BOARD CHARACTERISTICS AND CAPITAL STRUCTURE OF NON-FINANCIAL FIRMS LISTED ON NAIROBI SECURITIES EXCHANGE, KENYA: MODERATION BY INDUSTRY

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DECLARATION

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

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ABSTRACT

This study aims to examine the influence of board characteristics on the capital structure of non-financial firms listed on the Nairobi Securities Exchange (NSE), with industry sector as a moderating factor. The study focused on board attributes such as size, independence, expertise, and gender diversity, assessing their impact on firms' capital structure decisions within the Kenyan context. The study was informed by agency theory, trade-off theory, and pecking order theory, which provided a comprehensive framework for understanding the relationship between board attributes and financial decisions. A quantitative research methodology was employed, utilizing secondary data from 46 non-financial NSE-listed firms over ten years (2015–2024). Panel data regression analysis was conducted to examine relationships, with diagnostic tests addressing potential statistical issues such as multicollinearity and heteroscedasticity. Data was sourced from audited financial statements of individual non-financial firms listed on NSE which ensured reliability and validity final total observation was 320. The findings indicate that larger boards are significant and positively associated with higher debt-to-equity ratio, indicating that larger boards tend to be more diversified and adopt more aggressive capital structures. Board independence was also significant and positively correlated with debt-to-equity ratio, suggesting that independent directors may be more inclined to endorse higher debt levels. Gender diversity was found to have significant and positive correlation, leading firms on gender-diverse boards to maintain higher debt levels, and board expertise was found to be insignificant. Furthermore, the industry sector was found to moderate the relationship between board characteristics and capital structure, highlighting the sector-specific nature of governance and financial strategies. This study contributes to the understanding of corporate governance in emerging markets, offering valuable insights into how board dynamics influence capital structure decisions in Kenya. The findings are of importance to corporate managers, investors, and policymakers, providing guidance on optimizing governance frameworks and financial strategies in emerging economies.

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ABBREVIATIONS

BSIZ	Board size
CEO	Chief Executive Officer
CMA	Capital Market Authority
FE	Fixed effects
GMM	Generalized Method of Moments
INDE	Board independence
INDU	Industry
INFL	Inflation
IR	Interest rate
LNFSIZ	Firm size (Log)
NACOSTI	National Commission for Science, Technology and Innovation
NSE	Nairobi Securities Exchange
OLS	Ordinary Least Square
RE	Random effect
ROA	Return on Asset
VIF	Variance Inflation Factor
WOM	Women (Gender diversity)

DEFINITION OF TERMS

Capital Structure: Capital structure refers to the way a corporation finances its assets through a combination of debt, equity, and hybrid securities. It represents the proportion of debt and equity financing used by the company to fund its operations and growth (Myers, 2001).

Board Characteristics: Board characteristics refer to the various attributes of a company's board of directors, such as size, independence, gender diversity, and expertise, which influence governance and decision-making (Dalton et al., 2007).

Board Size: Board size refers to the total number of directors on a company's board. The size of the board can affect its decision-making effectiveness and the overall governance process (Lipton & Lorsch, 1992).

Board Independence: Board independence refers to the proportion of board members who are independent of management, ensuring unbiased oversight and decision-making (Fama & Jensen, 1983).

Gender Diversity: Gender diversity on a board refers to the representation of different genders among the members, which can bring diverse perspectives to decision-making, improving governance and corporate performance (Carter et. Al., 2003).

Board Expertise: Board expertise refers to the knowledge, skills, and experience that directors bring to the boardroom, which are essential for effective decision-making and risk management (Zahra & Pearce, 1989).

Debt-to-Equity Ratio: The debt-to-equity ratio is a financial ratio that compares a company's total debt to its shareholders' equity, used to assess the company's financial leverage (Ross et al., 2005).

DEDICATION

I dedicate this master's thesis to everyone that pushed me and made this journey a success. First and foremost, my dad Mr. Kilion Agalo and my mom, Mrs. Jane Benard. My brother Ben Agwa and my other siblings Roseline Mingusa, Faith Anjela, Christine Mingusa, Bridghite Mingusa and Beryl Mingusa. My niece Rolanda Mokeira and not forgetting the entire Strathmore community.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Capital structure refers to the mix of a company's long-term debt, equity, and other financial instruments used to finance its operations, growth, and investment activities. The decision regarding the capital structure is critical to a firm's financial stability, its ability to manage risk, and its overall business performance (Myers, 2001). A well-balanced capital structure enhances financial flexibility, improves the firm's ability to raise additional funds, and minimizes the cost of capital. On the other hand, a poorly structured capital mix can lead to increased financial risk, higher borrowing costs, and may limit the firm's capacity to capitalize on growth opportunities (Shakil, 2021). The board of directors plays a significant role in shaping capital structure decisions.

Board characteristics—such as board size, composition, independence, gender diversity, and expertise—are key elements of corporate governance that significantly influence a firm's strategic decisions, particularly those related to its capital structure (Vitolla et al., 2020). The board's primary responsibility is to oversee management, ensuring that corporate decisions align with shareholder interests and provide strategic direction for the firm. A well-structured board, composed of independent directors and equipped with diverse expertise, is more likely to make informed and prudent decisions that balance risk and reward in the firm's capital structure (Maina, 2022). Conversely, boards that lack independence or sufficient expertise may make riskier or less strategic financial decisions, negatively impacting the firm's capital mix and its long-term viability (Zaid et al., 2022).

The relationship between board characteristics and capital structure decisions is grounded in several financial and governance theories, including agency theory, trade-off theory, and pecking order theory. Agency theory, proposed by Jensen and Meckling (1976), posits that the presence of independent directors helps mitigate conflicts between managers and shareholders, thereby encouraging more conservative financing choices and promoting a balanced capital structure. Trade-off theory (Kraus & Litzenberger, 1973) suggests that firms strive to balance the tax benefits of debt with the potential costs of financial distress, a decision often influenced by board deliberations. Furthermore, corporate governance frameworks (Gompers et al., 2003) emphasize

the critical role of board structure in ensuring that firms operate transparently, accountably, and strategically, directly influencing decisions such as capital structure.

The board composition of firms in these markets may differ considerably from those in more developed economies, making it crucial to understand the dynamics between board characteristics and capital structure within these unique contexts. In Kenya, non-financial firms listed on the Nairobi Securities Exchange (NSE) represent an ideal case study. These firms operate across diverse industries, each with unique financial needs, risk profiles, and growth opportunities. This study focuses on these non-financial firms listed on the NSE to explore how board characteristics influence capital structure decisions, with particular emphasis on the moderating role of industry. Industries differ in terms of financial demands and challenges, so it is vital to understand how these sector-specific factors influence the relationship between board characteristics and capital structure.

The relationship between board characteristics and capital structure decisions has been the subject of extensive research in corporate finance and governance across the globe. As noted by Abor (2007), the board's responsibility is to provide expert guidance and advice, enabling firms to enhance and create shareholder value. Due to their strategic role, board characteristics have emerged as key factors influencing firms' financial policies, particularly capital structure decisions. This study focused on several critical board characteristics: board size, board independence, gender diversity, and board expertise which have been identified in the literature as vital components shaping financial decision-making (Adams & Ferreira, 2009).

Good corporate governance is essential in managing financial risk and determining the most appropriate mix of debt and equity. Effective governance structures help firms align the interests of management and shareholders, reduce agency costs, and enable the firm to access both debt and equity financing more efficiently (Yoshikawa & Phan, 2005). Conversely, weak corporate governance can result in information asymmetry, where conflicts arise between managers and shareholders, ultimately undermining decisions related to capital structure (Yoshikawa & Phan, 2005). Thus, the governance structures in Kenyan firms, particularly those listed on the NSE, are crucial in shaping how these firms approach strategic financing decisions.

The motivation for this study arises from the critical need to address the ongoing governance and capital structure challenges faced by non-financial firms listed on the Nairobi Securities Exchange

(NSE). These firms are particularly vulnerable to financial instability and corporate failures due to mismanagement of debt and poor capital structure decisions (Li & Tang, 2020). Unlike financial firms, which have structured regulatory oversight and clearer capital requirements, non-financial firms often face complex challenges in debt management and governance practices, which can result in financial distress and even corporate collapse (Njenga & Jagongo, 2019).

In Kenya, firms in various industries face unique financial challenges that require tailored capital structure strategies (Mulwa & Ndede, 2022). However, insufficient research has been conducted to understand how these industry-specific needs impact the relationship between board characteristics and capital structure decisions. Certain industries, such as manufacturing, energy, and construction, are inherently capital-intensive, requiring substantial debt financing to support large-scale operations, infrastructure development, and machinery investments (YuSheng & Ibrahim, 2020). For example, in the energy sector, firms need to finance long-term capital projects such as power plants and energy distribution networks, which often necessitate high levels of debt. Similarly, manufacturing firms, with their significant investment in machinery, technology, and factories, rely heavily on debt financing to maintain operations. These industries tend to have higher debt-to-equity ratios as part of their normal financial structure, which may not necessarily signal a crisis if managed correctly (Business Daily, 2023).

This study aimed to fill the gap by examining how board characteristics influence capital structure decisions in non-financial firms listed on the NSE. Additionally, the study explores how industry factors moderate this relationship, considering the unique challenges and opportunities different industries face which is the main study contribution to empirical literature. By providing insights into how board characteristics affect capital structure in Kenya, this study aims to contribute to the broader understanding of governance and financing strategies in emerging markets.

1.1.1 Board characteristics

Empirical literature has identified several board characteristics that influence capital structure decisions. These characteristics are commonly studied because they shape corporate governance, strategic decision-making, and financial policies. Some of the key board characteristics that have been widely researched include board size, board independence, gender diversity, board expertise, board composition, CEO duality and director tenure (Andoh, 2023; Li et al., 2020;). These characteristics play a crucial role in determining how a firm approaches financial decisions,

including its capital structure, risk management, and overall business strategy. However, this study will specifically focus on board size, board independence, gender diversity, and board expertise. These characteristics are selected because they have a direct influence on the decision-making process related to capital structure, and they are essential for understanding how governance affects financial strategies in emerging markets, particularly in Kenya.

Board size refers to the total number of directors on a company's board, playing a crucial role in corporate governance by influencing decision-making and shaping key corporate decisions such as capital structure, risk management, and business strategy (Li et al., 2020). The impact of board size on these decisions has been widely studied, with findings varying globally, regionally, and locally. The relationship between board size and capital structure is mixed. The studies which have been done depict these results. Globally, larger boards bring greater diversity and expertise, improving decision-making and access to capital, including debt financing (Yermack, 2019). However, they may face coordination challenges and inefficiencies (Kochhar & David, 2019). While some studies link larger boards to higher debt levels (Bazhair, 2023), others, such as in Australia, suggest they prefer equity financing due to a more risk-averse nature (Sivathaasan et al., 2021), highlighting the importance of context in this relationship.

Regionally, in Africa, larger boards have been linked to higher debt levels in Ghana, where they are seen as better equipped to manage financial risks (Andoh, 2023). In Nigeria, however, larger boards tend to prefer equity financing to reduce financial risk (Ehikioya et al., 2021). African studies suggest that larger boards are better at monitoring management and ensuring accountability, influencing capital structure decisions. In markets with underdeveloped capital markets, firms may rely more on equity financing to avoid high debt risks (Zeitun & Goaied, 2023).

Locally, Kenya's Capital Markets Authority (CMA) Corporate Governance Guidelines (2015) recommend a balanced board size (4-11) members that incorporates diverse expertise without being unwieldy. The Kenyan Companies Act (2015) requires listed companies to disclose board composition, preventing the domination of decision-making. Few studies on Kenyan firms, particularly in the banking sector, show a positive relationship between board size and capital structure decisions, with larger boards providing better oversight and access to debt financing (Mulwa & Ndede, 2022). However, Kenya's underdeveloped capital markets and evolving governance frameworks may result in different outcomes when studying the non-financial firms.

Understanding board size's role in capital structure is essential as firms listed on the Nairobi Securities Exchange (NSE) navigate capital raising and risk management.

Board independence refers to directors who are not involved in day-to-day management and have no material relationships with the company. Independent directors are key to ensuring transparency, reducing conflicts of interest, and promoting shareholder value, thus playing a vital role in corporate governance. Globally, independent boards are often linked to conservative financial decisions, favoring equity financing over debt to minimize risk and ensure long-term stability (Javid et al., 2023). However, some studies suggest independent boards may support debt financing if the benefits outweigh the risks (Ezeani et al., 2022), highlighting the role of context in shaping these decisions.

Regionally, independent boards generally prefer equity financing to avoid financial risks. In Ghana, for instance, independent boards are associated with lower debt levels, focusing on sustainability (Andoh, 2023). Similarly, in Nigeria, independent boards prioritize equity to maintain financial stability, especially in volatile markets (Ehikioya et al., 2021). Locally, Kenya's Capital Markets Authority (CMA) Corporate Governance Guidelines (2015) recommend at least one-third of board members be independent. The Companies Act (2015) requires disclosure of board composition, ensuring transparency. Studies on Kenyan firms, particularly in banking, show that independent boards prefer equity financing to manage financial risks, aligning with global practices (Mulwa & Ndede, 2022)

Gender diversity on boards, referring to the inclusion of both male and female directors, has become a crucial aspect of corporate governance. It is believed that gender-diverse boards bring diverse perspectives that enhance decision-making, risk management, and innovation, especially in capital structure decisions. Globally, Bazhair (2023) found that board gender diversity negatively influences capital structure in Chinese listed companies. However, Ben and Belkacem (2021) observed that board diversity influences the capital structure for firms in the United State positively, mainly after the financial crisis. The conflicting findings bring out a contextual gap in understanding how board gender diversity specifically influences capital structure decisions in different contexts.

Regionally, Hordofa (2023) examined the impact of board gender diversity on capital structure in the Ethiopian banking sector. The study found that gender-diverse boards in Ethiopian banks

utilized lower levels of debt, suggesting that female directors tended to adopt a more conservative approach to debt financing. Locally, the Capital Markets Authority (CMA) Corporate Governance Guidelines (2015) and the Companies Act (2015) emphasize gender diversity on boards. Women representation should be one-third of the total board members. Lungatso and Otuya (2022) analyzed corporate governance and capital structure in Kenyan-listed firms. Their study revealed that gender diversity positively influenced capital structure decisions. The presence of female directors brought diverse perspectives and improved risk management, resulting in more balanced financing choices for Kenyan corporations.

Board expertise, encompassing financial and industry-specific knowledge, enhances the board's capacity to evaluate financing options (Aibar-Guzmán et al., 2024). Though literature on Kenya remains limited, Gatehi and Nasieku (2022) found that expertise positively affects financial performance, implying potential influence on capital structure. Mulwa and Ndede (2022) also noted a strong association between board characteristics and strategic financial decisions in Kenyan banks. Despite extensive research on the influence of board characteristics on capital structure, scholars have yet to reach a consensus on their exact impact. Studies conducted globally, regionally, and locally have yielded varying results, highlighting the complexity of the relationship between board characteristics and financial strategies. The lack of agreement may stem from several factors, including differences in the regulatory environments in which firms operate. For instance, some firms are governed by regions or countries where corporate governance codes are strictly adhered to, while others may operate in environments with weaker governance frameworks. These variations in governance standards and practices could contribute to differing findings in the literature regarding the influence of board characteristics on capital structure decisions.

1.1.2 Capital Structure

Capital structure of a firm depends on the nature of its operations; it refers to how a company finances its operations and growth using diverse sources of funds. It is generally expressed as a debt and equity financing ratio (Hackbarth, 2008). One of the important aspects of corporate finance is the capital structure, which directly affects a company’s risk profile, value, and cost of capital. Amin et al. (2022) explains that having good corporate governance enables the

organization to manage its resources effectively, resulting in a lower total cost of capital structure, thereby influencing their capital structure decisions.

Over the past decade, trends in capital structure among non-financial firms listed on the Nairobi Securities Exchange (NSE) have revealed significant challenges. According to the Capital Markets Authority (CMA), approximately 47% of listed non-financial firms reported debt-to-equity ratios exceeding 0.75 as of 2022, highlighting a worrying reliance on debt financing (CMA, 2022). This trend is compounded by an increase in financial distress cases, with prominent firms such as Uchumi Supermarket and Nakumatt Supermarket entering receivership due to unsustainable debt levels. The period between 2015 and 2022 also saw a 30% rise in corporate loan defaults, emphasizing the critical need for better capital structure management (Business Daily, 2023).

Globally, studies have shown a consistent trend of firms leveraging sophisticated financing strategies to maintain balance between debt and equity. For instance, in the United States, the adoption of tax-advantaged debt financing strategies has contributed to a significant preference for higher debt levels among mature firms (Paniagua & Sapen, 2018). Conversely, European markets demonstrate a more conservative approach, with firms opting for equity financing to mitigate financial distress risks during volatile economic conditions (Gruszczynski, 2006).

Regionally, studies present a contrasting narrative. Buvanendra et al. (2017) highlight that while empirical research on corporate capital structure is extensive in developed markets, studies in emerging economies remain limited. In these contexts, capital structure decisions are influenced by unique challenges, including underdeveloped financial markets, regulatory constraints, and economic instability. Puni & Anlesinya (2020) noted that emerging markets increasingly focus on understanding the determinants of capital structure, with firms balancing between limited debt access and the high cost of equity financing.

Locally, Maina (2022) observed a trend indicating a shift towards more sophisticated financing strategies among Kenyan firms. This shift reflects a growing awareness of the need to optimize capital structure decisions. Factors influencing these decisions include company size, industry norms, profitability, growth opportunities, market conditions, and corporate governance frameworks. For example, larger firms in Kenya tend to leverage economies of scale to access favorable debt terms, while smaller firms rely more on equity due to limited access to credit markets. The practical problem faced by NSE-listed firms is rooted in structural inefficiencies in

capital structure management. These include a heavy reliance on debt leading to default, poor financial planning, and inadequate governance mechanisms to oversee strategic financial decisions. The high financial vulnerability of these firms is evidenced by the persistent trend of corporate failures and receiverships (García & Herrero, 2021).

Approximately one-quarter of the companies listed on the Nairobi Securities Exchange (NSE) are experiencing financial difficulties, necessitating additional capital to maintain operations and fulfill dividend payments to shareholders. This challenging situation highlights the severe impact of the ongoing economic crisis on listed firms, coupled with a noticeable decline in investor interest in stocks. This decline is attributed to reduced disposable incomes and a growing preference for alternative investment avenues such as real estate and private equity. According to *The EastAfrican* 2022, 14 out of the 57 firms actively trading on the Nairobi Stock Exchange are struggling with negative working capital, where their current assets are insufficient to cover their current liabilities. Audited financial statements reveal that 14 firms with negative working capital operate in sectors including Automobiles and Accessories, Commercial and Services, Construction and Allied, Energy and Petroleum, Investment Services, and Manufacturing and Allied.

