THE MEDIATING EFFECT OF INCOME DIVERSIFICATION ON THE RELATIONSHIP BETWEEN BOARD CHARACTERISTICS AND NON-PERFORMING LOANS AMONG COMMERCIAL BANKS IN KENYA

BY

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DECLARATION

Declaration by the Candidate

I declare that this project is my original work and has not been presented to any other institution. No part of this project may be reproduced without prior or express permission of the author and/or Moi University.

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DEDICATION

I dedicate this work to my dad Mr. Patrice Chirchir and mum Cecilia J. Misoi and my daughter Lynn Anne for their support and ample environment to partake of this project. My siblings; Nancy, Amos, Enock, Tonny and Emmanuel.

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ABSTRACT

Non-performing loans is a major problem facing commercial banks globally. Prior studies suggests that board characteristics such as size, financial expertise, independence, and meeting frequency may influence the level of NPLs because the board formulates the overall strategic decisions relating to the banking business. However, extant literature shows mixed findings on the relationship between board characteristics and NPLs. Recent studies further reveal that banks are gradually shifting towards income diversification to cushion themselves against deteriorating interest income and souring NPLs. Additionally, studies confirm that income diversification has an indirect impact on NPLs through cross-subsidization and cross-selling. Thus, this study sought to determine whether income diversification mediates the relationship between board characteristics and non-performing loans among commercial banks in Kenya. The specific objectives of this study were to; assess the effect of board size, board independence, board financial expertise, and board meeting frequency on NPLs. The study further determined the mediating effect of income diversification on the relationship between; board size, board independence, board financial expertise, board meeting frequency and non-performing loans. The study was grounded on the the agency theory, information asymmetry theory, resource dependency theory and modern portfolio theory. The study was premised on the explanatory and longitudinal research design. The target population consisted of 42 commercial banks operating in Kenya. Inclusion/ exclusion criteria was applied and thefinal sample size comprised of 31banks. The study period was from 2008 to 2019. Data was secondary and quantitative and was extracted from the individual bank's audited financial reports and the Central Bank of Kenya Annual Supervisory Report. Data was analyzed through descriptive and inferential statistics. The Hausman test guided the choice between the fixed effect and random effect model. The findings showed that board size (β=0.813, ρ<0.05) had a positive and significant effect on non-performing loans among commercial banks in Kenya. However, board independence (β=-0.618, ρ<0.05), board financial expertise (β=-0.092, ρ<0.05) board meeting frequency (β=-0.276, ρ<0.05) had a negative and significant effect on non-performing loans among commercial banks in Kenya. Besides, the study found that income diversification had a significant and positive effect on NPLs (β=0.382 ρ<0.05). In addition, the findings indicated that income diversification had a significant mediating effect on the relationship between board size (β=0.233 ρ<0.05), board independence (β= -0.053 ρ<0.05), board financial expertise (β=-0.026, ρ<0.05), board meeting frequency (β=-0.260, ρ<0.05) and non-performing loans among commercial banks in Kenya. Therefore, the study concluded that board size, board independence, board financial expertise and board meeting frequency were key predictors of NPL. Further, the study established there existed an indirect effect of board characteristics on NPLs through income diversification. The study recommends policy intervention on board characteristics and income diversification to minimize the rising level of non-performing loans among commercial banks in Kenya. Specifically, banks boards should be relatively small, have a higher proportion of independent directors, and have directors who are well vast with financial and accounting knowledge. There is also a need for a mandatory board meeting to discuss bank lending policies and problematic loans. The study recommends that bank managers should be cautious while engaging in income diversification due to the positive association between nonlending activities and NPLs.

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ABBREVIATIONS AND ACRONYMS

BFE	Board Financial Expertise
BI	Board independence
BIS	Bank of International Settlement
BMF	Board meeting frequency
BS	Board size
CAR	Capitalization
CBK	Central Bank of Kenya
CBR	Central bank Rate
CEO	Chief Executive Officer
CGI	Corporate Governance Index
FS	Firm size
HHI	Herfindahl Hirschman Index
ID	Income diversification
IIF	Institute of International Finance
IMF	International Monetary Fund
LS	Lending strategy
MPT	Modern portfolio theory
MS	Market share
NPL	Non-Performing Loan
RE	Random Effects
ROE	Return on Equity
US	United States
FE	Fixed effect
RE	Random effect

OPERATIONAL DEFINITION OF TERMS

Board financial expertise – means the ability to analyze and interpret a full set of financial statements, including the notes attached thereto, in accordance with accepted accounting principles.

Board independence – having members in the corporate board of directors who do not have a substantial or economic relationship with the business or management of the business.

Board meeting frequency – the number of board meetings in the year

Board size – the number of directors that have been elected or appointed to constitute the corporate board of directors

Income Diversification – is the expansion into non-lending activities that generates noninterest income (Gurbuz et al., 2013; Ebrahim & Hasan, 2008). Furthermore, Income diversification is a bank business activity which aims at earning income not only from interest in credit distribution but also non- interest income such as remuneration, commission, trading and other operating income (Widiasari,2015).

Non-performing loans – Loans that are not being serviced after 90 days of the agreement.

CHAPTER ONE

INTRODUCTION

1.0 Overview

This chapter discusses the background of the study, the statement of the problem, the objectives of the study,the hypotheses of the study, significance and the study's scope.

1.1 Background of the Study

Non-performing loans (NPL) are a problem affecting the banking sector globally (Espinoza & Prasad, 2010). In the wake of the global crisis, 2007-2008 NPLs were reported negatively impacting key macro-economic dimensions. For instance, in the U.S, NPLs led to a rise in house prices, a drop in real GDP growth and housing starts (Ghosh, 2015). Prior studies have also reported that non-performing loan (NPL) was the primary determinant of the Asian financial crisis in late 1997 and early 1998 (Kwack, 2000). Recent studies further confirm a negative association between NPLs and the financial performance of commercial banks (Bhattarai, 2016). Also, some authors claim that NPLs affect the general health financial system (Adegboye, Ojeka & Adegboye, 2020). The World Bank database (2020) indicates that the global average-banking sector NPLs stands 6.28%; where the U.S accounts for 0.85%, Europe 3.7 %, Asia 4.6 % and Africa 10.99%.

Sub-Saharan Africa (SSA) has the highest level of NPLs to other regions in the world. For instance, in 2018 SSA mean NPL ratio was 11.7%, compared to lower-middle-income countries (LMICs) 9.3 percent and low-income countries (LICs) 11.1 percent. In nominal terms, NPLs amounted to $34.8 billion in 2018, using FSI data available for 25 SSA countries, corresponding to a median of about 2 percent of GDP in this sample.

In Kenya, the mean banking sector NPLs was at 14.45% (CBK, 2019), which translates to Kshs. 4.36 billion in nominal terms.

The Financial Stability Institute (FSI) Compilation Guide (IMF, 2006) suggests that a loan should be categorized as NPL when; "(1) payments of principal and interest are past due by three months (90 days) or more, or (2) interest payments equal to three months (90 days) interest or more have been capitalized (re-invested into the principal amount), refinanced, or rolled over (i.e., payment has been delayed by arrangement)." Similarly the Bank of International Settlement (BIS,2006) recommend the 90 days rule, more precisely, "a default is considered to have occurred with regard to a particular obligor when the obligor is past due more than 90 days on any material credit obligation to the banking group."

The Central Bank of Kenya adopts the Institute of International Finance (IIF) recommendation (1999) for classifying loans as standard, watch, substandard, doubtful and loss. Non-performing loans usually comprise the categories substandard (interest and/or principal are more than 90 days overdue), doubtful (interest and/or principal are overdue more than 180 days) and loss loans (where the loan is virtually uncollectible; interest and/or principal are overdue for more than a year). Generally, non-performing loans are considered the most significant hazard to the banking sector and a "financial crisis" due to their adverse effect on a country's economic growth (Rachid, 2019;). Furthermore, having more non-performing loans in the company's balance hurts the bank's cash flows and its stock price. Therefore, banks are keen on mitigating the level of non-performing loans in their books by applying stringent policies in relation to borrowers' appraisal, loan monitoring and recovery (Olabamiji & Michael, 2018).

The recent corporate scandals and unprecedented increase in NPLs in the banking sector have prompted researchers and practitioners to focus on how board impacts NPLs (Agrawal & Chadha, 2005; Awolowo, Garrow, Clark & Chan, 2018). Furthermore, the Basel Committee on Banking Supervision (BCBS) (2006) highlights that "effective corporate governance practices are essential to achieving and maintaining public trust and confidence in the banking system, which are critical to the proper functioning of the banking sector and the economy as a whole." According to Cadbury (1992), corporate governance denotes the system by which companies are directed and controlled." Corporate governance aims to ensure that the management is more transparent and accountable in every aspect, including financial and non-financial activities, as the management is working to maximize shareholders' value (Kyere& Ausloos, 2021).

Generally, some essential corporate governance cited in extant literature includes board size, board independence, board financial expertise, and board meeting frequency. However, the findings are inconclusive (Ali, 2018; ur Rehman et al., 2019; Balagobei, 2019; Ahmad, Balagobei, Guohui, Hassan, Naseem & Rehman, 2016; Nyor & Mejabi, 2013). Furthermore, most of these studies were conducted in developed and emerging economies, which necessitate investigating this phenomenon in developing economies that are characterized by high NPLs, weak corporate mechanisms, and low credit information sharing (Poudel, Hovey & Yarram, 2014; Akwaa Sekyi, Moreno Gené, Miglietta & Roncone, 2018; Amin, Imam & Malik, 2019).

Historically, diversification has been considered as a value-maximizing strategy for many firms. Lang and Stulz (1994) contend that poor-performing firms are more likely to engage in diversification than well-performing firms. Income diversification is an

important strategic choice for bank managers. For instance, banks engaging in income diversification can reduce the average cost of financing, reduce transfer resources from inefficient operations to the most profitable activities, achieve economies of scale and benefit from tax advantages (McLaughlin *et al*., 2009).

However, Rajan (1994) notes, diversification might destroy the value of the bank. This result, known as the "diversification discount," was explained by several factors such as risk aversion, agency costs and inefficiency of operations.

However, weak corporate governance and agency conflict is consistently associated with value-reducing diversification strategies. For example, Jensen (1986) and Stulz (1990) argue that managers diversify to increase the firm's size and benefit from the power and prestige of managing a larger firm. Liang, Kuo, Chan and Chen (2020) argue that board effectiveness increases the positive effect of diversification on bank profitability and mitigates against bank's diversification discount. Therefore, the success of a bank's income diversification strategy depends on the effectiveness of the boards in monitoring managers' behaviours. In recent years, the effect of board characteristics on firm diversification strategy has received significant attention in the management and finance literature. Some authors contend that the board may indirectly influence firm financial performance through its participation in strategic decisions and implementation (Hill & Snell, 1988; Heracleous, 2001). Other researchers suggest that the boards only play a review and approval role, controlling and influencing the corporations' directions through the management control system (Hoskisson, Johnson & Moesel, 1994; Hendry & Kiel, 2004).

According to Abobakr & Elgiziry (2017), board characteristic is considered an essential part of the function of board directors; the main activity is controlling management in

the best interest of shareholders. It is also supposed that board performance is affected by the board's effectiveness, which is affected by different features such as board formation and quality. A diverse board provides more resources for banks hence improving diversification for the interests of shareholders. Therefore, the association between the board characteristics and diversification is much more related to the managerial control and the quality of decision-making (Adams & Mehran, 2005).

Therefore, the study seeks to investigate the mediating effect of board characteristics on the relationship between board characteristics and non-performing loans among Commercial Banks in Kenya.

1.1.1 Commercial banks in Kenya

In Kenya, commercial banks' journey date back to the colonial era that saw the formation of the East African Protectorate in 1865 and later Kenya's being declaration of a British colony in 1920. The National Bank of India pioneered the Kenyan banking sector in 1896, Standard Bank of South Africa joined in 1910, and Barclays Bank in 1916. The Central Bank of Kenya, which regulates the banking sector and is a banker for the government, was established in 1966. Presently there are 42 commercial banks and one mortgage finance company, and in total, these banks have over 1,541 branches across the country.

Kenya’s Vision 2030 envisages a vibrant, efficient, stable, and inclusive financial sector that improved households' financial access (Government of Kenya, 2007). Vision 2030 is consistent with Global Sustainable Development Goals that advocate for robust and regulated financial markets as a precondition for reducing global inequalities. The impact of the banking sector on the Kenyan economy cannot be underestimated. In 2017, the sector’s total asset base was Ksh 4.1 trillion, equity Ksh 600 billion, gross

pretax profit Ksh 148 billion, and loan portfolio of Ksh 2.7 trillion compared to Kenya's national budget 2016/17 of Ksh 2.3 trillion (CBK, 2017). The loan book of NPLs, according to (CBK 2020) amounted to 14.3%.

1.2 Statement of the Problem

Non-performing loans are a challenge facing the banking sector globally. The World Bank (2019) statistics show that the average banking sector NPLs for 119 countries was 6.45 percent. While the developed countries report low percentages (US, 0.8%, Canada, 0.50; France, 2.47%), the developing countries continue to report higher level of NPLs (Kenya, 14.5%; Nigeria, 6.03%; Ghana, 13.94%; Equatorial Guinea 48.81%). The Kenyan banking sector had seen the growth of NPLs from as low as 6.28% in 2010 to 14.45% in 2020. Further, Kenyan banks restructured loans amounting to KSh1.63 trillion, equivalent to 54.2% of the total banking sector loan book, by the end of December 2020 (Aura, 2021).

A high level of NPLs adversely affects bank performance and the overall health of a country's financial system. Swelling NPLs impairs banks' ability to originate loans, which leaves potential borrowers and investors with fewer opportunities to access credit. Kenya witnessed the collapse of several banking institutions, Chase Bank, Dubai Bank, and Imperial Banks, in the recent past, owing to an unsustainable level of NPLs. Similarly, the high level of NPLs has prompted banks to increase their loan loss provisions; thus, cutting back on profitability and returns to shareholders.

Prior studies report that board characteristics have a significant effect on non-performing loan. However, their findings are inconclusive (Berger, Imbierowicz & Rauch, 2016). While one strand suggests a positive relationship (Rehman, Zhang and Ahmad, 2016) another shows a negative relationship(Islam, 2020; Akwaa *et al.*, 2018).

Interestingly some authors find no relationship (Angahar & Mejabi,2014; Balagobei, 2019). Besides, the majority of these studies were conducted in developed countries with robust legal and institutional mechanisms that mitigate corporate governance lapses (Akwaa Sekyi, Moreno Gené, Miglietta & Roncone, 2018; ur Rehman, Mangla, & Zhang, 2016). Therefore there is need to investigate intervening factors that influence the associations between board characteristics and non-performing loans.

