to be addressed since it may lead to financial distress. Loan portfolio management is an important determinant of the firm's liquidity and credit risk. The banks should manage the credit risk to avoid financial distress.

Ndegwa (2017) also narrated the application of the financial distress theory in determining the relationship which exists between credit risk and financial performance of commercial banks. The study elaborated that the operating cash flows of the commercial banks should be able to meet the present needs and obligations. The ability of a firm to meet its mandate and obligations sufficiently and efficiently is by itself a business performance measure (Ndegwa, 2017).

This theory is relevant to this study as banks need to meet their obligations to suppliers and depositors as and when they fall due. This can largely be met if the loans extended by these banks are being serviced as per the contractual obligations. Credit risk can also lead to financial distress if not addressed adequately. The foregoing discussion brought about the question of what effect credit risks has on financial performance.

### 2.1.2 Credit Market Theory

This theory was formulated by Henry Dunning Macleod (1889). This theory states that credit market borrower and lender relationship is characterized by asymmetric information which influences equilibrium prices. The borrower is better informed with respect to their ability and willingness to repay (Rober, 2011). A model of the neoclassical credit market postulates that the terms of credits be clear in the market. If collateral and other restrictions (covenants) remain constant, the interest rate is the only price mechanism.

Olawale (2015) applied this theory on his study on credit risk and financial performance of commercial banks. It was stated that with an increasing demand for credit and a given customer supply, the interest rate rises, and vice versa. From the study, it was evidenced that the higher the risk of failure by the borrower, the higher the interest premium. The high interest rate is charged to compensate for the risk of failure to repay the loan as agreed.

This theory stresses borrowing and lending in the market. The interests charged on credit and the repayment of the interest plus the principal by the borrower have an overall effect on the financial performance of a firm. Hence the relevance of this theory for this particular study.

### 2.1.3 Loan Pricing Theory

This theory was formulated by Knut Wicksell in 1898. The theory stresses that banks cannot always set high-interest rates, and therefore, these banks should consider the problems of adverse selection and moral hazard since it is very difficult to forecast the borrower type at the start of the banking relationship (Stiglitz and Weiss, 1981). If banks set interest rates too high, they may induce adverse selection problems because high-risk borrowers are willing to accept these high rates. Once these borrowers receive the loans, they may develop moral hazard behavior or so-called borrower moral hazard since they are likely to take on highly risky projects or investments (Chodecai, 2004). From the reasoning of Stiglitz and Weiss, it is usual that in some cases we may not find that the interest rate set by banks is commensurate with the risk of the borrowers.

This theory was applied by Maonga (2016) in a study on determinants on loan pricing in commercial banks. The study presented loan pricing theory as a useful tool in credit risk analysis and its effects on financial performance of firms as it focused on the risk involved in lending and the terms of the loan as the determining factors of loan pricing. The risk involved in lending constitutes the credit risk in these commercial banks.

A better way for banks to set loan prices is to conduct a thorough, objective analysis to account for such factors as desired return, cost, risk, and credit profile. generally, the higher the risk, the higher the interest rate will be. A key risk to consider is credit risk. To develop accurate pricing information, banks should track their actual loss experience by loan type, loan-to-value tier, and credit score or grade. This allows the banks to better match pricing to the risks associated with particular types of loans or borrowers (Maonga, 2016).

Loan pricing theory is relevant for this study as it considers credit risk as to the key risk for loan pricing. This risk could cause the bank to lose principal or interest, or both, and to incur higher collection costs which have effects on the financial performance of these banks.

## 2.2 Empirical Literature Review

Several empirical studies have been carried out to investigate the extent to which capital adequacy ratio, loan loss provision, liquidity risk and asset quality ratio influence the financial performance of commercial banks.

### 2.2.1 Capital Adequacy

Capital adequacy refers to the amount of capital relative to a financial institution's loans and other assets (Basel II, 1988). It represents the most critical element of banks' stability and solidarity (Wen, 2010). Investors and stakeholders do not seem to understand what determines capital adequacy and why some banks do better than others (Ongore, 2012). To promote efficiency in the banking industry, to control weaknesses resulting from worldwide liberalization and deregulation, the Basel Capital Accord (Basel I) which led to the endorsement of a new capital adequacy framework (Basel II) in 2004 marked the beginning of a new phase of re-regulation with an attempt to bring about an international harmonization of banking regulation (Bichsel and Blum, 2005).

In Kenya, the Central Bank of Kenya (CBK) increased the minimum capital requirement, aimed at strengthening institutional structures and improving the resilience of the banking industry concerning the International standards. According to the Banking Act (2008), every bank was expected to maintain a minimum core capital of at least KES 1 billion by 2012. It was further expected that the small banks that found difficulties raising their capital to the required levels would be encouraged to merge (Kenya Finance Act, 2008).

Tightened minimum ratios for capital adequacy have been allied to increased ability to generate revenue as well as aggressive behaviors associated with deposit-taking that have a direct impact on the financial performance of the financial institutions (Ndegwa, 2017).

### 2.2.2 Loan Loss Provision

Charged on the income statement, loan loss provision refers to an expense made by a financial institution in anticipation for default of loan advancements. It is a provision that seeks to cushion such institutions from the adverse effects resulting from uncollectible loans, that in the long-run become bad debts. The provision therefore, aims at ensuring the financial institutions i.e., commercial banks do not experience bankruptcy as a result of customers failing to pay their loans in time or wholesome. Specific categories of loans that loan loss provision seeks to cover include; renegotiated loan terms, customer bankruptcy, and non-performing loans.

In this study, the loan loss provision was assessed through loan loss reserve ratio which is an indicator that measures the firm's ability to collect loans made to customers and the customers' ability to repay such loans in time. The loan loss reserve ratio is determined by taking amount provided for non-performing loans divided by the total loans made by a commercial bank during a financial year. According to Seitz *et al.* (2018), an optimal loan loss reserve ratio should range between 5% to 10%, where 5% signifies adequate financial performance and 10% moderate financial performance. A loan loss reserve ratio below 5% and above 10% translates to excellent financial performance and poor financial performance of the underlying commercial banks respectively.

### 2.2.3 Liquidity Risk

Liquidity refers to how easily an asset or security can be bought or sold in the market, and converted to cash (Ferrouhi, 2009). Based on BCB III (2008), liquidity coverage ratio aims at ensuring that commercial banks maintain quality liquid assets. High level of liquidity means that it is easier to convert the assets into cash to meet the current obligations of the firm. In this study, liquidity of the commercial banks was assessed through the loan-to-deposit ratio (LDR) which compares a bank's total loans to its total deposits for the same period. If the ratio is too high, it means that the bank may not have enough liquidity to cover any unforeseen fund requirements (Chris, 2020). According to Sari and Septiano (2020), an ideal capital loan-to-deposit ratio ranges between 80% and 90%. An LDR above 100% indicates that the commercial bank has loaned out every deposit and thus stares at the risk of illiquidity in the foreseeable future which attributes to low profit margins and poor financial performance.

