CORPORATE GOVERNANCE, INTELLECTUAL CAPITAL AND FINANCIAL DISTRESS OF LISTED FIRMS IN SUB-SAHARAN AFRICA

MOHAMMED ABDULKADIR

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DECLARATION

This research project is my original work and has not been presented elsewhere for a degree or any other award.

Signature ..... Date …….

Mohammed Abdulkadir

Department of Business Studies

D530/1517/2021

This research project has been submitted for examination with our approval as the University Supervisors.

Signature ..... Date …….

Dr Samuel Nduati Kariuki

Department of Business Studies

University of Embu

Signature ..... Date …….

Dr Peter Wang'ombe Kariuki

Department of Business Studies

University of Embu

DEDICATION

With devotion to my dad
In whose love and presence, I found my strength
Guiding light through darkest days

To my mom
A heartfelt thanks
Your love, a beacon through the years
Your support, a fortress in my fears

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ABBREVIATIONS AND ACRONYMS

ASEA	African Security Exchange Association
CEE	Capital Employed Efficiency
CEO	Chief Executive Officer
CG	Corporate Governance
CMA	Capital Market Authority
CSR	Corporate Social Responsibility
FD	Financial Distress
GDP	Gross Domestic Product
HCE	Human Capital Efficiency
IC	Intellectual Capital
ICE	Intellectual Capital Efficiency
ICT	Information and Communications Technology
MO	Managerial Ownership
OS	Ownership Structure
SCE	Structural Capital Efficiency
SSA	Sub-Sahara Africa
VAIC	Value Added Intellectual Coefficient
WFE	World Federation of Exchanges

DEFINITION OF TERMS

Board characteristics	Features or attributes of a company's board of directors such as the board’s composition and size, its duties and responsibilities, diversity, and the board's compensation.
Ownership structure	Percentage of managerial, institutional, foreign and state ownership of the selected firms listed in Sub-Sahara Africa.
Intellectual capital	Intangible assets of a company that contribute to its value creation potential.
Financial distress	Financial distress is a condition of being unable to settle mature expenses or debt.
Listed firms	Companies whose equity shares trade on any of the selected Sub-Sahara Africa Securities exchange and conforms to the listing requirements.

ABSTRACT

Financial distress often makes firms highly financially constrained due to limited external funds and high borrowing costs affecting a company's investment and operational decisions. The number of listed companies steadily dropped on several security exchanges in Sub-Saharan Africa from 2017 to 2022 due to financial difficulties, an implication that financial distress is a persistent concern in the region. The effects of corporate governance and intellectual capital on financial distress are not well comprehended in the Sub-Saharan African setting. This research sought to fill the empirical gap related to the Sub-Saharan African context. The research was underpinned by agency theory, resource dependency theory, stakeholder theory, resource-based view and Knowledge-based view theories. The study targeted 146 selected firms listed on Sub-Saharan Securities Exchanges that are operational in Anglophone countries with less developed corporate governance structures, and non-hyperinflationary economies. Data was sourced from yearly financial statements and circulars published by firms for the years 2017 to 2021. Descriptive statistics were employed to summarize the data and logistic regression models were used in analysis. Research findings established that board size negatively influences financial distress while director remuneration was observed to have no significant effect. Board meetings and gender diversity were observed to positively influence financial distress. The findings further established that institutional, foreign, and state ownership significantly reduce distress. However, managerial ownership does not influence financial distress whereas a significant positive influence of local ownership on financial distress is observed. Concerning intellectual capital, a negative effect of intellectual capital efficiency on corporate financial distress was revealed. The research findings emphasize on effective governance structures relating to the firm's board and ownership structure and the urgency of strengthening the intellectual capital base to ensure firms' survival amidst today's knowledge-based economy. The study recommends that non-financial firms maintain larger boards to enhance information efficiency and decision quality. In addition, non-financial firms should devise performance-based compensation mechanisms for the board and maintain an ideal frequency of board meetings. Moreover, non-financial firms should formulate ownership structure policies that enhance the firms' stability through sound governance practices and embrace a proactive and holistic approach towards intellectual capital's development to strengthen the competitive advantage base ensuring firms' survival. The findings contribute to a broader discourse on effective corporate governance practices as potential solutions to mitigating financial distress. Furthermore, the findings will assist legislators in policy formulation regarding governance frameworks and aid managers in modifying their decisions for extenuating the effects of financial distress in sub-Saharan Africa.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Financial distress (FD) has been a concern for many businesses across economies. Its prospect presents a frequent and sometimes very powerful constraint upon management. Financial distress is a disconcerting condition of being unable to settle mature expenses or debt (Altman, 1968). A firm undergoing financial distress has the situation recurrently sharply reduce its market value. Companies may incur financial distress costs when facing financial difficulties. FD is often caused by a combination of factors such as weak internal corporate governance (CG) practices where the interests of the managers supersede those of firm owners (C. Cheng et al., 2018; Jensen & Meckling, 1976), and deterioration of firms' performance and competitive edge due to mismanagement of strategic assets (intellectual capital) of the firm (Dalwai et al., 2022; Vishnu & Kumar Gupta, 2014). Additionally, studies indicate that rather than economic crises, financial distress is a consequence of corporate mismanagement (Ballester et al., 2020).

Several FD prediction models have been developed by scholars including Altman (1968), Ohlson (1980), and Zmijewski (1984). By using data from financial statements, the models aim to analyze the probable future failures of a company and hence play a crucial role in the firm's decision-making (Wang et al., 2022). Financial distress is a complex and multifaceted issue that can have far-reaching implications for societies, businesses and economies. It is crucial for researchers to better comprehend the causes and consequences of financial distress, as well as the role of CG in mitigating or exacerbating risks of distress. Globally, FD has been a subject of discussion for companies across various industries and sectors. In recent years, several high-profile bankruptcies have occurred, including those of Enron, WorldCom, and Lehman Brothers. Accordingly, the World Federation of Exchanges (WFE) depicts the number of delisted companies having been steadily on the rise globally. In 2017, there were 1918 delisted companies worldwide (WFE, 2023a). This number rose to 1896 in 2018. The most delisted companies were from the Asia-

Pacific region, with 1107 delisted companies in 2018. This was followed by the Europe-Middle East-Africa region with 525, and America with 264 (WFE, 2023b).

In Africa, financial distress has also been a major issue, particularly in countries that have undergone significant economic and political upheaval. In 2018, 2 companies were delisted from the Namibia Stock Exchange an exact number of the previous year's de-listings on the exchange (Heidi, 2019). According to the Johannesburg Stock Exchange, delisted companies in South Africa rose from 20 in 2020 to 25 in 2021. 24 of the de-listings happened as a result of mergers or acquisitions of distressed companies (ASEA, 2022). In Kenya, the Nairobi Stock Exchange evidenced 3 de-listings, 8 mergers and acquisitions and 5 suspended companies as of 2021 due to financial distress (CMA 2021). These failures have often been linked to poor CG, among other factors. The post-effect of the 2008 global economic crisis on all stakeholders of a firm sparked research interests and debates concerning the causes of FD (Bravo-Urquiza & Moreno-Ureba, 2021). Preceding literature has stressed the complexity of predicting the distress of firms and has urged on the role of CG structures in preventing the failure of firms (Manzaneque et al., 2016).

An implied ground to explain this possible connection is that CG is anticipated to significantly impact business decisions, particularly in situations where the firm's risk of failure is high. Regarding the nature of the relationship and extent to which CG practices, such as board characteristics and a firm's ownership structure, can influence financial distress is still an ongoing debate among policymakers and researchers alike (Gerged et al., 2022; Hazami-Ammar & Gafsi, 2021; Khurshid & Sabir, 2019) as well as mitigation of financial distress through CG is still a fundamental concern in today's business environment, especially in light of significant financial scandals involving major companies worldwide i.e. Enron (Manzaneque et al., 2016; Orazalin and Mahmood, 2018). On the other side, the recognition and repercussion of Intellectual capital have become a critical concern to the stability of businesses (Shahwan & Habib, 2020). Consequently, the trade-off between the leveraging benefits of using IC by firms as a buffer against financial distress by reducing the prospect of bankruptcy and improving the firm's ability to access capital markets (Dalwai & Salehi, 2021) and the cost of misaligned incentives

and poor decision-making is still a core issue (Dženopoljac et al., 2016; Vishnu & Kumar, 2014).

1.1.1 Corporate Governance and Financial Distress

Corporate governance dictates how a company is directed and steered to achieve its objectives (Jensen and Meckling, 1976). CG can be accessed through mechanisms including board characteristics and ownership structure. The board characteristics and ownership structure are the main drivers of CG thus can significantly influence all other CG mechanisms (Aslam & Haron, 2020) hence the focus of this study. Board characteristics typically include the board's composition and size, its duties and responsibilities, diversity, and the board's compensation. The board has a responsibility to serve the interests of the shareholders rather than serving their own or management's interests (Madhani, 2017). Therefore, CG is critical in preventing financial distress as it reduces agency problems and hence is an integral part of a business. Consequently, Ineffective monitoring of the management may result in poor and risky decision-making by the managers that can lead to financial distress (Sahlman, 2010).

Ownership structure is seen as a significant aspect of effective governance because it aligns the shareholders' interests with those of the managers (Guo et al., 2013). The alignment of incentives between shareholders and management can have a substantial influence on financial distress. Management that is incentivized to take on excessive risk can increase the prospect of FD. On the other hand, management that is incentivized to serve in the best interest of shareholders can help prevent financial distress by encouraging responsible decision-making. Good governance is directly associated with corporate decisions which influence company performance and sustainability thus decreasing the risk of FD (Luqman et al., 2018). Additionally, good CG mechanisms help in improving the quality of a firm's performance and value (Al-Absy, 2020). CG is therefore key to surviving in the competitive world (Iqbal & Zaib, 2017).