Corporate finance literature suggests that the board plays an important role in strategic decisions such as diversification. For instance, Chen, Dyball and Wright (2009) link board characteristics with corporate diversification. While, a study by Kim and Rasheed (2014) found that board attributes affects a firm's performance through the choice of a diversification strategy. More recently, it has been reported that a bank's involvement in income diversification improves lending quality through cross selling and cross-subsidization (Duho, Duho & Forson, 2021; Abedifar, Molyneux & Tarazi, 2018). Inversely, there are studies suggesting that non-lending activities impairs the quality of the loan portfolio (Githaiga, 2020; Waqas *et al.*, 2017). Thus, this study sought to determine whether income diversification mediates the relationship between board characteristics and non-performing loans among Commercial Banks in Kenya.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of the study was to determine the mediating effect of income diversification on the relationship between board characteristics and non-performing loans among Commercial Banks in Kenya.

1.3.2 Specific objective

The study was guided by the following specific objectives to:

1. Determine the effect of board size on non-performing loans among Commercial Banks in Kenya.
2. Assess the effect of board independence on non-performing loans among Commercial Banks in Kenya.
3. Examine the effect of board financial expertise on non-performing loans among Commercial Banks in Kenya.
4. Evaluate the effect of board meeting frequency on non-performing loans among Commercial Banks in Kenya.
5. Determine the mediating effect of income diversification on the relationship between;
    a) Board size and non-performing loans among Commercial Banks in Kenya.
    b) Board independence and non-performing loans among Commercial Banks in Kenya.
    c) Board financial expertise and non-performing loans among Commercial Banks in Kenya.
    d) Board meeting frequency and non-performing loans among Commercial Banks in Kenya.

1.4 Research Hypotheses

The study sought to address the following research hypotheses:

H_{01}: Board size has no effect on non-performing loans among commercial banks in Kenya.

H_{02}: Board independence has no effect on non -performing loans among commercial banks in Kenya.

H_{03}: Board financial expertise has no significant effect on non-performing loans among commercial banks in Kenya.

H_{04}: Board meeting frequency has no significant effect on non -performing loans among commercial banks in Kenya.

H_{05}: Income diversification does not significantly mediate the relationship between;

a) Board size and non-performing loans among commercial banks in Kenya.

b) Board independence and non-performing loans among commercial banks in Kenya.

c) Board financial expertise and non-performing loans among commercial banks in Kenya.

d) Board meeting frequency and non-performing loans among commercial banks in Kenya.

1.5 Significance of the Study

This study's main objective was to determine whether income diversification mediates the effect of board characteristics on non-performing loans among commercial banks of Kenya. Therefore, the study findings are beneficial to several stakeholders. First, the findings are of help to the banking industry regulator by creating awareness on important association between board structure, nonlending activities and NPLs. Secondly, the findings may assist in the formulation of policies and guidelines on board characteristics, which may help tame the NPLs that threaten the financial sector's stability. In addition, the owners of commercial banks would understand how the

various board characteristics affect non-performing loans and ultimately reduce the rate it is increasing.

The findings are equally beneficial to academia and future researchers. Specifically, the research adds to the existing body of knowledge on corporate governance, income diversification and non-performing loans, and may form the basis of future studies.

1.6 Scope of the Study

The study sought to assess the mediating effect of income diversification on the relationship between board characteristics and non-performing loans among commercial banks in Kenya. The study was limited to four board characteristics: board size, board independence, board financial expertise, and board meeting frequency. The theories that guided the study include; agency, information asymmetry, resource dependency, and modern portfolio theory while the unit of analysis was 42 licensed commercial banks in Kenya (CBK, 2020). The study period is between 2008 to 2019, where the banking sector was relatively stable and resilient, as reflected by the high capital and liquidity buffers compared to the statutory requirements. According to the financial stability report (2020), the period witnessed a consistent increase in NPLs. Similarly, there were several innovations and regulations in the industry that saw increased access to financial services and bank shifting towards nontraditional lending activities such as stock brockerage, insurance among others.

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview

This chapter reviewed the literature related to board characteristics, income diversification, and non-performing loans: the chapter further reviews related theories, a summary of the reviewed literature, and a conceptual framework.

2.1 Concept of Non-Performing Loans

A non-performing loan (NPL) is a loan in which the borrower is in default and has not paid the monthly principal and interest repayments for a specified period. Non-performing loans occur when borrowers run out of money to make repayments or get into situations that make it difficult for them to continue making repayments towards the loan (Suyanto, 2021). Usually, banks classify loans as non-performing loans when the repayments of principal and interest are due for more than 90 days or depending on the terms of the loan agreement. As soon as a loan is classified as an NPL, the likelihood of receiving repayments is significantly lower.

Understanding the factors that influence the level of non-performing loans is crucial for the risk management function of banks and the bank supervisors responsible for banking stability. The determinant of non-performing loans within and across countries is a significant theme in the non-performing loan academic literature (Skarica, 2014; Nkusu, 2011and Louzis *et al.*, 2012). Also, the cyclicality of bank lending and the incidence of abnormal loan losses arising from bank lending has been of interest to policymakers in recent years. Yet, academic and policy studies have not examined the role of corporate governance in exacerbating or reducing systemic losses in a financial

system, particularly losses arising from massive non-performing loans among lending institutions.

According to the International Monetary Fund (IMF), the types of non-performing loans include three of the following; loan installments of principal and interest are at least 90 days due, and the lender no longer believes the borrowers will honour their debt obligations. In this case, the loan is written off as a bad debt in the lender's books of accounts. Also, ninety (90) days' worth of interest payments is capitalized, refinanced, or delayed due to changes in the loan agreement. Finally, payments of principal and interest are less than 90 days overdue, and there are reasons to doubt that the borrower will not pay the outstanding loan in full. Therefore, banks are required by law to reveal their ratio of non-performing loans to total loans. NPL ratio is used to measure the bank's credit risk and quality of outstanding loans. A high ratio means the bank bears a greater risk of loss if it fails to recover the owed amounts, while a low ratio indicates that the outstanding loans pose a low risk to the bank.

In the literature, the GDP growth rate is often associated with NPLs because NPLs are lower during economic booms and are higher during recessionary periods (Skarica, 2014; Ozili, 2015; Beck *et al*, 2015). Also, high unemployment levels are associated with high non-performing loans because high unemployment, high inflation rates can affect borrowers' capacity to repay loans (Klein, 2013; Nkusu, 2011; Ozili, 2018). The effect of inflation on non-performing loans is inconclusive in the literature, with mixed evidence (Klein, 2013; Beck, 2015). Global risk factors may also influence the persistence of non-performing loans. For instance, Espinoza and Prasad (2010) investigated 80 banks from the Gulf Cooperation Council (GCC) region and employed the VIX proxy to control global financial volatility and risk aversion. The findings

indicate that non-performing loans are positively correlated with greater global financial volatility, implying that non-performing loans increase with global risk.

2.2 Concept of Board Characteristics

Board characteristics is an important dimension in corporate governance. Board characterirsics it is an essential tool for monitoring and advising, management of corporations (Akpan & Amran, 2014). The concept of corporate governance began to be used and spoken about more commonly in the 1980s (Mulili & Wong, 2011). Still, it originated in the Nineteenth Century when incorporation was being advocated for to limit liability (Hickson & Turner, 2005). According to Adams (2002), the establishment of the first corporate body marked the beginning of serious discussions on corporate governance.The genesis of corporate firms was triggered by the passing of the Joint Stock Companies Act 1844 (U.K.) that provided companies' registration. Today's corporate governance practices are premised on separation of control from ownership (Berle & Means, 1968). In this case, the owners (shareholders) are no longer involved directly in the management of firms because the function is delegated to and exercised by an agent /professional manager (Kiel & Nicholson, 2003). The passing of the Limited Liability Act 1855 (U.K.) gave rise to the need for corporate governance frameworks to protect owners of firms from the actions of professional managers.

According to Francis (2000), the concept of corporate governance gained prominence in the 1980s because this period was characterized by stock market crashes in different parts of the world and the failure of some corporations due to poor governance practices. The corporate collapse was the predominant driver for change to corporate governance codes (United Nations, 1999). As more corporate entities in different parts of the world collapsed in the 1980s, there was a change of attitude, with much higher

performance expectations being placed on management boards of firms. There was also a growing realization that managers are to run firms while boards ensure that firms are run effectively and in the right direction (Adams, 2002). Directors and managers require different sets of skills, and managers do not necessarily make good directors.

Prevention of corporate failure was not the only reason for adopting the corporate governance codes (Javid & Iqbal, 2010). Similarly, there has been a growing recognition that improved corporate governance was crucial for the growth and development of the whole economy of a country. Empirical studies also show a strong link between the firm performance and the quality of its corporate governance practices (Bhagat & Bolton, 2019; Ciftci, *et al*, 2019). Moreover, Gompers, Ishii and Metrick's (2003) study shows a strong association between good corporate governance practices and shareholder performance. Further, the study also indicates that two-thirds of investors are willing to pay more for shares of companies characterized by suitable corporate governance mechanisms. Conversely, Kurniati (2019) claims no significant association between firm performances and governance practices.

Corporate governance mechanisms are group into two groups; those internal to firms and those external to the firms. The internal governance system comprises of the management, and the board of directors. The board of directors as the top of internal governance systems, is responsible for providing advises to the management and providing monitoring and controlling of management as well. The board plays an essential role in the internal governance of corporate in monitoring and controlling function, accordingly it is considered the heart of corporate governance. Board effectively is associated with board characteristics such as size, independence, board

financial expertise and frequency of board meetings (Levrau & Van den Berghe, 2006 Anderson, Mansi & Reeb, 2004).

2.2.1 Concept of Board Size

Board size is an essential issue in corporate finance literature. However, empirical literature does not provide conclusive evidence on the relationship between board size and firm performance. Bijalwan and Madan (2013) state that board size is the total number of directors on the board for a particular financial year. Riaz, Khan and Shaheen(2017)) claim that a large board promotes performance. Similarly, Gafoor *et al.,* (2018) find that a large board that when the board size is between 6 and 9, there is a significant improvement in bank financial performance. Azoury, Jreitiny and Azzi (2015) contend that the board size is associated with the board's ability to monitor and advise management. Having a large board will likely result in better monitoring and advisory functions and create more value for the bank. Using a sample of top Indian companies Salim, Arjomandi and Seufert (2016), who considered a sample of 11 Australian banks between 1999 to 2013, show that large boards improve the quality of decision-making and supervisory processes; which, ultimately improve bank efficiency. There have been numerous arguments about whether the number of directors on boards enhances the level of monitoring, control, and returns (Germain, Galy & Lee, 2014).

2.2.2 Concept of Board Independence

According to Bozec (2013), board independence is a critical corporate governance mechanism that seeks to balance the power between executive directors and managers. Studies done in OECD countries indicate that firms characterized by the moderately independent board are efficient in creating firm value owing to the board's enhanced

monitoring and advisory functions (De Andres & Vallelado, 2008). Prior studies also show that board independence is an indicator of board effectiveness (Hashim & Devi, 2008). Researchers have also revealed that board independence impacts key firm performance indicators. Using an international sample of 2185 firms and data from 2006 to 2015, Uribe-Bohorquez, *et al,,* (2018) found a significant positive relationship between board independence and bank performance (measure by technical efficiency). Sasidharan (2020) assessed the link between board independence and firm value. The study employed a sample of Chinese listed firms between 2010 and 2017 reported that a high proportion of independent directors significantly improves firm value. Khosa's (2017) research that considered a sample of 317 and panel data for 2008-2012 that yielded 1,350 firm-year observations show a negative relationship between board independence and the firm value of group-affiliated firms in India. Tarchouna *et al.,* (2017) sought to examine the effect of corporate governance on non-performing loans and used a sample of 184 U.S. commercial banks for the period 2000–2013 to test the hypothesis. The study found that boards independence reduces NPLs. Additionally, studies have reported that a high proportion of independent directors minimizes the level of credit risk among banking institutions (Lu, & Boateng, 2018).

2.2.3 Concept of Financial Expertise

According to Gafoor, Mariappan and Thiyagarajan (2018) suggest that board financial expertise denotes the number of financial experts on the board; where a financial expert is someone who has in-depth knowledge of banking, finance and economics. Islam (2020) examined the impact of board composition and activity on bank non-performing loans (NPLs). The empirical evidence suggested that NPLs are negatively related to directors with financial expertise. Among different audit committee characteristics, an audit committee should include at least one member with financial experience (Section

407 of the SOX). Karamanou and Vafeas (2005) declared that management forecasts are positively related to financially experienced audit committees. Better governance leads to more forecasts and updated disclosures flowing from management to shareholders. Krishnan and 223 Visvanathan (2009) concluded an insignificant positive relationship between the existence of financial experts in audit committees and audit fees. Accounting experience, and not only general financial expertise, has a significant relationship to audit fees. The efficiency of audit committees is perceived more when financial and accounting experts prevail (Cohen et al., 2002). Mangena and Pike (2005) concluded that the financial expertise of audit committee members has an important positive impact on interim disclosures.

Based on the suggestion of agency theory regarding the monitoring role of principals, financial experts within audit committees are said to positively influence audit quality. Financial experts demand better audit quality, leading to an increase in audit fees (Sharma &Joseph, 2003). This increase in demand for better audit quality is because of financial experts' monitoring role and their intent to comply entirely with the principal–agent conceptual framework. Karamanou and Vafeas (2005) declared that management forecasts are positively related to audit committees, which comprise financial experts. The hypothesis to be empirically tested is as follows:

2.2.4 Concept of Board Meeting Frequency

According to Addo Hussain & Iqbal (2021), board activity is the number of meetings held by the board of directors yearly, whether ordinary or extraordinary. It has been argued that the frequency of board meetings is an essential internal control mechanism since the board is tasked with monitoring and advising the executive management (Koutoupis & Malisiovas, 2021). Therefore, the frequency of board meetings and the

extent of individual director attendance is an indicator of the quality and effectiveness of the board. Also, Adam, Soliman and Mahtab (2021) suggest that boards should meet at least once for effectiveness. Paul (2017), using a sample of 182 Indians for 2010–2013, found that a high frequency of board meetings has a significantly positive effect on firm performance. Adegboye and Dahunsi (2021), who studies Nigerian banks, report that board meeting frequency reduces the level of NPLs. Younas, Klein, Trabert, & Zwergel (2019) investigated the relationship between board composition and corporate risk-taking among listed firms in Germany and the USA. The authors used panel data drawn from a sample of 1252 firms for the period 2004 – 2015. The findings show that the frequency of board meetings has a significant impact on firm risk-taking.

2.2.5 Income Diversification

Gort (1962) defines diversification as the entry into firms where few firms account for a large proportion of total output and sales." In the same way, Ansoff (1957) avers that "diversification is usually associated with a change in the characteristics of a company's product line and market, in contrast to market penetration, market development, and product development which represent other types of change in product-market structure." According to Mercieca, Schaeck, and Wolfe (2007), bank diversification may be the form of creating new financial products, expansion of business lines, geographical expansion, or a blend of geographical and product development.

GÜRBÜZ, Yanik and Aytürk (2013) suggest that income diversification increases the share of the fee, net trading profits, and other noninterest income within the bank's net operating income. Ebrahim and Hasan (2008) view income diversification as expanding into new income-earning financial services save for traditional intermediation services. Therefore, income diversification is an income-generating strategy used by banks

through expanding business activities towards non-lending activities such as investment banking, trading, and insurance. Prior studies show that income diversification improves bank's profitability. A study by Brahmana, Kontesa, and Gilbert (2018) assessed the effect of income diversification on performance and used annual financial information from Malaysian banks between 2005 and 2015 and a sample of 15 banks; show that income diversification increases bank's performance.