Firms such as Chase Bank and ARM Cement, which were once pillars of the Kenyan economy, have struggled due to inefficiencies in financing strategies and governance deficiencies (Muthomi & Mugo, 2022). The audited financial data excludes Mumias Sugar (in receivership), ARM (in liquidation), Deacons East Africa (under administration), and Uchumi Supermarkets (under a court-backed creditor arrangement). These issues highlight the urgent need for a comprehensive understanding of how governance structures, particularly board characteristics, influence capital structure decisions to mitigate financial risks.

Studies specifically examining the relationship between board characteristics and capital structure: moderation by industry are limited (Li et al., 2024; Ejide et al., 2019). While much of the existing research focuses on corporate governance and financial performance, mixed findings suggest a need for more focused studies. For instance, Oana et al. (2021) found that board independence positively influences capital structure in developed markets, yet similar studies in emerging markets yield inconsistent results due to differing governance structures and market dynamics. This study evaluated how board characteristics uniquely affect capital structure decisions within the Kenyan context.

1.1.3 Moderating effect of industry on board characteristics and capital structure

Different industries (e.g., manufacturing, energy, telecommunications) possess unique attributes like capital intensity, regulation, competition, and growth, which influence both financial strategies and governance practices. Capital-intensive sectors may favor debt, while service-oriented ones might prefer equity, impacting how board expertise, size, independence, and diversity affect capital structure (Olawale & Obinna, 2023; Were, 2016). Sector-specific regulatory frameworks and market volatility further necessitate industry-focused analysis (YuSheng & Ibrahim, 2020).

Empirical studies support this moderation. Research in the UK (Al-Najjar & Abed, 2014) showed that the positive impact of board independence on leverage varied across industries. In Nigeria, Inyang and Hanga (2023) found that board size and financial expertise moderated the link between capital structure and performance in consumer goods. Similarly, a Kenyan study (Tanui, 2022) revealed that while board independence generally increases leverage on the NSE, this relationship is less pronounced when considering specific sectors, underscoring the industry's moderating effect. Collectively, these findings demonstrate that the industry sector significantly moderates how board characteristics influence target capital structure. The impact of board attributes on capital structure decisions is not uniform, emphasizing the essential need for industry-specific analyses in corporate governance research to gain more accurate insights.

1.1.4 Non-Financial Firms in Kenya

Non-financial firms are a major part of the economy in Kenya; hence, they play a key role in contributing to the country's economic growth and development. The non-financial firms in Kenya contribute to the country's GDP, employment, and economic stability. Some of the listed industries that are non-financial firms in Kenya, like manufacturing, agriculture, telecommunications, energy, petroleum, construction and its allied, automobile, and accessories, contribute to its GDP (Mutua & Ngugi, 2021). During the past decades, non-financial firms in Kenya have experienced tremendous growth and transformation, driven by changes in technology, increasing foreign direct investment, and supportive government policies. Despite operating with infrastructural constraints and regulatory challenges, these firms have shown great resilience and adaptability, often outperforming their regional counterparts in terms of innovation and market expansion (Kinuthia & Murshed, 2021; Munyoki et al., 2022).

The motivation of this study on non-financial firms is deliberate because of the following reasons: first, in comparison with financial institutions, non-financial firms operate under different regulatory frameworks; thus, it presents fewer constraints in analyzing the relationship between board characteristics and capital structure decisions (Li & Tang, 2020). Additionally, financial firms, including banks and insurance companies, are subject to specific capital requirements and risk management regulations, which may strongly affect capital structure decisions and potentially distort the relationship being investigated (Njenga & Jagongo, 2019).

In addition, the non-financial firms in Kenya show greater variation in their choices of capital structure and hence provide a rich dataset for investigating the role of board characteristics in capital structure (Mulwa & Ndede, 2022). Such variability gives a wide scope to investigate the different board attributes' influence on the financial decisions across all industries and firm sizes. Focusing on the non-financial firms, this study attempts to generalize its results to a larger population of businesses and potentially provides more generalizable lessons for corporate governance practices in Kenya and elsewhere in emerging markets with similar characteristics (Gatehi & Nasieku, 2022).

1.1.5 Nairobi Securities Exchange

The choice focuses on organizations listed on the NSE, for several reasons are, the NSE has been one of the most developed and dynamic stock exchanges in East Africa, hence offering a rich dataset of companies operating under a common regulatory framework. This context makes possible meaningful comparisons and analysis while offering insights that could prove useful to other emerging markets both within and beyond the region (Mulwa & Ndede, 2022). Listed companies at the NSE face specific disclosure requirements and governance standards that ensure a degree of transparency and availability of data necessary for such research. Given that the NSE has a big role in the growth of the Kenyan economy and in the active enhancement of practices related to good corporate governance, the provided setting is very opportune for investigating the relationship between board characteristics and capital structure decisions (Tarus & Ayabei, 2022).

The proposed study is driven by several key factors. There is a need to address the gap in literature regarding the specific impact of board characteristics on capital structure decisions in emerging markets like Kenya in different industries moderated by industry. While numerous studies have

examined this relationship in developed economies, the unique challenges and opportunities present in emerging markets are warrant focused research (Jiang et al., 2023).

The ongoing evolution of corporate governance practices in Kenya, driven by regulatory changes and increased market sophistication, provides a dynamic backdrop for this research. Understanding how these changes are influencing financial decision-making is crucial for policymakers, investors, and corporate leaders. The potential practical implications of this research are huge. By offering insights on how board characteristics impact capital structure decisions, this study may provide information for more effective corporate governance practices that could lead to better financial performance and sustainability of the firms in Kenya (Maina, 2022).

1.2 Problem Statement

In the current landscape of corporate finance, non-financial firms listed on the Nairobi Securities Exchange (NSE) are grappling with a critical crisis in capital structure management, which is undermining their long-term financial stability and sustainability. This crisis has primarily risen due to unsustainable debt levels, leading to heightened risks of debt defaults and corporate failures. The period between 2015 and 2022 also saw a 30% rise in corporate loan defaults, emphasizing the critical need for better capital structure management (Business Daily, 2023). While high debt levels are not inherently problematic in every case, mismanagement and poor governance practices have exacerbated the situation, resulting in a significant financial vulnerability that threatens the survival of many firms.

The Capital Markets Authority (CMA, 2022) reports that approximately 47% of NSE-listed non-financial firms have debt-to-equity ratios exceeding 0.75, a signal of unsustainable leverage. The inability of these firms to effectively manage their capital structures has contributed to debt defaults and collapse in several high-profile cases, including iconic brands like Uchumi Supermarket and Nakumatt Supermarket, and the receivership of prominent firms such as Chase Bank and ARM Cement, underscore deep-seated structural inadequacies in financial management (Business Daily, 2023). These cases represent systemic governance challenges that demand rigorous academic and practical investigation (Muthomi & Mugo, 2022). This crisis reveals a deeper issue: while debt is an essential financial tool, its mismanagement is a key contributor to corporate failures. In capital-intensive sectors such as manufacturing and energy, higher levels of debt are often necessary to fund large-scale operations. However, in other industries like

agriculture or services, firms may not require as much debt, yet they may still be exposed to similar risks due to ineffective governance and financial strategies.

Literature consistently indicates that board characteristics play a crucial role in determining capital structure decisions (Zaid et al., 2020). Factors such as board size, board independence, expertise, and gender diversity influence an organization's financial strategy. However, the findings for developed economies cannot be generalize since Kenyan context presents a unique environment characterized by higher economic volatility, less transparent governance mechanisms, and more pronounced informational asymmetries (Kariuki & Mwangi, 2023).

The research aimed to systematically address research gap which include insufficient exploration of board-induced financial challenges in Kenyan non-financial firms. limited understanding of how industry sectors moderate the relationship between board characteristics and capital structure decisions. By investigating these intricate relationships, the study generated insights that extend beyond academic discourse. The findings offer recommendations for enhancing corporate governance, mitigating financial risks, and improving organizational performance in complex emerging market environments while considering industry-sector dynamics. Ultimately, this study contributes to the expanding discourse on corporate governance in emerging markets, providing a sophisticated exploration of how board characteristics fundamentally influence financial decision-making, moderated by industry sector characteristics. By bridging existing knowledge gaps, the study aimed to support more robust, context-aware approaches to corporate governance and financial management.

1.3 Research Objectives

The General objective of the study is to determine the effect of board characteristics on capital structure among listed non-financial firms on Nairobi Securities Exchange, Kenya: moderation by industry.

1.3.1 Specific Objective

1. To determine the influence of board size on the capital structure of non-financial firms listed on NSE, Kenya.
2. To investigate the impact of board independence on the capital structure of non-financial firms NSE, Kenya.

3. To establish the effect of gender diversity on the capital structure of non-financial firms listed on NSE-listed, Kenya.
4. To establish the effect of board expertise on the capital structure of non-financial firms listed on NSE-listed, Kenya.
5. To investigate the moderating effect of industry sector on the relationship between board characteristics and capital structure.

1.4 Research Questions

1. What is the impact of board size on the capital structure of non-financial firms listed on the NSE, Kenya?
2. What is the impact of board independence on the capital structure of non-financial firms listed on the NSE, Kenya?
3. What is the effect of gender diversity on the capital structure of non-financial firms listed on the NSE, Kenya?
4. How does board expertise influence capital structure of non-financial firms listed on NSE, Kenya?
5. How does the industry sector moderate the relationship between board characteristics and target capital structure of listed companies?

1.5 Scope of the Study

This study focused on 46 non-financial firms listed on Kenya's Nairobi Securities Exchange (NSE). The choice of non-financial firms is deliberate, the firms are not subjected to strict capital adequacy requirement. Capital structure of non-financial are fundamentally different and are more responsive to the market conditions hence their financing decisions reflect board strategic decisions. Financial firms (such as banks and insurance companies) have distinct capital structures due to regulatory requirements and the nature of their operations (ElBannan, 2017: Basel Committee on Banking Supervision, 2017). The research covered ten years, from 2015 to 2024. This is after the introduction of the new code of corporate governance for publicly listed companies. The code also responds to the changing business environment. The study examined four keyboard characteristics: board size, board independence, board expertise and gender

diversity. These characteristics have been selected based on their prominence in existing literature and potential relevance to the Kenyan context. Capital structure was measured using debt-to-equity ratio. Secondary data was used because it is probable and factual this was collected from the published audited annual reports and the company's website. Currently there are 46 listed non-financial firms on NSE, Kenya. The list of the non-financial firms is attached to appendix I.

1.5 Significance of the Study

This research holds significant importance for various stakeholders in the Kenyan corporate landscape and beyond.

1.5.1 Corporate Managers

The study findings offered crucial insights to the management team of companies listed on NSE on how to balance debt and equity to achieve a target capital structure. Understanding how board characteristics influence capital structure empowers and helps a firm avoid financial risk and bad reputation which could come because of poor corporate governance structure. The knowledge also helps the corporate managers to strategically align their board composition with capital structure goals resulting in effective and improved financial performance due to sustainable debt.

1.5.2 Investors

Investors need to make well informed decisions on which companies they invest in, hence having a clear understanding of how board characteristics influence the capital structure of companies is crucial in different industries is crucial. Investors also need to assess the financial risk of a company. This study help Investors have a clear understanding on the influence of board characteristics on capital structure decision hence providing a valuable tool for evaluating companies and making well informed investment decisions. For example, if the study findings explain that larger boards are associated with higher debt level, the conservative investors would prefer a company with a smaller board. The knowledge gained from this study could also influence shareholders to advocate for a board which aligns with their financial expectations and risk preference potentially influencing corporate governance practices across the market (Maina, 2022).

1.5.3 Policymakers

Policymakers and regulators are now able to draw knowledge from this study findings which can inform the development and refinement of corporate governance policies. CMA can recommend the guidelines to companies listed on NSE on how they can structure their board which ensures their target capital structure is achieved.

1.5.3 Chapter summary

This chapter discussed the background of board characteristics and capital structure. The chapter also provided a detailed study on the problem statement, study objective, research questions, scope of the research and significance of the research emphasizing its potential to provide knowledge and insights for corporate managers, policy makers and investors on how effective board composition influences capital structure decisions.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter explains the theoretical and empirical review of literature about the relationship between board characteristics and capital structure decisions in firms. It aimed to provide a comprehensive understanding of the current state of knowledge on how various board attributes influence firms' financing choices, with a particular focus on non-financial firms listed on the Nairobi Securities Exchange (NSE). Additionally, the chapter presents a conceptual framework, operationalizes the study variables, and identifies research gaps in existing literature to provide a foundation for understanding board characteristics' influence on capital structure decisions in Kenya.

2.2 Theoretical Framework

The theoretical framework examines the existing body of literature and establishes a connection between board characteristics and capital structure. Theories underpinning this study were highlighted based on the review of previous studies mentioning their strengths and limitations. The study used multiple theories-agency theory, pecking order theory and trade off theory to establish a connection between the board and capital structure. The choice of more than one theory offered a comprehensive framework for analyzing the study variables from different angles, each theory shading light and bringing different perspective this strengthened the validity if the findings of the theories converge on similar conclusion. Using one theory in a study may provide a limited perspective of the study and result in potential biasness where the researcher tends to select data that meets their interest.

2.2.1 Agency Theory

Agency theory, developed by Jensen and Meckling (1976), provides a crucial framework for understanding the dynamics within corporate governance, especially the potential conflicts that arise from the separation of ownership and control in modern organizations. The theory identifies the agency dilemma, where managers (agents) who control day-to-day operations may pursue personal interests that conflict with the interests of shareholders (principals). This separation creates challenges in aligning the goals of both parties.

Agency theory explains that managers typically prefer lower debt levels because high debt increases financial risk, potentially threatening their job security. On the other hand, shareholders usually favor higher capital structure due to its tax advantages and its ability to discipline management by reducing the free cash flow available for discretionary spending (Jebran et al., 2020). This divergence in interests between managers and shareholders highlights the importance of corporate governance mechanisms, particularly the role of the board of directors, in ensuring that the interests of both parties are aligned.

Agency theory is directly relevant to the variables examined in this study, In the context of capital structure, agency theory suggests that independent directors help mitigate the risks associated with managerial discretion, ensuring that financing decisions align with shareholders' interests. Independent and larger boards provide better oversight, reducing agency costs and encouraging more conservative financial decisions. Thus, boards that are larger and more independent are more likely to make informed decisions about capital structure, reducing the firm's financial risk and ensuring a balance between debt and equity that benefits shareholders.

Empirical studies support the application of agency theory to corporate governance and capital structure decisions. For example, Ehikioya et al. (2021) found that independent boards in Nigerian firms effectively reduced leverage by imposing stricter financial discipline on management. Similarly, Thakolwiroj and Sithipolvanichgul (2021) demonstrated that Thai firms with larger boards, particularly those with external connections, were more successful in acquiring debt, confirming the theory's predictions regarding the role of board size in capital structure decisions.

While agency theory provides a clear framework for understanding how board characteristics influence capital structure, critics argue that the theory oversimplifies the complex organizational relationships and does not account for the interests of other stakeholders beyond shareholders and managers. Nevertheless, the theory remains valuable for analyzing corporate governance in the context of capital structure management, as it highlights how board independence and size can help mitigate agency conflicts and guide effective decision-making.

2.2.2 Trade Off Theory

The Trade-Off Theory, developed by Kraus and Litzenberger (1973), explains the optimal capital structure of a firm by balancing the benefits of debt financing, such as tax shields, against the potential costs of financial distress and bankruptcy. The theory suggests that firms should use debt

up to a point where the benefits derived from the tax shield are balanced by the increased likelihood of financial distress, ultimately maximizing firm value (Miloud, 2022). This balance is crucial in determining the appropriate capital structure for a firm.

In the context of this study, which explores the impact of board characteristics on capital structure in non-financial firms listed on the Nairobi Securities Exchange, the Trade-Off Theory helps explain how board expertise influences capital structure decisions. According to the theory, a board with experienced directors is better equipped to assess the potential tax benefits of debt, evaluate the firm's risk profile, and determine the appropriate level of debt that balances these risks. This ensures that the firm can maximize the benefits of debt financing while minimizing the risks associated with financial distress. Thus, board characteristics, particularly board expertise, play a pivotal role in aligning capital structure decisions with the optimal trade-off between debt and equity.

The Trade-Off Theory provides valuable insights into why firms may opt for higher debt levels, particularly when they are profitable and can benefit from tax shields. Firms across different industries adopt varying capital structures based on their risk profiles and the costs associated with financial distress (Javaid et al., 2021). The theory also recognizes that capital structure is dynamic, allowing for adjustments over time in response to changing market conditions and firm-specific factors. These dynamics emphasize how board characteristics such as expertise and decision-making capacity can influence how firms adapt their capital structures over time (Zaid et al., 2020).

The theory has limitations. One key weakness is its reliance on static market conditions, which may not fully capture the financial realities of emerging economies where markets are volatile (Farooq et al., 2024). Additionally, the Trade-Off Theory tends to overemphasize the role of tax benefits and financial distress costs, neglecting other factors that can influence capital structure decisions, such as managerial motivations, investor sentiment, and regulatory constraints (Javaid et al., 2021). These factors are particularly important in developing economies and should be considered when analyzing capital structure decisions in these contexts.

Recent studies have applied the Trade-Off Theory to examine how board characteristics influence capital structure decisions. For example, Zaid et al. (2020) explored how board expertise can lead to more conservative debt strategies, as experienced board members are better positioned to understand the benefits of debt while making informed decisions. Similarly, Farooq et al. (2024)

found that boards with diverse opinions, particularly with expert members, might adopt a cautious approach to financial decisions to avoid excessive risk-taking. These studies highlight the relevance of the Trade-Off Theory in explaining how board characteristics influence capital structure decisions, especially in environments where stability and long-term sustainability are prioritized over aggressive debt strategies.

Trade-Off Theory offers a clear framework for understanding how board expertise and other characteristics can guide firms in making informed capital structure decisions that balance the benefits of debt with the risks of financial distress. However, its applicability in emerging markets may require additional considerations to account for the volatility and complexity of local financial environments.