The loan to deposit ratio is a useful instrument to determine bank liquidity, and by extension, it influences the profitability of the banks (Somanadevi, 2015). The bank profit is based on the interest charged against the deposits; it means the profit is generated through the positive difference between interest on loans and interest on deposits (Tamkin *et al.*, 2006). The higher the ratio, the higher the profit. Credit businesses carry high risk as well as high returns. A higher credit deposit ratio indicates the higher deployment of deposits for credit business and higher will be the productivity of funds (Somabadevi, 2015).

### 2.2.4 Asset Quality

Asset quality is an evaluation of asset to measure the credit risk associated with it. It reflects the quantity of existing and potential credit risk associated with the loan and investment portfolios (Ndegwa, 2017). Asset quality is one of the most critical areas in determining the overall condition of a bank. The primary factor affecting overall asset quality is the quality of the loan portfolio and the credit administration program. Loans typically comprise a majority of a bank's assets and carry the greatest amount of risk to their capital. Securities may also comprise a large portion of the assets and also contain significant risks. Other items which can impact asset quality are other real estate, other assets, off-balance sheet items and, to a lesser extent, cash and due from accounts, and premises and fixed assets. The ability of the management to identify and manage credit risk is reflected in asset quality (Cheruiyot, 2016).

Quality of assets in commercial banks mainly refers to the quality of its loan book. This is measured using non-performing loans (Ndegwa, 2017). It is expected that the higher the non-performing loans, the poorer the financial performance of a commercial bank (Bank for International Settlement, 2013). According to Spilbergs (2020), a non-performing loan ratio below 6% is considered sound and adequate financial performance of a financial institution.

### 2.3 Empirical Review Summary

In a study by Sadeghi and Faraji (2017) to establish the effect of credit risk management on the financial performance and stock returns of banks listed on the Tehran Stock Exchange, it was established that a direct relationship existed between the capital adequacy of the banks and their respective financial performance indicators. The data was analyzed using a

multiple regression model at a 95% confidence level. The study was done over the years 2010- 2014 using a sample of 20 state banks. The researchers recommended the need for a reduction of credit risk levels at a point of loan origination by bank managers.

Mendoza and Rivera (2017), did research in rural banks in the Philippines. The research sought to establish whether a relationship existed between their financial performance and their credit risk levels and their capital adequacy. It was established that a relationship existed which was negative and statistically significant. However, capital adequacy did not have a significant effect on profitability. These results were analyzed using the Arellano-Bond estimator. The authors recommended that rural banks need to establish whether injection of capital would in any way affect their profitability vis a vis increasing their debts.

Felix and Claudine (2008) investigated the relationship between credit risk management and bank performance in Sweden. It could be inferred from their findings that return on equity (ROE) and return on assets (ROA) both measuring profitability were inversely related to the ratio of non-performing loans to total loan of financial institutions thereby leading to a decline in profitability.

Epure and Lafuente (2012) cited in Kolapo *et al.* (2012) examined bank performance in the presence of risk for the Costa-Rican banking industry from 1998-to 2007. The results showed that performance improvements follow regulatory changes and that risk explains differences in banks, and non-performing loans negatively affect efficiency and return on assets while the capital adequacy ratio has a positive impact on the net interest margin.

Owojori *et al.* (2011) in a study about the challenge of risk management in Nigerian banks in the post-consolidation era, highlighted that available statistics from the liquidated banks clearly showed that inability to collect loans and advances extended to customers and directors or companies related to directors/managers was a major contributor to the distress of the liquidated banks. At the height of the distress in 1995, when 60 out of the 115 operating banks were distressed, the ratio of the distressed banks' non-performing loans and leases to their total loans and leases was 67%. The ratio deteriorated from 79% in 1996; to 82% in 1997; and by December 2002, the licenses of 35 of the distressed banks had been revoked. In 2003, only one bank (Peak Merchant Bank) was closed. No bank was closed in the year 2004. Therefore, the number of banking licenses revoked by the CBN since 1994 remained at 36 until January 2006, when licenses of 14 more banks were revoked, following their failure to meet the minimum re-capitalization directive of the CBN. At the time, the banking licenses were revoked, some of the banks had ratios of performing credits that were less than 10% of loan portfolios. In 2000 for instance, the ratio of non-performing loans to total loans of the industry had improved to 21.5% and as of the end of 2001, the ratio stood at 16.9%. In 2002, it deteriorated to 21.27%, 21.59% in 2003, and in 2004, the ratio was 23.08% (NDIC Annual Reports- various years).

In a collaborative study by the CBN and the Nigeria Deposit Insurance Corporation {NDIC} in 1995, operators of financial institutions confirmed that bad loans and advances contributed most to the distress. In their assessment of factors responsible for the distress, the operators ranked bad loans and advances first, with a contribution of 19.5% (Olawale L. S, 2015).

Olawale L. S., (2015) on a research work studied the effect of credit risk on commercial banks' performance in Nigeria; the study was motivated by the damaging effect of classified assets on bank capitalization. The secondary data source was explored in presenting the facts of the situation. The secondary data were obtained from annual reports, relevant literature, and CBN's statistical Bulletin publication. The result showed that the ratio of loan and advances to total deposit negatively relate to profitability though not significant at 5% and that the ratio of Non-performing loans to loan and Advances negatively relate to profitability at a 5% level of significance. This study indicated that there is a significant relationship between bank performance (in terms of profitability) and credit risk management (in terms of loan performance). Loans and advances and non-performing loans are major variables in determining the asset quality of a bank. Some of the recommendations made in this study were; that management needs to be cautious in setting up a credit policy that will not negatively affect profitability and also they need to know how credit policy affects the operation of their banks to ensure judicious utilization of deposits and maximization of profit. Improper credit risk management reduces the bank profitability, affects the quality of its assets, and increase loan losses and non-performing loan which may eventually lead to financial distress; CBN for policy purposes should regularly assess the lending attitudes of financial institutions. One direct way is to assess the degree of the credit crunch by isolating the impact of the supply side of loans from the demand side taking into account the opinion of the firms about banks' lending attitude. Finally, strengthening the securities market will have a positive impact on the overall development of the banking sector by increasing competitiveness in the financial sector.

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In a case study by Kayogire and Shukla (2016) on Equity Bank (Rwanda) which sought to establish whether its credit risk management policy affected the bank's financial performance, it was found that there exists a relationship between the bank's financial performance and its loan collectability and policies it had put in place to assess lending to its customers. The researchers collected the primary data from 57 of the bank's credit officers.