1.1.2 Intellectual Capital and Financial Distress

Intellectual capital denotes the knowledge-based resources of the organization that aid in the creation of its competitive edge. In addition, it is acknowledged as a set of nonphysical assets (competencies, capabilities, and resources) that ambitions

organizational performance, asset management, and value creation (Aslam & Haron, 2020; Gogan et al., 2016). Companies that can manage as well as improve their knowledge and intellectual resources are believed to be able to effectively leverage their expertise and generate value addition that positively exerts an influence on the firm's performance. Performance improvements indicate that the company is healthy and likely to evade the likelihood of FD (Alvino et al., 2020; Gogan et al., 2016; Shahwan & Habib, 2020). Additionally, firms that fail to measure and report on their intellectual capital may be undervaluing their most important assets (Fulmer & Ployhart, 2014). This can lead to misallocation of resources and a lack of investment in the areas that are critical to the company's success, which ultimately can lead to FD. Intellectual capital is often closely linked to innovation, and failure by companies to innovate may expose the firms to the risk of losing market share to innovative competitors. This can lead to declining revenues and profitability, which can ultimately lead to financial distress.

1.1.3 Listed Firms in Sub-Sahara Africa

Sub-Sahara Africa region is known for its diverse economies and high growth potential, making it an attractive destination for investment. The security exchanges in Sub-Saharan Africa have significantly grown in recent years, with several firms going public to raise capital and provide liquidity to their shareholders contributing greatly to the region's GDP (Heidi, 2019). Through the exchanges, SSA has seen a growth rate of 22.4 per cent in domestic savings rate (percentage of GDP) and 3.4 per cent in GDP growth over the last 3 decades (Njenga et al., 2022). The region has 19 active security exchanges with more than 900 listed firms with stock market capitalization as percentage of GDP averaging 56.63 percent as of 2020. Some of the region's largest security exchanges include the Johannesburg Stock Exchange (JSE) in South Africa, the Nigerian Stock Exchange, the Bourse Régionale des Valeurs Mobilieres (BRVM) in West Africa, and the Stock Exchange of Mauritius (SEM) (Tyson & Raga, 2021). According to Njenga et al, (2022), the region‘s number of firm listings across all SSA exchanges is still small.

Countries such as Kenya, Ghana, Namibia, Mauritius, and Seychelles have fewer than 100 firms. South Africa tops with more than 200 firms and Nigeria seconds with firms slightly above 150 (Njenga et al, 2022). Listed firms in Sub-Saharan Africa operate

in a wide range of industries, including agriculture, financial services, telecommunications, consumer goods, and energy (ASEA, 2022). These firms are vital in steering the growth and development of SSA, as they provide investment capital and facilitate job creation (Yartey & Komla, 2009). However, listed firms in SSA also face numerous challenges such as weak regulatory frameworks, illiquidity, lack of investor protection, and limited access to capital markets (Njenga et al, 2022). Despite the challenges, the growth and development of the region's security exchanges and listed firms is seen as a positive trend, and there are efforts to improve the business environment and increase access to capital for firms in the region (Tyson & Raga, 2021).

1.2 Statement of the Problem

Companies are the backbone of the modern economy for they drive innovation, create jobs, and generate wealth. By listing the corporations in security exchanges, capital markets help unlock capital and drive economic and business growth (ASEA, 2022). Listed firms' operations and investments contribute to the overall economic growth (Njenga et al, 2022). Moreover, listed companies can raise capital for expansion, research, and development thus facilitating the company's growth, the growth of financial market infrastructure and the economy as a whole (César & Zeufack, 2020). The development of the security exchange requires the development of other financial institutions such as brokerage firms, investment banks, and regulators, which further foster the development of the financial system (Njenga et al, 2022).

In SSA region, FD has been a concern which has led to several corporate actions. In 2021, the region observed a 23.2% reduction in listed firms at the Stock Exchange of Mauritius, 6.2% at the JSE, and 0.6% at the Nigeria Stock Exchange (*WFE*, 2023a). Accordingly, Kenya evidenced 3 de-listings, 8 mergers and acquisitions, and 5 companies suspended in 2021 due to financial distress (CMA, 2021). Additionally, 2 companies were delisted from the Namibia Stock Exchange in 2018 and 2017 (Heidi, 2019). The frequent de-listings imply that FD is a persistent concern in the region. FD makes firms financially constrained hence affecting firms' investment and operational decisions (Gupta & Mahakud, 2022). FD erodes investor's confidence, leading to a decline in stock prices triggering stock market crashes and systemic crises. Firms might adopt proactive measures including implementing good CG

(Udin et al., 2017) and effective IC management to facilitate access to capital, and increase innovativeness and value ultimately preventing exposure to FD (Aslam & Haron, 2020; Gogan et al., 2016).

Even though various researchers have examined the connection between corporate governance and performance (Arosa et al., 2013; Aslam & Haron, 2020; Kirimi et al., 2022), only a few have considered examining CG and FD in developing economies (Younas et al., 2021). The available literature on the nexus between CG, IC and FD is limited with regard to the Sub-Saharan Africa region (Waweru, 2014). As such policymakers (Njenga et al, 2022), investors, and researchers (Nkundabanyanga et al., 2014; Lemma et al., 2021; Waweru, 2014) are still perplexed about the role CG and IC play in mitigating the distress of listed firms in SSA region. The study therefore sought to determine how these factors interact with each other in relation to listed companies across Sub-Saharan Africa.

1.3 Objectives of the Study

The research sought to investigate both general and specific objectives.

1.3.1 General objectives

This study sought to investigate the effect of corporate governance and intellectual capital on the financial distress of listed firms across Sub-Saharan Africa.

1.3.2 Specific Objectives;

1. To ascertain the effect of board characteristics on financial distress of listed firms in Sub-Saharan Africa.
2. To evaluate the influence of ownership structure on financial distress of listed firms in Sub-Saharan Africa.
3. To determine the effect of intellectual capital on financial distress of listed firms in Sub-Saharan Africa.

1.4 Research Hypotheses

H_{01}: Board characteristics have no effect on financial distress of listed firms in Sub-Saharan Africa.

H_{02}: Ownership structure has no effect on financial distress of listed firms in Sub-Saharan Africa.

H_{03}: Intellectual capital has no effect on financial distress of listed firms in Sub-Saharan Africa.

1.5 Justification of the Study

This study is exceptional in several ways. First, it builds upon the existing works by empirically presenting further attestations on the influence of board characteristics, a crucial CG mechanism, on financial distress from a multi-country viewpoint. Two, the paper presents cross-country evidence on the influence of ownership structure on financial distress from developing frontier markets, highlighting the importance of governance frameworks in firms' stability. Lastly, the study contributes to scanty literature on IC efficiency - financial distress nexus adopting non-parametric approaches to assessing efficiency, especially Simar and Wilson (2007) bootstrapped DEA model. The findings of the research will be used to identify potential solutions for mitigating the effects of firms' distress in SSA. This information, by shedding light on how CG and IC influence financial distress, can be used by governments and businesses in formulating CG policies, as well as by other stakeholders in developing effective strategies and policies to address financial distress and improve corporate performance in SSA.

1.6 Scope of the Study

This research examined how CG practices and IC affect the financial distress of 146 listed non-financial firms in 10 selected Sub-Saharan African countries as well as how the firms' CG structure and intellectual capital influenced the severity of FD between 2017 and 2021. The study focused on non-financial institutions owing to the high financial regulations and strict CG provisions of financial institutions while the study period was selected to test the argument that FD is often a result of corporate mismanagement rather than economic crises as several studies have cited as an economic crisis was nearly triggered between 2019 and 2020 by Covid-19.

1.7 Limitations of the Study

The present study suffers the following limitations. First, although two measures of financial distress were utilized, Altman (2005) and Zmijewski (1984), only one measure is most suitable for the emerging market, Altman EMS, while the Zmijewski X-score is of general applicability. Second, the board characteristics variables used in this study are limited to four variables: board size, director remuneration, gender

diversity, and board meetings. The inclusion of other governance aspects such as internal governance measures as well as focus on other measures of corporate board gender diversity, such as the Blau diversity index may provide important empirical insights. To assess the IC efficiency, a set of three inputs namely; structural capital, human capital, and capital employed efficiencies were used. Several other additional inputs including innovation capital and relational capital efficiencies of the modified VAIC methodology can be considered in the assessment of the efficiency scores of firms. Lastly, the empirical results considered non-financial firms in SSA and are not to be generalized to financial firms and other emerging economies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter investigates earlier studies on corporate governance, intellectual capital, and financial distress of companies. The section examines the several theories that underpin this study as well as highlights the empirical studies, research gaps, and summary of reviewed literature.

2.2 Theoretical Literature Review

The present research is anchored on five theories namely: agency theory which forms the study's main theory. The remaining theories include stakeholder theory, resource dependency, resource-based view and knowledge-based view theories.