2.2.3 Pecking Order Theory

The Pecking Order Theory, proposed by Myers and Majluf (1984), offers a distinct approach to understanding capital structure decisions compared to the Trade-Off Theory. This theory suggests that firms prioritize their sources of financing based on a hierarchy: first, internal funds (retained earnings), followed by debt, and only as a last resort, equity issuance. The theory emphasizes that this preference order arises due to information asymmetry between the firm and external investors. Issuing new shares is seen as sending negative signals to the market, indicating that the company may be overvalued, which can lead to a drop in stock prices (Miloud, 2022).

In the context of this study, which explores the impact of board characteristics on capital structure decisions in non-financial firms listed on the Nairobi Securities Exchange, the Pecking Order Theory highlights how board characteristics, such as financial expertise and independence, influence a company's financing choices. A board with financial expertise is more likely to understand the costs associated with external financing, including the negative market signals that may arise from issuing equity. As such, a well-informed and independent board may prefer debt over equity, especially in situations where internal funds are insufficient. Furthermore, larger boards or those with diverse opinions may be more cautious about equity issuance, prioritizing internal financing or debt to avoid the potential adverse market reactions associated with issuing shares (Gracia & Sogorb, 2008).

The relationship between board characteristics and the Pecking Order Theory becomes particularly evident in how boards influence firms' preferences for internal versus external financing. A larger

board or one with diverse expertise may more thoroughly evaluate the risks and benefits of each financing option, leading to a stronger preference for debt or internal resources rather than equity. This preference aligns with the Pecking Order Theory's assertion that firms avoid equity issuance unless necessary. In this way, board characteristics act as a moderating factor in financing decisions, aligning with the hierarchy outlined in the theory and influencing whether a firm turns to internal financing, debt, or equity.

One of the strengths of the Pecking Order Theory is its simplicity, which makes it a practical tool for understanding actual financing behaviors. It explains why profitable firms often rely on internal financing and minimize their debt levels, as they generate sufficient retained earnings to fund operations and growth (Carpenter & Petersen, 2002). The theory also effectively illustrates the role of information asymmetry in capital structure decisions, particularly in environments where firms are reluctant to issue new equity due to the potential negative market reaction (Farooq et al., 2024). However, the theory has limitations. It struggles to explain why some firms may still carry high levels of debt despite having ample internal resources, as it assumes that companies will always prioritize internal financing first. This could be inconsistent with the Trade-Off Theory, which suggests that firms may choose higher debt to capitalize on tax shields (Miloud, 2022). Furthermore, the Pecking Order Theory does not account for the non-financial factors influencing capital structure, such as corporate governance or managerial incentives, which can play an important role in financing choices.

Empirical studies have supported the application of the Pecking Order Theory in various contexts. For example, Zaid et al. (2020) applied the theory to investigate how board characteristics influence capital structure decisions in Palestinian companies. Their findings suggested that firms with diverse and independent boards were more likely to adhere to the pecking order, prioritizing internal funds and debt over equity issuance. Similarly, Javaid et al. (2021) found that firms with larger boards and higher institutional ownership in Pakistan were more likely to follow the pecking order, preferring debt to equity when internal funds were insufficient. The theory's emphasis on minimizing equity issuance and preferring debt and internal financing aligns with the behaviors observed in firms with informed, cautious, and diverse boards.

2.3 Empirical Review

The empirical literature identifies several board characteristics that affect the capital structure of a firm significantly. These characteristics are board size, independence, expertise, meeting, tenure, gender diversity (Abor, 2017: Ezeani et al., 2023). This study used board size, independence, and expertise because they have been supported by previous studies, and they relate very well to the theories underpinning this study relevant in the context of Kenyan geographical location. These attributes also feature globally and locally in the research on corporate governance; hence, this lays a focused yet comprehensive basis for analysis of influences in the capital structure in Kenya. The summary of literature is attached to appendix II.

2.3.1 Board size and capital structure.

Board size is the total number of directors on a company's board. It is a crucial component of corporate governance that influences many decision-making processes for organizations, including capital structure decisions (Bazhair, 2023). The presence of the board of directors is very important for a firm (Amin et al., 2022); a larger board may provide diverse expertise and perspectives, leading to more comprehensive financial decision-making; it may have access to resources where larger boards have better connections and networks, potentially easing access to debt financing; larger boards may deliver more effective monitoring of management, possibly reducing agency costs and having some influence on capital structure. Federo et al. (2020) contend that they may also encounter coordination. The agency theory supports the relevance of board size and capital structure decisions. The larger board's stringent monitoring and efforts to reduce information asymmetry enable the firm to use more debt and select the most favorable options aligned with shareholder interests. By influencing managerial decisions, this oversight compels managers to commit future cash flows, limiting their discretionary spending and ultimately enhancing firm value.

Board size varies quite a lot across countries and industries worldwide. In the global context, the regulations on board size also vary considerably. For instance, in the United States, the average board size for S&P 500 companies stands at about 10.7 members, as noted in the 2021 Spencer Stuart Board Index report. In the UK, for example, the UK Corporate Governance Code says the board should be of "sufficient size that the requirements of the business can be met," without giving a particular number. In Kenya, the CMA Corporate Governance Guidelines (2016) recommend

that the board size should be big enough to discharge its functions but not too big as to be unwieldy. The Kenyan Companies Act, (2015) stipulates that a public company should have at least two directors but does not provide for a maximum.

In the global context, Zaid et al. (2020) examined how corporate governance practices influence capital structure decisions in non-financial firms listed on the Palestine Stock Exchange, focusing on the moderating role of gender diversity. The study utilized panel data regression methods, including fixed effects and one-step system Generalized Method. Capital structure, measured as total debt to total assets, was the dependent variable, while explanatory variables included board characteristics and gender diversity. The findings reveal that board size positively impacts capital structure by enhancing monitoring capacity, networks, and reputation, reducing the cost of debt. Gender diversity further strengthens this relationship, with diverse boards perceived as more effective and credible.

Similarly, Detthamrong et al. (2017) examined Thai-listed firms and found a positive relationship between board size and capital structure. They argued that larger boards provide more diverse expertise, leading to increased confidence in managing higher debt levels. This finding suggests that in some contexts, larger boards may be associated with more aggressive capital structure strategies. Equally, Javaid et. (2021) investigated Pakistan listed companies and discovered a positive relationship between board size and debt ratios. They posited that larger boards might have better access to debt markets due to their extensive networks and expertise, facilitating higher capital structure. However, the assumption that larger boards automatically manage higher debt levels more effectively might oversimplify the complexities of financial decision-making, as larger boards may also face coordination challenges that could hinder swift decision-making.

According to Ozili (2020), who examined corporate governance in the Nigerian context using a comprehensive review methodology. The research spanned multiple years analyzing corporate governance practices and their impact on firm performance in Nigeria. The methodology involved a systematic review of existing literature and empirical studies on corporate governance in Nigeria. Data was collected from published research papers, corporate reports, and regulatory documents. The study investigated various governance mechanisms including board characteristics, ownership structure, and their relationship with firm performance metrics. Results showed a significant positive correlation between board size and financial performance measures (ROA: $\beta = 0.245$, $p <$

0.05). The study concluded that effective corporate governance mechanisms, particularly larger board sizes, contribute to improved firm performance in Nigerian corporations through enhanced monitoring and strategic decision-making capabilities.

Mulwa and Ndede (2022) examined the relationship between board size and capital structure among firms listed on the Nairobi Securities Exchange. Using panel data analysis from 2015-2020 covering 42 non-financial companies, they found a positive and significant relationship between board size and capital structure. The study concluded that larger boards in Kenyan firms are associated with higher debt to equity levels, likely due to enhanced monitoring capacity and better access to debt markets through board members' connections. Their findings also showed that firm size and asset tangibility positively correlated with capital structure, while profitability had a negative relationship. Mulwa and Ndede's (2022) study suggests a positive relationship between board size and capital structure. However, it doesn't address potential biases in panel data analysis, or the risks associated with higher debt to equity ratio in Kenyan firms.

Likewise, Usuanlele (2021) examined the relationship between board composition and financial performance of companies listed on the Nairobi Securities Exchange from 2018-2022. The study employed a quantitative research design using panel data regression analysis. The sample consisted of 57 listed companies, with data collected from annual reports and NSE databases. Variables included board size, ROA, ROE, and Tobin's Q as performance measures, while controlling for firm size, age, and leverage. The methodology used multiple regression analysis to test the relationships. Results indicated that board size had a significant positive relationship with financial performance. The study concluded that larger boards enhance financial performance through improved decision-making and better resource access in the Kenyan context. Usuanlele's (2021) study finds a positive relationship between board size and financial performance. However, it doesn't address potential multicollinearity issues in regression analysis or the impact of external market factors

Despite these findings, not all studies have found a positive relationship. Kao et al. (2019) examined Taiwanese firms and found that larger boards were associated with lower debt ratios. They argued that larger boards might be more risk-averse, preferring conservative capital structures with less debt. Studies in Kenya have reported contrasting results. For instance, Gitau and Muturi (2022) found a negative relationship between board size and capital structure among

NSE-listed firms. They suggested that larger boards in the Kenyan context might be more conservative in their financial decisions, preferring lower debt levels to minimize financial risk.

The mixed findings reflect the ongoing debate in the broader literature. These contrasting findings highlight the complex relationship between board size and capital structure, suggesting that the impact may be context-dependent and influenced by market conditions, regulatory environments, and firm-specific characteristics. A large board size in Kenyan firms can positively influence capital structure through diverse expertise and improved decision-making. The broader mix of directors enhances oversight, helping firms manage debt effectively and navigates governance challenges. This strong oversight can boost creditor confidence, making it easier to access debt capital and positively impact capital structure by increasing capital structure responsibly. The researcher expects to find a positive relationship between board size and capital structure among NSE-listed non-financial firms based on the empirical review and underpinning theory.

2.3.2 Board independence and capital structure

Board independence, typically measured by the proportion of independent directors on the board, is a critical aspect of corporate governance that can significantly influence a firm's financial decisions, including capital structure choices. Independent directors are those who have no material relationship with the company beyond their role as board members, and their presence is often associated with improved oversight and protection of shareholder interests (Nguyen & Nielsen, 2010). The relationship between board independence and capital structure is grounded in the idea that independent directors may have different risk preferences and decision-making approaches compared to insider directors. According to McCabe and Nowak (2008), independent directors might be more inclined to monitor management effectively, potentially influencing the balance between debt and equity in the firm's capital structure. Understanding this relationship is crucial for firms seeking to optimize their governance structures and financial strategies.

Agency theory explains this variable, arguing that independent directors can better supervise management and match choices with shareholder interests (Jensen & Meckling, 1976). According to Li et al (2020), insiders typically undermine the board's independence. The literature on board independence and capital structure in Kenya yields varied results. According to several studies, board independence and capital structure are positively correlated. For example, Kao et al. (2019) investigated Taiwanese listed companies and discovered a link between board independence and

capital structure. They contended that independent boards may embrace debt as a disciplinary mechanism for controlling management's behavior and lowering agency costs. Their research revealed that companies with a higher share of independent directors tended to have higher debt levels.

Board independence has become a key focus of corporate governance reforms. In Kenya, the Capital Markets Authority (CMA) Corporate Governance Guidelines (2015) stipulate that the board should have a policy on board independence and disclose this in the annual report. The guidelines recommend that at least one-third of the board members should be independent non-executive directors. The Companies Act (2015) while not explicitly addressing board independence, provides a framework for director duties that implicitly supports the concept of independent oversight**.**

In the global context, Kao et al. (2019) investigated how ownership structure and board composition influence firm performance among companies listed on the Taiwan Stock Exchange. Using panel data analysis, the study found a significant positive correlation between board independence and capital structure. This implies that markets with weak corporate governance mechanisms have value when independent directors monitor the activities.

Regionally research in the financial sector has also yielded relevant findings. Ehikioya et al. (2021) analyzed 93 Nigerian listed firms from 2015-2019, employing fixed effects regression to examine panel data. The study found that board independence positively influences capital structure in Nigerian listed firms. Their study showed that boards with more independent directors tend to endorse higher leverage levels, suggesting that independent directors may play a role in encouraging the use of debt financing.

Furthermore, Ideh et al. (2021) investigated the contentious relationship between corporate board structure and earnings management practices, a topic of significant concern among regulatory bodies, accounting professionals, corporate management, and academic researchers. Their empirical investigation examined the impact of board independence and size on earnings management practices within Nigerian publicly listed companies. The findings revealed that board independence demonstrated no statistically significant influence on either earnings management practices or organizational performance metrics, challenging conventional assumptions about corporate governance mechanisms.

Zeitun and Goaied (2023) conducted a comprehensive study of listed firms in Kenya, Tanzania, and Uganda from 2009 to 2021. Their findings revealed a mixed relationship between board independence and capital structure across the region. While they found a positive relationship in Kenya and Tanzania, Uganda showed a negative relationship. The authors attributed these differences to varying levels of market development and regulatory environments across the three countries.

Building on these foundations, Maina (2022) investigated the relationship between board independence and capital structure among NSE-listed companies from 2015 to 2020. Using panel data analysis, the study measured board independence as the ratio of non-executive directors to total board members, while capital structure was assessed using the debt-to-equity ratio. The findings revealed a significant positive relationship between board independence and leverage levels, suggesting that firms with more independent directors tend to maintain higher debt levels. This relationship was attributed to independent directors bringing external expertise, providing stronger monitoring, and enhancing creditor confidence in the firm's governance structure. However, the study doesn't address potential diagnostic issues in the panel data analysis or the role of industry-specific factors. This study performed the test and measured board independence as percentage of independent non-executive directors to total number of directors in the board.

Despite these findings, not all studies have found a positive relationship. Thakolwiroj and Sithipolvanichgul (2021) conducted a study on board characteristics and capital structure and analyzed data using multiple regression analysis, with 1,264 firm-year observations from 2015 to 2017. Their study observed a negative relationship between the proportion of independent directors and debt levels in Thai-listed companies. Independent directors may limit the firm's use of debt, possibly due to concerns about financial risk and agency costs associated with high leverage.

Moreover, Usman et al. (2019) examined the relationship between board independence and debt financing costs among Pakistani listed firms. Their panel data analysis revealed that companies with more independent boards secured lower borrowing costs, with a 10% increase in board independence associated with a 30-basis point reduction in interest rates. This relationship was attributed to independent directors enhancing financial oversight, strengthening corporate governance, and better protecting creditors' interests. The effect was particularly pronounced

during periods of market stress, suggesting that board independence serves as a significant risk-mitigating factor from creditors' perspectives.

The mixed findings in the literature highlight the complex nature of the relationship between board independence and capital structure. These contradictory results underscore the need for further investigation, particularly in the context of emerging markets like Kenya, where corporate governance practices continue to evolve. The researcher expects to find a positive relationship between board independence and capital structure of listed non-financial firms on the NSE, Kenya.

2.3.3 Gender diversity and capital structure

Board gender diversity refers to the presence and proportion of women on corporate boards of directors. According to Kirsch (2018), aspects of board composition have gained significant attention in recent years due to its potential impact on various aspects of corporate governance and performance, including capital structure decisions. The relationship between board gender diversity and capital structure is an area of growing interest in corporate finance research.

The pecking order theory can be relevant if gender-diverse boards are more risk-averse, as suggested by (Chen et al., 2019), they might prefer internal financing or lower levels of debt. The Capital Markets Authority (CMA) of Kenya has issued guidelines recommending that at least one-third of board positions in listed companies should be held by either gender (CMA, 2015). Additionally, the Kenyan Constitution of 2010 promotes gender equality and prohibits discrimination based on gender. However, despite these efforts, progress in achieving gender balance on corporate boards in Kenya has been slow with women still underrepresented in many sectors (Amunga & Amadalo, 2022).

Globally, Saeed and Sameer (2017) suggest that having women on boards can improve stakeholder relationships and corporate reputation, which may enhance a company's access to external financing. Their study emphasizes the positive effect of gender-diverse boards on decision-making processes and capital structure strategies. However, the study does not explore the potential trade-offs in risk aversion and debt preferences across different industries.

The relationship between board gender diversity and capital structure has been explored in various global contexts. In their study, Dang and Nguyen (2023) examined 82 countries using data from 498 microfinance institutions (MFIs) between 2009-2018. The authors employed random-effects

regression and robustness checks to account for endogeneity, finding that higher board gender diversity (BGD) is positively associated with financial stability. Furthermore, BGD was linked to a reduction in risk-taking behavior among MFIs, supporting the critical mass theory that highlights the importance of a sufficient proportion of female directors rather than tokenism. Simionescu et al. (2021) explored the effect of board gender diversity on firm performance within the U.S. information technology sector. Their study, using data from 71 Standard & Poor's 500 companies over a period from 2009 to 2020, employed various regression models and found a positive relationship between gender diversity and firm performance, particularly for market-based indicators like the price-to-earnings ratio.

In contrast, Li et al. (2022) conducted a cross-country study examining the effect of board characteristics on capital structure in the UK, France, Germany, and China. Their findings suggest that gender diversity on boards tends to lead to lower leverage, driven by risk aversion among female directors. However, the study fails to address how cultural and economic differences across countries may influence these findings, leaving room for further exploration into the contextual factors that affect gender-diverse boards' decision-making.

Regionally, Hordofa (2023) investigated the impact of board gender diversity on capital structure in the Ethiopian banking sector. Using panel data techniques from 2010 to 2022, the study found that gender-diverse boards in Ethiopian banks exhibited lower debt utilization, suggesting that women may bring a more conservative approach to debt financing.

Locally, Lungatso and Otuya (2022) examined corporate governance and capital structure in Kenyan-listed firms. Their study, based on panel data analysis of 42 companies from 2006 to 2012, found that gender diversity positively influenced capital structure decisions. The presence of female directors brought diverse perspectives and improved risk management strategies, leading to more balanced financing choices in Kenyan corporations.

While the studies reviewed show a generally positive relationship between board gender diversity and capital structure decisions, there are several points to critique. First, the research methodologies vary significantly, with some studies using panel data analysis (FE) (Hordofa, 2023; Lungatso & Otuya, 2022) while others use random-effects regression and GMM (Dang & Nguyen, 2023). These differences in methodology may affect the comparability of findings. Moreover, Saeed and Sameer (2017) and Li et al. (2022) primarily focus on the positive aspects of

gender diversity but fail to explore the potential trade-offs, such as gender-diverse boards' conservative stance on debt, which may limit access to necessary capital for growth. Additionally, some studies, such as those by Simionescu et al. (2021) and Li et al. (2022), provide insights into board gender diversity's effects on firm performance but overlook the specific implications for capital structure, the measures used on gender diversity could also lead to studies getting different results leaving a gap in understanding how gender diversity directly impacts capital structure.