Kargi (2011) cited in Kolapo *et al.* (2012) evaluated the impact of credit risk on the profitability of Nigerian banks. Financial ratios, as measures of bank performance and credit risk, were collected from the annual reports and accounts of sampled banks from 2004-to 2008 and analyzed using descriptive, correlation, and regression techniques. The findings revealed that credit risk management has a significant impact on the profitability of Nigerian banks. The study concluded that banks' profitability is inversely influenced by the levels of loans and advances, non-performing loans, and deposits thereby exposing them to great risk of illiquidity and distress.

Ndegwa (2017) in a study analyzed the effect of credit risk on the financial performance of commercial banks listed on the Nairobi Securities Exchange. The study specifically analyzed credit risk on its effects on return on equity and return on assets. A descriptive research design was done on a population of eleven banks and utilized secondary data which was obtained from the financial statements of these commercial banks. These financial statements were readily available on the specific bank's website between the years 2016-2020. Descriptive, correlation, and regression analysis were used to establish the relationship among the variables. In the study, Capital Adequacy Ratio was found to have a positive and weak association with ROA and ROE. Capital adequacy and loan to deposit ratio among other variables were found to have a positive effect on the financial performance of these banks. The study concluded that credit risk has an effect on the financial performance of the commercial banks listed at the NSE.

**2.4 Conceptual Framework**

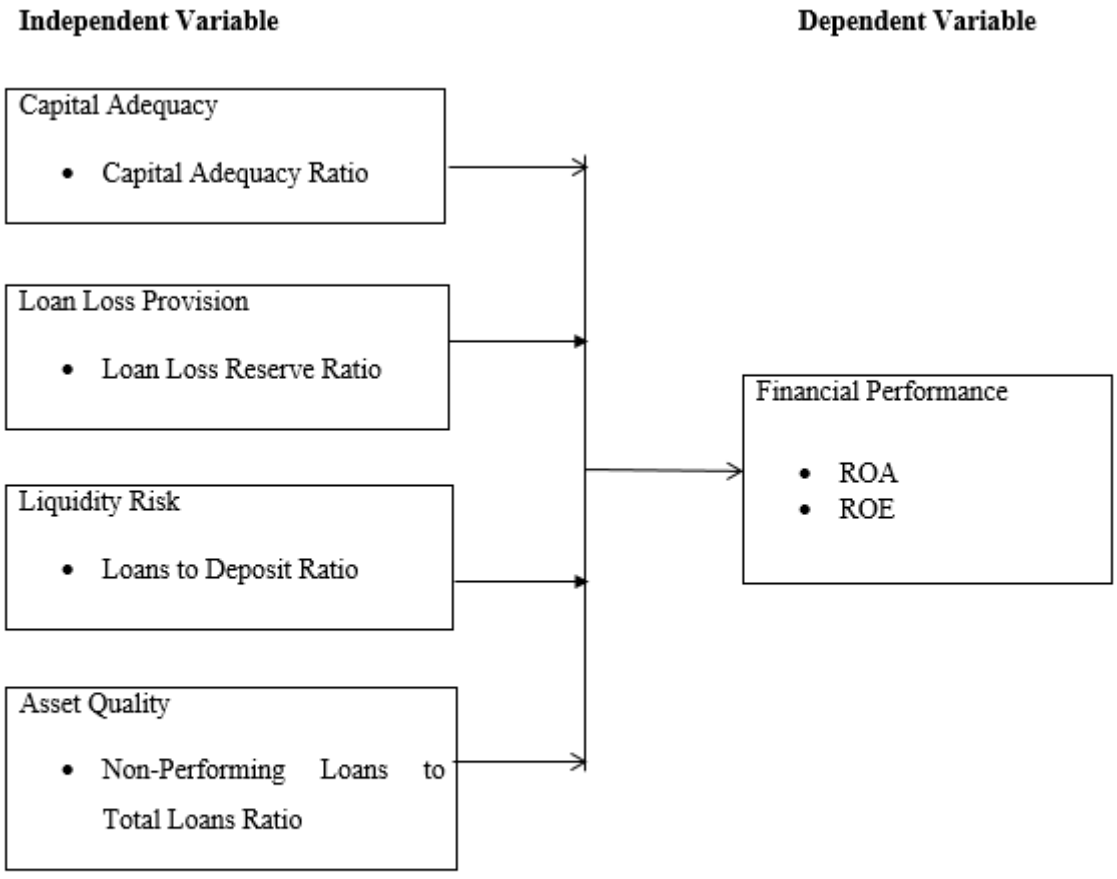


***Figure 2.1 Conceptual Framework***

***Source: Researcher (2022)***

### 2.5 Critique of the Existing Literature

In a study done by Ndegwa (2017), where the researcher analyzed the effect of credit risk on the financial performance of commercial banks listed on the Nairobi Securities Exchange. The researcher used a descriptive research design on a population of eleven banks. In this study, the topic was a good one since it has both the independent and dependent variables and the scope. Proper analysis was done from the descriptive research design used. However, this study did not take into account the commercial banks not listed at the NSE. This may not give a proper generalization of the findings of this study to other commercial banks.

A study by Kayogire and Shukla (2016) on Equity Bank (Rwanda) to establish whether a bank's credit risk management policy had an effect on its financial performance found that there exists a relationship between the bank's financial performance and its loan collectability and policies it had put in place to assess lending to its customers. The topic of this study was proper having both the independent and dependent variables and the scope of the study. However, the study was done on a narrow scope giving attention to only Equity bank in Rwanda. This scope could make it difficult for the researcher to generalize the findings to other banks as different banks may have different strategies for risk management and profit realization.

In a study by Mendoza and Rivera (2017) in rural banks in the Philippines where the research sought to establish whether a relationship existed between their financial performance and their credit risk levels and their capital adequacy, it was established that a relationship existed which was negative and statistically significant. However, capital adequacy did not have a significant effect on profitability. The results of this study were analyzed using the Arellano-Bond estimator. The study having a proper topic and scope, found out contradicting results from other studies about the relationship between capital adequacy and the banks' financial performance. The study used both credit risk and capital adequacy as independent variables, yet capital adequacy can be used as a measure of credit risk.

Numerous studies have been done in an attempt to establish the relationship that exists between the credit risk and the financial performance of commercial banks in different economies worldwide. Most of these studies, being done in different business conditions, have similar findings and conclude that the financial performance of the financial institutions inversely relates to the banks' credit risk levels as measured by different indicators. Several studies have proper topics indicating the independent and dependent variables, the scope of the study, employing proper statistical tools for analysis of the data, and relevant conclusions about the study findings. However, some studies had narrow scopes which could not make efficient generalizations of the findings. Also, different country governments offer different regulations in the banking sector and the presence of different trading environments across the world. These conditions can impede the generalization of the different study findings to the various economies.