2.2.1 Agency Theory

Agency theory as stipulated by Jensen and Meckling (1976) suggests that in the modern business setup, there exists a separation of ownership and control. The shareholders (principals) engage the service of the managers (agents) in running the corporation on their behalf (Manduku et al., 2020) and expect the agents to adopt strategies that maximize the firms' value (Al-Absy, 2020). However, when delegated with control of the corporation, managers may be opportunistic in their behaviour giving rise to ethical conflicts (Bravo-Urquiza & Moreno-Ureba, 2021). To protect their interests, shareholders employ several CG mechanisms including the board of directors to supervise, control and monitor the management's activities. The application of the theory to the present study is underscored by the need to regulate the actions of the several parties related to the firms. To reduce information asymmetries and cater for agency problems, the advocates of agency theory argue that a larger board carries out its monitoring role effectively (Ragab & Saleh, 2021). Similarly, agency theory observes that diversity in gender among board members results in greater control and independence (García & Herrero, 2021). Female directors are more risk-averse and have a low conflict of interest (Levi et al., 2014). The firms they manage have less volatile earnings, are efficient in capital allocation, and have lower leverage (Faccio et al., 2016). Research in finance has shown that gender matters when it comes to risk-taking behaviours and leadership style (Harris

et al., 2019). A diversified board results in effective decision-making as a result of better monitoring powers and ability which improves performance and ultimately lessens distress (Yousaf et al., 2021).

2.2.2 Stakeholder Theory

Developed by Freeman (1984), the theory is a perspective on social responsibility and corporate ethics that considers the interests of all stakeholders - not just shareholders - in a company's decision-making. This theory maintains that societies and firms are mutually dependent and firms should therefore strive to serve a wider purpose to ensure sustainable and responsible outcomes of improving the firm-stakeholders' relationships and reducing reputational risk (Nirino et al., 2020). Stakeholder theory propositions that effective CG practices and a commitment to stakeholder engagement can help ensure that firms invest in and manage their intellectual capital in a way that benefits not only shareholders but also other stakeholders. Applying the theory's concept remains an important aspect of creating good relational networks between the company and its stakeholders in the firm's lifecycle. The relational networks that a company creates through its stakeholders enhance performance (Iqbal & Zaib, 2017) hence lowering the risk of distress. Stakeholder theory links the company's external relationships and competence to company performance (Gaur et al., 2015a).

2.2.3 Resource Dependency Theory

This theory by Pfeffer and Salancik (1978) is a sociological and political perspective that describes how firms are influenced by the resources they depend on from other organizations or individuals. It posits that firms have different levels of dependence on their environment. The environment provides essential resources for the firm's operations and the creation of a sustainable competitive advantage (Arosa et al., 2013). The board as a critical resource for the firm is the firm's linkage to its need for resources. Intangible resources including knowledge and experience are dynamic assets that create an advantage for the firms to endure the competition in the environment in the long term. The theory underscores the role of the BOD in managing external dependencies and uncertainties, with a focus on external linkages (Manduku et al., 2020). Board members who come from diverse organizations play a crucial role in helping firms acquire essential resources and execute their roles

effectively (Gaur et al., 2015a). Accordingly, firms can address adverse consequences on their environments and the theory envisages a negative connection between firms' strategic assets and FD (Manduku et al., 2020).

2.2.4 Resource-Based View Theory

The theory proposes that an organization's intangible assets, including intellectual capital, are crucial determining factors of its competitive position and financial performance. Accordingly, as originally put forth by Wernerfelt (1984) and later refined by Barney (1991), RBT argues that a company's resources and capabilities, such as its intellectual capital, physical assets, organizational structure, and culture, can provide a sustainable competitive edge if they are unique and non-substitutable. Variances in performance among firms are a result of IC heterogeneity across the firms (Nkundabanyanga et al., 2014). Thus, IC is a strategic asset that can be leveraged to increase the firm's survival in the market (Leaniz & Bosque, 2013). The study thus anticipates that by investing in intellectual capital and enhancing its effectiveness, a company can decrease its cost of debt and raise its market value, thereby stabilizing its financial health.

2.2.5 Knowledge-Based View Theory

The knowledge-based view (KBV) theory proposed by Grant (1996) offers a compelling framework for comprehending the intricate role of knowledge as an asset in the knowledge-driven era. Fundamentally, KBV theory posits that organizations need to have knowledge-based assets such as IC to attain a sustainable competitive edge in the knowledge economy (Tjahjadi et al., 2024). Within this paradigm, continuous investment in intangible competencies and knowledge-based assets such as IC are invaluable in creating and enhancing firms' competitive advantage. In the knowledge economy, firms can capitalize on their unique, rare and irreplaceable IC to improve performance and ensure long-term sustainability for organizations (Kariuki, 2024). Additionally, the present study relies on the theory's emphasis on the significance of enhancing the knowledge and skills embodied in human resources as firms' stepping stone towards gaining growth and organizational success. Managing Knowledge-based assets (ICE) has therefore emerged as a critical tool to increase the financial performance and the resilience necessary to adapt to dynamic market landscapes (Bai et al., 2023).

2.3 Empirical Literature Review

This section presents an overview of various studies on corporate governance, intellectual capital, and financial distress among listed companies.

2.3.1 Board Characteristics and Financial Distress

The research on corporate governance and the consequences it imposes on financial distress has drawn so much attention from researchers across the world in contemporary finance such as Mangena et al. (2020), Shahwan & Habib, (2020) Wang et al. (2022) and Gupta and Mahakud (2022). Corporate governance can be of significance in preventing financial distress as recommended by (Habib et al., 2020; Luqman et al., 2018; Manzaneque et al., 2016). The board, and its characteristics, are essential in the company's strategic decisions and hence its financial stability and overall performance (Al-Absy, 2020).

Board size is the most analyzed variable in the study of CG (Khurshid & Sabir, 2019; Manzaneque et al., 2016; Mariano et al., 2021). Board size relates to the number of directors on a firm's board (Mariano et al., 2021). Evidence from the existing literature is mixed and thus inconclusive. The board size has been found to negatively influence financial distress in the conclusions by Manzaneque, Merino, et al. (2016). Agency theory dictates that larger boards raise board members' disciplinary control over the CEO (Ragab & Saleh, 2021). This is handy with Al-Absy (2020) who established that a larger board significantly improves financial stability of Malaysian listed firms. Larger boards bring in more knowledge, experience, skills, and expertise which enhances performance and hence reduces the chances of distress. A study by Hazami-Ammar and Gafsi (2021) further found that most firms with a reduced possibility of FD opt to have a larger board.

In contrast, a study by Arosa et al. (2013); Coleman and Wu (2020) established that board size influences FD by negatively impacting financial performance. Furthermore, Chen (2011) employing logistic regression, found that the likelihood of FD of Chinese firms increases with board size. Coinciding with these results is the work of Guizani and Abdalkrim (2022) that found larger boards increase the risk of which firms fall into distress. Larger boards may experience coordination difficulties, unlike smaller boards which can result in slower decision-making (Younas et al., 2021). The associated costs of worse coordination, miscommunication, and

inflexibility in a larger board outweigh the benefits of a better board's control over the manager. Interestingly, Gerged et al. (2022) established the association of board size and financial distress to be negative, albeit, insignificant in agreement with the conclusions of Ananto et al. (2017) in the Indonesian set-up.

The board has a fiduciary responsibility of steering the company to success. The duty is exercised by monitoring the activities of the CEO and low-level managers (Ballester et al., 2020; Yousaf et al., 2021). The board's effectiveness in fulfilling its roles is dependent on the turnout of board members during meetings. Consequently, the regularity of the meetings is important when the board aims to closely monitor managers and achieve optimal performance and value for the firm. Empirically, Chen (2011) observes that frequent board deliberations lead to better decisions and improve the board's supervision capacity in the organization. This in turn boosts performance and hence reduces the possibility of FD. This however contradicts the conclusions of the study by (Al-Absy, 2020) who found that board meetings are not always related to financial stability. Similarly, a study by (Khurshid & Sabir, 2019) found that increased board meetings positively influence financial distress.

Proponents of agency theory postulate that diversity in the board strengthens the board's oversight function. Some research, including that of Benkraiem et al. (2017) found that diversity in terms of gender may be employed as an instrument for mitigating agency problems. A report by Njihia (2017) on board diversity found that female presentations on boards have a positive influence on asset growth and revenues. This reduces the odds of FD by firms. This is supported by Guizani and Abdalkrim (2022) who found that greater women's participation in boards lowers financial distress of non-financial firms listed on Bursa Malaysia. This is attributed to the belief that women make effective monitors and are critical in governance. Hence, the existence of women improves board supervision and the quality of decisions made (Ain et al., 2020). Nevertheless, Süsi and Lukason (2019), employing logistic regression on Estonian firms, noted that gender diversity is not related to a firm's failure risk. The different perspectives that come from a board with heterogeneity gender have lower importance in accessing failure risk (Süsi & Lukason, 2019). This supports the findings of Mittal and Lavina (2018) that female presence on boards has an insignificant impact. Having female directors does not

resolve weak financial performance nor lower the prospect of distress (Salloum & Azoury, 2012).

An agent-principal relationship exists between the directors and shareholders. The directors are agents who agency theory expect to serve the interest of their shareholders. This however brings in the directors-shareholder's conflict of interest. To reduce this agency problem, which ultimately may threaten firms' financial stability, proponents of agency theory suggest directors be compensated for their commitments. A study by Hazami-Ammar and Gafsi (2021) established that remuneration is negatively related to financial distress. Higher chances of financial distress are attributable to low compensation. In conjunction, Lemma et al. (2021) in the South African context also found that higher directors' compensation is directly connected with corporate performance. The findings observed that higher remuneration acts as a catalyst to boost the board's effectiveness. In contrast, a study by Mariano et al. (2021) presents a positive connection with financial distress. The risk of a firm facing financial distress is higher when the directors are more highly remunerated as hefty pay is an additional drain on a company's financial condition. (Z. Li et al., 2021).