These studies collectively highlight the significant influence of board gender diversity on corporate governance and capital structure. However, they also present mixed results, particularly in different cultural contexts and industries. While some studies suggest that gender-diverse boards lead to more conservative financial decision-making (Li et al., 2022; Hordofa, 2023), others indicate improved decision-making processes and enhanced performance (Saeed & Sameer, 2017; Simionescu et al., 2021). These differing findings suggest that the relationship between gender diversity and capital structure is complex and may be moderated by factors such as industry, market conditions, and regulatory environment. Although gender-diverse boards have the potential to influence capital structure decisions, more research is needed to fully understand the implications of gender diversity in different sectors and regions, especially in emerging markets like Kenya.

2.3.4 Board expertise and capital structure

The relationship between board expertise and capital structure decisions is often analyzed through the lenses of agency theory and pecking order theory. Agency theory suggests that boards with higher levels of expertise are better positioned to monitor and control management, leading to more efficient capital structure decisions (Jensen & Meckling, 1976). On the other hand, pecking order theory posits that firms tend to prefer internal financing over external financing, and boards with greater financial expertise may be better equipped to navigate this hierarchy (Myers & Majluf, 1984). These theoretical frameworks provide a basis for understanding how board expertise can influence capital structure decisions. According to the Capital Markets Authority (2015), the board should be set up so that each member has a variety of skills and knowledge. An effective board is one that makes it easier to carry out the legal obligations and contributes value in a way that is suitable for the specific needs of the business.

Globally, studies have explored the impact of board expertise on capital structure, with mixed results. Djuwarsa and Setiawan (2024) examined the relationship between board expertise and capital structure among Islamic banks in Indonesia from 2020 to 2023. The study used panel data regression analysis, measuring board expertise through financial qualifications, banking experience, and expertise in Islamic banking. The results revealed that higher board expertise was positively associated with higher debt levels. Specifically, a 10% increase in board members' financial expertise was linked to a 2.5% increase in leverage ratios. The study attributed this positive relationship to experienced boards having better risk assessment capabilities and stronger industry networks. Notably, all debt instruments had to be Shariah-compliant, which added a unique context to the findings in the Islamic banking sector.

Regionally, Guney et al. (2020) observed that East African firms with boards possessing higher levels of industry expertise tended to have lower debt ratios. They suggested that expert boards were more aware of the risks associated with high leverage in their specific industry contexts, which led them to adopt more conservative capital structures. Similarly, Meng and Tian (2022) studied the link between board expertise and executive incentives and found that while board expertise improves investment decisions, it negatively impacts the value of mature companies, suggesting that experienced boards may be more cautious in adopting high-leverage strategies.

Locally, Chimakati (2024) investigated board expertise and capital structure among firms listed on the Nairobi Securities Exchange (NSE) from 2013 to 2018. Using regression analysis of 40 companies, the study found that directors with financial and industry expertise significantly influenced the debt-to-equity ratios of these firms. The study concluded that boards with higher proportions of financially qualified directors tended to make more optimal capital structure decisions, enhancing financing efficiency and risk management.

While the studies reviewed provide valuable insights into the role of board expertise in capital structure decisions, they present mixed findings. Djuwarsa and Setiawan (2024) found a positive relationship between board expertise and debt levels, but this is in the context of Islamic banks, where Shariah-compliant debt instruments are mandatory. The unique nature of Islamic banking may limit the generalizability of these findings to other sectors. On the other hand, Guney et al. (2020) and Meng and Tian (2022) found a more conservative approach to capital structure by

expert boards, suggesting that the relationship between expertise and debt levels might be influenced by the industry context and the maturity of the company.

Maina (2022) found that board expertise in Kenyan-listed firms led to more efficient capital structure decisions, but the study did not account for other potential moderating factors, such as firm size or market conditions, which could influence capital structure choices. The variation in findings across regions and sectors underscores the complexity of the relationship between board expertise and capital structure decisions. Additionally, the sample sizes and methodologies vary across studies, which may impact the comparability of results.

There is a clear distinction between the studies that support a positive relationship between board expertise and higher debt levels (Djuwarsa & Setiawan, 2024) and those that suggest a more conservative approach (Guney et al., 2020; Meng & Tian, 2022). This contrast highlights that the influence of board expertise on capital structure is likely to vary depending on industry context, market conditions, and the regulatory environment. The findings from Djuwarsa and Setiawan (2024) and Maina (2022) align with the idea that more experienced boards may be more confident in managing higher levels of debt. However, the studies by Guney et al. (2020) and Meng & Tian (2022) emphasize the more cautious approach, suggesting that expertise may lead to more conservative debt choices due to a better understanding of associated risks.

The studies reviewed indicate that the relationship between board expertise and capital structure is complex and context dependent. In some industries, particularly in emerging markets like Kenya, board expertise leads to better capital structure decisions and better risk management (Chimakati, 2024). In contrast, in more developed economies and industries like banking, board expertise may be associated with higher leverage (Djuwarsa & Setiawan, 2024), although this is influenced by specific regulatory and market factors, such as Shariah-compliant debt in Islamic banking. The differences in these findings highlight the need for more research to explore how board expertise influences capital structure decisions across different sectors, regulatory environments, and market conditions.

The mixed results indicate the need for further investigation, particularly regarding the moderating factors that may influence the relationship between board expertise and capital structure decisions. Studies focusing on different industries, market conditions, and regulatory environments could provide a clearer understanding of how board expertise impacts capital structure. Moreover, the

study could explore the potential influence of firm size, financial health, and macroeconomic factors on the relationship between board expertise and leverage.

2.3.5 Moderating effect of industry on board characteristics and capital structure

The industry sector plays a critical role as a moderating variable influencing the relationship between board characteristics and capital structure decisions. The industry sector encompasses the various categories of economic activities in which firms operate, such as manufacturing, energy, agriculture, and telecommunications (Smith & Liou, 2007). Each sector has distinct characteristics, including capital intensity, regulatory requirements, competitive dynamics, and growth potential, which can shape financial strategies and governance practices.

Capital-intensive sectors like manufacturing and energy may rely heavily on debt financing to support asset acquisition and operations (Were, 2016). In contrast, service-oriented industries, such as telecommunications, might prioritize equity financing to maintain operational flexibility. These differences impact on how board characteristics—such as expertise, size, independence, and gender diversity—affect capital structure decisions (Olawale & Obinna, 2023). The regulatory framework, market volatility, and sector-specific risks further underscore the need for sectoral analysis (YuSheng & Ibrahim, 2020).

A study by Al-Najjar and Abed (2014) examined the impact of board composition on capital structure decisions across various industries in Uk. The findings indicated that board independence positively influences leverage decisions, suggesting that independent directors advocate higher debt levels to discipline management. However, the strength of this relationship varied across industries, highlighting the moderating role of the industry sector.

In the African setting, research by Inyang and Hanga (2023) investigated the moderating effect of board characteristics on the relationship between capital structure and financial performance of listed consumer goods companies in Nigeria. The study found that board size and financial expertise significantly moderate this relationship, emphasizing the importance of considering industry-specific dynamics when evaluating governance structures.

Focusing on Kenya, a study by Tanui (2022) explored the effect of board composition on capital structure among listed firms. The research revealed that board independence is positively related to leverage, indicating that firms with a higher proportion of independent directors tend to employ

more debt in their capital structure. This relationship was found to be more pronounced in the overall firms listed on NSE without considering specific sector, underscoring the moderating effect of the industry sector. These studies collectively suggest that the industry sector plays a significant moderate role in the relationship between board characteristics and target capital structure. The impact of board attributes such as independence, size, and expertise on capital structure decisions is not uniform across industries, highlighting the necessity for industry-specific analyses in corporate governance research.

2.4 Research gap

Studies on the relationship between board characteristics and capital structure have gained considerable attention globally. However, significant gaps persist, particularly in the context of listed non-financial firms on the Nairobi Securities Exchange (NSE), Kenya. Most studies on board characteristics and their impact on capital structure are concentrated in developed economies, where institutional frameworks and corporate governance regulations are well-established (Ahmed Sheikh and Wang, 2012; Ezeani et. al., 2022; Miloud 2022; Zaid et al., 2020) has provided valuable insights, but these findings may not generalize to Kenya, given its unique economic, regulatory, and market conditions. Limited studies specifically address the Kenyan context, making it critical to investigate how local governance practices influence capital structure decisions.

There is insufficient exploration of the interplay between multiple board characteristics in the Kenyan context. While studies have examined individual board characteristics like size, independence, expertise, and gender diversity separately, there is limited research on how these characteristics work in combination to influence capital structure decisions. The existing literature doesn't adequately address how these characteristics might complement or substitute for each other in the unique Kenyan corporate governance environment, characterized by less transparent governance mechanisms and pronounced informational asymmetries.

Prior studies often examine direct relationships between board characteristics and capital structure but overlook how industry sectors moderate this relationship in emerging markets, particularly in Kenya. Most studies have focused on direct relationships without considering how industry-sector might influence the effectiveness of board characteristics in determining capital structure decisions. This gap is particularly significant given the unique characteristics and challenges of different sectors within the Kenyan economy Farooque et al., (2020).

Moreover, methodological limitations in existing studies, such as reliance on multiple regression analysis techniques, fail to capture the dynamic nature of governance-capital structure relationships. Advanced methodologies like the Generalized Method of Moments (GMM), as employed by Javaid et al. (2023), could provide more robust insights but remain underutilized in studies focusing on the Kenyan market. Among the few studies which have been done in Kenya the studies combined the all listed financial and non-financial firms (Tanui, 2022). Addressing these gaps enhanced understanding of how board characteristics, influence capital structure decisions in Kenya. This study contributed to both academic literature and practical governance strategies for firms operating in Kenya's unique economic environment. A summary of literature is attached in appendix II.

2.5 Conceptual framework

This conceptual framework illustrates the relationship between board characteristics and capital structure based on the theoretical foundation and empirical evidence reviewed.

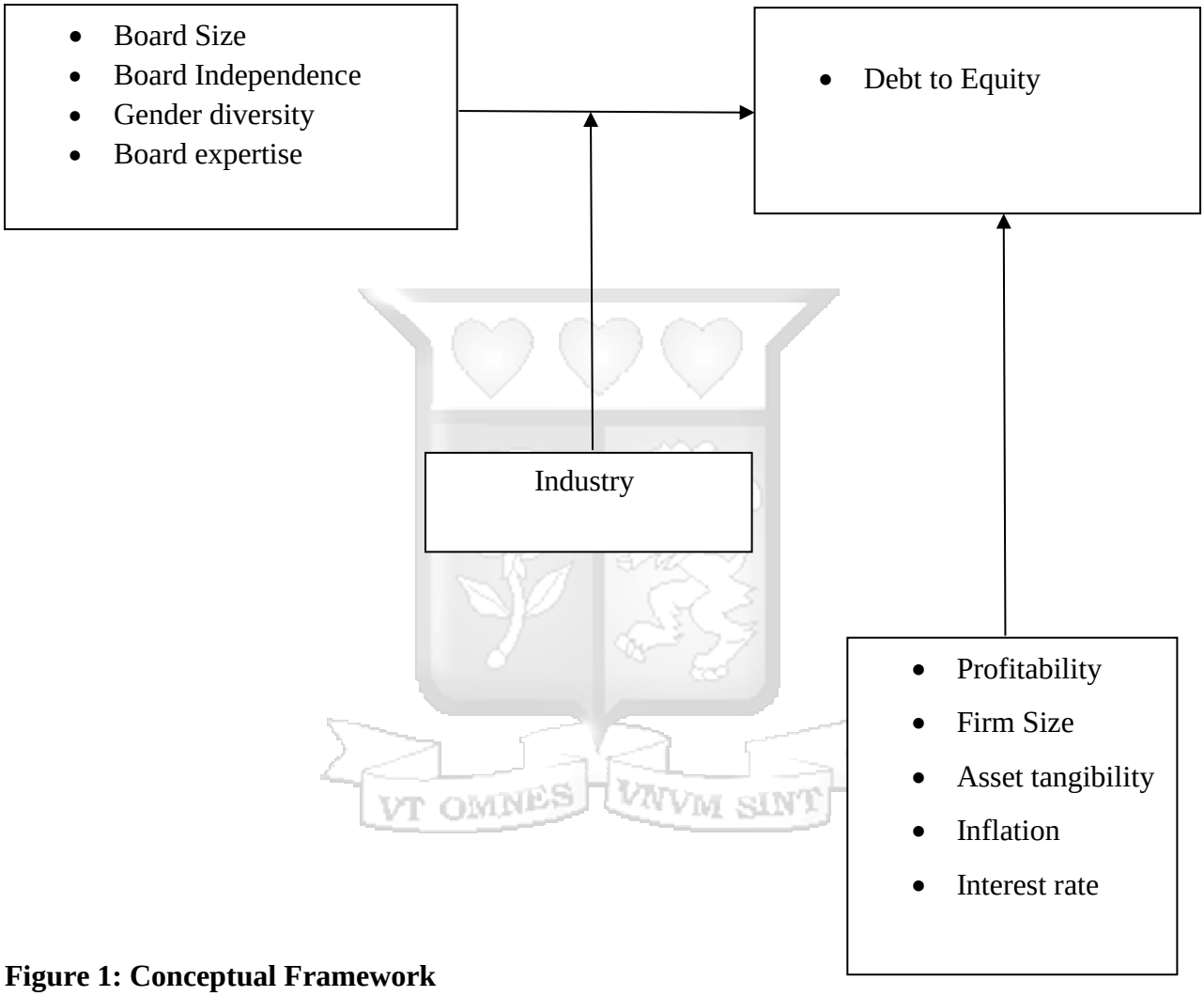

Figure 1: Conceptual Framework

2.5 Operationalization of the study's variable

Table 2.1 Operationalization of variables

Variable	Indicators	Measurement	Source	Scale of Measurement
Dependent variable	Capital Structure	Measured based on firms leverage (Total debt / total equity).	Farooq et al. (2024) Bazhair (2023) Thakolwiroj and Sithipolvanichgul (2021)	Ratio
Independent variable	Board Size	Total number of board members.	Zaid et al. (2020) Miloud (2022) Javaid et., 2021 Ezeani et al. (2023)	Count
	Board Independence	Percentage of Independent non-executive directors on the board.	Bazhair (2023) Mulwa and Ndede (2022) Amin et al. (2022)	Percentage
	Gender diversity	Percentage of women in the board	Farooq et al. (2024) Zaid et al. (2020) Miloud (2022)	Percentage

	Board Expertise	Assign a dummy variable, assign 1 to companies which have 50% of board members with 5yrs+ of experience and are in the Finance and accounting and zero otherwise.	Thompson and Manu (2021); Khan (2021): Assenga et al. (2018)	Nominal
Moderating variable	Industry sector	Assign a dummy variable for industry, with values of 1 if a firm belongs to high levered firms (manufacturing, energy and petroleum) and 0 otherwise.	Al-Najjar and Abed (2014)	Nominal
Control variables	Profitability	ROA	Anderson et al. (2004)	Ratio
	Firm size	Natural log of total assets.	Fayyaz et al. (2022)	Continuous
	Asset tangibility	PPE/total assets	Miloud (2022)	Ratio
	Inflation	Inflation rate	Javaid et., 2021	Percentage

	Interest rate	Interest rate		Percentage

Source: Authors (2024)

2.7 Chapter Summary

This chapter explained the theoretical and empirical literature and presents the study's conceptual framework and research gaps. The following chapter covers the research methodology, the study topic, the design, the population, sample strategies, data collection, and analytical tools.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter explores the research philosophy, research design, study population, and data collection methods employed in the study. It also delved into the data analysis process, as well as assessments of data quality and diagnostic testing.

3.2 Research Philosophy

Research philosophies form the foundation of scholarly inquiry, guiding researchers' approach to knowledge and methodology. The main philosophies include positivism, which seeks objective truths through empirical observation (Creswell & Creswell, 2018); interpretivism, emphasizing subjective meanings and social constructs (Bryman, 2016); pragmatism, focusing on practical outcomes (Tashakkori & Teddlie, 2010); critical realism, acknowledging an objective reality shaped by subjective perspectives (Saunders et al., 2019); transformative philosophy, aiming to address social inequalities (Mertens, 2014); and phenomenology, exploring lived experiences (Crotty, 1998). These philosophies influence research design, data collection, and interpretation, reflecting diverse epistemological and ontological stances. Researchers often align with a particular philosophy based on their worldview and research objectives, though some may adopt a mixed-methods approach, combining elements from different philosophical traditions to address complex research questions (Saunders et al., 2019).

This study adopted a positivism research philosophy, which aligns with the objective nature of the research questions and hypotheses. Positivism assumes that reality is objective, observable, and can be measured using scientific methods (Park et al., 2020). This philosophical stance is appropriate for examining the quantifiable relationships between board characteristics and capital structure of NSE-listed non-financial firms: moderation by industry. The research approach is deductive, moving from general theories about corporate governance and capital structure to specific hypotheses that can be empirically tested. It is a top-down method that involves starting with a theory or hypothesis and then testing it through observations and data collection (Pearse, 2019). This approach allows for applying existing theories to the Kenyan context and developing

testable propositions about the relationship between board characteristics and capital structure decisions.

3.3Research Design

Research designs can generally be categorized into exploratory, descriptive, experimental, and correlational designs. Exploratory research is typically used when little is known about a topic, while experimental research involves manipulating variables to observe cause-and-effect relationships. On the other hand, descriptive research seeks to describe characteristics of a phenomenon, and correlational research investigates relationships between variables without manipulating them. This study's research design was a quantitative approach consistent with a positivism philosophical perspective and a deductive reasoning procedure. Bloomfield and Fisher (2019) describe quantitative research as systematically collecting and studying numerical data. As a result, this study used a descriptive correlational research design. This design requires collecting and analyzing numerical data to test the suggested hypotheses and establish the correlations between the relevant variables.

3.4 Population

The target population for this research included the 46 non-financial firms quoted at the Nairobi Securities Exchange (NSE) in 2024 because they do not have a specific capital requirement level. The total firm observation was 460. These firms cut across the various sectors of the Kenyan economy, which include agriculture, automotive and accessory industries, commercial and service sectors, construction and related fields, energy and petroleum, investment services, manufacturing and associated industries, and telecommunications and technology sectors. The period for data collection is between 2015 and 2024; the period demonstrates current practices and captures very important changes happening in corporate governance practice and the market moves after the introduction of the new code of governance in 2015.