### 2.6 Research Gap

Many researchers have done different studies intending to determine the effect credit risk has on the financial performance of financial institutions both at global and local levels. Most of these studies focus on measuring credit risk in terms of capital adequacy, liquidity risk, loan to deposit ratio, non-performing loans, regulations among other variables, and financial performance in terms of return on assets and return on equity. There are recent developments and regulations in different countries, Kenya inclusive, with regards to the banking sectors.

In recent studies in Kenya, Ndegwa (2017), while undertaking a study on the effect of credit risk on the financial performance of commercial banks listed at the NSE incorporated the effect of the latest capping of the interest rates by the CBK on the banks' credit management and financial performance. In the researcher's view, traditionally, banks used to compensate for the high risk of default by increasing their lending interest rate. This has been since capped by the CBK to a fixed-rate beyond which no commercial bank in Kenya is allowed to charge interest on loans. The researcher used ROE and ROA to measure the financial performance of these commercial banks. A good number of similar studies have also used profitability ratios, that is, ROE and ROA to measure financial performance. Related studies done in the Kenya economy have either focused on all the commercial banks in Kenya or the ones listed at the NSE. Most of the empirical studies reviewed have conflicting findings from similar variables used in the study.

In this study, therefore, the researcher attempts to conduct research on this topic and compare the findings of the previous studies, and establish whether the time difference between these studies could pose a significant difference in the findings in the context of the Kenyan economy. The study focused on determining how credit risk determinants affect the

efficiency with which these banks utilize their assets (loans for this case) to generate revenue, and how this affects their financial performance in terms of profitability. Therefore, this gap, as evident in the above cases, forms the basis for this research proposal with the topic, "effect of credit risk determinant on the financial performance of commercial banks in Kenya."

## 3. RESEARCH METHODOLOGY

### 3.1 Research Design

The study adopted a cross-sectional research design to collect the required secondary data for the study. In this case, the researcher was able to understand the correlations which existed between the studied variables. Curtis (2016) argue that correlational research design helps one to understand the magnitude and direction of association amongst study variables.

### 3.2 Target Population

In this study, the financial statements of the relevant banks were obtained from the central bank of Kenya website and individual banks' websites. According to the Central Bank of Kenya report (2021), there are 41 commercial banks in Kenya out of which 28 are locally owned banks. The banks are supposed to publish their accounts annually as per the regulatory requirements. Central Bank of Kenya oversees the entire banking sector in Kenya and therefore, was used as an authoritative source for banking sector information.

### 3.3 Sampling and Sample Size

A sample is a finite part of a statistical population whose properties are studied to gain generalized information representing the whole universe (Kombo and Tromp, 2009). It enables one to draw conclusions generalized to the population of interest (Sekaran & Bougie, 2011). Lavrakas (2008) defines a sample in a survey research context as a subset of elements or objects drawn from a larger population. This research utilized data from all the 41 commercial banks in Kenya on the condition that they have published annual accounts for the years 2017 to 2021.

### 3.4 Data Collection Procedures

The study utilized secondary data which were collected from the respective banks' websites and the Central Bank of Kenya website. These data were obtained from the annual financial statements of the banks. Ratios were then computed and used for the analysis.

### 3.5 Data Analysis

The data were summarized, coded, and tabulated. Thereafter, a descriptive analysis was done on the data, and then the variables correlated to each other using correlation analysis. Statistical Package for Social Sciences (SPSS) was adopted for this analysis. Data presentation was, therefore, done using bar charts, graphs, percentages, and ANOVA tables. Finally, a linear regression model was applied to determine the relationship among the variables.

#### 3.5.1 Analytical Model

A multiple regression model anchored on cross sectional analysis utilizing panel data from licensed commercial banks' financial statements and annual reports was applied in measuring the effect of credit risk determinants on financial performance of licensed commercial banks in Kenya. To determine the underlying relationship between credit risk determinants and financial performance of commercial banks in Kenya, the study conducted regression and correlation analyses.

The regression model for the study was as follows

$Y= \beta 0 + \beta 1X1+ \beta 2X2+ \beta 3X3+ \beta 4X4+\acute{\varepsilon}$

Where:

Y= Financial performance (the dependent variable) measured by ROA and ROE

B0 = Constant Term

$\beta 1$ to $\beta 4$= Coefficients of the factors

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X1= Capital Adequacy

X2= Loan Loss Provision

X3= Liquidity Risk

X4= Asset Quality

ε= Error term

## 4. DATA ANALYSIS, RESULTS AND DISCUSSION

### 4.1 Descriptive Statistics Analysis

The focus of this study was to determine the effect of credit risk determinants on the financial performance of commercial banks in Kenya. The underlying credit risk determinants that were analyzed included capital adequacy (measured through capital adequacy ratio), Loan Loss provision (measured through loan loss reserve ratio), liquidity risk (measured through loans to deposit ratio), and asset quality (measured through non-performing loans to total loans ratio). The financial performance of the banks was measured by return on asset and return on equity.

Table 4.1 shows the SPSS summary on descriptive statistics for the effect of credit risk determinants on financial performance. The values shown in table 4.1 are the measurements of the respective variables, determined from the financial statements of the 41 commercial banks in Kenya for a period of 5 years, thus N= 205. From table 4.1, the Financial Performance, Capital Adequacy, Loan Loss Provision, Liquidity Risk, and Asset Quality had a mean of; 45.64, 15.26, 7.35, 91.54, and 2.69 respectively. Further, Financial Performance, Capital Adequacy, Loan Loss Provision, Liquidity Risk, and Asset Quality had a standard deviation of 11.29, 5.74, 1.51, 5.09, and 0.89 respectively. Moreover, Financial Performance, Capital Adequacy, Loan Loss Provision, Liquidity Risk, and Asset Quality had a minimum value of; 27.86, 8.5, 80, 1.4, and 1 respectively. Lastly, Financial Performance, Capital Adequacy, Loan Loss Provision, Liquidity Risk, and Asset Quality had a maximum value of; 70.00, 30.6, 10.5, 98.0, and 4.00 respectively.

**Table 4.1 Descriptive Statistics**

| Variables | N | Minimum Statistics | Maximum Statistics | Mean Statistics | Standard Deviation |
|---|---|---|---|---|---|
| Financial Performance (ROA and ROE) | 205 | 27.86 | 70.0 | 45.64 | 11.29 |
| Capital Adequacy (Capital Adequacy Ratio) | 205 | 8.5 | 30.6 | 15.26 | 5.74 |
| Loan Loss Provision (Loan Loss Reserve Ratio) | 205 | 5.0 | 10.5 | 7.35 | 1.51 |
| Liquidity Risk (Loans to Deposit Ratio) | 205 | 80.0 | 98.0 | 91.54 | 5.09 |
| Asset Quality (Non-Performing Loans to Total Loans Ratio) | 205 | 1.0 | 4.0 | 2.69 | 0.89 |
| **Valid N (listwise)** | **205** | | | | |

***Source: Research Data (2022)***

#### 4.1.1 Test of Multicollinearity

The degree of correlation between the studied variables is assessed using the multicollinearity test. The Variance Inflation Factor (VIF) is a commonly used index of the multicollinearity that aids in assessing the degree of correlation between the research predictors. A VIF score of between 1 and 5 denotes a lack of multicollinearity, while a value below 5 denotes substantial correlations. High correlation between study variables, indicated by VIF values above 10, may make it difficult to achieve the goals of the study (Kalnins, 2018). To determine the level of variable correlation, this study used the Variance Inflation Factor, whose summary is given in table 4.2.