Githaiga, Yegon and Komen (2019) assessed the effect of income diversification on the financial performance of Kenya commercial banks for the period 2008-2017. The study used a sample of 31 banks. Herfindahl-Hirschman Index (HHI) was used to measure income diversification. The findings indicated that income diversification had a positive and significant effect on banks' financial performance in Kenya. Wang and Lin (2021) examined the effect of income diversification on bank risk from a sample of commercial banks in 14 Asia Pacific economies over the years 2011–2016. The findings show that banks with a higher level of income diversification are less risky.

However, some studies have reported income diversification discounts. Duho, Onumah and Owodo (2019) investigated the impact of diversification on Ghanaian banks' profitability, profit efficiency, and financial stability. The study employed panel regression technique on a data set of 32 banks from 2000 to 2015. The results of this study indicate that income diversification decreases profit, profit efficiency and financial stability.

Yustyarani and Yuliana (2020) examined the effect of intellectual capital and income diversification on firm value mediated by profitability among Indonesian banks using a sample size of 36 banks for 2013-2018. The findings show that income diversification had a negative effect on profitability.

2.3 Theoretical Review

The following theories guided the study: Agency Theory, Information asymmetry Theory, Resource dependency Theory and Modern portfolio theory.

2.3.1 Agency theory

Jensen & Meckling (1976) pioneered agency theory, which seeks to explain the principal (shareholders) and agent (directors/managers) relationship, which is the basis of modern corporations. The central premise of this theory is the separation of ownership from control, which potentially creates a conflict between the shareholder and the managers. According to the theory, management may engage in "opportunistic behaviours" such as shirking and indulging in excessive perquisites that may lead to expropriation of shareholders' wealth (Zainuldin, Lui & Yii, 2018). Agency theory is grounded on seven main assumptions: self-interest, goal conflict, bounded rationality, information asymmetry, the preeminence of efficiency, risk aversion, and information as a commodity (Eisenhardt, 1989). Jensen (1983) came up with two branches of agency theory, namely: positivist and principal-agent. Positivists emphasize the broader separation of ownership from control and claim that incentive schemes, external labor markets conditions and capital markets discipline agents. Therefore, the positivist branch focuses on protecting shareholder interest, minimizing the agency cost and ensuring that principal-agent interests are configured. The second branch of agency theory, principal-agent, is concerned with technical and mathematical relationships between the principal and the agent (contractual relationship).

Fama and Jensen's (1983) agency theory is instrumental in explaining the role of the board of directors in controlling the principal and agent conflict, which increases firm value. The principal-agent conflict is exacerbated by the two moral hazard problems

(Ali, 2020). First, the principal difficulty in monitoring executive actions and firm complexity make establish a cause-effect relationship between managerial decisions and outcomes. Hence, this creates an incentive for managers to engage in fraudulent acts with minimal detection. The second moral hazard problem is the lack of transparency on various firm outcomes, for instance, accounting statements and performance indicators. Besides, managers can easily engage in financial misreporting.

Based on the theory, corporate governance dimensions such as board composition and activities have a significant effect in aligning the interests of the managers with those of the shareholders. Fama and Jensen (1983) argue that the proportion of independent directors indicates boards' ability to control the management. From an agency theory perspective, large boards are more effective in monitoring since more people will review managerial actions. Regarding the frequency of board meetings, both the agency theory and the resource dependence theory assume that the higher the board meetings frequency, the greater the capabilities board directors advise, discipline and monitor managers, hence better performance of the firm. Previous studies have used the theory to predict the impact of corporate governance on firm performance (Tulung & Ramdani, 2018; Poletti-Hughes & Briano-Turrent, 2019). Despite the popularity of agency theory in management studies, the theory has been criticized for lack of realism regarding managerial motivation and behaviours, economic inefficiency of the proposition derived from agency theory and questionable legal interpretation of governance suggested by the theory (Segrestin & Hatchuel, 2011).

Thus, borrowing from agency theory, this study hypothesizes that strong corporate governance structures (board size, board independence, financial expertise and board activity) have lower non-performing loans due to minimal cases of related parties, self-

dealing transactions, and low cost of capital. On the contrary, weak corporate governance leads to higher NPLs.

2.3.2 Information Asymmetry Theory

George Akerlof (1970) founded asymmetric information where he referred it as The Market for Lemons. The theory proposes that an imbalance of information between shareholders and directors may lead to organizational failures. Asymmetric information is more rampant in financial firms like borrowing and lending. The borrowers have better knowledge about their financial state than the lender, creating an imbalance of power in transactions and finally causing skew or organizational failures (Suri and Adnan, 2016).

Asymmetry of information is related to access of information among participants in making economic decisions (Mirrlees (1997). Also, Nyoni (2018) suggests that lenders may make decisions that could be unfavourable to borrowers leading to adverse selection. Moral hazards and adverse selection have led to a significant increase in NPLs in banks (Nyandoro, 2019). This explains why most finance providers require collaterals from credit applicants. (Rahman, Belas, Kliestik, & Tyll, 2017) found that information asymmetry has the following effects (adverse selection, moral hazard and monopoly of knowledge) among organizations. This is particularly true for larger firms facing challenges in information asymmetry compared to small organizational firms (Felício, Rodrigues, & Samagaio, 2016). Kennedy, Sivakumar, and Vetzal (2006) argue that the board of directors, shareholders, and borrowers can access valuable, confidential information and use it for their advantage and also in the interests of others. Therefore, components of corporate governance like board size, board independence and busy functional board of directors are believed to minimize information

asymmetry. For instance, Harris and Raviv (2008) stated that board members have valuable information than outsiders, emphasizing board independence to check the executive board members.

The literature has shown that having financial expertise in the board composition positively affects the confidentiality of financial firms by creating more accurate and reliable information and audited financial states, hence reducing the level of NPLs (Güner et al., 2008). Anderson, Mansi, & Reeb (2004) stated that a large board of directors provides better oversight of the financial accounting process; therefore, the company offered better transparency, mitigating the problems brought in by asymmetric information and allowing investors to adjust on subjective possibility deliveries. Also, Adams and Mehran (2005) noted that the frequency of board meetings is an indicator of board effectiveness, more so the monitoring function; thereby an essential tool to monitoring insider and unsecured lending.

Based on information asymmetry, this study hypothesizes that corporate governance plays a critical role in minimizing information asymmetry and adverse selection, which are ingredients to rising NPLs. Specifically, the study predicts that board size, effective board activity, financial expertise, and board independence reduce NPLs.

2.3.3 Resource Dependence Theory

Pfeffer and Salancik (1978) advanced the resource dependency theory. The theory's central premise is that a firm is an open system dependent on contingencies in the external environment. According to resource-based theory (RBV), the organization is an amalgam of tangible and intangible assets and capabilities (Barney, 1991). In particular, strategic resources are valuable, rare, inimitable and non-substitutable (Barney, 1991). In this context, besides the monitoring role, the resource dependence

theory (RDT) postulates that the boards enable the firm to access resources that are not otherwise available.

Given that all organizations depend on others to survive and thrive, resource dependency theory (Pfeffer, 2003) suggests that managing external relationships to leverage influence and resources is the prime purpose of the board. Hence, board members are selected for their background, contacts and skills in 'boundary-spanning. The use of the board mechanism reflects the board's potential in fostering long-term relationships with key external constituencies. It has been argued that diverse board directors who possess financial and accounting knowledge, skills and experience, have a more significant effect on the firm performance (Saleh & Islam, (2020). The theory further suggests that the board of directors provides several critical resources to the firm; advice and counsel, balancing information flow between the firm and environment, access to resources, and legitimacy (Hillman, Withers & Collins (2009). Using resource dependency theory, it is hypothesized that a board of directors with more external linkages and networks will likely enhance a company's access to various resources, thus improving corporate governance and firm performance. (Jackling & Johl,(2009). This study uses the resource dependence theory to argue that board characteristics, improve its diversity such as size, gender, and expertise enables the board to provide better quality guidance and counsel to the organizations; which may minimize the level of NPLs.

2.3.4 Modern Portfolio Theory

Harry Markowitz (1952) advanced Modern portfolio theory. The theory is premised on how risk-averse investors can build their collection of assets to maximize their expected returns and minimize risk by diversifying their numerous investments. Proponents of

diversification as a risk argue that revenue coming from different businesses of a diversified firm, which have imperfectly correlated income streams, reduces the bankruptcy or the overall risk when banks engage in the broader scope of activities (Lewellen, 1971). MPT is a central theory in explaining the relationship between income diversification and NPLs.

Markowitz (1952) argues that asset with the imperfectly correlated return; the risk of that portfolio, measured by the portfolio's beta, is lower than the aggregate risk. Investors are willing to assume more risks for extra returns. MPT is based on several assumptions: investors are rational, investors have homogeneous expectations and the existence of a risk-free borrowing and lending rate, and information is readily available and free (Markowitz, 1952). Valverde and Fernandez (2007) contend that diversifying income streams improves banks operating income and market power. Besides, non-lending activities offset declining interest income occasioned by competition in the lending business (DeYoung & Rice, 2004). Lang and Stulz (1994), Rumelt (1974) found that under-performing firms tend to diversify more than profitable ones.

Bank managers are responsible for the diversification of income streams and desired loan portfolio. Therefore, commercial banks should consider reducing or minimizing the default risk from credit takers in loans repayments, which cause the rise in NPLs, affecting the profitability. Besides, MPT encourages the activities of diversification, which provides a more stable income and the ability to leverage managerial efficiency across products. For the case of commercial banks, it reduces NPLs and increases profitability.

Empirical literature further claims that income diversification improves financial intermediation through reduced information gaps between depositors and borrowers

(Sanya & Wolfe, 2011). As banks expand into nontraditional activities, they tend to cut back on lending, implying that the share of interest incomes will reduce and noninterest income increases. The bank will experience less interest risk and credit risk. Besides, the interplay between lending and non-lending activities leads to cross-selling, and cross-subsidization may absorb any undesirable impact of information asymmetry in lending. Thus, through income diversification, banks may improve the lending activities, thus lowering the level of NPLs. The relevance of the modern portfolio theory to this study First, the theory hypothesis is a causal relationship between income diversification and non-performing loans. Secondly, the theory suggests an indirect effect of board characteristics and non-performing loans through income diversification.

2.4 Empirical Review

2.4.1 Board Size and Non-Performing Loans

The number of members existing on the board of directors measures the board size. O'Sullivan *et al.,* (2016) found that board size positively affects the performance of bank holding companies. Their results indicate that the ideal size of bank boards reduces the non-performing asset ratio, loan loss reserve ratio, and net charge-off ratio in normal periods. Likewise, the board size is negatively related to the non-performing assets ratio during the crisis, which reflects better monitoring; however, the relation between board size and performance changes in a crisis framework. O'Sullivan *et al.,* (2015) explain this finding via the justifications presented by Lipton and Lorsch (1992) and Jensen (1993). They argue that the enlargement of board size may erupt difficulties by hindering the timely decision-making process. Grove *et al.,* (2011) indicated that the increase of board size enhances the financial performance. However, if the board becomes excessively large, this enlargement may weaken the bank's

performance. Concerning loan quality, these authors indicate that a larger board of directors does not control the bank lending process efficiently and hence, weakens loans quality.

The Basel Committee on Banking Supervision (BCBS) (2006) highlights that effective corporate governance practices are essential to achieving and maintaining public trust and confidence in the banking system, critical to the banking sector's proper functioning and the entire economy. Board size is one of the key variables to determine corporate governance. So many efforts have been made to find the optimal board size, but still, the results are mixed. There is an exciting debate among researchers in two ways; does board size matter for the performance of the firms, and what should be the board size. Maria *et al.,* (2009) explored the effect of board size and composition on the banking efficiency for 57 large European banks for 2002-2006. They empirically concluded that the higher the board size, the less the efficiency of the banks. They took the non-performing loans ratio as the measure of inefficacy.

Similarly, Simpson and Gleason (1999), Belkhir (2006) and Altunbas, Gardener, Molyneux and Moore, (2001) came with the same conclusion that the higher the board size, the lower the performance of the banking and thus high non-performing loans. Bussoli, *et al*,(2015). explored the relationship between corporate governance and banks loan performance and empirically stated that board size negatively influences loans quality and results in higher non-performing loans.The same argument is proved by Farrell and Whidbee (2000). Akwaa Sekyi, Moreno Gené, Miglietta and Roncone (2018) examined board characteristics and insider ownership affecting non-performing loans among 102 banks drawn 22 European countries over 2008-2014. The finding indicates that and found that board size has a negative relation with NPLs. Rehman,

Zhang, & Ahmad (2016) examined the factors that influence NPLs between 1998 and 2009 and found that board size positively correlates with non-performing loans.

2.4.2 Board Independence on Non-Performing Loans

According to Minton *et al.,* (2014), board independence is the ratio of independent directors to total board members. Switzer and Wang (2013) suggest that board independence is an essential indicator of a board's ability to exercise oversight over managerial behaviours, contributing to improved organizational performance. Prior studies have revealed the importance of board independence to bank efficiency (Adeabah, Gyeke-Dako & Andoh, 2019; Ramly, Sok-Gee, Mustapha & Sapiei, 2015). Furthermore, Fama and Jensen (1983) document that an independent director is more likely to protect the shareholders' right to realize the importance of outside directors on board. A study by Alves (2014) further reports that independent boards are associated with better earnings quality. Based on the existing literature, there seems to be an essential link between board independence and NPLs, though previous studies show mixed findings.

Ur Rehman *et al.,* (2019) assessed the relationship between corporate governance dimensions (board size and board independence) on non-performing loans among listed Chinese banks. Data was for the period 2000 to 2013. The findings of this study indicate that while large board size mitigates the level of NPLs, board independence had a positive effect.

Ali (2018) investigated the impact of corporate governance on non-performing loans among banks operating from three emerging economies (Pakistan, India and Bangladesh). This study used a panel data analysis technique and a sample of 86 banks

from 2006 to 2016. The researcher found that the impact of board independence on NPLs was significantly negative.

Using a sample of 50 largest Chinese banks and data for 2003–2010, Liang, Xu and Jiraporn (2013) examined the relationship between board characteristics (size, composition and functioning of the board) and bank asset quality (NPLs) in China. The authors found that the number of board meetings and the proportion of independent directors had a significant and positive effect on asset quality. In contrast, board size has a significantly negative impact on bank performance. We find new evidence that the degree of bank boards' political connection is negatively correlated with bank performance and asset quality. The findings suggest that the board of directors plays a significant role in bank governance in China.

Tarchouna, Jarraya and Bouri (2017) explored the association between corporate governance index (composed of board size, board independence and CEO duality) and non-performing loans using a sample of 184 US-based commercial banks and panel data for the years 2000 to 2013. The findings show that corporate governance has a negative effect on NPLs for small banks, but corporate governance fails to mitigate the problem of NPLs in medium and large banks. Also, Ahmad *et al.*, (2016), who studied the nexus between corporate governance on the non-performing loans in the Pakistan banking sector and panel data for 1996-2007, found that board size had a significant positive effect on board independence had a negative impact on NPLs.