2.3.2 Ownership Structure and Financial Distress

Ownership structure denotes the distribution of equity ownership of a company among its shareholders (Wahl, 2006). The distribution of the ownership of a company has been argued to be a significant tool to improve performance and financial stability. The various ownership structures can be utilized to address agency problems and enhance the interaction between the management and the company's other stakeholders (Kirimi et al., 2022). The conversation on ownership structure has increasingly gained attention due to its potential influence on decision-making, firm value, and financial stability (Jensen & Meckling, 1976).

Managerial ownership denotes the proportion of equity held by its directors. Compliance with most corporate governance codes demands attributing part of the firms' ownership to the directors through director share ownership. A study by Donker et al. (2009) and Manzaneque et al. (2016) conclude that companies with larger managerial ownership are less likely to encounter FD. This is supported by

Luqman et al. (2018) who found MO to have a negative influence on FD. Directors who bear ownership of firms' shares are more risk averse and ensure greater management efficiency which boosts performance. Calomiris and Carlson (2016) indicate in their study that firms can lower the possibility of distress, through the enhancement of a firm's performance, by attributing ownership to the managers.

Contrarily, findings by Ragab and Saleh (2021) conclude that MO does not have any significant influence on FD. Shareholding by directors does not necessarily result in interest alignment between the directors and the shareholders. This coincides with the conclusion of Lemma et al. (2021) that share ownership by directors has an insignificant effect on the firm's performance. Another research by Kirimi et al. (2022) established that MO is negatively linked to the performance of commercial banks. Managerial ownership is an insufficient mechanism to alleviate agency costs and prevent risky decisions that might threaten a firm's financial stability (Gerged et al., 2022).

Institutional ownership relates to the proportion of stocks held by large organizations such as hedge funds, pension funds, insurance firms, and other large institutional investors (Manzaneque et al., 2016). Institutional shareholders are crucial in shaping the firm's CG (Donker et al., 2009) and have a significant influence over the company's decisions about management and governance practices (Kirimi et al., 2022). Focusing on long-term performance unlike the management, institutional investors pursue their active controlling role over the management (Donker et al., 2009). Studies by Mariano et al. (2021) and Gerged et al. (2022) conclude that institutional ownership negatively influences financial distress because large stockholders are in a better capacity for effective monitoring. In support, a study by Li et al., (2021) found that a listed company has lower chances of financial distress when an institutional investor holds a stake in it. However, Manzaneque et al. (2016) observed no significant impact of institutional investors in forecasting financial distress. This coincides with the study by Donker et al. (2009) who found that shareholdings by institutions in the Netherlands are insignificant in predicting financial distress. In concurrence are the findings of Kirimi et al. (2022) that ownership by institutions has an insignificant influence on the performance of commercial banks in Kenya.

Foreign ownership denotes the ratio of shares in a firm that is held by foreign individuals or entities. Foreign investors are more oriented toward profit and have more incentives to monitor managers (Udin et al., 2017). The presence of foreign investors helps in reducing information asymmetry in boards hence lowers the prospect of financial distress (Ali et al., 2022). Foreign investors complement the weak monitoring by domestic institutions (Udin et al., 2017). However, an empirical study by Younas et al. (2021) highlighted an insignificant relationship between foreign ownership and financial distress. This confirms the findings of Cheng et al. (2016) that foreign ownership insignificantly influences banks' risks in China.

State ownership reveals the proportion of equity owned by the government, which might be at the local or national level (Ballester et al., 2020). As posited by Kirimi et al. (2022) state ownership of corporations is ineffective owing to the lack of proper monitoring by governments, which leads to weaker managerial incentives and political interference in CG practices. The main reason could be, state-owned firms exist primarily to achieve general social benefit rather than make profits. To mitigate the risk of distress, it may be necessary to limit the extent of state ownership in these firms. (Udin et al., 2017). This contradicts the finding of Li et al. (2021) that a company under state control has a minimal chance of becoming distressed. In agreement, a study by Zouari and Neila (2014) concluded that state investor is beneficial to Islamic bank performance. It is negatively connected to the risks of distress (Wang & Deng, 2006). Empirical evidence has shown a lack of a common finding as Hoang et al. (2017) found the connection between SO and firm performance to be an inverted U-shaped implying that partial privatization is an efficient means to boost performance and reduce distress risk.

2.3.3 Intellectual Capital and Financial Distress

Firm value can be created by intangible resources such as brands, innovativeness, skills, knowledge, and reputation. As a dynamic resource, intellectual capital has been argued to bring about a competitive advantage for the organization and needs to be managed effectively. Empirically, there have been great scholarly attempts to study how intellectual capital efficiency relates to firms' performance, although the variation in the sample has yielded mixed results. A strand of literature affirms a positive influence of firms' intangible assets on firm performance. Vo and Tran

(2021) for instance, employed a GMM system dynamic estimator to investigate the relationship between IC and the performance of 14 listed banks in Vietnam. Empirical evidence revealed a positive association between intellectual capital and firms' performance. In assessing the consequence of IC on the performance of listed banks in Pakistan, Iqbal & Zaib (2017) established that IC has a positive influence on financial performance.

Similarly, Cenciarelli et al. (2018) investigated the distress predictability of US public companies using intellectual capital efficiency from 1985 to 2021. The study concluded that IC performance negatively influences financial distress. As to whether ICE predicts distress, the findings suggested that distress predictability is higher in IC-related prediction models compared to standard models. Tiwari (2021) observed a positive linkage between the IC of 84 healthcare firms in India from 2009 to 2018 and their financial performance. The accumulation of IC improves firms' adaptability to the constantly changing business environment. The IC, thus, represents an effective tool for enhancing firm value and performance (Tjahjadi et al., 2024). Firms' efficient IC management bridges their internal leveraging capabilities and external dependencies enhancing their resilience and value, further mitigating financial distress. Contrarily, Weqar et al. (2021) observed an inverted U-shape relationship between IC and the performance of knowledge-driven firms in India. Nevertheless, Probohudono *et al*. (2021) revealed no relationship between IC and the risk of firms' stock crashing.

Regarding sub-Saharan Africa, the existing literature presents a mix of findings. For instance, Mohammed and Irbo (2018) documented a weak correlation between IC and Ethiopian banks' performance. Whereas Isola and Akanni (2019) could not ascertain any relationship between IC and the listed firm's performance in Nigeria, Olarewaju and Msomi, (2021) reported a U-shape relationship between IC and the performance of general insurance firms in the South African Development Community. Contrarily, focusing on the financial performance of firms in Tanzania, Kasoga (2020) concludes that IC impacts financial performance indicators positively. The findings revealed that IC is critical for sustainability, and firms that recognize and maintain their IC create more value than their peers. Anifowose et al. (2018) also, conclude that IC positively influences the future cash flows and economic value

added of Nigerian firms. Relevant to our study, Shahwan and Habib (2020) affirm that IC efficiency has a negative effect on financial distress.

2.4 Conceptual Framework

This research has developed a conceptual framework to assess the influence of board characteristics, ownership structure, and intellectual capital on the financial distress of listed firms in Sub-Saharan Africa.