From table 4.2, capital adequacy, loan loss provision, liquidity risk, and asset quality had a VIF of 4.135, 7.591, 5.242, and 5.062 respectively. Since the VIF values are between the recommended 1 and 10, the variables are therefore, said to be moderately correlated which is sufficient for carrying out this study (Akinwande *et al*., 2015).

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**Table 4.2: VIF Test for Multicollinearity**

| Model | Coefficients of Std. Error | Standardized Coefficients Beta | Sig. | Collinearity Statistics Tolerance | VIF |
|---|---|---|---|---|---|
| (Constant) | 11.224 | | 0.000 | | |
| Capital Adequacy | 0.110 | 0.164 | 0.001 | 0.242 | 4.135 |
| Loan Loss Provision | 0.516 | -0.325 | 0.000 | 0.132 | 7.591 |
| Liquidity Risk | 1.127 | -0.568 | 0.000 | 0.191 | 5.242 |
| Asset Quality | 0.719 | 0.089 | 0.114 | 0.198 | 5.062 |

***Source: Research Data (2022)***

**4.1.2 Test for Independence of Errors**

According to the assumptions of error independence, residuals used to make forecasts should not follow a case-by-case pattern. The Durbin-Watson is an acceptable indicator for quantifying the correlation of mistakes or residuals depicting variables, according to Carvajal-Rodrguez (2018). The correlation is stated to exist when a definite relationship between variables under examination occurs. The Durbin-Watson statistic, which is based on the assumption of time series, aids in measuring variable autocorrelation. The Durbin-Watson should be closer to 2 to demonstrate a lack of autocorrelation. Durbin Watsons of less than 1 or more than 3 are source of concern for a researcher as they depict existence of autocorrelation among variables which automatically denies a study the needed significance and applicability. From table 4.3, the study variables had a Durbin-Watson index of 1.642 which is within the recommended margin of 1 to 3.0, thus depicting lack of autocorrelation among the variables.

**Table 4.3: Durbin Watson Test for Independence of Errors**

| Model | R | R-Square | Std. Error of the Estimate | Change Statistics Sig. F-Change | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | 0.935[a] | 0.875 | 4.0373 | 0.000 | 1.642 |

**a. Predictors: (Constant), Capital Adequacy, Loan Loss Provision, Liquidity Risk, Asset Quality**

**b. Dependent Variable: Financial Performance**

***Source: Research Data (2022)***

**4.1.3 Karl Pearson Correlation Coefficient**

**Table 4.4: Karl Pearson Correlation Matrix**

| **Variables** | **Financial Performance** | **Capital Adequacy** | **Loan Loss Provision** | **Liquidity Risk** | **Asset Quality** |
|---|---|---|---|---|---|
| **Financial Performance** | 1.000 | 0.846 | -0.879 | -0.918 | -0.792 |
| **Capital Adequacy** | 0.846** (0.000) | 1.000 | -0.837 | -0.845 | -0.785 |
| **Loan Loss Provision** | -0.879** (0.000) | -0.837 (0.000) | 1.000 | 0.774 | 0.792 |
| **Liquidity Risk** | -0.918** (0.066) | -0.845 (0.000) | 0.774 (0.000) | 1.000 | 0.715 |
| **Asset Quality** | -0.792** (0.000) | -0.785 (0.000) | 0.792 (0.000) | 0.715 (0.000) | 1.000 |

****Correlation is significant at the 0.05 level (2-tailed test)**

***Source: Research Data (2022)***

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### 4.2 Inferential Statistics Analysis

To examine the effect of credit risk determinants on financial performance of commercial banks in Kenya, this study applied inferential statistics analysis of simple regression analysis and multivariate regression analysis.

#### 4.2.1 Univariate Regression Analysis and Results for Respective Independent Variables

The goal of the univariate regression analysis was to determine the relationship and distinct effect of each variable on the dependent variable. According to the study objectives, the next sections describe model summary of variables, analysis of variance, and regression coefficients.

##### 4.2.1.1 Effect of Capital Adequacy on Financial Performance of Commercial Banks

To establish the effect of capital adequacy on financial performance of commercial banks in Kenya, a univariate analysis was conducted. The study aimed at answering the following question on this variable:

**$Q_{01}$ What is the effect of capital adequacy on the financial performance of commercial banks in Kenya?**

Table 4.5 provides the summary for the effect of capital adequacy on financial performance of commercial banks in Kenya, with an R-square of 0.716. The R-square represent the coefficient of determination between capital adequacy and financial performance. The results show that capital adequacy explained 71.6% of the financial performance of the commercial banks in Kenya, holding other credit risk determinants constant.

**Table 4.5: Model Summary of Capital Adequacy and Financial Performance**

| Model | R | R-Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | 0.846[a] | 0.716 | 0.715 | 6.03115 |

**a. Predictors: (Constant), Capital Adequacy**

***Source: Research Data (2022)***

At 95% confidence level, variance tests were conducted to establish the significance of the univariate regression model in predicting the effect of capital adequacy on financial performance of commercial banks in Kenya. Yu *et al.* (2021), a regression model is said to be fit for a study if its underlying p-value is below the underlying significance level. From table 4.5, the observed significance level was 0.000 which was less than the study's 5% (p-value of 0.000<0.05). The p-value as such, showed that the regression model was adequate in determining the causal relationship between capital adequacy and financial performance.

**Table 4.6: ANOVA for Capital Adequacy and Financial Performance**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| **1** | **Regression** | **18617.853** | **1** | **18617.853** | **511.833** | **0.000[b]** |
| | **Residual** | **7384.090** | **203** | **36.375** | | |
| | **Total** | **26001.943** | **204** | | | |

**a. Dependent Variable: Financial Performance**

**b. Predictors: (Constant), Capital Adequacy**

***Source: Research Data (2022)***

From table 4.7, the commercial banks' financial performance had a constant value of 20.242, holding the capital adequacy variable constant. Capital adequacy registered a coefficient beta of 1.665 with the financial performance of commercial banks in Kenya. The beta coefficient means that a unit increase in capital adequacy would result in an increase in the financial performance of commercial banks by 1.665 units. Table 4.7 shows that capital adequacy had a significance of 0.000 which was less than 0.05 significance level at which the tests were conducted. These results, therefore, mean that capital adequacy had a statistically significant effect on the financial performance of commercial banks in Kenya. The findings are consistent with those of Sadeghi and Faraji (2017) that revealed a direct statistically significant effect of capital adequacy on financial performance and stock returns of banks listed on the Tehran Stock Exchange.