3.5 Data Collection Methods

The study sourced data from audited financial statements through the Nairobi Securities Exchange (NSE) website and company websites. Dependent variables (debt-to-equity ratio) were calculated using balance sheet and income statement data. Board characteristics data was collected as follows: board size from company annual reports via NSE portal and CMA reports; board independence

from corporate governance statements in annual reports and NSE governance reports; board expertise from director profiles in annual reports and company websites; and gender diversity from board composition disclosures. Control variables were gathered from financial statements and audited reports: firm size (total assets), profitability (ROA), asset tangibility, interest rate and inflation. All data was accessed through the NSE Data Portal, CMA website, company investor relations pages.

3.6 Data Analysis

The study analyzed data using panel data regression techniques. This method mainly calculates how much the dependent variable depends on the independent variable (Saunders et al., 2009). The core study used panel data regression to test hypotheses and identify how board features affect capital structure. Descriptive statistics summarized variable features, followed by correlation analysis to investigate correlations between variables. The researcher analyzed the data using the Stata. The regression model was in the following form:

Y_{it}= β₀ + $\beta 1X1_{it} + \beta 2X2_{it} + \beta 3X3_{it} + \beta 4X4_{it} + \beta 5X5_{it} + \beta 6X5_{it}$ + εit ……(I)

Y_{it}= β₀ + $\beta 1X1_{it} \times IND\_it + \beta 2X2_{it} \times IND\_it + \beta 3X3_{it} \times IND\_it + \beta 4X4_{it} \times IND\_it + \beta 5X5_{it} + \beta 6X6_{it} + \beta 7X7_{it} + \beta 8X8_{it} + \beta 9X9\_it$ +εit ……(II)

Where:

Y_{it}= Capital structure measure for firm i at time t

$X1_{it}$ = Board size

$X2_{it}$ = Board independence

$X3_{it}$ = Gender diversity

$X4_{it}$ = Board expertise

$X5_{it}$= Profitability

$X6_{it}$= Firm size

$X7_{it}$=Inflation

$X8_{it} = Asset\ tangibility$

$X9_{it}$=Interest rate

IND_{it}= Industry

ε_{it}= Error term

3.6.1 Diagnostic tests

Diagnostic test assessed data for accuracy, validity, and assumptions before analysis. It identifies potential errors, outliers, or biases, ensuring robustness of results (Shapiro, 1999). Such tests help strengthen research findings by validating underlying data assumptions.

3.6.1.1 Outliers and Influential Points

Outliers and influential points are defined as those data points that are significantly deviant from the rest of the dataset and, therefore, may distort regression results by skewing estimates and standard errors (Asteriou & Hall, 2015). If these points are ignored, one might get a model that poorly represents the data and then yields unreliable results. One could identify such outliers and influential points through diagnostic tests using leverage statistics. To solve these remedies such as box plotting that downplay the effect of outliers, was used or the deletion of extreme points to prevent them from unduly affecting the results (Greene, 2018).

3.6.1.2 Normality test

A normality test will be conducted to assess whether the data follows a normal distribution. If non-normality is detected, it will be addressed using the Shapiro-Wilk test, which is suitable for small to medium-sized samples and provides a reliable assessment of the data's deviation from normality (Asteriou & Hall, 2015).

3.6.1.3 Multicollinearity test

Multicollinearity occurs when a regression model has a strong correlation between two or more independent variables. If multicollinearity exists, it might inflate the coefficients' standard errors, resulting in incorrect and unstable estimates since the model cannot distinguish the specific effect of each predictor (Gujarati & Porter, 2009). If multicollinearity is overlooked, the unique impact of each variable may not be fully understood, resulting in misleading results (Asteriou & Hall, 2015). If identified, multicollinearity was to be addressed by deleting or merging correlated variables and utilizing regularization techniques like Ridge to lower coefficient sensitivity to correlated factors (Wooldridge, 2016).

3.6.1.4 Heteroscedasticity

Heteroscedasticity arises due to different variabilities in the residuals across all levels of the independent variables (Asteriou & Hall, 2015). This presents a problem in regression analysis since there is a violation of the assumption of constant variance, which, in turn, results in inefficient estimators and gives inaccurate statistical tests. Not considering heteroscedasticity would then lead to biased estimation of the standard errors and would also give unreliable confidence intervals (Greene, 2018). Testing for heteroscedasticity was performed using the Wald test/ Breusch-Pagan Lagrange Multiplier (LM) if detected, the study applied heteroscedasticity gls/-robust standard errors or transform variables to stabilize variance (Gujarati & Porter, 2009).

3.6.1.5 Autocorrelation

Autocorrelation occurs when residuals from one observation are correlated with residuals from another, often in panel data. This violates the assumption of independence of errors, which is necessary for reliable statistical inference. Autocorrelation can lead to biased and inefficient estimates, distorting hypothesis tests and leading to incorrect conclusions. It may indicate model misspecification or omitted variables.

To test for autocorrelation in panel data, the Wooldridge test is commonly used. If autocorrelation is detected, robust standard errors can be applied to correct for the bias. For more complex issues, Generalized Least Squares (GLS) or Cochrane-Orcutt procedures can be employed to adjust the regression estimates. Failure to address autocorrelation can result in misleading conclusions by underestimating variability and overestimating the significance of predictors. Therefore, detecting and correcting for autocorrelation is essential in regression models, particularly when working with panel data.

3.6.1.6 Hausman test

The Hausman test estimated the most appropriate model between fixed-effects and random effects. This approach allows for comprehensive analysis of the data across firms and time, providing robust insights into the relationships between board attributes and capital structure decisions in NSE-listed non-financial firms.

3.7 Research quality

The study ensured research quality by employing rigorous methodological approaches, systematic data gathering, and extensive analysis (Aksnes,2019). Quality was maintained through credible data sources such as audited annual reports, NSE publications, and CMA reports, as well as known statistical approaches for data analysis. The research design, data collection techniques, and analytical procedures was thoroughly documented to ensure the study's transparency and replicability.

3.7.1 Research reliability

The study aims to achieve reliability through consistent and repeatable data gathering and analysis techniques using Stata. This was accomplished by utilizing standardized data collection processes from official corporate reports and regulatory filings subject to external auditing and verification. The dependability of the research instruments improved by employing standard measurements for variables that have been validated in prior studies and keeping complete documentation of all data collecting and analysis procedures (Roberts & Priest, 2006).

3.7.2 Research validity

Multiple methodologies were used to ensure the research's validity (Cohen et. al.,2017). Content validity was established using well-defined variable measurements based on existing research and theoretical frameworks. Construct validity was maintained by employing previously validated board features and capital structure measures. External validity bolstered by a large sample of non-financial enterprises listed on the NSE, making the findings applicable to similar environments. Implementing proper statistical techniques and diagnostic tests improved the study's internal validity.

3.8 Ethical Considerations

The research project followed a strict ethical standard which was approved by the Strathmore University Ethical Review Committee. All data collected was derived majorly from open sources, and even in this process, all data collected was for academic purposes majorly keeping the research as scholarly as possible and maintaining integrity. Despite the public nature of data being collected any sensitive data was kept confidential for the benefit of the firms in this study. This compliance ensures that the study meets all necessary ethical standards in corporate governance research.

Furthermore, the researchers commit to reporting all results with complete honesty and accuracy, avoiding any form of data manipulation or biased interpretation. All data collection, analysis, and storage procedures followed the prescribed ethical guidelines, with particular attention to data privacy and ensure confidentiality requirements are met (Clarke, 2001). This ethical approach not only upholds the integrity of the research but also contributes to the credibility and reliability of the findings, thereby enhancing the study's value to academic and professional communities in corporate governance and final.

3.9 Chapter summary

The chapter presented a research methodology examining board characteristics and capital structure in Nairobi Securities Exchange non-financial firms. Using a positivist research philosophy, the study employed a quantitative, correlational design with panel data analysis from 2015 to 2024, focusing on 46 firms. Secondary data from annual reports and company websites were used. Key variables included board size, independence, gender diversity and board expertise, and capital structure. Data was analyzed with Stata using regression techniques, testing hypotheses and considering industry moderating effects. Diagnostic tests addressed multicollinearity, heteroscedasticity, linearity, and outliers. Ethical approval was obtained from Strathmore University's Ethical Review Committee, following national research guidelines.

CHAPTER FOUR

PRESENTATION OF RESULTS

4.1 Introduction

This chapter presents the results and interpretation of the data collected to examine the influence of board characteristics on the capital structure of non-financial firms listed on the Nairobi Securities Exchange (NSE), Kenya, with industry sector as a moderating variable. The study employs a quantitative research design, utilizing panel data regression analysis to explore the relationships between board size, board independence, board expertise, gender diversity, and capital structure, while controlling variables are profitability, firm size, asset tangibility, interest rate and inflation. Descriptive statistics are provided to summarize the key variables. Diagnostic tests, including multicollinearity, heteroscedasticity, autocorrelation and linearity checks, are discussed to ensure the robustness of the regression model. The results of the panel data regression analysis are then presented, followed by a detailed discussion of the findings in relation to the study's objectives and existing literature. The moderating effect of the industry sector is examined to provide deeper insights into how industry-specific dynamics influence the relationship between board characteristics and capital structure decisions.

4.2 Sample representation

The following table summarizes the exclusions and final samples of non-financial firms considered for the study analysis for a period of 10 years.

Table 4.1: Sample representation

Reason for Exclusion	Number of Firms	Total observation
Total Non-Financial Firms	46	460
Trading suspended	4	40
Voluntary delisting	1	10
Incomplete data	9	90
Final sample	32	320

4.3 Descriptive Statistics

This section presents the descriptive statistics of the variables used in the study, including board characteristics (board size, independence, expertise, and gender diversity), capital structure (measured by the debt-to-equity ratio), and control variables (profitability, inflation, asset tangibility and interest rates and firm size.

Table 4.2: Descriptive Statistics

Variable	Statistic	Mean	Std. Dev.	Min	Max	Observations
DE	Overall	0.51	0.07	0.34	0.65	N = 320
	Between	0.06	0.37	0.59		n = 32
	Within	0.04	0.35	0.65		T = 10
BSIZ	Overall	0.09	0.10	-0.14	0.36	N = 320
	Between	0.05	-0.02	0.19		n = 32
	Within	0.09	-0.12	0.32		T = 10
INDE	Overall	0.16	0.18	-0.30	0.60	N = 320
	Between	0.14	-0.19	0.44		n = 32
	Within	0.12	-0.18	0.50		T = 10
WOM	Overall	0.31	0.14	-0.09	0.67	N = 320
	Between	0.10	0.10	0.53		n = 32
	Within	0.10	-0.19	0.63		T = 10
BEXP	Overall	0.49	0.50	0.00	1.00	N = 320
	Between	0.18	0.20	0.80		n = 32
	Within	0.47	-0.31	1.29		T = 10
ROA	Overall	0.12	0.10	-0.10	0.30	N = 320

	Between	0.06	-0.01	0.30		n = 32
	Within	0.08	-0.20	0.36		T = 10
LNFSIZ	Overall	0.89	0.07	0.71	1.04	N = 320
	Between	0.04	0.80	0.98		n = 32
	Within	0.06	0.73	1.04		T = 10
INFL	Overall	0.12	0.08	-0.07	0.30	N = 320
	Between	0.03	0.07	0.18		n = 32
	Within	0.07	-0.07	0.31		T = 10
ASSET_TANGIBILITY	Overall	0.31	0.14	0.03	0.65	N = 320
	Between	0.11	0.17	0.49		n = 32
	Within	0.09	0.08	0.57		T = 10
IR	Overall	0.15	0.08	-0.08	0.37	N = 320
	Between	0.02	0.08	0.20		n = 32
	Within	0.08	-0.05	0.37		T = 10

The descriptive statistics in Table 4.2 provide insights into the key variables of interest, focusing on capital structure, board characteristics, and macroeconomic factors. The debt/equity ratio (DE) has an overall mean of 0.51, with a standard deviation of 0.07, indicating moderate and consistent debt levels across firms. The range of 0.34 to 0.65 reflects varying financing strategies among firms. Regarding board characteristics, the board size (BSIZ) variable has a mean of 0.09, with a standard deviation of 0.10, showing significant variation in board sizes. The independent directors (INDE) variable has a mean of 0.16, indicating moderate board independence, with a range from 0.29 to 0.60. The women on board (WOM) variable have a mean of 0.31, showing 31% female representation on average, with significant variation in gender diversity across firms.

The board experience (BEXP) variable has a mean of 0.49, with low variation, suggesting most firms have experienced boards. The return on assets (ROA) variable has a mean of 0.12, indicating

moderate profitability, with some firms reporting negative returns. Firm size (LNFSIZ) has a mean of 0.89, indicating medium-to-large firms with minimal size variation. Macroeconomic variables, inflation (INFL) and interest rates (IR), have means of 0.12 and 0.15, respectively, suggesting stable economic conditions. Finally, asset growth (ASSET_TANGIBILITY) has a mean of 0.31, indicating moderate asset growth across firms. The variability in these variables provides a comprehensive overview of the firms' financial structures, board compositions, and external/internal economic factors influencing debt/equity decisions.

4.4 Correlation analysis

Correlation analysis was conducted to examine the linear relationships between the variables in the study. This statistical technique measured how pairs of variables moved together, providing valuable insights into their associations without implying causation. The analysis was particularly important as it helped identify potential multicollinearity issues that could affect the regression results, while also revealing preliminary patterns consistent with theoretical expectations about corporate governance and capital structure. The results are provided below:

Table 4.3: Correlation

Variables	DE	bsiz	inde	wom	bexp	roa	lnfsiz	infl	asset-tang	ir
de	1.00									
bsiz	0.49	1.00								
inde	0.61	0.08	1.00							
wom	0.40	0.06	0.05	1.00						
bexp	-0.04	0.07	-0.09	-0.08	1.00					
roa	0.30	0.10	0.07	0.00	0.03	1.00				
lnfsiz	-0.28	-0.20	-0.16	-0.02	-0.08	-0.16	1.00			
infl	-0.04	-0.06	-0.02	-0.01	-0.11	0.02	0.05	1.00		

asset_tang	0.21	0.06	0.05	0.17	0.04	0.10	-0.15	0.01	1.00	
ir	0.06	-0.01	0.02	0.03	-0.06	-0.04	0.09	0.04	0.05	1.00

The analysis used Pearson correlation coefficients to evaluate the relationships between key variables. The coefficients ranged from -1 to +1, with values closer to these extremes signifying stronger relationships. The debt-to-equity (DE) ratio showed moderate positive correlations with board size (BSIZ) (0.49) and independent directors (INDE) (0.61), suggesting that firms with larger, more independent boards tend to have a higher reliance on debt. Return on assets (ROA) had a moderate positive correlation with DE (0.30), indicating that more profitable firms are also more likely to use debt in their capital structure.

Board characteristics exhibited low intercorrelations, with board size and independence having a minimal association (0.08), while gender diversity (WOM) showed very low correlations with other board variables (all < 0.1). Board experience (BEXP) showed virtually no correlation with other variables, suggesting it is independent of other board characteristics. Firm size (LNFSIZ) negatively correlated with DE (-0.28), indicating that larger firms tend to use less debt.

Macroeconomic variables, including inflation (INFL) and interest rates (IR), showed minimal correlations with the firm-level variables, all of which were below 0.1, implying limited influence of macroeconomic conditions on capital structure decisions. These results support the inclusion of all variables in subsequent regression analyses, as the low intercorrelations and their meaningful relationships with DE suggest their relevance.

4.5 Diagnostic test results

Diagnostic tests were conducted to verify whether the regression model met key statistical assumptions. These tests examined potential issues that could affect the validity of the results, including multicollinearity, heteroscedasticity, normality of residuals, autocorrelation, and model specification. Ensuring these assumptions were satisfied was critical for producing reliable and unbiased regression estimates.

4.5.1 Normality test results

The normality test was conducted to assess whether the regression model's residuals followed a normal distribution. Shapiro-Wilk test was used because it is one of the most powerful tests for normality, particularly for small to moderate sample sizes (less than 50, but can work for up to 2000). It tests whether a sample comes from a normally distributed population.

The result for this test is shown below.

Table 4.4: Normality results

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
resind	320	0.94	12.91	6.02	0.00

The Shapiro-Wilk test results for resind ($W = 0.94$, $p = 0.00$) identified significant residual non-normality, violating key panel data assumptions. In this case, $W = 1.0$ indicates perfect normality, and $p > 0.05$ suggests normally distributed residuals. Since the p-value is less than 0.05, it indicates that the residuals significantly deviate from normality. To address this, the study employed a log transformation of variables, used robust standard errors, and conducted outlier diagnostics to correct for non-normality without distorting the model's core relationships. These steps ensured more reliable statistical inference. However, the assumption of normality can be mitigated due to the large sample size of 320 observations, which has asymptotic properties. According to Gujarati, for sample sizes over 30, the Central Limit Theorem (CLT) applies, meaning the sampling distribution of estimators approximates normality even if the underlying data is not normal. This is particularly important in panel data models, where large datasets are common due to multiple time periods and cross-sectional units. Therefore, despite the non-normality, the large dataset supports the validity of the study's conclusions.

4.5.2 Multicollinearity test results

Multicollinearity was examined as a critical diagnostic concern in the regression analysis. To detect multicollinearity, the study used the Variance Inflation Factor (VIF) which calculated for each independent variable. The results are provided below:

Table 4.5: Multicollinearity results

Variable	VIF	1/VIF
lnfsiz	1.12	0.89
asset tang	1.07	0.94
bsiz	1.06	0.95
inde	1.05	0.96
bexp	1.04	0.96
roa	1.04	0.96
wom	1.04	0.96
infl	1.02	0.98
ir	1.02	0.98
Mean VIF	1.05	

The multicollinearity analysis revealed no significant issues, with all VIF values well below the critical threshold of 5. The highest VIF value is 1.12 for lnfsiz (firm size), followed by asset tangibility at 1.07, indicating minimal correlation between these predictors. The mean VIF of 1.05 confirms the overall low correlation among the independent variables in the model. This suggests that each predictor contributes unique explanatory power without redundancy, ensuring that the individual effects of each variable on the dependent variable can be reliably interpreted.

The 1/VIF values are all above 0.89, further confirming the absence of problematic multicollinearity in the model (Alin, 2010). The low VIF and high 1/VIF values validate that the independent variables are not highly correlated, which enhances the robustness of the statistical

analysis. Thus, the results support the reliability and validity of the regression model, with no concern regarding multicollinearity.