Some studies also show no relationship between board independence and NPLs. For instance, Balagobei (2019), who studied Sri Lankan commercial banks, found that board independence had no significant effect on non-performing loans.

Rashid (2018) stated that board independence is an essential attribute of corporate board practices; however, board independence still may be an illusion in Kenya. Adegboye, Ojeka & Adegboye (2020) studied the effect of corporate governance structure and bank externalities on non-performing loans in Nigeria. The study used data for the period 2009–2017, found that board independence has no significant effect on NPLs. Idewele (2016) examined the determinants of non-performing loans among all commercial banks in Nigeria. The study used secondary data extracted from the Central Bank of Nigeria Statistical Bulletin and the Annual Reports of all commercial banks and found that board independence has no significant effect on NPLs. Conversely, Al Masud & Hossain (2021) reported a significant and negative relationship between board independence and NPLs using a sample of 22 conventional private commercial banks from emerging economies and panel data for the period 2007 - 2016.

2.4.3 Board Financial Expertise and Non-Performing Loans

According to Zhang, *et al,(*2020). financial expertise is the act of understanding the generally accepted accounting principles (GAAP) and financial statements. Financial expertise is being experienced in preparing or auditing financial statements of comparable companies; having experience accounting for estimates, accruals, and reserves; understanding internal accounting controls; and understanding an audit committee's functions. The financial expertise may increase the probability of cross-cultural communication problems (Lehman & Dufrene, 2013) and interpersonal conflicts (Cos, 2009). However, it may also bring competitive advantages to the firm, such as international networks, commitment to shareholder rights and managerial entrenchment avoidance (Oxelheim & Randoy, 2003).In the study, financial expertise was measured by assessing if financial expertise understands the generally accepted accounting principles and financial statements, is experienced in auditing financial

statements of comparable companies, participated in accounting for estimates, accruals, and reserves and understanding of internal accounting controls. Islam (2020 carried out a study on the impact of board composition and activity on nonperforming bank loans for 2008-2009. The findings indicate that NPLs are negatively related to directors with financial expertise. Ojeka, Adegboye, & Dahunsi (2021) carried out a study on audit committee characteristics on nonperforming loans in Nigerian Deposits banks using 15 banks according to the Nigerian Stock Exchange. The findings suggested that financial expertise in the audit committee leads to a reduced level of nonperforming loans in listed banks in Nigeria.

Nahari (2015) studied the impact of audit committees' size and financial expertise on the discretionary loan loss provision of listed Deposit Money Banks using a sample of 14 banks for (2009-2013) in Nigeria banks. The findings indicate that the financial expertise has a significant negative impact on the banks' discretionary loan loss provision.

2.4.4 Board Meeting Frequency on Non-Performing Loans

Board meeting frequency measures the board's effectiveness in exercising oversight and control (Arosa, Iturralde & Maseda, 2013). Previous studies have also reported a significant relationship between board meeting frequency and organizational performance (Paul, 2017; Birindelli, Dell'Atti, Iannuzzi, & Savioli, 2018), firm value (Brick & Chidambaran, 2010) and firm risk (Younas, Klein, Trabert & Zwergel, 2019).

The impact of board meeting frequency on NPLs has been subjected to several empirical studies, though the findings are inconclusive. Balagobei (2019) carried out a survey of the influence of various corporate governance dimensions on non-performing loans of listed banks in Sri Lanka using a sample size of 10 banks for five years (2013

-2017). The author used secondary data and Pearson's correlation to test the hypotheses. The study found that board meeting frequency had a significant positive impact on non-performing loans of listed banks in Sri Lanka.

Tahir, Shah, Sayal and Afridi (2020) investigated the effect of corporate governance on loan quality using a sample of 21 banks listed in the Pakistan Stock Exchange and panel data for the period 2005–2015. The findings indicate a lower proportion of block holders, lower debt level, low frequency of board meetings, and high proportion of non-performing loans.

Islam (2020) explored the effect of board meeting frequency on bank non-performing loans (NPLs). The author panel data was drawn from 102 publicly traded U.S. commercial and data for 2002-2015. The findings suggest that more active boards (measured by the frequency of board meetings) effectively mitigate NPLs. Ojeka, Adegboye and Dahunsi (2021) studied the effect of board audit committee characteristics on NPLs in the Nigerian banking sector. The study considered a sample of listed 15 banks. The findings show that a higher frequency of board meetings reduces non-performing loans. Gafoor *et al.,* (2018) Studied the effect of board structure (board size, board independence, financial expertise and board meeting) on asset quality (measured by the proportion of non-performing loans to total loans) using a sample of 36 Indian commercial banks for the years 2001 to 2014. The findings of this study demonstrate that board independence; financial expertise had a significant positive impact on NPLs. Conversely, the study reports that board size, frequency of board meetings had no considerable effect on non-performing loans.

Ali (2018) sought to examine whether corporate governance affects non-performing loans of listed banks in Pakistan, India and Bangladesh. The study employed data from

2006 to 2016 and a sample for it consists of 86 banks. The study found that institutional shareholders, board meetings and state ownership are significantly and positively related to NPLs.

In summary, from the above empirical literature, the relationship between board meeting frequency and non-performing loans of the commercial banks have both positive and negative effects; thus, further analysis of this relationship is needed.

2.5 The Mediating Effect of Income Diversification

Empirical literature suggests an indirect relationship between board characteristics and NPLs through income diversification.

2.5.1 Board Characteristics and Income Diversification

Prior studies show that board characteristics affect the extent to which firms engage in income diversification. A study by Marouan (2015) that explored the association between corporate board characteristics, managerial entrenchment and diversification strategy and considered a sample of 30 Tunisian companies listed on the Stock Exchange over the period 1997-2011 found that board size had a positive effect on diversification, while board independence had a negative effect.

Kim, Al-Shammari, Kim and Lee (2009) explored the association between CEO duality leadership and corporate diversification behavior. The study employed a sample consisting of 290 U.S. firms listed in the Fortune 1000 and data for 2002. The study found that board independence significantly and positively influenced corporate diversification. Liang, Chen and Chen (2010) examined the effect of corporate governance on bank diversification. We use the OSIRIS database to obtain the financial statements of banks from 2003-2007. The findings indicate that board size and board

meeting frequency had no significant effect on bank diversification; while, board independence significantly positive effect.

Liang, Chen & Chen (2016) determined the relationship between corporate governance structures and the level of diversification using data from the OSIRIS7 database for 2003 to 2008. The results show no relationship between board independence and diversification.

Nishi (2015) studied the impact of corporate governance dimensions on diversification. The study employed data drawn from 217 Japanese electronics corporations for 2013. The study's findings indicate that diversified corporations adopt more independent directors to improve monitoring because diversified businesses are more complex and require more directors to interpret and audit the business.

Anderson, Bates, Bizjak and Lemmon (2000) studied the effect of corporate governance structure on diversified firms and whether any differences in corporate governance were related to the value loss from diversification. Data were collected from 199 NYSE/AMEX firms for the years 1985 - 1994. The study found that diversified firms had more independent boards than undiversified ones; however, board sizes were similar across firms.

2.5.2 Income Diversification and Non-Performing Loan

Extant literature shows that non-lending activities affect lending activities through cross-selling and subsidization (Abedifar *et al.,* 2018). A higher share of non-interest characterizes a more stable bank; on the contrary, less diversified banks depend less on income interest, improving their risk diversification. Non-interest income is more volatile than interest income that becomes difficult for borrowers to switch their lending association due to information costs (Ayunku & Uzochukwu (2020). Similarly,

researchers have examined the impact of income diversification on non-performing loans. Khan *et al.,* (2020) examined the determinants of non-performing loans among commercial banks listed in the Pakistan Stock Exchange for 2005–2017, yielding 177 firm-year observations; the study findings show a negative relationship between income diversification and non-performing loans. Chaibi (2016) explored the determinants of problem loans in the Tunisian banking sector. The sample comprised ten commercial banks listed on the Stock Exchange of Tunis and data for 2001 -2010. The results show no significant relationship between income diversifications and NPLs. Ismail *et al.,* (2017) report that non-interest activities have a significant positive effect on NPLs. The authors used data from 7 Malaysian banks for the period 2008- 2015.

Ozcan & Bolat (2016) examined the factors that determine the non-performing loans using a sample size of 20 deposit banks in Turkey using panel data for 2006-2012. The study reported that solvency, profitability, credit quality, diversification, economic growth and the recent financial crisis are essential indicators of non-performing loans rate in the Turkish banking sector. Moreover, revenue diversification significantly lowers the non-performing loans rate. Khan Siddique & Sarwar (2020) examined determinants of non-performing loans in the banking sector in developing countries. The sample consists of commercial banks listed on the Pakistan Stock Exchange for 2005–2017. The results show that income diversification has a negative association with NPLs. Bayar (2019) studied the macroeconomic, institutional, and bank-specific factors behind non-performing banking loans using a sample size of the banking sector among emerging market economies from 2000 through 2013. The study found that diversification proxied by non-interest income to total income in the study is expected to affect NPL negatively since diversification enhances loan quality and decreases NPL.

Rachman, Kadarusman Anggriono & Setiadi (2018) Carried out a study on bank-specific Factors Affecting Non-performing Loans in Developing Countries listed in the Indonesian stock exchange. This study used a sample size of 36 Commercial banks and panel data for 2008–2015. The study found that income diversification had an insignificant relationship between income diversification and NPL. Githaiga (2020) examined the impact of revenue diversification on loan portfolio quality using a Sample size of 67 countries and quarterly banking sector financial reports over the period 2016-2018. The study found that income diversification had a positive impact on NPLs.

2.6 Control Variables

To isolate the mediating effect of income diversification on relationship between board characteristics on non-performing loans, the study would control for a set of variables based on empirical literature.

2.6.1 Firm Size and Non-Performing Loans

Prior studies argue that bank size influences the level of non-performing loans. It has been argued that large-sized banks have sufficient financial and human resources to appraise and process loans, improving the quality of their loan portfolio. A study by Hu, Li and Chiu (2004) examines ownership of non-performing loans. It uses a sample of 40 Taiwanese commercial banks, and panel data for 1996 to 1999 show that bank size is negatively related to the rate of NPLs. A similar finding was reported by Bolarinwa, Akinyele and Vo (2021), who considered 14 listed Nigerian banks and data for 2011 to 2018. Conversely, Cotugno, Stefanelli and Torluccio (2010), who studied a sample of 1,927 Italian banks for 2006, report a positive relationship between bank size and loan default.

2.6.2 Lending strategy and non-performing loans

Based on empirical evidence, they argued that banks charging relatively higher lending rates with excessive lending strategies are exposed to a higher risk of incurring NPLs. The results of this study were in accordance with that of Keeton and Morris (1987). They considered economic conditions and concluded that banks with higher risk appetites are exposed to increased losses. Further studies conducted by Sinkey and Greenwalt (1991), Rajan and Dhal (2003) and Jimenez and Saurina (2005) are also based on the same. Fofack (2005) highlighted the causes and implications of non-performing loans. His study revealed that macroeconomic shocks and higher cost of capital through the rise in interest rates are highly associated with the increase in NPLs of Sub-Saharan African countries. Collins and Wanjau (2011) also concluded higher lending rates as a key factor boosting NPLs. Dash and Kabra (2010) found that commercial banks with aggressive lending strategies charging relatively higher rents on lending incur greater NPLs.

Khemraj and Pasha (2009) studied the relationship of various bank-specific and macroeconomic variables as determinants of NPLs in the Guyanese banking sector. Based on empirical evidence, they argued that banks charging relatively higher lending rates with excessive lending strategies are exposed to a higher risk of incurring NPLs. Collins and Wanjau (2011) also concluded higher lending rates as a key factor boosting NPLs. Dash and Kabra (2010) found that commercial banks with aggressive lending strategies charging relatively higher rents on lending incur greater NPLs. Lending policies and non-performing loans are indeed related. Lending policies help the banks lend prudently and lower the risk level to the banks, and strict adherence to lending policies has led to reduced non-performing loans. (Owino, M. O. (2013). The effect of

the lending policies on the levels of non-performing loans (NPLS) of commercial banks in Kenya (Doctoral dissertation, University of Nairobi).

2.6.3 Market Share and Non-Performing Loans

Though prior studies suggest that banks commanding a significant market share are more effective in screening loan customers, the findings are inconclusive. Khemra and Pasha (2009) assessed the determinant of non-performing loans among banks in Guyana. The study used a panel dataset drawn from six commercial banks that operated during the 1994 to 2004 period. The study found no relationship between market share and NPLs.

Ekanayake and Azeez (2015) explored the determinant of non-performing loans (NPLs) among Sri Lankan commercial banks. Data was for nine licensed commercial banks for the period from 1999 to 2012. The findings show a significantly negative relationship between market share and NPLs.

2.6.4 Capitalization and Non-Performing Loans

Empirical studies show that managers of undercapitalized banks have the incentive to engage in risky lending and saving costs due to reduced monitoring, resulting in higher future non-performing loans. Therefore, this “moral hazard” suggests a negative relationship between bank capital and NPLs. On the other hand, the managers of the banks with higher capital ratios are likely to prefer a loose credit policy because of their too big to fail (TBTF) status.

Prior studies show that bank capitalization is a significant driver of NPLs. Capitalization is synonymous with “moral hazard,” which is a typical problem of taking an unnecessary risk when other parties bear the risk (Berger & DeYoung, 1997).

Therefore, the management of thinly capitalized banks is more likely to engage in more risky loans, thereby increasing NPLs.

Bahrini (2011), who studied the determinants of non-performing loans among Tunisian banks and used data drawn from ten banks for 1996-2007, found a negative association between bank capitalization and NPLs. Khan, Siddique, and Sarwar (2020) studied the determinants of NPLs among commercial banks in Pakistan Stock Exchange for 2005–2017 reported a negative relationship between capitalization and NPLs. Similar findings were reported by Benthem (2017) using data collected for eleven countries; Canada, China, France, Germany, Italy, Japan, Netherlands, Spain, Switzerland, United Kingdom, and the United States over the period from 2007-2016.

2.7 Conceptual Framework

According to Cresswell (2013), a conceptual framework is a diagram that elucidates the main concepts being studied and the relationship among the variables. The study's conceptual framework is presented in Figure 2.1. The diagram shows that non-performing loans is the dependent variable. The independent variables are board size, board independence, board financial expertise, and board meeting frequency. Income diversification is the mediating variable. The control variables include firm size, lending strategy, market share and capitalization.