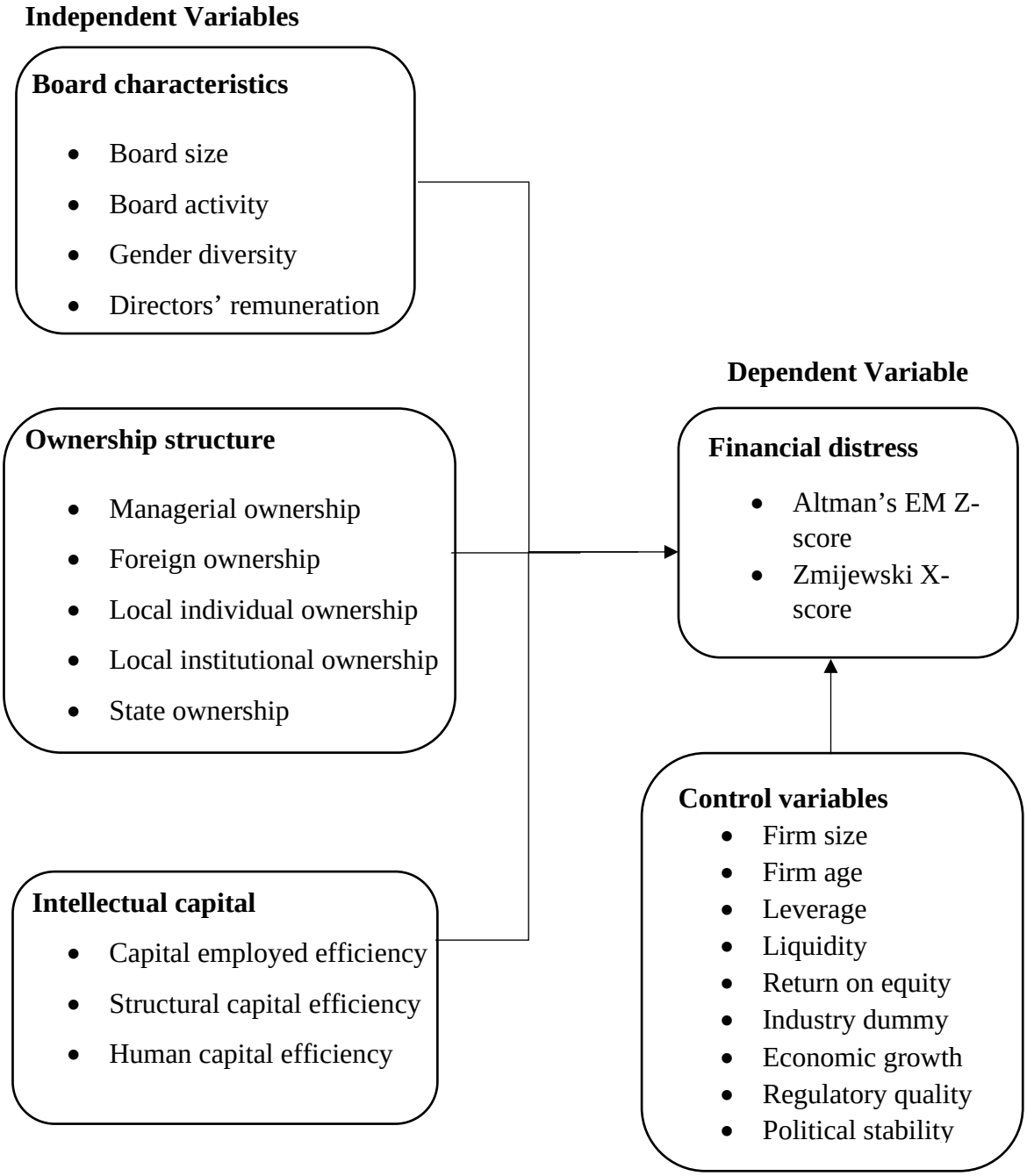

Figure 2.1: Conceptual Framework

2.5 Summary of the Literature Review

Evidently, the literature reviewed depicted agency theory as the most preferred theory in corporate governance studies to scholars. The theory offers a framework for understanding, by aligning the managers-shareholders' interests in a firm, how corporate governance influences the performance and distress of firms (Jensen & Meckling, 1976). The theory emphasizes the significance of effective CG and the promotion of intellectual capital practices in preventing financial distress. Stakeholder theory explains the significance of considering the interests of multiple stakeholders, including the management of IC, in the decision-making of firms in lowering the possibility of distress. Resource Dependency theory proposes that organizations' dependence on the environment varies. The environment provides resources such as such as reputation, intangible assets, and an effective board of directors which are essential to the organizations' operations and the creation of their sustainable competitive advantage (Arosa et al., 2013). RBV and KBV theories suggest that a firm's knowledge assets such as IC are strategic and if rare, unique, and non-substitutable can be leveraged to increase the firm's survival in the market (Leaniz & Bosque, 2013) thus guaranteeing the firm's financial stability (Shahwan & Habib, 2020).

Empirical works on corporate governance, intellectual capital, and financial distress specifically are limited in emerging markets. This literature remains scanty in the Sub-Sahara African region see (Coleman & Wu, 2020; Nkundabanyanga et al., 2014; Lemma et al., 2021). Outstandingly, the scanty literature present mixed, conflicting, and inconclusive results. Prior works by Mangena et al. (2020); Merino, et al. (2016); Priego, et al. (2016) concluded that CG aspects such as board ownership and board size reduce the chances of financial distress. Nevertheless, Guizani and Abdalkrim (2022) found that enlarging the board raises the likelihood of financial distress. Nonetheless, Gogan et al. (2016) and Ni et al. (2020) concluded that IC positively impacts performance and hence reduces bankruptcy. Similarly, Shahwan and Habib (2020) affirm that increasing the IC efficiency reduces financial distress. While Mohammed and Irbo (2018) documented a weak correlation between intellectual capital and the performance of Ethiopian banks, Isola and Akanni (2019) could not ascertain any connection between IC and firm performance. Contrarily, Olarewaju

and Msomi, (2021) report a U-shape relationship between IC and the performance of general insurance firms in the South African Development Community. This suggests that the studies' findings regarding the company's corporate governance, intellectual capital and financial distress were not conclusive.

2.6 Research Gaps

Prior studies that attempted to describe the nexus between corporate governance and financial distress present inconclusive and contradicting results. The research gaps found in the previous literature are summarized in Appendix II.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter examines the research design, data collection procedure and methods, data analysis techniques, and the target population to be used in the study. Similarly, a detailed explanation of how the study was conducted to ensure the reliability and validity of the results is also presented.

3.2 Research Design

This study employed a matched pair design, where a distressed firm is paired with a non-distressed firm based on the same year, same age, and same asset size. This design allows for a comparison between the two groups while minimizing the effects of confounding variables. Additionally, by matching a distressed firm with a financially non-distressed firm, the variability in the outcomes is reduced and the precision of the model increased (Ragab & Saleh, 2021).

3.3 Target Population

This study only considered Anglophone countries with emerging capital markets that have been operational since 2016. This was to enable better collection of data from audited annual reports since the researcher is from an Anglophone country. The focus on Anglophone countries was further informed by the need to ensure sample homogeneity, grounded on commonality in legal systems, language, financial reporting frameworks, and CG structures. Moreover, Anglophone countries have the largest and most active security exchanges that account for over 80 per cent of SSA gross domestic product and stock market capitalization (Waweru, 2020). Distinctively, the CG standards and business practices in anglophone countries are largely influenced by Anglo-Saxon models enhancing comparability (Ntim & Soobaroyen, 2013). Additionally, the study focused on non-financial institutions owing to the high financial regulations and strict CG provisions of financial institutions. This study equally excluded South Africa, Nigeria, and Zimbabwe since South Africa and Nigeria have progressed CG structures. Zimbabwe was excluded owing to the hyperinflation observed in the country during the study period. Thus, the study targeted 146 non-financial firms listed in selected Sub-Sahara Africa

Security Exchanges that met the selection criteria. A list of the selected firms is presented in Appendix V. The study utilized a census of the aforementioned target population.

3.4 Data Collection Instruments

This research utilized secondary data covering five years from 2017 to 2021. The collection of data was done using the data collection sheet in Appendix III. The data are publicly available from the annual reports published by the listed non-financial firms.

3.5 Data Collection Procedure

Secondary data for the period 2017 to 2021 utilized in the study were obtained from companies' annual financial reports published on the targeted companies' respective websites.

3.6 Data Processing and Analysis

Panel logistic models were employed to explore the influence of board characteristics, ownership structure and intellectual capital on financial distress with control variables (see the conceptual framework in 2.4) controlling for firm and country effects. The logistic regression is the most suitable model to maintain the paired traits of the samples with a binary response variable. The model is used following Gerged et al. (2022) observation that logistic regressions are suitable for studies using longitudinal panel data.

To test the first hypothesis, the study adopted the following panel logistic regression model presented in equation 3.1

$$FD_{ijt} = \beta_0 + BSZE_{ijt} + DR_{ijt} + BM_{ijt} + BDG_{ijt} + FSZE_{ijt} + LEV_{ijt} + LIQ_{ijt} + ROE_{ijt} + ECG_{ijt} + PS_{ijt} + \varepsilon_{ijt} + \mu_{ijt} \quad (3.1)$$

Where:

Where FD denotes financial distress; BSZE is board size; DR is director remuneration; BM represents the number of meetings the board held in a fiscal year; BDG symbolizes board gender diversity; FSZE denotes the firm's size; LEV denotes leverage; LIQ signifies liquidity; ROE is the return on equity; ECG is economic growth, and PS is political stability. The subscripts *i*, *t* and *j* represent the cross-

sectional units, time-period and country respectively, while ε is an unobserved error within entities and μ is disturbance term between entities.

To test the second hypothesis, the research employed a conditional logistic regression model (clogit). The model relies on a conditional likelihood function to fit the regression equation with a conditional mean bounded between zero and one, overcoming linear regression constraints in estimating parameters with binary dependent variables (FDA=1/0) (Hosmer *et al.*, 2000). The conditional likelihood function preserves the sample's paired character in estimating the model parameters. Thus, the estimation of the model's parameters, β_i , is conditional on the number of cases (distressed) and controls (non-distressed) in cluster *k* for *k*= 1, 2…*n* matched by a vector of *X* variables. Correspondingly, the econometric model is specified in Eq. 3.2.

$$FDA_{it} = \beta_0 + \beta_i\, OWNSHIP_{it} + \sum Control\ variables_{it} + n_t + d_i + \varepsilon_{it} \quad (3.2)$$

Where: FDA is a binary variable (coded 0 for non-distressed and 1 for distressed firms proxying financial distress; OWNERSHIP is a block representation of the five types of ownership structure; managerial ownership (MANOWN), institutional ownership (INSOWN), foreign ownership (FOROWN), local ownership (LOCALOWN) and state ownership (STATEOWN). Control variables include board gender diversity, board size, firm age, liquidity, firm size, economic growth, and regulator quality. The subscripts *t* and *i* represent the time-period and cross-sectional units, respectively; n_t denotes the time effect, $d_i$is individual effect, while ε denotes the disturbance term.