4.5.3 Heteroscedasticity test results

Heteroscedasticity was tested to determine whether the variance of regression residuals remained constant across observations. The results are provided below:

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Test	Hypothesis (H_0)	Chi^2 (df = 1)	p-value	Decision
Breusch-Pagan / Cook-Weisberg Test	Constant variance (Homoscedasticity)	0.25	0.6157	Fail to reject H_0: No heteroskedasticity

The Breusch-Pagan / Cook-Weisberg test for heteroskedasticity assesses whether there is non-constant variance (heteroskedasticity) in the model. The null hypothesis (Ho) assumes constant variance. The test results show a chi^2 (1) value of 0.25 and a p-value of 0.6157, which is greater than 0.05. This indicates that we fail to reject the null hypothesis, meaning there is no significant evidence of heteroskedasticity. Therefore, the variance of the residuals is constant, and the assumption of homoscedasticity holds, ensuring the model's standard errors are reliable for further statistical analysis.

4.5.4 Autocorrelation test results

Autocorrelation refers to the correlation of a variable with itself across time periods within the same observational units (firms, in this study). In panel data regression, it manifests when residuals from the same firm are correlated over time. The result for autocorrelation is shown below.

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

F (1, 31) = 26.55

Prob > F = 0.00

The Wooldridge test for autocorrelation assessed whether first-order autocorrelation exists in panel data. The null hypothesis (H0) suggested no first-order autocorrelation. The test statistics are F (1, 31) = 26.55, with a p-value of 0.00, which is less than 0.05. This indicates strong evidence to reject

the null hypothesis, implying the presence of significant first-order autocorrelation in the data. Therefore, autocorrelation is a concern in the model. This problem was corrected using FGLS regression.

4.6 Model specification

4.6.1 Pooled vs fixed effect results

Table 4.6 Pooled OLS regression

de	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
bsiz	.27	.02	13.00	.00	.23	.31	***
inde	.20	.01	17.93	.00	.18	.22	***
wom	.16	.01	11.44	.00	.13	.19	***
bexp	.00	.00	-0.08	.94	-.01	.01	
roa	.14	.02	7.19	.00	.10	.18	***
lnfsiz	-.07	.03	-2.32	.02	-.12	-.01	**
infl	-.01	.03	-0.25	.79	-.06	.04	
asset_tang	.04	.01	2.51	.01	.01	.07	**
ir	.04	.02	1.78	.08	-.00	.09	*
Constant	.43	.03	15.31	.0	.37	.48	***

Mean dependent var	0.51	SD dependent var	0.07
R-squared	0.74	Number of obs	320
F-test	99.83	Prob > F	0.00

Table 4.7: Fixed Effect

de	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
bsiz	.24	.02	12.32	0.00	.2	.27	***
inde	.11	.01	7.74	0.00	.08	.13	***
wom	.13	.02	8.04	0.00	.09	.16	***
bexp	.00	.00	0.99	.322	-.00	.01	
roa	.09	.02	4.18	0.00	.05	.12	***
lnfsiz	-.03	.03	-1.14	.254	-.09	.02	
infl	.03	.02	1.30	.194	-.02	.07	
asset_tang	.01	.02	0.76	.45	-.02	.05	
ir	.04	.02	2.16	.03	.00	.08	**
Constant	.43	.03	16.15	0	.38	.48	***
Mean dependent var		0.51	SD dependent var			0.07	
R-squared		0.55	Number of obs			320	
F-test		37.20	Prob > F			0.00	
Akaike crit. (AIC)		-1375.85	Bayesian crit. (BIC)			-1338.17	

*** p<.01, ** p<.05, * p<.1*

F-Test

(1) _cons = 0

F (1, 279) = 260.70

Prob > F = 0.00

The significant F-test suggests that individual-specific heterogeneity (firm-specific effects) is important and should be accounted for. In this case, the Fixed Effects model would likely be

more appropriate, as it accounts for the unobserved individual differences between entities (e.g., firms) that could influence the dependent variable.

4.6.2 Fixed Effect Model vs Random Effect Model: Hausman Test

The Hausman test was employed to evaluate the most suitable model specification for the panel data analysis. This statistical procedure compared the fixed effects (FE) and random effects (RE) models to determine whether unobserved individual-specific effects were correlated with the explanatory variables. The test served as a crucial methodological step in selecting between these alternative approaches, as it identified which model would yield consistent and efficient parameter estimates. By conducting this test, the study ensured proper accounting for unobserved heterogeneity in the panel data regression framework. The analysis followed standard econometric practice, where a statistically significant test result would favor the fixed effects specification, while a non-significant outcome would support the random effects alternative (Clark & Linzer, 2015). This test formed an essential part of the model selection process prior to estimating the final regression specifications. The result is as shown below:

Table 4.8: Hausman specification test results

	Coef.
Chi-square test value	58.67
P-value	0

The Hausman test compared the fixed effects (fe_mode1) and random effects (re_mode1) models. The differences in coefficients were calculated, and the test statistics (chi2(9) = 58.67) with a p-value of 0.00 indicated a significant difference. This suggested that the fixed effects model was more appropriate.

4.5 Multiple Regression Model 1

The multiple regression model analyzed the relationship between capital structure (debt-to-equity ratio) as the dependent variable and board characteristics (size, independence, gender diversity, expertise) as independent variables, while controlling profitability, firm size, inflation, and interest rates. Two models were estimated: one without industry interaction and another incorporating

industry sector (manufacturing/energy = 1, others = 0) as a moderating variable. The models quantified how board characteristics influenced capital structure decisions, with interaction terms revealing industry-specific effects.

The regression equation is as follows:

Y_{it}= β₀ + $\beta 1X1_{it} + \beta 2X2_{it} + \beta 3X3_{it} + \beta 4X4_{it} + \beta 5X5_{it} + \beta 6X6_{it} + \beta 7X7_{it} + \beta 8X8_{it} + \beta 9X9_{it}$ + εit ……(I)

Where:

Y_{it}= Capital structure measure for firm i at time t

$X1_{it}$ = Board size (bsiz)

$X2_{it}$ = Board independence(inde)

$X3_{it}$ =Gender diversity(wom)

$X4_{it}$ = Board expertise(bexp)

$X5_{it}$= Profitability(roa)

$X6_{it}$= Firm size(lnfsiz)

$X7_{it}$= Inflation(infl)

$X8_{it}$= Asset tangibility (asset tangibility)

$X9_{it}$=Interest rate(ir)

IND_{it}= Industry

ε_{it}= Error term

The results are provided below:

Table 4.9: Model 1

de	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
bsiz	.24	.02	12.3	.00	.20	.28	***
inde	.11	.01	7.74	.00	.08	.14	***
wom	.13	.02	8.04	.00	.09	.16	***
bexp	.00	.00	0.99	.32	-.00	.01	
roa	.09	.02	4.18	.00	.05	.13	***
lnfsiz	-.03	.03	-1.14	.25	-.09	.02	
infl	.03	.02	1.30	.19	-.02	.07	
asset_tang	.01	.02	0.76	.45	-.02	.05	
ir	.04	.02	2.16	.03	.00	.08	**
Constant	.43	.03	16.15	.00	.38	.48	***
Mean dependent var		0.51	SD dependent var			0.07	
R-squared: within		0.55	Number of obs			320	
between		0.90					
overall		0.72					
F-test		37.20	Prob > F			0.00	
Akaike crit. (AIC)		-1375.85	Bayesian crit. (BIC)			-1338.17	

**** p<.01, ** p<.05, * p<.1*

The fixed-effects regression results revealed significant relationships between board characteristics and capital structure decisions for the sample firms. The model explained 55% of the variation within firms and 72% overall, indicating strong explanatory power. Board size (0.24), board independence (0.11), and gender diversity (0.13) all had significant positive effects on debt-

to-equity ratios, with p-values less than 0.01. This suggested that larger boards, more independent directors, and greater gender diversity were associated with a higher reliance on debt financing. Additionally, profitability, measured by return on assets (ROA), positively influenced capital structure decisions (0.09, $p<0.01$), indicating that more profitable firms tended to use more debt.

Inflation (0.03), asset tangibility (0.02), and industry representation (0.01) did not show significant effects on capital structure decisions (all $p>0.05$), suggesting that these variables did not play a crucial role in influencing firms' financing choices in the given model. The significant F-test ($F=37.20$, $p<0.00$) confirmed the relevance of the model and the importance of controlling for unobserved firm heterogeneity. The high between-firm R-squared (0.90) and error term decomposition (51% firm-specific effects) supported the use of a fixed-effects approach. These findings emphasized the importance of board characteristics in shaping capital structure decisions, even when considering profitability and macroeconomic factors. Adjusted R-squared is 0.712
This means about 71.2% of the variation in the dependent variable is explained by the model, after accounting for the number of predictors. This suggests a strong model fit.

4.5.1 Board size and debt to equity

According to the regression results, board size demonstrated a highly significant positive relationship with debt to equity ratio ($\beta = 0.24$, $p<0.00$) with a standard error of 0.02. This strong positive coefficient indicates that for each additional board member, the debt-to-equity ratio increased by approximately 0.24 units. The statistical significance at the 5% level confirms that larger boards were consistently associated with higher debt-to-equity ratio among NSE-listed non-financial firms, likely due to their enhanced monitoring capacity and access to debt financing networks.

4.5.2 Board independence and capital structure

The analysis revealed board independence had a significant positive effect on debt to equity ($\beta = 0.11$, $p<0.00$) with a standard error of 0.01. This result suggests that a 1% increase in independent directors was associated with a 1.12 unit increase in the debt-to-equity ratio. The highly significant p-value indicates that independent directors played a crucial role in capital structure decisions, potentially by advocating for debt's disciplinary benefits as predicted by agency theory. This suggests that a higher proportion of independent directors on the board is associated with an increase in debt-to-equity ratio.

4.5.3 Gender diversity and capital structure

The results showed gender diversity significantly influenced debt to equity (β = 0.13, p<0.00) with a standard error of 0.02. This positive coefficient indicates that each increase in female board representation corresponded to a 1.13unit increase in the debt-to-equity ratio meaning that a higher percentage of women on the board is associated with higher debt-to-equity (capital structure).

4.5.1 Board expertise and capital structure

Board experience was found to be statistically insignificant (β = 0.00, p = 0.32) with a standard error of 0.03. The non-significant coefficient suggests that directors' experience levels did not systematically influence capital structure decisions when other factors were considered. This null result may indicate that experience thresholds rather than incremental gains affect financing choices in Kenyan firms.

4.6 Model 2

The regression equation is as follows:

Y_{it}= β₀ + $\beta 1X1_{it} \times IND\_it$+ $\beta 2X2_{it} \times IND\_it$+ $\beta 3X3_{it} \times IND\_it$+ $\beta 4X4_{it} \times IND\_it$+ $\beta 5X5_{it}$+ $\beta 6X6_{it}$ + $\beta 7X7_{it}$ + $\beta 8X8_{it}$ + $\beta 9X9_{it}$ + εit ……(II)

Table:4.10: Model 2 Results

de	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
bsiz_indu	.22	.05	4.92	0	.13	.31	***
inde_indu	.13	.03	3.83	0	.06	.19	***
wom_indu	.09	.04	2.56	.011	.02	.17	**
bexp_indu	.01	.01	1.31	.19	-.01	.02	
roa	.09	.03	3.16	.00	.03	.14	***
lnfsiz	-.03	.04	-0.90	.37	-.11	.04	
infl	.03	.03	0.96	.34	-.03	.09	
asset_tang	.02	.02	0.77	.44	-.03	.06	

ir	.05	.03	1.81	.071	-.00	.10	*
Constant	.49	.03	14.11	0	.42	.55	***

Mean dependent var	0.51	SD dependent var	0.07
R-squared: within	0.22	Number of obs	320
between	0.25		
overall	0.25		
F-test (9, 279)	8.75	Prob > F	0.00
Corr (u_i, Xb)	-0.3253	Bayesian crit. (BIC)	-1165.44

The results from Model 2 (Table 4.9) reveal several key insights into the factors influencing the dependent variable, accounting for industry-specific effects. The regression analysis indicates that board size, when interacted with industry, has a statistically significant and positive impact, with a coefficient of 0.22 ($p < 0.001$). This suggests that larger boards, particularly in certain industries, are associated with a higher value of the dependent variable. Similarly, the presence of independent directors, also interacted with industry, shows a positive and significant effect (coefficient = 0.13, $p < 0.001$), underscoring the importance of governance structures tailored to industry contexts.

Gender diversity on the board, measured by the proportion of women and interacted with industry, exhibits a modest yet significant positive relationship (coefficient = 0.09, $p = 0.01$). In contrast, board expertise had no significant effect (coefficient = 0.01, $p = 0.19$). Firm profitability, as captured by return on assets (ROA), is another strong predictor, with a coefficient of 0.09 ($p < 0.001$), highlighting the role of financial performance in shaping the dependent variable. Among the control variables, firm size, inflation, and asset tangibility do not show statistically significant effects. However, interest rates exhibit a marginally significant positive relationship (coefficient = 0.05, $p = 0.07$), suggesting that financing costs may have a

subtle influence. The constant term (0.49, $p < 0.001$) represents the baseline value of the dependent variable when all other factors are held constant.

The within R-squared value of 0.22 indicates that 22% of the variation within firms is explained by the model, suggesting a moderate fit for explaining within-firm variation. The between R-squared value of 0.25 indicates that 25% of the variation between firms is explained by the model, suggesting that the model is somewhat effective at explaining differences across firms. The overall R-squared of 0.25 shows that the model explains 25% of the total variation in capital structure across all firms. While the F-test (8.75) with a p-value of 0.00 confirms the model's overall significance, the R-squared values suggest that there is room for improvement in the model's explanatory power. The adjusted R-squared is 22.8%. This suggests that approximately 22.8% of the variation in the dependent variable is explained by the model, after adjusting for the number of predictors.

4.6.1 Board Size in Industrial Firms (bsiz_indu)

The regression results indicated a strong positive relationship between board size and capital structure, with a coefficient of 0.22 and a p-value of 0.00. This suggests that in capital-intensive sectors like manufacturing and energy, larger boards were associated with higher debt-to-equity ratios. Larger boards likely offer better networks, enhanced oversight, and more strategic decision-making capabilities, which may help firms secure debt financing for their substantial capital needs.

4.6.2 Board Independence in Industrial Firms (inde_indu)

The coefficient for board independence was 0.13 (p-value = 0.00), indicating a significant positive relationship with leverage. Independent boards are generally perceived as more effective at monitoring management, which can enhance creditor confidence and facilitate access to debt financing. This aligns with agency theory, which suggests that independent boards tend to support debt financing to ensure better alignment between management and shareholder interests.

4.6.3 Gender Diversity in Industrial Firms (wom_indu)

The coefficient for gender diversity was 0.09 (p-value = 0.01), suggesting a significant positive relationship with frirms leverage. This finding deviates from conventional theories, which often suggest that gender-diverse boards are more risk-averse. However, this result may reflect the sector-specific expertise that female directors bring to industrial firms, leading to more

conservative debt usage. In sectors with large capital expenditures, female directors may prefer lower levels of debt to manage financial risks.

4.6.4 Board Expertise in Industrial Firms (bexp_indu)

Board experience did not significantly influence capital structure decisions in this context, with a coefficient of 0.1 (p-value = 0.19). This suggests that for industrial firms, board expertise did not play a notable role in shaping debt-to-equity ratios. Other factors, such as board size and independence, were likely more influential.

4.7 Chapter Summary

Chapter Four presented the results and analysis of the data examining the influence of board characteristics on the capital structure of non-financial firms listed on the Nairobi Securities Exchange (NSE), with industry sector as a moderating variable. The study employed a quantitative research design using panel data regression from 2015 to 2024, focusing on board size, independence, expertise, and gender diversity, while controlling profitability, firm size, asset tangibility, interest rates, and inflation. Diagnostic tests were conducted to ensure the model's robustness. The findings revealed significant relationships between board characteristics and firms leverage, with industry-specific effects moderating these relationships, particularly in capital-intensive sectors.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

This study examined the influence of board characteristics on the capital structure of non-financial firms listed on the Nairobi Securities Exchange, with a focus on the moderating effect of industry sectors. A quantitative research approach was employed, utilizing panel data regression analysis of secondary data from 46 firms spanning from 2015 to 2024. The analysis considered key board characteristics, such as board size, independence, expertise, and gender diversity, and their relationships with firms' capital structure decisions. The chapter is organized into several sections. It discusses findings of the study on the influence of board characteristics on the capital structure of non-financial firms listed on the Nairobi Securities Exchange (NSE), Kenya, moderated by industry sector. It provides a comprehensive discussion of the results, aligns them with existing literature and theoretical frameworks, and draws conclusions. The chapter also outlines practical implications for corporate managers, investors, and policymakers, along with recommendations for future research.

5.2 Summary of findings

This study investigated the impact of board characteristics on the capital structure of non-financial firms listed on the Nairobi Securities Exchange (NSE), with a focus on the moderating role of industry sector. The findings revealed that board attributes such as board size, independence, and gender diversity have varying effects on capital structure decisions. Specifically, the study identifies how these board characteristics influence the decision to use debt in a firm's capital structure and how the industry sector moderates these relationships.

5.3 Discussion of findings

5.3.1 Board size and capital structure

The analysis found a significant positive relationship between board size and leverage, particularly in capital-intensive sectors like manufacturing and energy. A larger board was associated with higher debt-to-equity ratios. This suggests that larger boards may provide better monitoring, stronger networks, and more strategic decision-making capabilities, which may help firms access debt financing to meet substantial capital needs. The positive relationship between board size and

debt-to-equity aligns with findings by Mulwa and Ndede (2022), who reported that larger boards in Kenyan firms were associated with higher debt levels due to enhanced monitoring and network access. Similarly, Zaid et al. (2020) found that board size positively influenced leverage in Palestinian firms, attributing this to improved creditor confidence. However, Gitau and Muturi (2022) found a negative relationship between board size and capital structure among NSE-listed firms. They suggested that larger boards in the Kenyan context might be more conservative in their financial decisions, preferring lower debt levels to minimize financial risk which is inconsistent with the finding. The positive influence of board size aligns with agency theory, which suggests that larger boards can effectively reduce agency costs and enhance financial oversight.