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The resultant capital adequacy and financial performance regression equation was as follows;

**$Y = B_0 + B_1x_1 + \varepsilon_1$**

**$Y = 20.242 + 1.665X_1 + 0.074$**

**Where;**

Y = Financial Performance

$X_1$ = Capital Adequacy

**Table 4.7: Coefficients for Capital Adequacy and Financial Performance**

| Model | | Unstandardized Coefficients Beta | Std. Error | Standardized Coefficients Beta | Sig. |
|---|---|---|---|---|---|
| **1** | (Constant) | 20.242 | 1.199 | | 0.000 |
| | Capital Adequacy | 1.665 | 0.074 | 0.846 | 0.000 |

**a. Dependent Variable: Financial Performance**

***Source: Research Data (2022)***

**4.2.1.2 Effect of Loan Loss Provision on Financial Performance of Commercial Banks**

To establish the effect of loan loss provision on financial performance of commercial banks in Kenya, a univariate analysis was conducted. The study aimed at answering the following question on this variable;

**$Q_{02}$ What is the effect of loan loss provision on the financial performance of commercial banks in Kenya?**

Table 4.8 provides the summary for the effect of loan loss provision on financial performance of commercial banks in Kenya, with an R-square of 0.772. The R-square represent the coefficient of determination between loan loss provision and financial performance. The results show that loan loss provision explained 77.2% of the financial performance of the commercial banks in Kenya, holding other credit risk determinants constant.

**Table 4.8: Model Summary of Loan Loss Provision and Financial Performance**

| Model | R | R-Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | 0.879[a] | 0.772 | 0.771 | 5.39961 |

**a. Predictors: (Constant), Loan Loss Provision**

***Source: Research Data (2022)***

At 95% confidence level, variance tests were conducted to establish the significance of the univariate regression model in predicting the effect of loan loss provision on financial performance of commercial banks in Kenya. According to Meyners and Hasted (2021), a regression model is said to be fit for a study if its underlying p-value is below the underlying significance level. From table 4.9, the observed significance level was 0.000 which was less than the study's 5% (p-value of 0.000<0.05). The p-value as such, showed that the regression model was adequate in determining the causal relationship between loan loss provision and financial performance.

**Table 4.9: ANOVA for Loan Loss Provision and Financial Performance**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| **1** | Regression | 20083.323 | 1 | 20083.323 | 688.829 | 0.000[b] |
| | Residual | 5918.620 | 203 | 29.156 | | |
| | **Total** | **26001.943** | **204** | | | |

**a. Dependent Variable: Financial Performance**

**b. Predictors: (Constant), Loan Loss Provision**

***Source: Research Data (2022)***

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From table 4.10, the commercial banks' financial performance had a constant value of 93.931, holding the loan loss provision variable constant. Loan loss provision registered a coefficient beta of -6.573 denoting a negative relationship between loan loss provision and financial performance of commercial banks in Kenya. The beta coefficient means that a unit increase in loan loss provision would result in a decrease in the financial performance of commercial banks by 6.573 units. Table 4.10 further shows that loan loss provision had a significance of 0.000 which was less than 0.05 significance level at which the tests were conducted. These results therefore, mean that loan loss provision had a statistical significant effect on the financial performance of commercial banks in Kenya. The findings are consistent with those of Afolabi *et al.* (2020) that revealed an indirect statistically significant effect of loan loss provision on financial performance of commercial banks in Nigeria.

The resultant loan loss provision and financial performance regression equation was as follows;

$$Y = B_0 + B_2x_2 + \varepsilon_2$$

$$Y = 93.931 - 6.573X_2 + 0.250$$

**Where;**

**Y = Financial Performance**

**$X_2$ = Loan Loss Provision**

**Table 4.10: Coefficients for Loan Loss Provision and Financial Performance**

| Model | | Unstandardized Coefficients Beta | Std. Error | Standardized Coefficients Beta | Sig. |
|---|---|---|---|---|---|
| 1 | (Constant) | 93.931 | 1.878 | | 0.000 |
| | Loan Loss Provision | -6.573 | 0.250 | -0.879 | 0.000 |

**a. Dependent Variable: Financial Performance**

***Source: Research Data (2022)***

**4.2.1.3 Effect of Liquidity Risk on Financial Performance of Commercial Banks**

To establish the effect of liquidity risk on financial performance of commercial banks in Kenya, a univariate analysis was conducted. The study aimed at answering the following question on this variable;

**$Q_{03}$ What is the effect of liquidity risk on the financial performance of commercial banks in Kenya?**

Table 4.11 provides the summary for the effect of liquidity risk on financial performance of commercial banks in Kenya, with an R-square of 0.842. The R-square represent the coefficient of determination between liquidity risk and financial performance. The results show that liquidity risk explained 84.2% of the financial performance of the commercial banks in Kenya, holding other credit risk determinants constant.

**Table 4.11: Model Summary of Liquidity Risk and Financial Performance**

| Model | R | R-Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | 0.918[a] | 0.842 | 0.841 | 4.49903 |

**a. Predictors: (Constant), Liquidity Risk**

***Source: Research Data (2022)***

At 95% confidence level, variance tests were conducted to establish the significance of the univariate regression model in predicting the effect of liquidity risk on financial performance of commercial banks in Kenya. Yu *et al.* (2021), a regression model is said to be fit for a study if its underlying p-value is below the underlying significance level. From table 4.12, the observed significance level was 0.000 which was less than the study's 5% (p-value of 0.000<0.05). The p-value as such, showed that the regression model was adequate in determining the causal relationship between liquidity and financial performance.

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**Table 4.12: ANOVA for Liquidity Risk and Financial Performance**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 21892.969 | 1 | 21892.969 | 1081.60 | 0.000[b] |
| | Residual | 4108.974 | 203 | 20.241 | | |
| | Total | 26001.943 | 204 | | | |

**a. Dependent Variable: Financial Performance**

**b. Predictors: (Constant), Liquidity Risk**

***Source: Research Data (2022)***

From table 4.13, the commercial banks' financial performance had a constant value of 231.921, holding the liquidity risk variable constant. Liquidity risk registered a coefficient beta of -2.035 denoting a negative relationship between liquidity risk and financial performance of commercial banks in Kenya. The beta coefficient means that a unit increase in liquidity risk would result in a decrease in the financial performance of commercial banks by 2.035 units. Table 4.13 further shows that liquidity risk had a significance of 0.000 which was less than 0.05 significance level at which the tests were conducted. These results, therefore, mean that liquidity had a statistical significant effect on the financial performance of commercial banks in Kenya. The findings are consistent with those of Somanadevi (2015) that revealed an indirect statistically significant effect of liquidity risk on financial performance of commercial banks in Kenya.