Lastly, drawing on Shahwan (2015) and Shahwan & Habib (2020), the study assuming the CRS-DEA model yielded technical efficiency scores employed a logistic regression model to test the third hypothesis, H_{03}: Intellectual capital has no effect on financial distress of listed firms in Sub-Saharan Africa. The model is described below in equation 3.3:

$$Z_{xty} = \beta_0 + \beta_1(ICE_{tf})_{xty} + \beta_2(Fsz)_{xty} + \beta_3(roe)_{xty} + \beta_4(lev)_{xty} + \beta_5(liq)_{xty} + \beta_6(In_1)_{xty} + \beta_7(In_2)_{xty} + \beta_8(In_3)_{xty} + \beta_9(In_4)_{xty} + \beta_{10}(In_5)_{xty} + \beta_{11}(In_6)_{xty} + \beta_{12}(In_7)_{xty} + \beta_{13}(In_8)_{xty} + \beta_{14}(In_9)_{xty} + \beta_{15}(ecg)_{xty} + \beta_{16}(ps)_{xty} + \mu_{xty} \quad \text{.....(3.3)}$$

Where Z_{xty} is financial distress denoted by dummy variable 1 if firm *x* is financially distressed at a particular time *t* in country *y* and 0 otherwise. $ICE_{tf\ xty}$ denotes the intellectual capital efficiency obtained from technical efficiency scores from a constant return to scale (CRS) assumption of the bootstrapped DEA model for company *x* at time *t* in country *y*. *Fsz* is firm size, *roe* is return on equity, *lev* is leverage and *liq* is the liquidity of a firm. In_1 to In_9 refers to the industrial sectors of the sample firms. See Appendix VI for the composition of the industries. $(ecg)_{xty}$ and $\beta_{14}(ps)_{xty}$ denotes economic growth and political stability of a country *y*. Whereas β_0 is the slope, $\beta_i - \beta_{16}$ are the explanatory variables coefficients. Lastly, μ_{xty} depicts the disturbance term.

Similarly, the study substituted the bootstrapped IC efficiency scores with bootstrapped pure technical efficiency scores to retest the influence of ICE on financial distress generated under the assumption of variable return to scale (VRS). The model is thus, re-written in equation 3.4 as follows;

$$Z_{xty} = \beta_0 + \beta_1(ICE_{ptf})_{xty} + \beta_2(Fsz)_{xty} + \beta_3(roe)_{xty} + \beta_4(lev)_{xty} + \beta_5(liq)_{xty} + \beta_6(In_1)_{xty} + \beta_7(In_2)_{xty} + \beta_8(In_3)_{xty} + \beta_9(In_4)_{xty} + \beta_{10}(In_5)_{xty} + \beta_{11}(In_6)_{xty} + \beta_{12}(In_7)_{xty} + \beta_{13}(In_8)_{xty} + \beta_{14}(In_9)_{xty} + \beta_{15}(ecg)_{xty} + \beta_{16}(ps)_{xty} + \mu_{xty} \quad \text{..... (1.4)}$$

Where $(ICE_{ptf})_{xty}$ denotes the intellectual capital efficiency obtained from pure technical efficiency scores assuming a variable return to scale (VRS) of the bootstrapped DEA model for company *x* at time *t* in country *y*.

3.7 Measurement of Variables

To measure the response variable, the study employed two measures for assessing financial distress: Altman (2005) Emerging Market Model and Zmijewski (1984) model. Drawing on Shahwan and Habib (2020), a dummy variable of zero for non-distressed firms and one for financially distressed firms was used to proxy distress.

Following prior studies (Jacoby et al., 2019; Khurshid & Sabir, 2019), a firm having a Z score of more than 4.15 from the calculated Altman (2005) model was assigned zero and else was assigned one. This score was calculated as presented below:

$$Z = 3.25 + 6.56d_1 + 3.26d_2 + 6.72d_3 + 1.05d_4 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.5)$$

Where: d_1 = working capital / to total assets, d_2 = retained earnings / total assets, d_3 = earnings before interest and tax / total assets, and d_4 = the book value of equity to total liabilities ratio.

Secondly, the study utilized another ex-ante business failure approach, the (Zmijewski, 1984) model, as the other response variable. The model has recently been used in studies on financial distress (Bravo-Urquiza & Moreno-Ureba, 2021; Coleman & Wu, 2020). Below is the score:

$$\mathrm{X} = -4.5a_1 + 5.7a_2 + 0.004a_3 - 4.3 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.6)$$

Where: α_1 is the net income / total assets, α_2 is the ratio of total debt / total assets, and α_3 is current assets / current liabilities. Firms scoring more than 0.5 are classified as financially distressed, assigned one, and zeroed otherwise.

Board characteristics were operationalized by board size, directors' remuneration, board meetings, and board gender diversity. Board size was measured by the number of directors serving on the board (Guizani & Abdalkrim, 2022; Hazami-Ammar & Gafsi, 2021;Tawfik et al., 2022; Younas et al., 2021). Director remuneration was measured by the total directors' remuneration to total revenue. Board activity was proxied by the number of annual board meetings (Al-Absy., 2020) while the proportion of female directors to total directors informed the gender diversity (Guizani & Abdalkrim., 2022).

Regarding ownership structure, managerial ownership (MANOWN) was measured by the proportion of equity shares held by top managers to Total shares. The ratio of equity shares owned by institutional shareholders to firm total shares represented the institutional ownership (INSOWN). Foreign ownership (FOROWN) was determined by the ratio of equity shares held by total foreigners, both individual and institutional while the proportion of shares held by local institutions and individuals to total shares represented the local ownership (LOCALOWN). State ownership (STATEOWN) was measured by the proportion of equity held by state shareholders to total firms' equity shares.

To measure intellectual capital, the study employed the original VAIC methodology proposed by Pulic (2000). The model is among the most extensively accepted valuation methods used in assessing intellectual capital performance. Many researchers including Alhassan & Asare, 2016; Shahwan & Habib, 2020; Tiwari & Vidyarthi, 2018; Vishnu & Kumar Gupta, 2014; Xu et al., 2022; Xu & Zhang, 2021 among others) have considered the VAIC as a reliable model to assess the value of intellectual capital. The intellectual capital of the sampled firms can be mathematically expressed as:

$$\mathrm{VAIC} = \mathrm{HCE} + \mathrm{SCE} + \mathrm{CEE} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(3.7)$$

Where human capital efficiency is represented by HCE. SCE denotes structural capital efficiency while CEE refers to capital employed efficiency.

HCE can be quantitatively expressed as the value-added divided by the firm's total salaries and wages (human cost). The value added (VA) for a firm can be obtained as the summation of depreciation, amortization, total employee costs, and operating profits. SCE can be generated by diving the firm's structural capital to the firm's value added. Mathematically, SC can be expressed as the difference between the value-added and human cost (VA-HC). Lastly, to measure the capital employed efficiency, the value added of a firm is divided by the capital employed (VA/CE). The CE is measured by the book value of the firm's net assets. To assess the intellectual capital efficiency of firms, the study utilized data envelopment analysis (DEA). According to Olohunlana et al. (2022), DEA is an appropriate tool for assessing the efficiency of the interaction of several indicators such as the IC components. DEA as a deterministic model demands utilizing particular inputs for a desired output. Accordingly, to assess the intellectual capital efficiency score, three inputs namely; HCE, SCE and CCE were used while output variables consisted of VAIC, roe and Tobin's Q.

Specifically, DEA models have different orientations. As such, an input-oriented or output-oriented approach can be opted. Input-oriented minimizes the inputs while the outputs are maintained at the prevailing level whereas the output-oriented approach maximizes outputs while a constant level of input amounts are maintained. The study adopted the input-oriented DEA approach since the discretion to determine the inputs

level (human capital, physical capital) by managers of listed non-financial firms (DMUs) is higher than the output (return on asset and Tobin Q).

The conventional statistical properties of the DEA in generating biased efficiency scores underpins the violation of basic assumptions of regression analysis. To fix measurement errors and correct the biased efficiency scores, Simar and Wilson (2007) proposed the use of a bootstrapped truncated DEA approach. The study in line with prior works of Li, 2020; Kariuki, 2023; Zervopoulos et al., 2019, adopted the two-stage bias-corrected DEA to obtain bias-corrected efficiency scores.

Concerning the control variables, firm size (FSZE) is measured by the log of total assets (log TA) (Dalwai & Salehi, 2021). Leverage (LEV) is expressed as total debt to total assets (Coleman & Wu, 2020). Profitability (ROE) is measured as a ratio of net income to total equity. Liquidity (LIQ), on the other hand, is measured as a proportion of current assets to current liabilities (Guizani & Abdalkrim, 2022). The study further controls for years and sectors by including year-dummy variables and sector-dummy variables. Lastly, two country-specific variables were used in the study. The study considered listed non-financial firms in selected countries in the SSA, and as such, country-specific variables could influence the distress levels of firms in the different countries. The GDP annual growth rate measures economic growth (ECG), while the probability of political stability indicated by the World Governance Index measures political stability (PS).

3.8 Diagnostic Tests

To ensure the correct model's specification and the reliability of results, a series of statistical tests were conducted.

3.8.1 Multicollinearity Test

The variance inflation factor (VIF) was used to test and detect any correlation between independent variables in the model. A VIF of more than 10 implies the presence of multicollinearity. When multicollinearity exists, the correlation between the independent variables is strong and can lead to biased results.

3.8.2 Goodness of Fit

To test the goodness of fit of the employed logistics regression models, McFadden R squared was used. The R squared indicates the explanatory power of a model with a value of 0.2 – 0.4 indicating an excellent model fit.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the relationship between board characteristics, ownership structure, intellectual capital and financial distress of non-financial companies listed across SSA. The study logically organizes the research findings and discussion on the study hypothesis per study objective.

4.2 Descriptives Statistics

This section presents an extensive discussion of the study's dependent, independent and control variables.

4.2.1 Descriptives Statistics on Board Characteristics and Financial Distress

The descriptive statistics of the study variables are conveyed in Table 4.1 below.