5.3.2 Board independence and capital structure

Board independence also showed a significant positive relationship with firms leverage. Firms with a higher proportion of independent directors tended to use more debt in their capital structure. The study findings are consistent with Maina (2022), who observed that independent directors in Kenyan firms advocated for higher debts. This suggests that independent directors may advocate for debt financing, likely due to their enhanced ability to monitor management and ensure alignment with shareholder interests discipline management. Ehikioya et al. (2021) also reported similar findings in Nigerian firms, linking board independence to stricter financial oversight. However, Thakolwiroj and Sithipolvanichgul (2021) observed a negative relationship between the proportion of independent directors and debt levels in Thai-listed companies. This finding supports agency theory, where independent boards can enhance creditor confidence and facilitate access to debt financing by improving the alignment of management and shareholder interests.

5.3.3 Gender diversity and capital structure

Gender diversity demonstrated a positive relationship with leverage. This result suggests that gender diversity on boards contributes positively to the capital structure decisions of firms. This could be due to diverse perspectives leading to better risk management and more balanced financial decisions. The results are consistent with the study of Lungatso and Otuya (2022): who found that board gender diversity positively influenced capital structure decisions, suggesting that female directors brought diverse perspectives and risk management approaches that led to more balanced financing choices. However, Alves et al. (2015) found that firms with more female directors tend to have lower debt ratios, suggesting a more conservative approach to financing. The study results

is inconsistent with the pecking order theory which is relevant if gender-diverse boards are more risk-averse, as suggested by (Chen et al., 2019), they might prefer internal financing or lower levels of debt.

5.3.4 Board expertise and capital structure

Board experience did not significantly influence capital structure decisions in the context of Kenyan firms. Despite its theoretical relevance, board experience did not show a measurable effect on the debt-to-equity ratios of the firms studied. This suggests that other factors, such as board size and independence, may be more critical in shaping capital structure decisions in the Kenyan context. The insignificant result is consistent with Guney et al. (2020), who found no significant impact of board expertise on capital structure in East African firms.

5.3.5 The Moderating Role of the Industry Sector in Board Characteristics and Capital Structure

The introduction of industry-specific moderating factors in Model 2 has significantly impacted on the model's explanatory power, as reflected in the notable change in R-squared values. In Model 1, which does not include industry interactions, the R-squared values are relatively high, indicating a good fit of the model. Specifically, the Within R-squared is showing that the model effectively explains within-firm variations in capital structure. The Between R-squared suggests that the model is highly successful at explaining cross-sectional differences between firms. The Overall R-squared indicates that of the total variation in capital structure decisions is explained by the model. This high explanatory power suggests that the variables used in Model 1 are adequate for understanding capital structure decisions in this context.

However, when industry-specific factors are introduced in Model 2 (through interaction terms between board characteristics and industry sector), the R-squared values decrease substantially. The Within R-squared droped indicating that the model now explains a smaller portion of the variation within firms. Similarly, the Between R-squared falls, suggesting that industry moderation has weakened the model's ability to explain the differences between firms. The overall fit of the model is also affected, with the Overall R-squared decreased signifying that industry-specific dynamics have complicated the model’s ability to explain the total variation in capital structure.

The decrease in R-squared suggests that while industry factors are indeed important and may influence capital structure decisions, their inclusion in the model introduces complexity that does not substantially improve the model's explanatory power. In fact, the added complexity from industry moderation may have reduced the model's ability to explain the within-firm and between-firm variation in capital structure decisions. This indicates that industry-specific dynamics may need to be further refined or complemented with additional variables to fully capture their moderating influence on capital structure decisions. The adjusted R-squared dropped in Model 2, indicating a substantial decline in explanatory power. This suggests that removing industry-specific interactions in Model 2 significantly reduces the model's ability to explain variation in the dependent variable across firms and time.

In conclusion, while industry-specific factors are important in understanding capital structure, their inclusion in the model may not always lead to an improvement in the overall explanatory power. The change in R-squared values highlights the trade-off between adding complexity and maintaining model fit, suggesting that a more nuanced approach or additional controls may be required to accurately capture the moderating effect of industry on capital structure decisions.

5.4 Conclusion

The study effectively explored the relationship between board characteristics and capital structure decisions among non-financial firms listed on the Nairobi Securities Exchange (NSE), with an emphasis on the moderating role of industry-specific factors. The findings revealed that board size, board independence, and gender diversity were significant determinants of capital structure decisions. Larger boards and those with more independent directors generally favor higher debt levels in their financing decisions. This supports the agency theory, which posits that independent boards help align management and shareholder interests by enhancing monitoring and decision-making effectiveness. Gender diversity also emerged as a notable factor, albeit with varying impacts across different industries.

The inclusion of industry-specific interaction terms in Model 2 revealed that while industry dynamics are indeed important, they moderated the relationship between board characteristics and capital structure in a way that reduced the overall explanatory power of the model. The adjusted R-squared values decreased significantly when industry factors were included, indicating that the complexity introduced by these interactions made the model less effective at explaining both

within-firm and between-firm variation in capital structure. This suggests that the industry sector moderates the relationship between board characteristics and capital structure, but that the moderation is complex and requires a more nuanced approach. Industry-specific factors might not have been fully captured by the interaction terms in this model, and additional controls or more refined interaction terms might be necessary to improve the model's explanatory power.

Despite the lower adjusted R-squared values in Model 2, the study highlighted the importance of governance characteristics like board size, independence, and gender diversity in shaping capital structure decisions, with industry dynamics playing a significant role in moderating these relationships. Capital-intensive sectors, such as manufacturing and energy, exhibited stronger relationships between board characteristics and capital structure, suggesting that firms in these sectors are more reliant on debt to meet substantial capital requirements. Conversely, in less capital-intensive sectors, such as services or agriculture, the relationship between governance and capital structure was less pronounced, indicating the need for industry-specific analyses when evaluating corporate governance structures.

This research contributes significantly to the limited literature on corporate governance in Kenya, particularly concerning the impact of board characteristics on capital structure decisions in emerging markets. By analyzing firms listed on the NSE, the study provides valuable insights into how governance mechanisms in these markets influence financial decision-making. The findings underscore the importance of considering board composition when making decisions related to capital structure. The study also lays the groundwork for future research, particularly in exploring the interplay between board characteristics and capital structure across different industries in emerging economies like Kenya. The results suggest that enhancing board independence, size, and gender diversity can lead to more informed and balanced capital structure decisions, which in turn can improve financial stability and risk management.

In conclusion, this research underscores the critical role of board characteristics in shaping capital structure decisions and provides practical recommendations for firms seeking to optimize their governance structures. By considering factors such as board size, independence, and gender diversity, firms can better align their financial strategies with their long-term goals and ensure greater financial stability. Moreover, the findings suggest that policymakers and regulators can use

these insights to refine corporate governance guidelines, fostering a more robust financial environment within Kenya's corporate sector.

5.5 Recommendation

5.5.1 For practice

Enhance Financial Decision-Making with Better Governance: Corporate managers should ensure that their boards are equipped with adequate skills, diversity, and independence to handle financial decision-making, especially when it comes to debt management. The study emphasizes the role of board characteristics in managing debt and ensuring that capital structure decisions are aligned with the long-term goals of the firm.

The findings of this study suggest that corporate managers should pay close attention to the composition of their boards when making decisions about capital structure. Factors such as board size, board independence, and gender diversity were found to have a significant impact on financial decision-making and capital structure decisions. By strategically enhancing these governance aspects, managers can better align their boards with the financial and strategic goals of the company. For instance, a well-balanced board with diverse perspectives and independent oversight could foster more prudent and effective capital structure decisions, potentially reducing financial risk.

5.5.2 Theory

Expanding existing governance theories, the study highlights the critical role of board characteristics in shaping capital structure decisions in emerging markets. Future research should expand on existing theories, such as Resource Dependence Theory, by incorporating industry-specific factors. These factors can modify or moderate the relationship between board characteristics and capital structure, especially in different sectors. This could lead to a more comprehensive understanding of how governance structures impact financial decisions in varying market conditions.

5.5 Policymakers

Policymakers, particularly in emerging markets like Kenya, the study highlights the need to promote sound corporate governance practices. By establishing policies that encourage board diversity, independence, and proper governance structures, governments can help create an

environment that supports sustainable business practices. This, in turn, can enhance financial stability within the market, fostering more predictable and balanced growth. Developing specific guidelines and incentives for boards could further improve corporate governance and, by extension, the capital structure decisions made by firms.

Industry-Specific Regulations should be implemented since industry dynamics play a crucial role in moderating the relationship between governance characteristics and capital structure. Policymakers should consider industry-specific regulations to encourage firms in capital-intensive sectors (such as energy and manufacturing) to structure their boards in ways that best fit the capital demands of those industries. For example, firms in these sectors might be encouraged to have boards with more diverse skills and experience to handle their complex financial structures.

5.6 Limitations

While this study offers valuable insights, it has several key limitations that need to be addressed. First, the research focuses exclusively on non-financial firms listed on the Nairobi Securities Exchange (NSE). This narrow focus means the findings may not be applicable to firms in other sectors, such as financial services, where capital structure decisions are often influenced by different factors, such as regulatory constraints and risk management practices. The capital structure decisions in the financial sector are likely to differ significantly due to industry-specific regulations that do not apply to non-financial firms.

The study relied on secondary data sourced primarily from annual reports and publicly available financial statements. While these sources are useful, they may not provide a complete or nuanced picture of how boards make decisions. Secondary data can be subject to reporting biases, omissions, or inconsistencies, especially if the data does not capture the internal decision-making processes within firms. Furthermore, relying solely on public documents might overlook important qualitative factors that influence governance, such as boardroom dynamics or informal governance practices.

The study used broad industry categories within Kenya, which may have obscured sector-specific variations. Different industries have unique challenges, market conditions, and regulatory environments that influence capital structure decisions. The lack of a more granular industry analysis means that some industry-specific nuances and variables, like competition or market volatility, were not fully explored, potentially limiting the depth of the conclusions.

5.7 Contribution of the study

This study contributed to the literature by exploring the combined effect of board characteristics on capital structure among listed non-financial firms in Kenya. It addressed contextual gaps by focusing on Kenya's unique economic, regulatory, and corporate governance environment. The study also considered the moderating role of industry sectors, which had not been largely studied.

5.8 Suggestions for Further Study

To address the limitations of this study, future research should consider expanding the scope to include financial firms. Since capital structure decisions in financial firms are often influenced by specific regulatory constraints, including them in future research could provide a more comprehensive understanding of how governance factors interact with capital structure decisions across different sectors. Financial firms, due to their complex regulatory frameworks and risk management structures, present an important contrast to non-financial firms and could yield different findings. Future studies should incorporate primary data through surveys, interviews, or case studies with board members could offer deeper insights into the decision-making processes behind capital structure choices. While secondary data is useful for identifying trends, primary data would provide a more direct understanding of how boards evaluate and make financial decisions. This approach would allow researchers to capture more granular details about the internal dynamics of boards and the factors they prioritize when determining a firm's capital structure.

Another avenue for future research could involve conducting industry-specific analyses. Instead of grouping firms into broad sectors, future studies could examine specific industries (e.g., manufacturing, healthcare, technology) to understand how unique market forces, regulatory environments, and competitive pressures influence governance and capital structure decisions. Factors such as market competition, regulatory pressures, and market volatility could be explored in greater detail to provide a clearer understanding of how different industries navigate capital structure decisions. Longitudinal studies could be valuable in examining how board characteristics and capital structure decisions evolve over time. By tracking changes in board composition and governance practices, researchers could gain a better understanding of how these factors influence capital structure decisions during periods of market flux or changes in regulatory environments.

This approach would allow for a more dynamic and time-sensitive analysis of governance and its impact on financial strategies.

5.9 Chapter summary

This chapter summarizes the study's findings on how board characteristics impact the capital structure of non-financial firms listed on the Nairobi Securities Exchange (NSE), with the industry sector serving as a moderator. It highlights that board size, independence, and gender diversity significantly influence capital structure decisions, with larger, independent boards adopting more debt. The industry sector was a key moderating factor, while board experience showed no significant impact. The chapter concludes with recommendations for corporate managers and policymakers to consider board characteristics in governance structures and suggests future research on financial firms and longitudinal studies to explore governance dynamics over time.

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APPENDICES

APPENDIX 1: LISTED NON-FINANCIAL FIRMS

Industry	Name
Agricultural	1. Eagads Ltd 2. Kakuzi Plc 3. Kapchorua Tea 4. Sasini Plc 5. The Limuru Tea Co. Plc 6. Williamson Tea Kenya Plc
Auto mobile & accessories	7. Car and General (K) Ltd
Commercial and services	8. Deacons (East Africa) 9. Eveready East Africa Ltd 10. Express Kenya Plc 11. Homeboyz Entertainment Plc 12. Kenya Airways 13. Longhorn Publishers Plc 14. Nairobi Business Ventures Ltd 15. Nation Media Group Plc 16. Sameer Africa Plc 17. Standard Group Plc 18. TPS Eastern Africa (Serena) Ltd 19. Uchumi Supermarket Plc 20. WPP Scangroup Plc
Construction & allied	

	21. ARM Cement Plc 22. Bamburi Cement Ltd 23. Crown Paints Kenya Plc 24. E.A Cables Ltd 25. E.A Portland Cement Ltd
Energy & petroleum	26. KenGen Plc 27. Kenya Power & Lighting Plc 28. Total Kenya Ltd 29. Umeme Ltd
Manufacturing & allied	30. B.O.C Kenya Plc 31. British American Tobacco Kenya Plc 32. Carbacid Investments Plc 33. East African Breweries Ltd 34. Flame Tree Group Holdings Ltd 35. Kenya Orchards Ltd 36. Mumias Sugar Co. Ltd 37. Unga Group Ltd
Telecommunication	38. Safaricom Plc
Real Estate investment trust	39. Ilam Fahari I-Reit
Exchange-traded fund	40. Absa New Gold ETF
Investment services	41. Nairobi Securities Exchange Plc

Investment	42. Centum Investment Co Plc 43. Home Afrika Ltd 44. Kurwitu Ventures Ltd 45. Olympia Capital Holding Ltd 46. Trans-Century Plc

Source: NSE (2023)

https://www.nse.co.ke/listed-companies/

APPENDIX 2: Ethical Review Certificate Reference number: SU-ISERC2582/25

14th February 2025

Ms. Mingusa Juliet,

juliet.mingusa@strathmore.edu

Dear Ms. Mingusa,

RE: Board Characteristics and Capital Structure of Non-Financial Firms on Nairobi Securities Exchange, Kenya: Moderated by industry

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-masters** proposal. Your application reference number is **SU-ISERC2582/25.** The approval period is from **14th February 2025 to 13th February 2026.**

This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, MTA) will be used.

ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.

iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 72 hours of notification.

iv. Any changes anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU- ISERC within 72 hours.

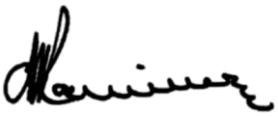
v. Clearance for the export of biological specimens must be obtained from relevant institutions.

vi. Submission of a request for renewal of approval at least 60 days prior to the expiry of the approval period. Attach a comprehensive progress report to support the renewal.

vii. Submission of an executive summary report within 90 days of completion of the study to SUISERC.

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

Yours sincerely,



Mr Ambrose Rachier, Chairperson; SU-ISERC

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APPENDIX 3: SUMMARY OF LITERATURE

Author	Purpose	Theories	Variables	Methodology	Findings Positive	Findings Negative	Research gap	Type of gap
Amin et al. (2022) Pakistan	To examine the moderating role of gender diversity on the relationship between corporate governance and capital structure.		Dependent Leverage; Independent Board size, independence, CEO duality; Moderator Gender diversity	Panel regression analysis; Generalized Method of Moments (GMM)	Board size Board Independence Gender diversity	CEO duality	Limited to Pakistan and non-financial firms. no exploration of broader diversity dimensions	Geographical, Sectoral.
Saad and Belkacem (2022) France		Agency theory Resource Dependence theory, Economic	Dependent Capital structure Independent Board gender diversity	Structural Equation Modeling (SEM)	Gender diversity		Limited studies on mediating effects of transparency	Contextual

		theory Sociology and Psychology Theories	Mediators Information transparency, firm risk-taking				and risk-taking minimal research on gender diversity approaches' impact on capital structure.	
Zaid et al. (2020) Palestine	Investigate the relationship between board attributes and financing decisions, focusing on the role of	Agency	Board size, board independence, CEO duality, gender diversity (moderator), control variables (firm size, etc.)	Fixed effects, random effects, and system GMM panel data regression	Board size and independence CEO duality moderated by gender diversity	CEO duality With no gender moderation	Limited studies in developing countries, particularly focusing on gender diversity as a moderator in CG-capital structure.	Regional and conceptual.

	gender diversity							
Miloud (2022) France	Investigate the relationship between corporate governance and capital structure behavior in France.	Trade-off Theory Agency Theory	Independent Board size, CEO duality, gender diversity. Dependent leverage ratio.	Dynamic partial adjustment model. Regression analysis	Strong governance enhances speed of adjustment and reduces extreme deviations.	Firms with weak governance show significant deviation from target leverage.	Limited empirical studies on gender diversity and governance quality's role in leverage adjustment	Contextual
Ezeani et al. (2023). UK, France, and Germany.	Examine the influence of corporate board characteristics on capital structure dynamics and		Independent Board size, gender diversity, board independence, board meeting frequency. Dependent	System GMM panel regression	Stakeholder governance firms adjust leverage faster; board size and independence influence SOA, in UK	Leverage negatively linked to board size, independence, meetings in France/Germany.	Few studies exploring governance-environment interactions and their impact on leverage and SOA in	Regional and conceptual gaps

	the speed of adjustment		Leverage Control: Firm size, profitability, asset tangibility, growth, liquidity.		Board meeting in Japan	Board meeting in Germany and France	European markets.	
Bazhair (2023) Saudi Arabia	To examine the impact of board governance mechanisms on the capital structure of Saudi non-financial listed firms	Agency theory Resource dependency theory.	**Independent** Board size, board independence, CEO tenure, board gender, **Dependent** Capital structure **Control** firm size, profitability (ROA),	Generalized Method of Moments	Board independence (take more debt) Gender no relationship	Larger board size and longer CEO tenure prefer lower debt. Gender no relationship	Impact of other factors like ownership structure and audit committee attributes on dynamic capital structure determination.	Limited scope, only governance mechanisms studied without other potential influences

			tangibility, growth.					
Maji & Saha (2021) India	To examine how gender diversity at workforce and leadership levels influences financial performance in Indian firms.	Strategic Human Resource Management (SHRM) theory, Agency theory, Resource dependency theory	**Independent** Workforce gender diversity, board gender diversity, audit committee diversity, **Dependent** Financial performance **Control** firm size, R&D expenses, leverage, CEO duality, etc.	Generalized Estimating Equations System GMM for causality	Gender-diverse boards and workforces	Minimal representation in audit committees' limits diversity impact; smaller firms see reduced benefits from diversity.	Lack of exploration of tokenism, cultural, and societal barriers to gender diversity in Indian firms.	Conceptual
Tarus & Korir (2023)	To examine the influence of board		**Dependent**	Panel data analysis	Independent boards reduce	CEO narcissism diminishes the effectiveness of	Limited exploration of cultural and	Contextual and institutional

Kenya	structure on earnings management and the moderating role of CEO narcissism in Kenya.		Real earnings management. **Independent** Board independence, board tenure, CEO duality, board size. **Moderating** CEO narcissism.		earnings manipulation ; larger boards bring diverse expertise; long-tenured boards provide effective oversight	board oversight, particularly in dual CEO roles and larger boards.	institutional specifics in other emerging markets; scarcity of cross-country studies integrating narcissism and governance.	gaps in emerging markets
Farooq et al. (2024) Pakistan		Trade-off Theory Pecking Order Theory Agency Theory	**Dependent Variable** Capital structure **Independent Variables** Board Size,	The two-step difference GMM model.	CEO duality and block holder ownership	Board size and board independence. Smaller firms tend to adjust their capital structure faster	Limited to Pakistan	Conceptual and limited studies on developing economies

			Independent directors, CEO duality, Managerial Ownership, Blockholder Ownership. Institutional Ownership **Control Variables** Firm size, tangibility, market-to-book ratio (MBR), profitability (EBIT), and depreciation.			than larger firms.		
Hordofa (2023)	To examine impact of gender	Agency theory and Resource	**Dependent** Leverage	GMM	Board independence	Board Size	Limited exploration of the variable	Methodology

Ethiopia	diversity on capital structure	dependence theory.	Market and Book Value Leverage **Independent** Gender Diversity Number of female directors. Board Independence Percentage of nonexecutive directors on the board. Board Size Total number of directors on the board.		Gender diversity has no relationship	CEO tenure Gender diversity associated with lower debt	and methodology use in assessing capital structure.	