The resultant liquidity risk and financial performance regression equation was as follows;

$Y= B_0 + B_3x_3 + \varepsilon_3$

$Y=231.921 – 2.035X_3 + 0.062$

Where;

Y= Financial Performance

$X_3$= Liquidity Risk

**Table 4.13: Coefficients for Liquidity Risk and Financial Performance**

| Model | | Unstandardized Coefficients Beta | Std. Error | Standardized Coefficients Beta | Sig. |
|---|---|---|---|---|---|
| 1 | (Constant) | 231.921 | 5.673 | | 0.000 |
| | Liquidity Risk | -2.035 | 0.062 | -0.918 | 0.000 |

**a. Dependent Variable: Financial Performance**

***Source: Research Data (2022)***

**4.2.1.4 Effect of Asset Quality on Financial Performance of Commercial Banks**

To establish the effect of asset quality on financial performance of commercial banks in Kenya, a univariate analysis was conducted. The study aimed at answering the following question on this variable;

$Q_{04}$ What is the effect of asset quality on the financial performance of commercial banks in Kenya?

Table 4.14 provides the summary for the effect of asset quality on financial performance of commercial banks in Kenya, with an R-square of 0.627. The R-square represent the coefficient of determination between asset quality and financial performance. The results show that asset quality explained 62.7% of the financial performance of the commercial banks in Kenya, holding other credit risk determinants constant.

**Table 4.14: Model Summary of Asset Quality and Financial Performance**

| Model | R | R-Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| **1** | **0.792[a]** | **0.627** | **0.626** | **6.90823** |

**a. Predictors: (Constant), Asset Quality**

***Source: Research Data (2022)***

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At 95% confidence level, variance tests were conducted to establish the significance of the univariate regression model in predicting the effect of asset quality on financial performance of commercial banks in Kenya. Meyners and Hasted (2021), a regression model is said to be fit for a study if its underlying p-value is below the underlying significance level. From table 4.14, the observed significance level was 0.000 which was less than the study's 5% (p-value of 0.000<0.05). The p-value as such, showed that the regression model was adequate in determining the causal relationship between asset quality and financial performance.

**Table 4.15: ANOVA for Asset Quality and Financial Performance**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 16314.038 | 1 | 16314.038 | 341.844 | 0.000[b] |
| | Residual | 9687.905 | 203 | 47.724 | | |
| | Total | 26001.943 | 204 | | | |

**a. Dependent Variable: Financial Performance**

**b. Predictors: (Constant), Asset Quality**

***Source: Research Data (2022)***

From table 4.16, the commercial banks' financial performance had a constant value of 72.899, holding the asset quality variable constant. Asset quality registered a coefficient beta of -10.133 denoting a negative relationship between asset quality and financial performance of commercial banks in Kenya. The beta coefficient means that a unit increase in asset quality would result in a decrease in the financial performance of commercial banks by 10.133 units. Table 4.16 further shows that asset quality had a significance of 0.000 which was less than 0.05 significance level at which the tests were conducted. These results, therefore, mean that asset quality had a statistical significant effect on the financial performance of commercial banks in Kenya. The findings are consistent with those of Olawale (2015) that revealed an indirect statistical significant effect of asset quality on financial performance of commercial banks in Nigeria.

The resultant asset quality and financial performance regression equation was as follows;

$$Y= B_0 + B_4x_4 + \varepsilon_4$$

$$Y=72.899 – 10.133X_4 + 0.547$$

**Where;**

**Y = Financial Performance**

**$X_4$ = Asset Quality**

**Table 4.16: Coefficients for Asset Quality and Financial Performance**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | |
|---|---|---|---|---|---|
| | | Beta | Std. Error | Beta | Sig. |
| 1 | (Constant) | 72.899 | 1.551 | | 0.000 |
| | Asset Quality | -10.133 | 0.547 | -0.792 | 0.000 |

**a. Dependent Variable: Financial Performance**

***Source: Research Data (2022)***

### 4.3. Multivariate Regression Analysis and Results

The multivariate regression analysis was conducted to establish the combined effect of the credit risk determinants on the financial performance of commercial banks in Kenya. The regression analysis, therefore, tested the effect of capital adequacy, loan loss provision, liquidity risk, and asset quality on the financial performance of commercial banks in Kenya. The test were conducted at 5% confidence level where if the p<0.05, the respective variable was considered as statistically significant in affecting the financial performance of commercial banks in Kenya.

Table 4.17 provides the summary for the effect of credit risk determinants on financial performance of commercial banks in Kenya, with an R-square of 0.875. The R-square represent the coefficient of determination between the credit risk

determinants and financial performance of commercial banks in Kenya. The results show that credit risk determinants explain 87.5% of the financial performance of commercial banks in Kenya.

**Table 4.17: Model Summary for Credit Risk Determinants and Financial Performance**

| Model | R | R-Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| **1** | **0.935[a]** | **0.875** | **0.872** | **4.03734** |

**a. Predictors: (Constant), Capital Adequacy, Loan loss provision, Liquidity Risk, Asset Quality**

***Source: Research Data (2022)***

At 95% confidence level, variances tests were conducted to establish the significance of credit risk determinants in affecting the financial performance of commercial banks in Kenya. From table 4.18, the observed significance level was 0.000 which was less than the study's 5% (p=0.000<0.05). The p-value as such, showed that the regression model was adequate in determining the causal relationship between credit risk determinants and financial performance of commercial banks in Kenya.

**Table 4.18: ANOVA for Credit Risk Determinants and Financial Performance**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| **1** | Regression | 22741.913 | 4 | 5685.478 | 348.799 | 0.000[b] |
| | Residual | 3260.030 | 200 | 16.300 | | |
| | Total | 26001.943 | 204 | | | |

**a. Dependent Variable: Financial Performance**

**b. Predictors: (Constant), Capital Adequacy, Loan Loss Provision, Liquidity Risk, Asset Quality**

***Source: Research Data (2022)***

From table 4.19, the commercial banks financial performance had a constant value of 170.713, holding the credit risk determinants constant. Capital adequacy, loan loss provision, liquidity Risk, and asset quality registered beta coefficients of 0.164, -0,325, -0,568, and 0.089 respectively. From the statistics obtained, capital adequacy and asset quality had a positive relationship with financial performance of the commercial banks. Additionally, loan loss provision and liquidity risk registered a negative relationship with financial performance of commercial banks in Kenya. Liquidity risk had the greatest effect on the financial performance of the commercial banks, followed by loan loss provision, then capital adequacy and finally asset quality

Table 4.19 shows that capital adequacy had a beta of 0.164 where a unit increase in capital adequacy would result in increase in financial performance by 0.164 units. Capital adequacy had a significance of 0.001 which was less than the 5% significance level at which tests were conducted (p= 0.001<0.05). The beta coefficient and the p-value statistics showed that capital adequacy was statistically significant in affecting financial performance of commercial banks in Kenya. Therefore, the study concluded that capital adequacy directly and significantly affects the financial performance of commercial banks in Kenya.