Table 4.1: Descriptive Statistics on Board Characteristics and Financial Distress

Variable	Mean	Std. Dev.	Min	Max
FDA	.255	.436	0	1
FDX	.209	.407	0	1
BSZ	9.114	2.787	3	16
DR	.141	.862	0	17.735
BM	5.657	2.58	1	23
BDG	.194	.161	0	2
FSZE	6.773	1.243	3.033	9.426
LEV	.603	.777	-.13	14.187
LIQ	2.643	11.835	-37.515	197.984
ROE	.099	1.351	-15.948	20.715
ECG	3.934	3.364	-8.726	11.37
PS	-.39	.714	-1.355	1.111

Note: S. Dev denotes the standard deviations, FDA and FDX are financial distress as measured by Altman (2005) and Zmijewski (1984) models respectively. BSZ is board size, DR is director remuneration, BM is board meetings, FSZE is firm size, and LEV is leverage while LIQ, ROE, ECG and PS are liquidity, return on equity, economic growth and political stability respectively.

The response variable, FD, measured by the Altman (2005) EM score has an average value of 0.255. This implies that 25.5 per cent of the sample firms experienced financial distress. This low value can be anticipated, as this metric is an ex-ante

financial distress approach solely considering bankruptcy. Additionally, the mean distress, as presented by the Zmijewski (1984) score (FDX), is 0.209, indicating that 20.9% of the firms in the sample were exposed to financial difficulties. This aligns with previous studies (Bravo-Urquiza & Moreno-Ureba, 2021) that present a low possibility of FD. Similarly in their study in Kenya, Geoffrey et al. (2020) found the average distress level to be at 23.98% of their sample.

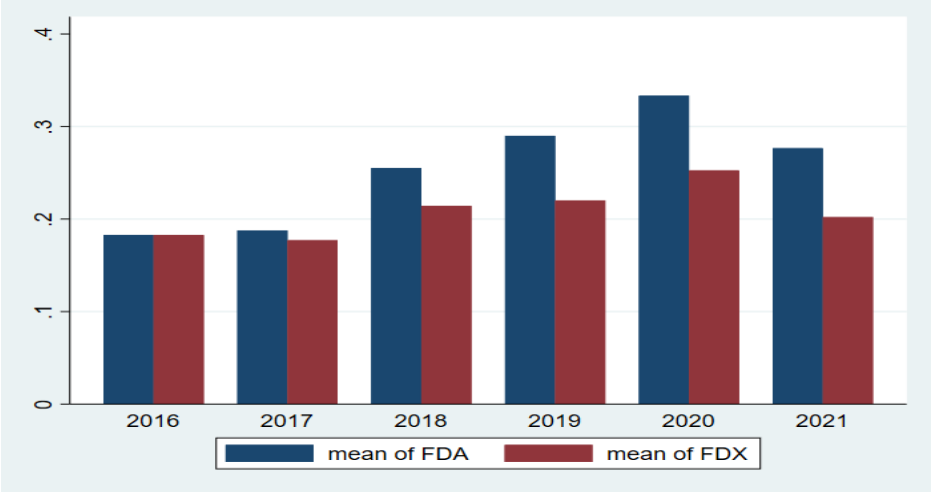

Figure 4.1: Sampled Financial Distress Mean Distribution Over Years

The year 2020 had most firms going into financial distress, as depicted in Figure 4.1 with FD levels steadily rising from 2018, with a peak observed in 2020, followed by a drop in the subsequent year.

Similarly, Table 4.1 exhibits the mean size (BSZE) of the sampled boards from 2016 to 2021 as 9 directors, with the least size of 3 and a maximum of 16 directors. Most countries have their BSZE averaging around nine members. Equally, the average DR is 14.1% of total revenue, with a mean value of 0% for those firms that did not make any revenue. Additionally, the mean number of BM is 6, with 1 being the least and a maximum of 23 meetings. This implies that the selected firms held six board meetings on average, while the average percentage of female directors is approximately 19.4% of the board members. The call for BDG is yet to be fully embraced, with minimum gender diversity standing at zero, indicating that some SSA corporate boards have no female directors.

Regarding firm-specific controls, the average firm size is 6.773, extending from 3.033 to 9.426. In the sample, firms' leverage is 0.603 on average, ranging between -0.13

and 14.187. As measured by the current ratio, the LIQ level ranges from -35.515 to 197.984, with an average of 2.643. The mean return on equity (ROE) of our sampled firms is 0.099, with the minimum being -15.948 and the most being 20.715. With a standard deviation of 1.351, the huge dispersion indicates that equity holders earn relatively lower returns. The country-specific variables indicate that firms operate under an average ECG of 3.934 and a PS environment of -0.39. As measured by the GDP per capita index, economic growth ranges from -8.726 to 11.37, with political stability between -1.355 and 1.111.

Further, Table 4.2 displays the difference in means of the variables between the distressed and non-financially distressed groups. Generally, significant differences are observed between non-distressed and distressed groups, except for three variables. Significantly, there is a difference in the board size in that distressed firms have a lower BSZE than their non-distressed peers. Beyond expectation, distressed firms remunerate their directors significantly higher than non-distressed firms. As for the board meetings, t-test results reveal that significantly, distressed firms are inclined towards holding more meetings than their non-distressed peers. The t-test, inconsistent with expectations, presents board-gender diversity (BDG) as having a significant difference with a higher mean reported in distressed firms

Table 4.2: Mean Difference Test

Variables	**Distressed firms**		**Non-distressed firms**			
	Mean	**S. D**	**Mean**	**S. D**	**t-value**	***P-value***
BSZ	8.486	2.484	9.329	2.854	3.2	0.002
DR	0.414	1.627	0.047	0.247	-4.55	0.000
BM	6.014	2.713	5.535	2.524	-1.95	0.051
BDG	0.224	0.138	0.184	0.168	-2.6	0.009
FSZE	6.485	1.438	6.872	1.154	3.3	0.001
LEV	1.041	1.236	0.453	0.448	-8.4	0.000
LIQ	3.659	23.031	2.295	2.603	-1.2	0.227
ROE	-0.063	2.602	0.154	0.363	1.7	0.092
ECG	3.736	3.512	4.002	3.314	0.85	0.406
PS	-0.438	0.7	-0.373	0.719	0.95	0.342
%	25.52%		74.48%			

Note: S. Dev denotes the standard deviations, FDA and FDX are financial distress as measured by Altman (2005) and Zmijewski (1984) models respectively. BSZ is board size, DR is director remuneration, BM is board meetings, FSZE is firm size, and LEV is leverage

while LIQ, ROE, ECG and PS are liquidity, return on equity, economic growth and political stability respectively.

Moreover, two out of the six control variables report differences, as indicated by the t-tests. Non-distressed firms have a larger FSZE than financially distressed firms. Distressed firms have a relatively higher FSZE dispersion than non-distressed firms. Additionally, the t-test further indicates that LEV is significantly higher in distressed samples. This indicates that financially distressed firms are more financially constrained due to higher gearing than non-distressed firms. Finally, the study observes that distressed firms have a lower ROE as compared to non-distressed firms.

4.2.2 Descriptive Statistics on Ownership Structure and Financial Distress

As for the second objective, the variable summary statistics for the entire sample are reported in Table 4.3 below. Managerial ownership averages 9.8% of the shares, which signifies a low control power by the directors. Institutional investors with a mean of 63.6% have higher ownership compared to the rest of the ownership classes. Institutional ownership is higher in SSA than in Spanish-listed companies and Pakistani-listed firms. For instance, Manzaneque, Priego, et al., (2016) reported 20.7% for Spanish-listed firms, while in the case of Pakistani-listed firms, 12.8% was reported by Din et al. (2021). Foreign investors have lower mean participation in shareholding compared to their local peers (34.3% vis-a-vis 56.1%). On average, state ownership is at 11.4%, with a standard deviation of 19.88%, signifying a high variation in the data of state equity ownership.

Table 4.3: Descriptive Statistics on Ownership Structure and Financial Distress

Variable	Mean value	S. Deviation	Minimum	Maximum
MANOWN	9.809	18.163	0	70.573
INSOWN	63.579	26.501	0	99.72
FOROWN	34.325	30.703	0	96.361
LOCALOWN	56.073	34.169	0	100
STATEOWN	11.356	19.88	0	73.919
BSZ	7.997	3.031	0	16
BDG	.191	.134	0	.667
FSZE	6.432	1.326	3.033	9.426
LIQ	3.544	15.989	-37.515	197.984
FAGE	46.686	26.193	0	119
ECG	3.431	3.976	-8.726	11.37
RQ	-.237	.374	-.786	.736

Note. This table presents the summary statistics of the various study variables. MAONOWN, INSOWN, FOROWN, LOCALOWN and STATEOWN represent managerial, institutional, foreign, local and state ownership respectively. BSZ is board size, BDG is board gender diversity, FSZE is firm size, LIQ is liquidity and FAGE is firm age. ECG represents economic growth while RQ is regulatory quality.

In addition, Table 4.4 provides the key descriptives for the categorical groups (non-distressed and distressed) and the significance test in differences of mean. The results from the mean comparison tests in Table 4.4 report no significant systematic difference in the level of managerial ownership between non-distressed and distressed groups. However, it is witnessed that firms under the distressed category tend to have low institutional ownership – a mean (median) of 55.897% (59.986%) compared to a mean of 71.235% (median of 73%) of non-distressed firms. Additionally, per expectations, foreign ownership is higher in the non-distressed group than in the distressed category. On average, from the analysed sample, the non-distressed group has 40.903% of their shares held by foreign individuals and institutions. In comparison, foreigners' equity ownership of distressed firms stands at 27.748% at the average level. Table 4.4 further reveals that for non-distressed companies, the proportion of local shareholding is lower, with an average value (median) of 42.908% (34.729%) compared to 69.239% (88.087%) for distressed companies. No significant difference is observed between non-distressed and distressed firms regarding state ownership.