			Board Meetings Number of board meetings held annually.					
Javaid et. al. (2023) Pakistan	To analyze how corporate governance affects capital structure through the mediating role of the cost of capital	Agency theory	Panel data regression analysis	Independent Board size Board independence CEO duality Gender Board meetings Dependent	Board size Board independence	CEO Duality	The study does not consider other potential mediators like firm performance or market conditions.	Conceptual

				Capital structure Moderating Cost of capital				

Source: Authors (2024)

Industry Sector	ID	NSE non-financial firms	Year	DE	BSIZ	INDE	WOM	BEXP	ROA	LNFSIZ	INFL	ASSET TANG	IR
Agricultural	1	Eaagards	2023										
	1	Eaagards	2022										
	1	Eaagards	2021										
	1	Eaagards	2020										
	1	Eaagards	2019										
	1	Eaagards	2018										
	1	Eaagards	2017										
	1	Eaagards	2016										
	1	Eaagards	2015										
	2	Kakuzi Plc	2023										
	2	Kakuzi Plc	2022										
	2	Kakuzi Plc	2021										
	2	Kakuzi Plc	2020										
	2	Kakuzi Plc	2019										
	2	Kakuzi Plc	2018										
	2	Kakuzi Plc	2017										
	2	Kakuzi Plc	2016										
	2	Kakuzi Plc	2015										
	3	Kapchorua Tea Kenya Plc	2023										
	3	Kapchorua Tea Kenya Plc	2022										
	3	Kapchorua Tea Kenya Plc	2021										
	3	Kapchorua Tea Kenya Plc	2020										

	3	Kapchorua Tea Kenya Plc	2019										
	3	Kapchorua Tea Kenya Plc	2018										
	3	Kapchorua Tea Kenya Plc	2017										
	3	Kapchorua Tea Kenya Plc	2016										
	3	Kapchorua Tea Kenya Plc	2015										
	4	The Limuru Tea Co. Plc	2023										
	4	The Limuru Tea Co. Plc	2022										
	4	The Limuru Tea Co. Plc	2021										
	4	The Limuru Tea Co. Plc	2020										
	4	The Limuru Tea Co. Plc	2019										
	4	The Limuru Tea Co. Plc	2018										
	4	The Limuru Tea Co. Plc	2017										
	4	The Limuru Tea Co. Plc	2016										
	4	The Limuru Tea Co. Plc	2015										
	5	Sasini Plc	2023										
	5	Sasini Plc	2022										
	5	Sasini Plc	2021										
	5	Sasini Plc	2020										
	5	Sasini Plc	2019										
	5	Sasini Plc	2018										
	5	Sasini Plc	2017										
	5	Sasini Plc	2016										

	5	Sasini Plc	2015										
	6	Williamson Tea Kenya Plc	2023										
	6	Williamson Tea Kenya Plc	2022										
	6	Williamson Tea Kenya Plc	2021										
	6	Williamson Tea Kenya Plc	2020										
	6	Williamson Tea Kenya Plc	2019										
	6	Williamson Tea Kenya Plc	2018										
	6	Williamson Tea Kenya Plc	2017										
	6	Williamson Tea Kenya Plc	2016										
	6	Williamson Tea Kenya Plc	2015										
Auto mobile & accessories	7	Car and General (K) Ltd	2023										
	7	Car and General (K) Ltd	2022										
	7	Car and General (K) Ltd	2021										
	7	Car and General (K) Ltd	2020										
	7	Car and General (K) Ltd	2019										
	7	Car and General (K) Ltd	2018										
	7	Car and General (K) Ltd	2017										
	7	Car and General (K) Ltd	2016										
	7	Car and General (K) Ltd	2015										
Commercial and services	8	Express Kenya Plc	2023										

	8	Express Kenya Plc	2022										
	8	Express Kenya Plc	2021										
	8	Express Kenya Plc	2020										
	8	Express Kenya Plc	2019										
	8	Express Kenya Plc	2018										
	8	Express Kenya Plc	2017										
	8	Express Kenya Plc	2016										
	8	Express Kenya Plc	2015										
	9	Kenya Airways Ltd	2023										
	9	Kenya Airways Ltd	2022										
	9	Kenya Airways Ltd	2021										
	9	Kenya Airways Ltd	2020										
	9	Kenya Airways Ltd	2019										
	9	Kenya Airways Ltd	2018										
	9	Kenya Airways Ltd	2017										
	9	Kenya Airways Ltd	2016										
	9	Kenya Airways Ltd	2015										
	10	Longhorn Publishers Ltd	2023										
	10	Longhorn Publishers Ltd	2022										
	10	Longhorn Publishers Ltd	2021										
	10	Longhorn Publishers Ltd	2020										
	10	Longhorn Publishers Ltd	2019										

	10	Longhorn Publishers Ltd	2018										
	10	Longhorn Publishers Ltd	2017										
	10	Longhorn Publishers Ltd	2016										
	10	Longhorn Publishers Ltd	2015										
	11	Nairobi Business Ventures Ltd	2023										
	11	Nairobi Business Ventures Ltd	2022										
	11	Nairobi Business Ventures Ltd	2021										
	11	Nairobi Business Ventures Ltd	2020										
	11	Nairobi Business Ventures Ltd	2019										
	11	Nairobi Business Ventures Ltd	2018										
	11	Nairobi Business Ventures Ltd	2017										
	11	Nairobi Business Ventures Ltd	2016										
	11	Nairobi Business Ventures Ltd	2015										
	12	Nation Media Group	2023										
	12	Nation Media Group	2022										
	12	Nation Media Group	2021										
	12	Nation Media Group	2020										
	12	Nation Media Group	2019										
	12	Nation Media Group	2018										
	12	Nation Media Group	2017										
	12	Nation Media Group	2016										
	12	Nation Media Group	2015										

	13	Sameer Africa PLC	2023										
	13	Sameer Africa PLC	2022										
	13	Sameer Africa PLC	2021										
	13	Sameer Africa PLC	2020										
	13	Sameer Africa PLC	2019										
	13	Sameer Africa PLC	2018										
	13	Sameer Africa PLC	2017										
	13	Sameer Africa PLC	2016										
	13	Sameer Africa PLC	2015										
	14	Standard Group Ltd	2023										
	14	Standard Group Ltd	2022										
	14	Standard Group Ltd	2021										
	14	Standard Group Ltd	2020										
	14	Standard Group Ltd	2019										
	14	Standard Group Ltd	2018										
	14	Standard Group Ltd	2017										
	14	Standard Group Ltd	2016										
	14	Standard Group Ltd	2015										
	15	TPS Eastern Africa (Serena) Ltd	2023										
	15	TPS Eastern Africa (Serena) Ltd	2022										

	15	TPS Eastern Africa (Serena) Ltd	2021										
	15	TPS Eastern Africa (Serena) Ltd	2020										
	15	TPS Eastern Africa (Serena) Ltd	2019										
	15	TPS Eastern Africa (Serena) Ltd	2018										
	15	TPS Eastern Africa (Serena) Ltd	2017										
	15	TPS Eastern Africa (Serena) Ltd	2016										
	15	TPS Eastern Africa (Serena) Ltd	2015										
	16	WPP Scangroup Plc	2023										
	16	WPP Scangroup Plc	2022										
	16	WPP Scangroup Plc	2021										
	16	WPP Scangroup Plc	2020										
	16	WPP Scangroup Plc	2019										
	16	WPP Scangroup Plc	2018										
	16	WPP Scangroup Plc	2017										
	16	WPP Scangroup Plc	2016										

	16	WPP Scangroup Plc	2015										
Construction and Allied	17	Bamburi Cement PLC	2023										
	17	Bamburi Cement PLC	2022										
	17	Bamburi Cement PLC	2021										
	17	Bamburi Cement PLC	2020										
	17	Bamburi Cement PLC	2019										
	17	Bamburi Cement PLC	2018										
	17	Bamburi Cement PLC	2017										
	17	Bamburi Cement PLC	2016										
	17	Bamburi Cement PLC	2015										
	18	Crown Paints Kenya PLC.	2023										
	18	Crown Paints Kenya PLC.	2022										
	18	Crown Paints Kenya PLC.	2021										
	18	Crown Paints Kenya PLC.	2020										
	18	Crown Paints Kenya PLC.	2019										
	18	Crown Paints Kenya PLC.	2018										
	18	Crown Paints Kenya PLC.	2017										
	18	Crown Paints Kenya PLC.	2016										
	18	Crown Paints Kenya PLC.	2015										
	19	E.A.Cables PLC	2023										
	19	E.A.Cables PLC	2022										

	19	E.A.Cables PLC	2021										
	19	E.A.Cables PLC	2020										
	19	E.A.Cables PLC	2019										
	19	E.A.Cables PLC	2018										
	19	E.A.Cables PLC	2017										
	19	E.A.Cables PLC	2016										
	19	E.A.Cables PLC	2015										
	20	E.A.Portland Cement Ltd	2023										
	20	E.A.Portland Cement Ltd	2022										
	20	E.A.Portland Cement Ltd	2021										
	20	E.A.Portland Cement Ltd	2020										
	20	E.A.Portland Cement Ltd	2019										
	20	E.A.Portland Cement Ltd	2018										
	20	E.A.Portland Cement Ltd	2017										
	20	E.A.Portland Cement Ltd	2016										
	20	E.A.Portland Cement Ltd	2015										
Energy & petroleum	21	KenGen Plc	2023										
	21	KenGen Plc	2022										
	21	KenGen Plc	2021										
	21	KenGen Plc	2020										
	21	KenGen Plc	2019										
	21	KenGen Plc	2018										

	21	KenGen Plc	2017										
	21	KenGen Plc	2016										
	21	KenGen Plc	2015										
	22	Kenya Power & Lighting Plc	2023										
	22	Kenya Power & Lighting Plc	2022										
	22	Kenya Power & Lighting Plc	2021										
	22	Kenya Power & Lighting Plc	2020										
	22	Kenya Power & Lighting Plc	2019										
	22	Kenya Power & Lighting Plc	2018										
	22	Kenya Power & Lighting Plc	2017										
	22	Kenya Power & Lighting Plc	2016										
	22	Kenya Power & Lighting Plc	2015										
	23	Total Kenya ltd	2023										
	23	Total Kenya ltd	2022										
	23	Total Kenya ltd	2021										
	23	Total Kenya ltd	2020										
	23	Total Kenya ltd	2019										
	23	Total Kenya ltd	2018										
	23	Total Kenya ltd	2017										
	23	Total Kenya ltd	2016										
	23	Total Kenya ltd	2015										
	24	Umeme Ltd	2023										

	24	Umeme Ltd	2022										
	24	Umeme Ltd	2021										
	24	Umeme Ltd	2020										
	24	Umeme Ltd	2019										
	24	Umeme Ltd	2018										
	24	Umeme Ltd	2017										
	24	Umeme Ltd	2016										
	24	Umeme Ltd	2015										
Investment	25	Centum Investment Co Ltd	2023										
	25	Centum Investment Co Ltd	2022										
	25	Centum Investment Co Ltd	2021										
	25	Centum Investment Co Ltd	2020										
	25	Centum Investment Co Ltd	2019										
	25	Centum Investment Co Ltd	2018										
	25	Centum Investment Co Ltd	2017										
	25	Centum Investment Co Ltd	2016										
	25	Centum Investment Co Ltd	2015										
	26	Home Afrika Ltd	2023										
	26	Home Afrika Ltd	2022										
	26	Home Afrika Ltd	2021										
	26	Home Afrika Ltd	2020										
	26	Home Afrika Ltd	2019										

	26	Home Afrika Ltd	2018										
	26	Home Afrika Ltd	2017										
	26	Home Afrika Ltd	2016										
	26	Home Afrika Ltd	2015										
	27	Olympia Capital Holdings ltd	2023										
	27	Olympia Capital Holdings ltd	2022										
	27	Olympia Capital Holdings ltd	2021										
	27	Olympia Capital Holdings ltd	2020										
	27	Olympia Capital Holdings ltd	2019										
	27	Olympia Capital Holdings ltd	2018										
	27	Olympia Capital Holdings ltd	2017										
	27	Olympia Capital Holdings ltd	2016										
	27	Olympia Capital Holdings ltd	2015										
	28	Kurwitu Ventures Ltd	2023										
	28	Kurwitu Ventures Ltd	2022										
	28	Kurwitu Ventures Ltd	2021										
	28	Kurwitu Ventures Ltd	2020										
	28	Kurwitu Ventures Ltd	2019										
	28	Kurwitu Ventures Ltd	2018										
	28	Kurwitu Ventures Ltd	2017										
	28	Kurwitu Ventures Ltd	2016										
	28	Kurwitu Ventures Ltd	2015										

	29	Trans-Century Plc	2023										
	29	Trans-Century Plc	2022										
	29	Trans-Century Plc	2021										
	29	Trans-Century Plc	2020										
	29	Trans-Century Plc	2019										
	29	Trans-Century Plc	2018										
	29	Trans-Century Plc	2017										
	29	Trans-Century Plc	2016										
	29	Trans-Century Plc	2015										
Manufacturing & allied	30	B.O.C Kenya Ltd	2023										
	30	B.O.C Kenya Ltd	2022										
	30	B.O.C Kenya Ltd	2021										
	30	B.O.C Kenya Ltd	2020										
	30	B.O.C Kenya Ltd	2019										
	30	B.O.C Kenya Ltd	2018										
	30	B.O.C Kenya Ltd	2017										
	30	B.O.C Kenya Ltd	2016										
	30	B.O.C Kenya Ltd	2015										
	31	British American Tobacco Kenya Ltd	2023										

	31	British American Tobacco Kenya Ltd	2022										
	31	British American Tobacco Kenya Ltd	2021										
	31	British American Tobacco Kenya Ltd	2020										
	31	British American Tobacco Kenya Ltd	2019										
	31	British American Tobacco Kenya Ltd	2018										
	31	British American Tobacco Kenya Ltd	2017										
	31	British American Tobacco Kenya Ltd	2016										
	31	British American Tobacco Kenya Ltd	2015										
	32	Carbacid Investments Ltd	2023										
	32	Carbacid Investments Ltd	2022										
	32	Carbacid Investments Ltd	2021										
	32	Carbacid Investments Ltd	2020										
	32	Carbacid Investments Ltd	2019										
	32	Carbacid Investments Ltd	2018										

	32	Carbacid Investments Ltd	2017										
	32	Carbacid Investments Ltd	2016										
	32	Carbacid Investments Ltd	2015										
	33	East African Breweries Ltd	2023										
	33	East African Breweries Ltd	2022										
	33	East African Breweries Ltd	2021										
	33	East African Breweries Ltd	2020										
	33	East African Breweries Ltd	2019										
	33	East African Breweries Ltd	2018										
	33	East African Breweries Ltd	2017										
	33	East African Breweries Ltd	2016										
	33	East African Breweries Ltd	2015										
	34	Eveready East Africa Ltd	2023										
	34	Eveready East Africa Ltd	2022										
	34	Eveready East Africa Ltd	2021										
	34	Eveready East Africa Ltd	2020										
	34	Eveready East Africa Ltd	2019										
	34	Eveready East Africa Ltd	2018										
	34	Eveready East Africa Ltd	2017										
	34	Eveready East Africa Ltd	2016										
	34	Eveready East Africa Ltd	2015										

	35	Flame Tree Group Holdings Ltd	2023										
	35	Flame Tree Group Holdings Ltd	2022										
	35	Flame Tree Group Holdings Ltd	2021										
	35	Flame Tree Group Holdings Ltd	2020										
	35	Flame Tree Group Holdings Ltd	2019										
	35	Flame Tree Group Holdings Ltd	2018										
	35	Flame Tree Group Holdings Ltd	2017										
	35	Flame Tree Group Holdings Ltd	2016										
	35	Flame Tree Group Holdings Ltd	2015										
	36	Unga Group Ltd	2023										
	36	Unga Group Ltd	2022										
	36	Unga Group Ltd	2021										
	36	Unga Group Ltd	2020										

	36	Unga Group Ltd	2019										
	36	Unga Group Ltd	2018										
	36	Unga Group Ltd	2017										
	36	Unga Group Ltd	2016										
	36	Unga Group Ltd	2015										
Telecommunication	37	Safaricom PLC	2023										
	37	Safaricom PLC	2022										
	37	Safaricom PLC	2021										
	37	Safaricom PLC	2020										
	37	Safaricom PLC	2019										
	37	Safaricom PLC	2018										
	37	Safaricom PLC	2017										
	37	Safaricom PLC	2016										
	37	Safaricom PLC	2015										

APPENDIX 4: Data collection sheet