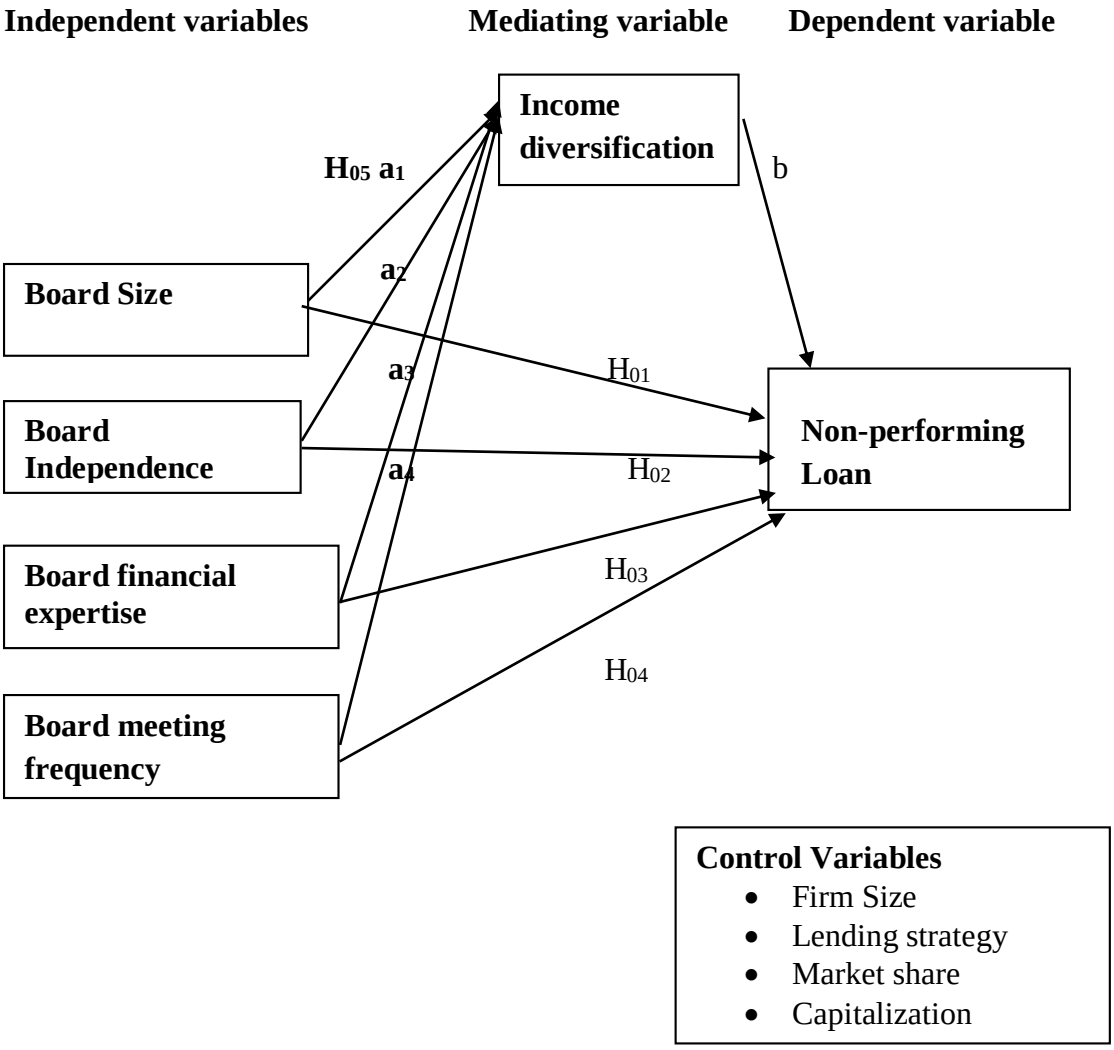

Figure 2.1: Conceptual Framework

Source: Researcher (2021)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Research methodology means the theory of how research should be undertaken. This section described the research design, study's population, sampling techniques, model specification and measurement of the variables, data collection, data analysis, and ethical consideration.

3.2 Research Paradigm

A research paradigm is a set of shared beliefs about research and is the central feature of any research study (Brown & Dueñas, 2020). Guba (1990) suggests that a research paradigm is a philosophical framework or set of beliefs that guide action on research. Thus, a research paradigm denotes the general theory that informs most scholarships on the operation and outcomes of any particular system of thoughts and action. Research paradigms are classified into; positivism, postpositivism (or realism), interpretivism (or constructivism) and pragmatism (Chimhundu, 2018).

Positivists believe that the external world is ordered and regular and with an objective reality with a specific pattern, that can be predicted and explained with theories and laws (Gorski, 2018). Proponents of positivists further argue that knowledge is value-free and independent of researchers. Therefore, theory-based research uses deductive reasoning and scientific methods, beginning from identifying a theory, formulating hypotheses, and collecting data to generalize.

Postpositivism is grounded on an imperfect reality, though it recognizes the inherent biases common in social interactions and research processes. Therefore, postpositivists suggest that research is partly value-laden, implying that researchers are part of what is

being studied and may influence the study (Young & Ryan, 2020).

Interpretivism opposes the assertions of positivism and claims that there are many subjective realities that individual interpretations can construct. Proponents of interpretivism seek to find 'meanings' or constructed knowledge through qualitative data (i.e., texts, stories, or images) rather than objective facts. For interpretivists, research is value-bound, and in that, they are directly involved in the study with their interpretations (Klenke, 2016).

Pragmatism is premised on multiple realities and aims at providing pragmatic solutions or outcomes. Pragmatists argue that truth is useful, though being affected by the researchers; hence, both inductive and deductive approaches are employed in generating practical knowledge, which usually begins from data collection, pattern formation, and theory creation (Kaushik & Walsh, 2019). Besides, research hypotheses can be formulated grounded on a theory and then tested. Additionally, pragmatists proponents employ various quantitative or qualitative methods.

The positivism paradigm guided this study since it is based on theory, which seeks to test hypotheses and employs scientific data collection and analysis methods. The findings would be used to generalize the social phenomenon.

3.3 Research Design

The research design refers to the overall strategy that the researcher chooses to integrate the different components of the study coherently and logically, thereby ensuring they effectively address the research problem. Thus, research design constitutes the blueprint for measuring, collecting, analyzing, and interpreting data (Kothari, 2004). The nature informed the choice of a research design of the research problem and the nature of the data. The study adopted longitudinal, and explanatory research designs. According to

Blumberg, Cooper and Schindler (2005), a descriptive study aimed to provide a picture of a situation, person, or event or show how things are related to each other and naturally occur. Saunders, Lewis and Thornhill (2009) argued that exploratory research design is conducted "when enough is not known about a phenomenon and a problem that has not been clearly defined." Therefore, explanatory research is used to answer cause-effect relationships so as provide evidence to support or refute an explanation or prediction.

A longitudinal design is primarily defined by the element of time as the emphasis is on data collected at different time points, generally from the same participants (Cockcroft, Goldschagg, & Seabi, 2019). The applicability of this design is informed by the nature of the data to be used to test hypotheses. Specifically, data was between 2008 – 2019.

3.4 Target Population

The target population refers to the group of people or study subjects who are similar in one or more ways and form the study's subject in a detailed survey (Orodho, 2005). The target population for the study was all the 42 Commercial banks in Kenya for the period 2008-2019. The inclusion and exclusion criterion was based on whether the bank was in operation from 2008 to 2019 (See Appendix II). As of 2017, two banks, namely Chase Bank (K) Limited and Imperial Bank Limited, were under receivership. The target population of 31 commercial banks was chosen after inclusion and exclusion criteria since Commercial banks are the leading sector in extending loans to the public.

3.5 Data Collection

Data collection is an integral part of the research process. According to Punch (2005), data collection is "the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes."The type of data in this research is

based on quantitative technique and hypothesized using secondary data extracted from the annually published reports of the banks under study and the CBK bank annual supervisory report. A data collection schedule guided the extraction process, ensuring that relevant information was recorded and proper conversions were made.

3.6 Measurement of Research Variables

Research variables ought to be measurable to enable hypotheses testing, making inferences, and drawing conclusions. Measurement entails the operationalization of research variables. Sekaran and Bougie (2016) define the operationalization of concepts as "operationally defining a concept to render it measurable is done by looking at the behavioral dimensions, facets, or properties denoted by the concept. These are then translated into observable and measurable elements to develop an index of measurement of the concept". Operationalization thus entails reducing research variables into their respective empirical measurements. The study operation operationalized the variables as follows.

3.6.1 Dependent Variable.

Non-performing loan is the study's dependent variable. This variable is an indicator of worsening loan portfolio quality. This variable was measured by the ratio of non-performing loans to total loans and advance as suggested by extant literature (Simion, Cavezzali, Nathan and Rigoni, 2020; Topak & Tırmandıoğlu Talu, 2017)

$$NPL = \frac{Total\ non\ performing\ loans}{Total\ loans\ and\ advances}$$

3.6.2 Independent Variables

The independent variable is decomposed into:board size, board independence,board financial expertise and board meeting frequency, whose measures are presented in the subsequent section.

3.6.2.1 Board size

Generally, board size denotes the number of sitting directors on the board of a company. Based on empirical literature, this study measured this variable as the natural logarithm of the total number of directors (Belkhir, 2009); Gafoor, Mariappan & Thyagarajan, 2018).

$$BS = Natural\ logarithm\ total\ number\ of\ director$$

3.6.3.2 Board Independence

Board independence is the percentage of independent directors in the board. An independent director is person who is not, and has not been, directly or indirectly employed by the firm, either as an employee or as a manager. The proxy for this variable is the ratio of independent director to total number of directors (Sheikh, Shah & Akbar, 2018).

$$BI = \frac{Number\ of\ independent\ directors}{Total\ number\ of\ of\ board\ directors}$$

3.6.3.3 Board Financial Expertise

Board financial expertise is an important dimension of board characteristics. Board financial expertise means the percentage/ number of board members possessing knowledge in accounting, auditing, banking and finance. In line with previous literature, board financial expertise was measured by the ratio board members with financial expertise to the total number of the board of director member (Lee & Park, 2019; Lanis, Richardson, Govendir &Pazmandy, 2020).

$$BFE = \frac{Number\ of\ director\ with\ financial\ expertise}{Total\ number\ of\ directors}$$

3.6.3.4 Board Meeting Frequency

Board meeting frequency is an indicator of board effectiveness. It also shows the number of times the directors meet to monitor and query top management and formulate strategic decisions. Based on empirical literature there seems to be a consensus that board meeting frequency is the number of times the board meets annually (Wilson Jr, 2016).

$$BMF = Natural\ logarithim\ of\ the\ number\ of\ board\ meetings\ per\ year$$

3.6.3 Control Variables

The study employed four control variables:

3.6.3.1 Firm size

Firm size was measured as the natural logarithm of banks' total assets (Wang& Lin, 2021; Pucheta Martínez & Bel Oms, 2019; Chiorazzo *et al.*, 2008). Large banks have more resources and opportunities for diversification compared to smaller banks.

$$\text{Firm Size} = \text{Natural logarithm of total assets}$$

3.6.3.2 Lending strategy

Lending Strategy is denoted as the ratio of loans to total assets (Edirisuriya, Gunasekarage, & Dempsey, 2015; Gurbuz *et al.*, 2013; Buch *et al.*, 2019). This variable controls for the effect of lending strategy on risk-adjusted bank performance

$$\text{Lending Strategy} = \frac{\text{Total Loans and Advance}}{\text{Total Assets}}$$

3.6.3.3 Market Share

The stuy adopted the CBK market share index, which is the composite of net assets, deposits, capital, number of loan accounts and number of deposit accounts (CBK, 2012)

3.6.3.4 Capitalization

Based on prior studies bank capitalization was measured as the ration of equity to total assets. (Black & Hazelwood, 2013; Fungáčová, Solanko & Weill, 2014).

$$Capitalization = \frac{Total\ Equity\ (t)}{Total\ Asset\ (t)}$$

3.6.4 Mediating Variable

Income diversification is measured by (Herfindahl Hirschman index, (Alhassan (2015). A bank's operating income comprises of interest income generated from lending activities and noninterest income earned from non-lending activities.

3.7 Research Model

Since the study had several variables (independent variables, a mediator, control variable and dependent variable);the hypotheses were tested using a set of multiple regression model as shown below.The following regression model were used:

Model 1. Testing the effect of the control variables on the dependent variable

$$NPL_{it} = \beta_0 + \beta_1 FS_{it} + \beta_2 LS + \beta_3 MS_{it} + \varepsilon_{it}\beta_4 CAR_{it} + \varepsilon_{it}$$

Model 2. Testing the effect of the independent variable on dependent variables

$$NPL_{it} = \beta_0 + \beta_1 BS_{it} + \beta_2 BI_{it} + \beta_3 BFE_{it} + \beta_4 BMF_{it} + \beta_z C_{it} + \varepsilon_{it}$$

Model 3. Testing the effect of the independent variables on the mediator

$$ID_{it} = \beta_0 + \beta_1 BS_{it} + \beta_2 BI_{it} + \beta_3 BFE_{it} + \beta_4 BMF_{it} + \beta_z C_{it} + \varepsilon_{it}$$

Model 4. Testing the effect of the mediator on the outcome variable; while controlling for the independent variables

$$NPL_{it} = \beta_0 + \beta_1 BS_{it} + \beta_2 BI_{it} + \beta_3 BFE_{it} + \beta_4 BMF_{it} + \beta_5 ID_{it} + \beta_z C_{it} + \varepsilon_{it}$$

Where:

NPL= represents on non- performing loans among Commercial Banks

BS=Board size

BI=Board independence

BFE=Board financial expertise

BMF=Board meeting frequency

FS=Firm size

LS=Lending strategy

MS=Market share

CAR=Capitalization ratio

ID= Income diversification

t=Time (t in years 2008-2019)

$\beta 1, \beta 2, \beta 3, \ldots\ldots, \beta n$ *represents coefficients of the study variables.*

ε *represents the error term*

3.8 Data Analysis

The quantitative data was gathered from the commercial banks. The data to be collected was analyzed using both descriptive and inferential statistics with the help of STATA Version 13. The results of the Hausman test would be determined by the choice between fixed effect and random effect. The fixed effect regression model assumed that the individual-specific effects are correlated with the independent variables. In contrast, the random effect assumed that the unobserved variables are uncorrelated with all the observed variables (Park, 2011). Hausman test has two hypotheses; the null hypothesis

(H_0) supporting random effect and the alternative hypothesis (Ha) favouring the fixed effect regression model. Descriptive statistics aimed to summarise the data into their respective means, median, standard deviation, minimum, and maximum values. Inferential data was analysed using correlation and regression models.

Hausman test has two hypotheses;

Ho. (Null hypothesis) where the preferred model is random-effect

Ha. (The alternative hypothesis) where the preferred model is fixed-effect.

If ρ-value <0.05, the null hypothesis will be rejected, and the fixed-effect model should be used; otherwise, the random-effect model.

3.9 Regression and Panel Data Diagnostic Tests

The study sought to test the hypotheses using multiple regression analyses and panel data. Multiple regression models have several assumptions that must hold before data analysis. They include panel unit root, autocorrelation, heteroscedasticity, multicollinearity, multivariate normality and model specification (Hayes, 2018).

3.9.1 Normality test

Regression models assume that the residual is normally distributed for valid hypothesis testing. This assumption was tested using the Shapiro-Wilk test for normality. The test hypothesizes that the distribution is normal, implying that the null hypothesis predicts that the distribution of the residuals is normal. The principle guiding the model states that, if $(\rho < 0.05)$ null hypothesis is rejected.