Moreover, table 4.19 shows that loan loss provision had a significance of 0.000 which is less than the 5% significance level at which tests were conducted (p= 0.000<0.05). This statistic showed that credit rating was statistically significant in affecting the financial performance of commercial banks in Kenya. Additionally, loan loss provision had a beta coefficient of -0.325 with financial performance, thus denoting an indirect correlation where a unit increase in loan loss provision would result in a decrease in financial performance of commercial banks by 0.325 units. Therefore, the study found that loan loss provision indirectly and significantly affects the financial performance of commercial banks in Kenya.

From table 4.19, liquidity risk registered a p-value of 0.000 which was less than the 5% significance level at which tests were conducted (p= 0.000<0.05). This outcome showed that liquidity risk was statistically significant in affecting financial performance of commercial banks in Kenya. Moreover, liquidity risk and financial performance registered a beta coefficient of -0.568 which showed a negative relationship with financial performance where a unit increase in the liquidity would result in the decrease in financial performance of commercial banks by 0.568. The p-value and beta

coefficient statistics show that liquidity risk had a statistical negative effect on the financial performance of commercial banks in Kenya.

Additionally, table 4.19 shows that asset quality had a significance of 0.114 which is more than the 5% significance level at which tests were conducted (p= 0.114>0.05). This statistic showed that liquidity risk was statistically insignificant in affecting financial performance of commercial banks in Kenya. Further, asset quality registered a beta coefficient of 0.089 where a unit increase in asset quality would result in an increase in financial performance of commercial banks by 0.089. These statistics therefore, show that asset quality positively and insignificantly affect the financial performance of commercial banks in Kenya. The resultant multivariate regression analyses include;

$$\mathbf{Y= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \acute{\varepsilon}}$$

$$\mathbf{Y= 170.713 + 0.164X_1 - 0.325X_2 - 0.568X_3 + 0.089X_4}$$

Where;

Y= Financial Performance

$X_1$= Capital Adequacy

$X_2$= Loan Loss Provision

$X_3$= Liquidity Risk

$X_4$= Asset Quality

**Table 4.19 Coefficients of Credit Risk Determinants and Financial Performance**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 170.713 | 11.224 | | 15.209 | 0.000 |
| | Capital Adequacy | 0.323 | 0.100 | 0.164 | 3.227 | 0.001 |
| | Loan Loss Provision | -2.431 | 0.516 | -0.325 | -4.711 | 0.000 |
| | Liquidity Risk | -1.259 | 0.127 | -0.568 | -9.901 | 0.000 |
| | Asset Quality | 1.142 | 0.719 | 0.089 | 1.587 | 0.114 |

**a. Dependent Variable: Financial Performance**

***Source: Research Data (2022)***

## 5. CONCLUSION AND RECOMMENDATIONS

### 5.1 Conclusion

In examining the effect of effect of credit risk determinants on financial performance of commercial banks in Kenya, the following findings were revealed. In determining the effect of capital adequacy on financial performance of commercial banks in Kenya, the study found that capital adequacy statistically and significantly affect financial performance of commercial banks in Kenya. The study therefore, concluded that an increase in capital adequacy results in increase in financial performance of commercial banks in Kenya.

Additionally, on the effect of loan loss provision on financial performance of commercial banks in Kenya, the study found an indirect statistical significant effect of loan loss provision on financial performance. As such, the study concluded that an improvement in loan loss provision through reduced loan loss reserve ratio would result in improved financial performance of commercial banks in Kenya through high return on assets.

On the effect of liquidity risk on financial performance of commercial banks in Kenya, the study found that liquidity risk has an indirect statistical significant effect on financial performance of commercial banks in Kenya. As such, the study concluded that adequate liquidity position of commercial banks in Kenya exemplified through low loan to deposit ratio result in their improved financial performance, thus high return on equity.

The study further found that asset quality was statistically insignificant in affecting the financial performance of commercial banks in Kenya. Hence, the study concluded that commercial banks should not take much attention on the non-performing loans ratio as it carries less weight in determining the financial performance of the commercial banks in Kenya.

Generally, the study found that credit risk determinants statistically and significantly affect the financial performance of commercial banks in Kenya. As such, the study concludes that commercial banks in Kenya should restructure their respective credit risk determinants to result in adequate and sustainable financial performance both in the short and long-runs.

### 5.2 Recommendations

#### 5.2.1 Management Recommendations

Among the four credit risk determinants analyzed, the study found that loan loss provision and liquidity risk were the leading contributors to the adequate financial performance of the commercial banks in Kenya. Both loan loss provision and liquidity risk were statistically significant in affecting the financial performance of commercial banks in Kenya. With a p-value= 0.000 and beta factor of -0.325, this study recommends that management of various commercial banks should ensure their loan loss reserve ratio is kept as low as possible, with recommended margin being between 5% and 10% to ensure sustainable financial performance of the commercial banks in Kenya.

Moreover, since liquidity risk registered a p-value of 0.000 and beta factor of -0.568, this study recommends that management of various commercial banks should streamline their liquidity risk function by maintaining the required level between loan and deposits (80% to 90%). Commercial banks with loan to deposit ratio below 90% are considered as having adequate financial performance as opposed to those with ratios above 100%. As such, this study recommends for managements of commercial banks to ensure they stick to this ratio to avoid over lending which can plunge them into high levels of indebtedness, thus experiencing poor financial performance.

#### 5.2.2 Policy Recommendation

Controlled by the Central Bank of Kenya (CBK), this study recommends that the regulatory agency should continue to monitor capital adequacy, liquidity risk, asset quality, and loan loss provision of commercial banks in Kenya to ensure they conform to the regulatory standards. The CBK has in place adequate policies concerning the operation of commercial banks in Kenya, and as such, the agency should focus on their implementation to ensure all commercial banks in the country experience sound financial performance both in the short and long runs.

### 5.3 Suggested Areas for Further Research

This study focused on the credit risk determinants that affect the financial performance of commercial banks in Kenya, thus being limited to a specific category of factors that affect financial performance of the financial institutions. Consequently, the study suggests that a similar study should be conducted on the effect of other factors such as micro-economic and macro-economic factors that affect the financial performance of commercial banks. Additionally, the study recommends that firm-specific factors such as size of the commercial banks and management efficiency be studied in depth to determine their underlying effect on the financial performance of commercial banks in Kenya.

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