3.9.2 Multicollinearity

Multicollinearity refers to the linear relation among two or more variables, specifically the explanatory variables. The study tested for multicollinearity using the Variance

Inflation Factor (VIF); A VIF value greater than 10 indicates the presence of multicollinearity in the data (Alin, 2010). Similarly, multicollinearity was inspected from the results of pairwise correlation, where it is assumed that a correlation coefficient greater than 0.8 is an indicator of multicollinearity. Either changing the measurements or dropping the variables would address the presence of multicollinearity. The threshold implies that if $VIF < 10$ it indicates that the model does not suffer from multicollinearity. Furthermore, if $r < 0.8$ it implies that the variables are not correlated.

3.9.3 Panel Unit Root test

The study tested for stationarity since it used time-series data. Time series data is considered stationary if statistical properties, such as mean, variance and covariance, remain constant over time and in any sample of data (Salles, *et al*, 2019). Gujrati (2003) argues that time series must be tested for stationarity in all econometric studies. Non-stationary data leads to spurious regression (Pseudo- regression). Unit root test was tested for the variables using Levin-Lin-Chu, (2002) and Breitung (2001). The null hypothesis for the two tests is that the panel are stationary. If the unit root is detected, the problem would be cured through first differencing. The guiding principle states that if $\rho < 0.05$ it implies that the variables are stationary in the model.

3.9.4 Test for Heteroscedasticity

Heteroscedasticity is an econometric problem that arises when the error term in the model has no constant variance (Wamono, *et al*, 2021). Econometrics models require the error term should have a constant mean and variance. Heteroscedasticity was tested using Breusch-Pagan/Cook-Weisberg test.The principle states that if($\rho > 0.05$) implies that there is no constant variable in the model.

3.9.5 Test for Autocorrelation

Autocorrelation, also known as serial correlation, is an econometric problem that arises whenever two successive error terms in a model are correlated. The study adopted the Woodridge test for autocorrelation. The method is considered attractive since it can be used under general conditions and is easier to implement. The test's null hypothesis is stated as 'there is no first-order autocorrelation' while the alternative hypothesis states autocorrelation.The guiding principle is $(\rho > 0.05)$ it shows that there is no autocorrelation in the model.

3.9.6 Model specification

Testing for omitted variables in regression is vital because it assumes that the model's error term and independent variables are not correlated. Therefore, the study determined whether the model is misspecified using the Ramsey RESET test. The test’s null hypothesis is that the model does not have omitted variables.The threshhold is that if $(\rho > 0.05)$ it implies that the model does not have omitted variables.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents the findings of the research study. Specifically, the chapter discusses the results of the diagnostic tests, the descriptive statistics, the correlation analysis and the regression results used for hypotheses testing.

4.2 Descriptive Statistics

Table 4.1 shows the descriptive statistics for all the variables used in the study. Starting from the non-performing loan (NPL) mean was 0.119 (minimum= 0.009 and maximum = 0.506; standard deviation = 0.093). The mean board size was 8.889 (minimum= 5 and maximum = 14; standard deviation = 1.777). Further, board independence had a mean of 0.738 (minimum= 0.333 and maximum = 1.429; standard deviation = 0.120). While the mean value of board meeting frequency was 5.535 (minimum= 2.000 and maximum = 9.000; standard deviation = 1.733). Besides, the board financial expertise was at 0.405 (minimum= 0.090 and maximum = 1; standard deviation 0.171). The average income diversification was at 0.392 (minimum= -0.187 and maximum = 0.5; standard deviation 0.095); inferring low level of income diversification. Firm size had a mean value of 4.622 minimum= 3.504 and maximum = 5.611; standard deviation = 0.558). Market share had a mean of 2.924, (minimum= 0.002 and maximum = 20.62; standard deviation = 4.466), the mean lending strategy was 0.515 (minimum= 0.012 and maximum = 0.864; standard deviation = 0.157). The mean capitalization was 0.156 (minimum=0.051 and maximum = 0.458; standard deviation = 0.48)

Table 4.1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
NPL	372	0.119	0.093	0.009	0.506
BS	372	8.889	1.777	5.000	14.000
BI	372	0.738	0.120	0.333	1.429
BFE	372	0.405	0.171	0.091	1.000
BMF	372	5.535	1.733	2.000	9.000
ID	372	0.392	0.095	-0.187	0.500
FS	372	4.622	0.558	3.504	5.611
MS	372	2.924	4.466	0.002	20.620
LS	372	0.515	0.157	0.013	0.864
CAR	372	0.156	0.049	0.051	0.458

Source: Author 2021

4.3 Regression Assumptions and Panel Data Diagnositic Tests

Before selecting which panel regression model to use and to eliminate spurious regression problems, some robustness tests were carried out, such as normality tests, multicollinearity, unit root test, test for heteroscedasticity, autocorrelation test, and specification error test.

4.3.1 Normality Tests

Shapiro-Wilk test was used to check for normality. The test's null hypothesis of the is that the residuals are normally distributed. The results of the Shapiro Wilk test are shown in Table 4.2. Since the ρ-value (0.1036) is larger than 0.05, the hypothesis of normality cannot be rejected.

Table 4.2: Shapiro Wilk Normality Test

Variable	**Obs**	**W**	**V**	**Z**	**Prob>z**
Myresiduals	372	0.97064	1.337	1.261	0.1036

Source: Researcher 2021

4.3.2 Multicollinearity

Multicollinearity means that two or more of the independent variables are highly correlated. Multicollinearity can have damaging effects on the results of multiple regressions. Statistically, multicollinearity is present when correlation coefficients are above 0.9 (Hair, 2006; Saunders, *et al* ,2009), 0.8 (Garson, 2013; Gujarati, Porter & Gunasekar, 2012), and 0.7 (Sekaran & Bougie, 2016). Variance inflation factor (VIF) is an additional method of testing multicollinearity. Multicollinearity is present if the VIF value is higher than 10 (Gujarati, 2012). The results of the VIF test are shown in Table 4.3. The values range between 1.04 and 2.53; which, are less than 10, implying the research variables do not suffer from multicollinearity.

Table 4.3: Multicollinearity

Variable	VIF	1/VIF
MS	2.53	0.395257
FS	2.42	0.413223
BMF	1.26	0.793651
ID	1.17	0.854701
BI	1.16	0.862069
BFE	1.10	0.909091
BS	1.08	0.925926
CAR	1.06	0.943396
LS	1.04	0.961538
Mean VIF	1.42	

Source: Researcher 2021

4.3.3 Unit root test

Stationarity means that the mean and variance of variables are time-invariant. In economics and finance, time related or seasonal shocks of one period may strongly

influence subsequent periods. This study applied Levin- Lin Chu, Breitung.The following hypotheses were considered in conducting the unit root test.

Null hypothesis (Ho): Panel data contains unit root [non-stationary].

The alternative hypothesis (Ha): Panel data is stationary.

Looking at the *p*- values in Table 4.4, the null hypothesis can be rejected at all conventional significance levels for all the study variables, which means that there is no unit root in our data. Accordingly, the means and variances of the data are not time-dependent; hence, regression analysis can produce meaningful results (Gujarati, 2012).

Table 4.4: Results of unit root test

	Levin-Lin-Chu	**Breitung**
NPL	-6.33	-3.59
p-value	0.00	0.00
BS	-4.49	-2.61
p-value	0.00	0.04
BI	-17.17	-3.87
p-value	0.00	0.00
BFE	-5.20	-4.97
p-value	0.00	0.02
BMF	-10.74	-4.12
p-value	0.00	0.00
ID	-5.41	-3.59
p-value	0.00	0.00
FS	2.42	10.68
p-value	0.02	0.00
MS	-3.74	-0.63
p-value	0.00	0.05
LS	-4.48	-2.74
p-value	0.00	0.02
CAR	-11.75	-2.06
p-value	0.00	0.02

Source: Researcher 2021

4.3.4 Test for Heteroskedasticity

The Breusch-Pagan/ Cook-Weisberg test was used to test for heteroskedasticity and the results are presented in Table 4.5. The findings indicate that the Chi2 (1) value was 8.98

and ρ- of 0.111, revealing that the null hypothesis was not rejected. Thus, the assumption of constant variance was not violated.

Table 4.5: Breusch-Pagan / Cook-Weisberg Test for Heteroscedasticity

Ho: **Homoskedasticity**

Variables: Myresiduals	
chi2(1) =	8.98
Prob > chi2 =	0.111

Source: Researcher 2021

4.3.5 Autocorrelation Test

The study used the Wooldridge test to check for autocorrelation. The results shown in table 4.6 indicate that ρ-*values* is greater that 0.05; which implies that the null hypothesis was not reject. Therefore, the data did not suffer from autocorrelation in the data.

Table 4.6: Wooldridge test for autocorrelation in panel data

Wooldridge test for autocorrelation in panel data
H0: no first order autocorrelation
F(1, 30) = 0.553
Prob > F = 0.4628

Source: Researcher 2021

4.3.6 Specification Error Test

Table 4.7 highlights the results of the Ramsey RESET test. From the findings in the table, the probability values of the computed statistics in the Ramsey RESET value of 0.3694 show that the null hypothesis cannot be rejected. Hence, the model does not seem to be misspecified.

Table 4.7: Ramsey RESET (test using powers of the fitted values of NPLs

Ramsey	RESET test using powers of the fitted values of NPL
Ho: model has no omitted variables F(3, 372) = 1.05 Prob > F = 0.3694	

Source: Researcher 2021

4.3.7 Correlation Analysis

Correlation analysis shows the nature and magnitude of the relationship between research variables. The coefficients of the correlation analysis are presented in a matrix, as shown in Table 4.8. The table show that the correlation between board size and NPLs is positive and significant ($r= 0.246;\ \rho< 0.05$). Board independence ($r = -0.284;\ \rho< 0.05$), board financial expertise ($r = -0.168;\ \rho< 0.05$) and board meeting frequency ($r =- 0.256;\ \rho< 0.05$) were negatively correlated with NPLs ($r = 0.472;\ \rho< 0.05$). The correlation between income diversification and NPLs was positive ($r = 0.224;\ \rho< 0.05$). In addition, firm size was positively related to NPLs ($r=0.130;\ p < 0.05$). The correlation between capitalization ratio and NPLs was positive ($r = 0.219;\ \rho< 0.05$). Market share was negatively correlated with NPLs ($r = -0.540;\ \rho< 0.05$). Lending strategy and NPLs had a negative correlation ($r = -0.140;\ \rho< 0.05$).

Table 4.8: Results of Pairwise Correlation Analysis

	NPL	BS	BI	BFE	BMF	ID	FS	LS	MS	CAR
NPL	1.0000									
BS	0.2457*	1.0000								
BI	-0.2842*	0.0381	1.0000							
BFE	-0.1676*	-0.1553*	-0.0688	1.0000						
BMF	-0.2559*	0.1654*	0.2657*	-0.1496*	1.0000					
ID	0.2239*	0.1606*	-0.0205	-0.1484*	-0.0314	1.0000				
FS	0.1299*	0.0014	0.1008	-0.0018	0.2569*	0.1893*	1.0000			
LS	-0.1402*	0.0135	0.0243	0.1031*	-0.0926	0.0004	-0.1278*	1.0000		
MS	-0.5399*	0.0866	0.2860*	0.0463	0.3715*	0.0146	0.6981*	-0.1098*	1.0000	
CAR	0.2193*	0.1576*	-0.0280	-0.1078*	-0.0309	-0.0045	-0.2071*	-0.0618	-0.1098*	1.0000

* $p<0.05$

Source: Researcher 2021

4.4 Testing the Effect of the Control Variables

Before investigating the effect of the predictor variables on the outcome variable, the study examined the impact of the control variables; firm size, lending strategy, market share and the capitalization on nonperforming loans. The results of the Hausman test (chi2 (4) = 13.66 and Prob >chi2= 0.0085< 0.05), as shown in Appendix III, supported the use of the fixed-effect regression model to interpret the relationship between the controls and the outcome variable. Table 4.9 shows that firm size positively but significantly affects non performing loans (β= 0.798, ρ0.05). However they contradict Lee, *et al*, (2020), who reported a negative relationship. The results confirm the "too-big-to-fail" hypothesis. It has been argued in finance literature that large banks are even willing to take additional credit risks by granting loans to low quality borrowers (Stern & Feldman, 2004).

In contrast, lending strategy (β= -0.394, $\rho<0.05$) had a negative effect and the results concede with those of Rifat (2016) who studied non-bank financial institutions in Bangladesh; however they contradict those of Ozili (2018) that show a positive relationship among commercial banks in emerging markets.Moreover, market share

had a statistically significant and negative effect on NPLs (β= -0.442, ρ<0.05). The results conflict with Khemraj and Pasha (2009) who found a positive but insignificant effect among Guyana commercial banks. Therefore, more market share leads to more lending activities.Finally, Bank capitalization (β= 0.475, ρ>0.05) had a positive and insignificant effect on non-performing loans of commercial banks in Kenya.

The findings contradict those of Makri, *et al*,(2014), who found a negative relationship. The positive association between capitalization and NPLs can be attributed to the moral hazard problem associated with thinly capitalized banks that prompt managers to take additional risks or engage in reckless lending activities.

Table 4.9: Regression results for control variables and the outcome variable

Fixed-effects (within) regression	Number of obs	=	372
Group variable: firmid	Number of groups	=	31
R-sq: within = 0.2619	Obs per group: min	=	12
between = 0.2060	Avg	=	12.0
overall = 0.0232	Max	=	12
	F(4,322)	=	28.57
corr(u_i, Xb) = -0.3182	Prob > F	=	0.0000

NPLs	Coef.	Std. Err.	T	P>t	[95% Conf.	Interval]
FS	.798	.119	6.68	0.000	.563	1.033
LS	-.394	.115	-3.44	0.001	-.619	-.169
MS	-.442	.076	-5.85	0.000	-.591	-.293
CAR	.475	.261	1.82	0.070	-.038	.987
_cons	-5.908	.583	-10.14	0.000	-7.054	-4.762
sigma_u	.637					
sigma_e	.469					
Rho	.648	(fraction of variance due to u_i				

F test that all u_i=0: F(29, 322) = 9.17 Prob > F = 0.0000

Source: Researcher 2021

4.5 Testing the Direct Effect

The study had four direct hypotheses that were tested by regressing the outcome variable (NPLs) against all the explanatory variables (board size, board independence, board financial expertise, board meeting frequency and the controls. The study performed both the fixed effect (FE) and the random effect (RE) regression and the results of the Hausman test (Appendix III) supported the use of FE to test the direct hypotheses. The regression results for the FE are shown in Table 4.10.

4.5.1 The Effect of Board Characteristics on Nonperforming Loans

The fixed-effect panel data analysis model are presented in table 4.10. The findings indicate that a board characteristic explains 37.76 % variation in the non-performing loans of commercial banks. From the table, board size had a positive and significant effect on non-performing loans ($\beta= 0.813, \rho<0.05$). Specifically, a unit increase in board size leads to a 0.813 unit increase in non-performing loans. Moreover, the study found that board independence had a negative and significant effect on non-performing loans ($\beta= -0.618, \rho<0.05$). The findings suggest that a 1% decrease in board independence contributes to a 61.8 % increase in NPLs. Besides, board financial expertise had a negative and significant effect on non-performing loans ($\beta= -0.092, \rho<0.05$); implying, that a unit decreases in board financial expertise led to a 0.092 unit increase in non-performing loans. Additionally, the results showed that board meeting frequency negatively and significantly affected non-performing loans ($\beta= -0.276, \rho<0.05$). Specifically, a unit decrease in board meeting frequency causes a 0.276 unit increase in non-performing loans.

Table 4.10: Regression of Results of Non-Performing loans on Board characteristics - Fixed Effect

Fixed-effects (within) regression	Number of obs	=	372
Group variable: firmid	Number of groups	=	31
R-sq: within = 0.3776	Obs per group: min	=	12
between = 0.3259	Avg	=	11.9
overall = 0.3666	Max	=	12
	F(8,330)	=	25.02
corr(u_i, Xb) = 0.0165	Prob > F	=	0.0000

NPL	Coef.	Std. Err.	T	P>t	[95% Conf.	Interval]
FS	.212	.040	5.35	0.000	.134	.290
LS	-.171	.054	-3.19	0.002	-.277	-.066
MS	-.220	.032	-6.93	0.000	-.282	-.157
CAR	.381	.111	3.43	0.001	.162	.600
BS	.813	.299	2.72	0.007	.224	1.401
BI	-.618	.172	-3.60	0.000	-.956	-.280
BFE	-.092	.036	-2.54	0.012	-.163	-.021
BMF	-.276	.098	-2.81	0.005	-.469	-.083
_cons	-1.647	.239	-6.89	0.000	-2.117	-1.177
sigma_u	.179					
sigma_e	.194					
rho	.461	(fraction of variance due to u_i)				

F test that all u_i=0: F(30, 330) = 6.82 Prob > F = 0.0000

Source: Researcher (2021)

4.6 Testing direct hypotheses

The study had four null hypotheses that sought to determine the effect of board characteristics on NPLs.

(H_{01}) stated that *board size has no significant effect on non-performing loans among commercial banks in Kenya*.

The findings in Table 4.10 confirm that the effect of board size on NPLs was

significantly positive *(β1 = 0.813 and ρ-value<0.05*); therefore, null hypothesis (H_{01}) was rejected.

The results suggest that a unit increase in board size led to a 0.813 unit increase in non-performing loans. Similar findings were reported in previous studies (Shan & Xu, 2012; Rehman, Zhang & Ahmad, 2016; Nyor & Mejabi, 2013). Gafoor, Mariappan and Thiyagarajan (2018) reported a positive but insignificant relationship. Conversely, the results conflict with Balagobei (2019), who found that board size had no significant impact on NPLs among Nigerian Deposit Money Banks and Islam (2020), who argues that NPLs are negatively related to board size. The argument can explain the positive relationship between board size and NPLs that large boards are generally ineffective in their monitoring role owing to the problems that can arise from large groups, such as social loafing, free riding and higher coordination costs (Beji, Yousfi, Loukil & Omri, 2021

(H_{02}) stated that; *board independence has no significant effect on no performing loans among commercial banks in Kenya*.

The findings in Table 4.10 indicate that board independence had a negative and significant impact on non-performing loans (*β2= -0.618, ρ <0.05*); hence H_{02} was rejected. Empirically, a unit increase in board independence led to a -0.618 unit decrease in nonperforming loans. Rehman, Zhang and Ahmad (2016), Gafoor *et al.*, (2018 and Islam (2020) reported similar results in studies. In contrast, Balagobei (2019) found no association between board independence and NPLs among listed banks in Sri Lanka. The negative relationship between board independence and NPLs suggests that independent boards are more effective in monitoring and restraining executive actions linked to lending activities and, ultimately, the level of NPLs.

(H_{03}) stated that; *board financial expertise had no significant effect on nonperforming loans among commercial banks in Kenya*.

The regression results in Table 4.10 illustrate that board financial expertise negatively and significantly effect on NPLs ($\beta 3 = -0.092, \rho < 0.05$); thus H_{03} is rejected. The results indicated that a unit increase in board financial expertise caused a unit decrease in non-performing loans. The findings are consistent with those of Gafoor *et al.,* (2018 Islam (2020) and Ojeka, Adegboye and Dahunsi, (2021). The result of this study on the board financial expertise and NPLs supports the argument that board member with finance, accounting and banking skills aid a banking institution in formulation suitable loan policies, which in turn reduces loan default risk thus a higher loan

(H_{04}) stated that; *board meeting frequency has no significant effect on non-performing loans among commercial banks in Kenya*.

As illustrated in Table 4.10, the regression output shows that board meeting frequency had coefficients of estimate, which was negative and significant basing on $\beta 4 = -0.276$ and $\rho\text{-value} < 0.05$; hence H_{04} was rejected.The results are supported by Islam, (2020); however, they contradict Gafoor *et al.,* (2018), who found an insignificant positive relationship between board meeting frequency and NPLs among Indian banks. The findings of the study suggest that the frequency of board meetings signals better monitoring of NPLs. This means that more meetings enable the board to spend more time discussing lending procedures and how banks would recover problematic loans, hence reducing the level of non-performing loans.

4.7 The Effect of Board Characteristics on Income Diversification

The study also tested for the effect of board characteristics on income diversification. The findings show that board size had a significant and positive effect on income

diversification ($\beta = 0.609; \rho < 0.05$). Marouan (2015) reported similar findings. This implies that banks with large boards are more likely to engage in non-lending activities. The impact of board independence on income diversification was negative and significant ($\beta = -0.139; \rho < 0.05$) and the results are consistent with those of Marouan (2015) but contradict Kim *et al.*, (2009) that suggest a negative relationship. Independent board offers objective and independent judgement of strategic decisions such as income diversification. Besides, an independent board sanctioned investment decisions likely to lead to diversification discount. Board financial expertise had a negative and significant effect on income diversification ($\beta 5 = -0.067; \rho < 0.05$); implying that board members with finance, accounting and banking knowledge safeguards a bank against diversification discount. The effect of board meeting frequency on income diversification was negative and significant ($\beta = -0.162; \rho < 0.05$), suggesting that more board meetings enables the board to deliberate on lending strategies as shown in the table 4.11.

Table 4.11: Regression of Income Diversification on Board Characteristics

Fixed-effects (within) regression	Number of obs	=	372
Group variable: firmid	Number of groups	=	31
R-sq: within = 0.2830	Obs per group: min	=	12
between = 0.2407	Avg	=	12.0
overall = 0.2615	Max	=	12
	F(8,330)	=	16.28
corr(u_i, Xb) = 0.0417	Prob > F	=	0.0000

ID	Coef.	Std. Err.	T	P>t	[95% Conf.	Interval]
FS	.030	.014	2.18	0.030	.003	.057
LS	-.020	.019	-1.06	0.291	-.058	.017
MS	.010	.011	0.72	0.471	-.014	.030
CAR	-.130	.038	-3.44	0.001	-.205	-.056
BS	.609	.098	6.19	0.000	.416	.803
BI	-.139	.056	-2.47	0.014	-.250	-.028
BFE	-.067	.024	-2.75	0.006	-.114	-.019
BMF	-.162	.033	-4.96	0.000	-.227	-.098
_cons	-.567	.080	-7.10	0.000	-.724	-.410
sigma_u	.063					
sigma_e	.067					
Rho	.466	(fraction of variance due to u_i)				

F test that all u_i=0: F(30, 330) = 8.00 Prob > F = 0.000

4.7.1 The Mediating Effect of Income Diversification on the Relationship between Board Characteristics and NPLs

The study's main objective was to determine the mediating effect of income diversification on the relationship between board characteristics and non-performing loans. Table 4.12 shows the results of the regression of the mediator on the predictor variables. The purpose of this regression analysis is to establish the beta coefficients of path *a* (a_1, a_2, a_3, and a_4). Model 2 shows the output of the regression of the non-performing loans on the board characteristics (board size, board independence, board financial expertise and board meeting frequency) whereas controlling for the income diversification, which is meant to establish path b (the beta coefficient of b). The estimated model used is the fixed effect regression based on the results of the Hausman

test, as shown in Appendix III (*chi2 (8) = 46.86; Prob>chi2 = 0.0000*). Model 3 illustrates the computed coefficients of the indirect path *ab,* that is, the coefficients of a_1b, a_2b, a_3b *and* a_4b that were used to test hypothesis H_{5a} H_{5b}, H_{5c} *and* H_{5d} respectively. The criteria for determining the mediating effect was the significance of the beta coefficient *c` (a x b),* as argued by Zhao *et al.,* (2010*).* The coefficient was computed by multiplying the beta coefficients of Model 1 (*path a*) and the coefficient of the mediator, *b*, as shown in model 2. The significance of indirect path, *ab*, *was* tested using Preacher and Hayes's (2004) Sobel test calculator; using the beta coefficients and standard errors of model 1 and model 2.

H_{05a} : *income diversification does not significantly mediate the relationship between board size and non-performing loans among commercial banks in Kenya.*Based on the results of the mediation presented in model 3 in Table 4.12, the coefficient for the indirect path, a_1b, is positive and significant (β*= 0.712,* $\rho < 0.05$); thus, the null hypothesis was rejected and the alternative hypothesis accepted. The interpretation was that income diversification significantly mediated the relationship between board size and non-performing loans among commercial banks in Kenya. Therefore, through a large board size they are more likely to engage in non-lending activities hence a rise in NPLs.

H_{05b} : *income diversification does not significantly mediate the relationship between board independence and non-performing loans of commercial banks in Kenya.*

Model 3 in Table 4.12 shows that the indirect path, a_2b, had a negative and significant coefficient, (β *= -0.658,* $\rho<0.05$), hence the study rejected the null hypothesis. Therefore, the study concluded that income diversification significantly mediated the relationship between board independence and non-performing loans among

commercial banks in Kenya. Suggesting that high proportion of independent directors leads to reduction in the level of non-performing loans.

H_{05c} : *Income diversification does not significantly mediate the relationship between board financial expertise and non-performing loans among commercial banks in Kenya.*

This hypothesis was tested against the results of the indirect path a_3b as shown in Model 3 in Table 4.12. Based on the findings ($\beta = -0.087$, $\rho<0.05$), the null hypothesis was rejected. Thus, the study concluded that income diversification significantly and negatively mediates the relationship between board financial expertise and non-performing loans of commercial banks in Kenya; implying that board of directors with diverse financial skills in accounting and banking are more likely to give an oversight and monitor loans hence reducing the level of NPLs.

H_{05a} : *income diversification does not significantly mediate the relationship between board meeting frequency and non-performing loans among commercial banks in Kenya.* The indirect path a_4b was used to test this hypothesis. The results in Model 3 in Table 4.12 ($\beta = -0.260$ *and* $\rho<0.05$) indicate that the null hypothesis was rejected; and the conclusion was that income diversification significantly and negatively mediated the effect of board meeting frequency and non-performing loans of commercial banks of Kenya. Hence, the frequency of board meetings in presence of diversified banks leads to reduction in NPLs.

Table 4.12: Board characteristics, Income Diversification and Non-performing loans.

Fixed-effects (within) regression	Number of obs	=	372
Group variable: firmid	Number of groups	=	31
R-sq: within = 0.3919	Obs per group: min	=	12
between = 0.2697	Avg	=	12.0
overall = 0.3467	Max	=	12
	F(9,329)	=	23.56
corr(u_i, Xb) = -0.0641	Prob > F	=	0.0000

NPL	Coef.	Std. Err.	T	P>t	[95% Conf.	Interval]
LS	-.172	.053	-3.23	0.001	-.276	-.067
CAR	.389	.110	3.54	0.000	.173	.606
FS	.191	.040	4.79	0.000	.113	.270
MS	-.216	.031	-6.88	0.000	-.278	-.154
BS	.712	.298	2.39	0.017	.126	1.299
BFE	-.087	.036	-2.42	0.016	-.157	-.016
BI	-.658	.171	-3.86	0.000	-.994	-.323
BMF	-.260	.097	-2.67	0.008	-.451	-.069
ID	.382	.137	2.78	0.006	.112	.651
_cons	-1.408	.252	-5.60	0.000	-1.903	-.913
sigma_u	.188					
sigma_e	.192					
Rho	.489	(fraction of variance due to u_i)				

F test that all u_i=0: F(30, 329) = 7.22 Prob > F = 0.000

Source:Research(2021)

Table 4.13: Summary Table for Mediation

	Model 1 (*path a*)		**Model 2 (*path b*)**		**Model 3 (*a x b= c`*)**		**Model 4 (*path c*)**	
	β	**ρ>z**	**β**	**ρ>z**	**β**	**ρ>z**	**β**	**ρ> z**
a_1	0.609	0.000	-	-	0.233	0.000	0.813	0.007
a_2	-0.139	0.000	-	-	-0.053	0.000	-0.618	0.000
a_3	-0.067	0.000	-	-	-0.026	0.000	-0.092	0.012
a_4	-0.162	0.000	-	-	-0.062	0.000	-0.276	0.005
B	-	-	0.382	0.006	-	-	-	-
R^2	0.2830		0.3919				0.3776	
Hausman Prob>chi2	ρ<0.05		ρ<0.05				ρ<0.05	

Source: Research (2021)

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings, the conclusion, recommendations, limitations of the study and areas for further research.

5.2 Summary of Findings

The study's general objective was to determine whether income diversification mediates the relationship between board characteristics and non-performing loans among commercial banks in Kenya. The study found that board characteristics are a significant determinant of non-performing loans among commercial banks in Kenya.

5.2.1 Effect of board size on non-performing loans

The first specific objective was to determine the effect of board size on non-performing loans among commercial banks in Kenya. The study found that the mean was (8.889). The results showed that board size had a positive and statistically significant effect on non-performing loans ($\beta = 0.813$ $\rho<0.05$). Therefore, the larger the board size, the higher the levels of non-performing loans.

5.2.2 Effect of Board Independence on Nonperforming Loans.

The second objective sought to assess the effect of board independence on non-performing loans among commercial banks in Kenya. The study found that the mean of board independence was 0.738, implying that the boards were, on average, independent. The study found that board independence negatively affected non-performing loans among commercial banks in Kenya ($\beta = -0.618$, $\rho< 0.05$), suggesting that independent board mitigates NPLs.

5.2.3 Effect of Board Financial Expertise on Non-Performing Loans

The third objective sought to examine the effect of board financial expertise among commercial banks in Kenya. The study measured board financial expertise as the proportion of directors with knowledge in accounting and finance. The study found that board financial expertise had a mean of 0.45 and a negative and significant effect on non-performing loans among commercial banks in Kenya (β= -0.092, ρ <0.05). The findings suggest that the board can leverage finance, accounting, and banking skills to improve loan portfolio quality by crafting suitable lending policies.

5.2.4 Effect of Board Meeting Frequency on Nonperforming Loans

The fourth objective was to evaluate the effect of board meeting frequency on nonperforming loans among commercial banks in Kenya. The study found that board meeting frequency had a mean of 5.535 and a negative and significant effect on nonperforming loans (β= -0.276; ρ <0.05), implying that a high number of meeting frequencies helps the board strategize on how to tame problem loans.

5.2.5 Effect of Board Characteristics on Income Diversification

The main objective was to establish whether income diversification mediates the relationship between board characteristics and non-performing loans. Therefore, the study analyzed the effect of board characteristics on income diversification, and the findings showed that the impact of board characteristics on income diversification had an R2 of 28.30%.

The study examined the relationship between board size and income diversification. The findings showed that board size had a significant and positive effect on income diversification (β= 0.609, ρ<0.05). The relationship between board independence and income diversification was also assessed and found that board independence had a

significant and negative effect on income diversification (β= -0.139; ρ <0.0.05). The study further examined the impact of board financial expertise on income diversification. The results showed that board financial expertise significantly and negatively impacted income diversification (β=-0.067, ρ<0.05). Finally, the study examined the relationship between board meeting frequency and income diversification and found that BMF had a significant and negative effect on income diversification (β = -0.162, ρ<0.05).

5.2.6 Effect of Income Diversification on Nonperforming Loans

The study examined the effect of income diversification on non-performing loans. The study found a mean of 0.119 and the relationship was statistically significant and positive (β=0.382 and ρ<0.05). One percent change in income diversification leads to a 38.2 % change in non-performing loans.

5.2.7 Mediating Effect of Income Diversification

The study tested mediation by determining the indirect path's significance, as Zhou et al. (2010) suggested. The indirect path was computed by multiplying the beta coefficient of path a with the mediator's beta coefficient in path b. The significance of the coefficient ab was tested using Preacher and Haye's (2004) Sobel test calculator. The effect of board size on NPLs was the first objective. The study found that the mean of board size was (8.889). The coefficients of Model 3 (β= 0.712 ρ<0.05) indicated that income diversification significantly mediated the relationship between board size and NPLs. The study examined the mediating effect of income diversification on board independence and non-performing loans relationship of Commercial Banks in Kenya. The mediation effect a2b is shown in model 3 in Table 4.12 (β=-0.658, ρ<0.05), implying that income diversification had a negative significant mediating impact on the

relationship between board independence non-performing loans. The study also examined whether income diversification mediated the board financial expertise and NPLs relationship. The results of the mediation effect, a3b, are illustrated in Model 3 (β=-0.087; ρ<0.05), confirming that income diversification significantly mediated the relationship between board meeting frequency and NPLs.The study investigated whether income diversification mediated board meeting frequency and non-performing loans. The results of the indirect effect a4b presented in Model 3 (β=-0.260 ρ<0.05) indicated that income diversification significantly mediated the effect of board meeting frequency and NPLs.

5.3 Conclusion

The study sought to determine the mediating effect of income diversification on the relationship between board characteristics and non-performing loans among Commercial Banks of Kenya. The Kenyan banking sector has reported a persistent rise in NPLs, which has been linked to lapse in corporate governance, though studies show an association between board characteristics and non-performing loans; however, the findings are inconclusive.Again prior studies report that board characteristics affect income diversification and that income diversification influences non-performing loans. Therefore, the mediating effect of income diversification in the board characteristics and non-performing loans relationship using a sample of 31 banks and data for the period 2008-2019 among Kenyan commercial banks. The findings show that board size had a positive and significant effect on non-performing loans. Whereas board independence, board financial expertise, and board meeting frequency negatively affected non-performing loans. Therefore, the study concludes that board characteristics influence non-performing loans.

5.4 Recommendations

5.4.1 Managerial implication.

The managerial implication of this study is that managers should understand that engaging in non-lending activities exposes banks to higher NPLs. This means that nontraditional business deteriorates a bank's assets quality. Therefore, specialized banks are expected to have lower NPLs than diversified ones. Consequently, managers should consider an optimal level of income diversification. Similarly, managers should strive for ideal bank size, firm size, and capitalization ratio that minimizes NPLs.Moreover a high proportion of independent directors, skillful

5.4.2 Policy implication

The regulator (CBK) strengthens the corporate governance board structure guidelines to reduce the level of NPLs. To achieve this, the regulator may consider board characteristics. An efficient board is likely to frame effective loan policies. Consequently, bank boards with more independent directors and financial experts may monitor the management in following loan policies and compliances and early detect problematic loans. Besides, the regulator should tighten regulations to minimize how banks can engage in income diversification associated with high NPLs among Kenyan banks. Additionally, CBK may need to examine the credit policies of all banks and recommend a complete overhaul of the credit policies of some banks found to be weak and insensitive to credit risk.

5.4.3 Theoretical Implication

This study contributes to theory by establishing that board characteristics constraints NPLs, thus supporting the agency theory's propositions on the role of the board monitoring and controlling reckless lending by bank managers. Contrary to the modern

portfolio, this study found that diversifying into non-lending activities exposes banks to higher NPLs and credit risks. Therefore, this study argues that diversification into noninterest income-generating activities is harmful to banking institutions.

5.4.4 Limitation of the Study

Like any other research study, this study had several limitations that future studies can address. First, rather than using an aggregate measure of non-performing loans, future studies can consider dividing the NPLs by loan categories such as mortgages, business credits and consumer credits, among others. Second, this study focused on only four board characteristics (board size, board independence, board financial expertise and board meeting frequency); therefore, additional variables such as board gender, CEO duality and the number of interlocks impact non-performing loans income diversification. Third, the study focused on Kenyan commercial banks. Thus, a similar study in a different setting would shed more light on the relationship between board characteristics, income diversification, and NPLs. Finally, yet significant, board ownership and insider lending may affect banks' lending policy and ultimately loan portfolio quality. For this reason, future studies can fill this gap by considering these novel dimensions when studying non-performing loans.

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APPENDICES

Appendix I: List of Commercial Banks in Kenya.

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

Appendix II: Data Collection Schedule

Dependent variable

Y = NPL= nonperforming loans/ total loans and advances(TL)

Independent Variables

(i) BI = Board independence (ratio of independent director to total number of directors)
(ii) BFE= Board financial expertise; ratio of directors with financial expertise to total number
(iii)BS = Board size (natural logarithm total number of director)
(iv)BA= Board meeting frequency (natural logarithm of board meeting frequency)

Bank (t=1,12)	NPL	TL	No. of directors	No. Independent directors	No.financial expertize	No. Board meeting frequency	NPL/TL	BFE	BMF	BS	BI
	1	2	3	4	5	6	1/2	5/4	Nat.log 6	Nat log. 3	4/3
KCB Bank Kenya Ltd											
Co - operative Bank of Kenya Ltd											
Equity Bank Kenya Ltd											
Barclays Bank of Kenya Ltd											
Standard Chartered Bank (K) Ltd											
Commercial Bank of Africa Ltd											
Diamond Trust Bank (K) Ltd											
Stanbic Bank Kenya Ltd											
NIC Bank PLC											
I & M Bank Ltd											
National Bank of Kenya Ltd											
Citibank N.A. Kenya											
Family Bank Ltd											
Bank of Baroda Ltd											
Bank of Africa Kenya Ltd											

Prime Bank Ltd											
HFC Ltd											
Ecobank Kenya Ltd											
Bank of India											
Guaranty Trust Bank (Kenya) Ltd											
Gulf African Bank Ltd											
African Banking Corporation Ltd											
Victoria Commercial Bank Ltd											
Mayfair Bank Ltd											
Sidian Bank Ltd											
SBM Bank (Kenya) Ltd											
Development Bank of Kenya Ltd											
Jamii Bora Bank Ltd											
Spire Bank Ltd											
First Community Bank Ltd											
DIB Bank Kenya Ltd											
Guardian Bank Ltd											
Consolidated Bank of Kenya Ltd											
Habib Bank A.G. Zurich											
Transnational Bank Ltd											
Paramount Bank Ltd											
M-Oriental Commercial Bank Ltd											
Credit Bank Ltd											
Middle East Bank (K) Ltd											
UBA Kenya Bank Ltd											
Chase Bank Ltd*											
Imperial bank ltd											

MEDIATOR: INCOME DIVERSIFICATION.

	Amount in financial year (Sh. 000,000)			Income Diversification
Bank (t=1,12)	Net operating income (NOI)	Total interest income (NII)	Total non- interest income (NOI)	$HHI = \left[1 - \left\{\left(\frac{INT}{TOR}\right)^2 + \left(\frac{NIN}{TOR}\right)^2\right\}\right]$
KCB Bank Kenya Ltd				
Co - operative Bank of Kenya Ltd				
Equity Bank Kenya Ltd				
Barclays Bank of Kenya Ltd				
Standard Chartered Bank (K) Ltd				
Commercial Bank of Africa Ltd				
Diamond Trust Bank (K) Ltd				
Stanbic Bank Kenya Ltd				
NIC Bank PLC				
I & M Bank Ltd				
National Bank of Kenya Ltd				
Citibank N.A. Kenya				
Family Bank Ltd				
Bank of Baroda Ltd				
Bank of Africa Kenya Ltd				
Prime Bank Ltd				
HFC Ltd				
Ecobank Kenya Ltd				

Bank of India				
Guaranty Trust Bank (Kenya) Ltd				
Gulf African Bank Ltd				
African Banking Corporation Ltd				
Victoria Commercial Bank Ltd				
Mayfair Bank Ltd				
Sidian Bank Ltd				
SBM Bank (Kenya) Ltd				
Development Bank of Kenya Ltd				
Jamii Bora Bank Ltd				
Spire Bank Ltd				
First Community Bank Ltd				
DIB Bank Kenya Ltd				
Guardian Bank Ltd				
Consolidated Bank of Kenya Ltd				
Habib Bank A.G. Zurich				
Transnational Bank Ltd				
Paramount Bank Ltd				
M-Oriental Commercial Bank Ltd				
Credit Bank Ltd				
Middle East Bank (K) Ltd				
UBA Kenya Bank Ltd				
Chase Bank Ltd*				
Imperial bank ltd				

Appendix III: Inclusion Exclusion Selection Criteria

No.	Banks	Excluded	Included	Sample
1	African Banking Corporation Ltd	0	1	1
2	Bank of Africa Kenya Ltd	0	1	1
3	Bank of Baroda Ltd	0	1	1
4	Bank of India	0	1	1
5	Barclays Bank of Kenya Ltd	0	1	1
6	Charterhouse Bank Ltd	1	0	1
7	Citibank N.A. Kenya	0	1	1
8	Co - operative Bank of Kenya Ltd	0	1	1
9	Commercial Bank of Africa Ltd	0	1	1
10	Consolidated Bank of Kenya Ltd	0	1	1
11	Credit Bank Ltd	0	1	1
12	Development Bank of Kenya Ltd	1	0	1
13	Diamond Trust Bank (K) Ltd	0	1	1
14	DIB Bank Kenya Ltd	1	0	1
15	Ecobank Kenya Ltd	0	1	1
16	Equity Bank Kenya Ltd	0	1	1
17	Family Bank Ltd	0	1	1
18	First Community Bank Ltd	0	1	1
19	Guaranty Trust Bank (Kenya) Ltd	0	1	1
20	Guardian Bank Ltd	0	1	1
21	Gulf African Bank Ltd	0	1	1
22	Habib Bank A.G. Zurich	1	0	1
23	HFC Ltd	0	1	1
24	I & M Bank Ltd	0	1	1
25	Jamii Bora Bank Ltd	1	0	1
26	Mayfair Bank Ltd	1	0	1
27	Middle East Bank (K) Ltd	1	0	1
28	M-Oriental Commercial Bank Ltd	0	1	1
29	National Bank of Kenya Ltd	0	1	1
30	NIC Bank PLC	0	1	1
31	Paramount Bank Ltd	0	1	1
32	Prime Bank Ltd	0	1	1
33	SBM Bank (Kenya) Ltd	1	0	1
34	Sidian Bank Ltd	0	1	1
35	Spire Bank Ltd	0	1	1
36	Stanbic Bank Kenya Ltd	0	1	1
37	Standard Chartered Bank (K) Ltd	0	1	1
38	Transnational Bank Ltd	0	1	1
39	UBA Kenya Bank Ltd	1	0	1
40	Victoria Commercial Bank Ltd	0	1	1
41	Chase Bank	1	0	1
42	Imperial Bank	1	0	1
	Total	**11**	**31**	**42**

Note: (1 Included; 0 Excluded)

Appendix IV: Hausman Tests

Effect of Control Variables on Non-performing Loans

	---- Coefficients ----			
	B Fe	B re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
CAR	.4746182	.5796053	-.1049871	.0619272
MS	-.4423922	-.5953602	.152968	.0397808
LS	-.3939585	-.4562018	.0622434	.
FS	.7979775	.4670365	.330941	.0666742

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic
chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 13.66
Prob>chi2 = 0.0085
(V_b-V_B is not positive definite)

Effect of Board Characteristics on Non -Performing Loans.

	---- Coefficients ----			
NPL	B Fe	B Re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
LS	-.1713998	-.1732384	.0018387	.0068611
CAP	.3810497	.4269262	-.0458764	.0367095
FS	.2122167	.1423932	.0698235	.0197606
MS	-.2198044	-.2340625	.0142581	.0184119
BS	.8127135	.937618	-.1249045	.099888
BFE	-.0917042	-.1079431	.0162389	.0081818
BI	-.6182855	-.6127569	-.0055286	.0295026
BMF	-.275783	-.2534692	-.0223137	.0173616

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic
chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 46.36
Prob>chi2 = 0.0000

Effect of Income Diversification on Board Characteristics

	---- Coefficients ----			
	b	B	(b-B)	sqrt(diag(V_b-V_B))
	fe	Re	Difference	S.E.
LS	-.0202585	-.0157057	-.0045528	.0023471
CAP	-.1301338	-.1380753	.0079415	.0127312
FS	.0297547	.0389965	-.0092418	.0065435
MS	.0079332	.001308	.0066252	.0064471
BS	.6093051	.4935279	.1157772	.0287875
BFE	-.0665278	-.0862383	.0197105	.005588
BI	-.1391343	-.1580516	.0189172	.0139849
BMF	-.162274	-.1738959	.0116219	.0042143

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic
chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 437.54
Prob>chi2 = 0.0000
(V_b-V_B is not positive definite)

Mediating Effect of Income Diversification on the Relationship between Board Characteristics and NPLs

	--- Coefficients ----			
	B	B	(b-B)	sqrt(diag(V_b-V_B))
	Fe	Re	Difference	S.E.
LS	-.1717577	-.1747143	.0029567	.0045033
CAP	.3892519	.4334373	-.0441853	.0342194
FS	.191416	.1291742	.0622418	.0188015
MS	-.2163218	-.2294541	.0131323	.0177115
BS	.7124087	.8952303	-.1828216	.0979668
BFE	-.0865193	-.1022245	.0157052	.0070423
BI	-.658469	-.6358287	-.0226403	.0254849
BMF	-.2598697	-.2423522	-.0175175	.0140799
ID	.3815423	.2598158	.1217264	.0387619

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic
chi2(9) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 62.80
Prob>chi2 = 0.0000
(V_b-V_B is not positive definite)