Table 4.4: Distressed and non-distressed mean comparison tests

Variables	**Distressed firms**		**Non-distressed firms**		**T-Tests**
	Mean	S. Dev	Mean	S. Dev	
MANOWN	9.268	18.229	10.351	18.133	0.55
INSOWN	55.897	30.167	71.235	19.456	5.65*
FOROWN	27.748	30.756	40.903	29.289	4.1*
LOCALOWN	69.239	32.938	42.908	30.137	-7.8*
STATEOWN	11.528	19.351	11.183	20.449	-0.15
BSZ	8.517	2.613	7.477	3.324	-3.25***
BDG	0.198	0.133	0.183	0.134	-1
FSZE	6.36	1.465	6.504	1.17	1
LIQ	3.196	21.26	3.893	7.783	0.4
FAGE	46.77	30.89	46.601	20.502	-0.05

****,** ,* denote significance at p< 0.01, p< 0.05, and p<0.1 respectively*

Concerning the board structure-related control variables, the distressed firms are inclined to have a slightly larger board size (around 9 members) and where are more likely to have a higher board diversification in terms of gender (19.8%), than distressed companies (an average of 7 board members and 18.3% gender diversified).

T-test results, however, indicate a significant difference exists in the board size only between the non-distressed and distressed categories. Concerning the rest of the controls, no systematic difference between the two groups is noted in firm size, liquidity, and firm age.

4.2.3 Descriptive Summary of Intellectual Capital and Financial Distress

Table 4.5 reports the descriptive summary of the variables. The mean HCE was at 4.258 with a dispersion of about 6.576 while SCE was at 2.498 on average with a deviation of 2.498 and a maximum - minimum of 36.673 and 0.014 respectively. The CCE has a value of 49.008 at most and 0.01 at the least with a mean of 3.271 and a deviation of 8.338 signifying a higher variation in the data.

Table 4.5: Descriptive Statistics on Intellectual Capital and Financial Distress

Variables	Mean	Std. Deviation	Minimum	Maximum
HCE	4.258	6.576	0.014	143.187
SCE	2.041	2.498	0.014	36.673
CCE	3.271	8.338	0.01	49.008
VAIC	9.557	10.988	0.101	144.458
ROA	0.081	0.086	0.00	0.555
TQ	1.677	2.752	0.00	22.855
LEV	0.56	0.53	0.001	4.588
ROE	0.087	0.065	0.00	0.427

The study further observed that HCE (human capital) displays a greater influence in creating values for the sampled firms within the study period followed by the capital employed and structural capital. As for VAIC, an average value of 9.557 with a range of 0.10-144.458 is observed. The mean ROA and TQ were at an average of 0.081 and 1.677 with a range of 0.00-0.555 and 0.00-22.855 respectively. Leverage (LEV) was at a mean of 0.56 with a minimum value of 0.001 and 4.588 at maximum suggesting heavy reliance on debt capital by firms in SSA. With ROE, a mean value of 0.087 with a range of 0.00-0.427 was observed.

4.3 Correlational analysis

This section presents the correlational analysis of the variables under the study.

4.3.1 Correlation analysis of board characteristics and financial distress

Panel 1 of Table 4.6 summarizes the correlation of the variables. A pairwise correlation was used to assess the underlying strength among our dependent and independent variables. The two measures of financial distress (FDA and FDX) show

a significant correlation of 0.614 at 10%. Regarding the BC, the board size (BSZE) displays a significant negative correlation of -0.132* and 0.099* with financial distress (FDA and FDX, respectively). Additionally, a positive correlation of 0.186* and 0.107* is observed between DR and BDG with FDA, respectively, both significant at $p<0.1$. The firm size (FSZE) presents a negative correlation of 0.136, which is significant at 10%. Leverage (LEV), at the 10% significance level, depicts a correlation of 0.330. Profitability measure ROE depicts a negative correlation with both distress measures; however, this correlation is only significant with FDX. Additionally, a VIF of greater than five was not observed, indicating the absence of multicollinearity, as exhibited in Panel 2 of Table 4.6.

Table 4.6: Correlation Analysis of Board Characteristics and Financial Distress

Panel 1: Correlation matrix												
Variables	FDA	FDX	BSZ	DR	BM	BDG	FSZE	LEV	LIQ	ROE	ECG	PS
FDA	1											
FDX	0.614*	1										
BSZ	-0.132*	-0.099*	1									
DR	0.186*	0.205*	-0.064	1								
BM	0.081	0.126*	0.371*	0.103*	1							
BDG	0.107*	0.096*	0.131*	-0.07	0.124*	1						
FSZE	-0.136*	-0.06	0.320*	-0.092*	0.092*	0.101*	1					
LEV	0.330*	0.491*	-0.049	0.086*	-0.022	0.102*	-0.037	1				
LIQ	0.05	0.098*	-0.093*	0.211*	0.139*	-0.109*	-0.116*	0.004	1			
ROE	-0.07	-0.083*	0.039	0.011	0.056	-0.034	0.101*	0.003	-0.005	1		
ECG	-0.035	-0.025	-0.021	-0.079	0.009	0.01	0.103*	-0.025	-0.088*	0.035	1	
PS	-0.04	-0.029	0.064	0.064	-0.014	-0.092*	-0.269*	-0.087*	0.064	-0.01	-0.180*	1
Panel 2: Multicollinearity												
Vector inflation factor			1.36	1.08	1.24	1.07	1.26	1.03	1.11	1.02	1.05	1.16
TOF			0.7353	0.925	0.807	0.938	0.7941	0.9668	0.9033	0.9836	0.9523	0.8633

*, **, *** denote significance at 10%, 5%, and 1% significance levels, respectively

4.3.2 Correlation analysis of ownership structure and financial distress

Table 4.7 displays correlation analysis results between our independent variables, controls, and financial distress. The study observes the correlation coefficients between all our explanatory variables are lower, except between FOROWN and LOCALOWN with a coefficient of -0.855*. This is, however, expected since a firm whose equity is mainly held by foreign institutions and individuals has relatively low local ownership of its shares. Significantly, the study observed negative weak correlations of -0.290*, and -0.215* between INSOWN and FOROWN, respectively, with the FDA. Further, a positive correlation between LOCALOWN and FDA is observed. The highest correlation coefficient (apart from that between foreign and local ownership) is observed between the state ownership (STATEOWN) and firm size (FSZE) ($r= 0.336$, $p < 0.1$). This implies that state-owned enterprises (SOEs) or firms with a majority of their equity stake held by governments have larger pools of resources at their disposal compared to those owned by institutions ($r = -0.140$, $p < 0.1$).

Table 4.7: Correlation Analysis on Ownership Structure and Financial Distress

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) FDA	1.000											
(2) MANOWN	-0.030	1.000										
(3) INSOWN	-0.290*	-0.137*	1.000									
(4) FOROWN	-0.215*	-0.062	0.127*	1.000								
(5) LOCALOWN	0.386*	0.010	-0.124*	-0.855*	1.000							
(6) STATEOWN	0.009	-0.042	-0.301*	-0.353*	0.118*	1.000						
(7) BSZ	0.172*	-0.291*	-0.120*	-0.126*	0.121*	0.298*	1.000					
(8) BDG	0.054	-0.146*	-0.164*	-0.209*	0.154*	0.228*	0.325*	1.000				
(9) FSZE	-0.055	-0.001	-0.140*	-0.053	-0.023	0.336*	0.316*	0.131*	1.000			
(10) LIQ	-0.022	-0.028	-0.017	0.201*	-0.256*	-0.088	-0.087	-0.147*	-0.200*	1.000		
(11) Fage	0.003	-0.214*	0.069	-0.186*	0.238*	-0.021	0.167*	0.175*	0.204*	-0.135*	1.000	
(12) ECG	0.098	0.071	-0.087	-0.110*	0.151*	0.097	-0.048	-0.031	0.144*	-0.154*	0.085	1.000

****,** ,* denote significance at p< 0.01, p< 0.05, and p<0.1 respectively*

4.3.3 Correlation analysis of intellectual capital and financial distress

Table 4.8 presents the correlation matrix of the study variables. Of interest to the current study, negative correlations are observed between financial distress and the two assessed efficiency scores (technical and pure technical efficiency from output-orientation) both significant at $p<0.1$. Similarly, no correlation of more than 0.7 is observed thus the study rules out any possible multicollinearity issues among the variables.

Table 4.8: Correlational Analysis on Intellectual Capital and Financial Distress

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) Z	1.000														
(2) ICE_TF	-0.135*	1.000													
(3) FSZ	-0.140*	0.063	1.000												
(4) LEV	0.447*	-0.037	0.033	1.000											
(5) LIQ	-0.357*	0.125*	-0.128*	-0.325*	1.000										
(6) ROE	-0.174*	-0.019	0.115*	-0.125*	-0.001	1.000									
(7) In1	-0.081*	0.086*	-0.152*	-0.118*	0.312*	-0.115*	1.000								
(8) In2	-0.041	0.008	0.053	0.005	-0.124*	0.056	-0.192*	1.000							
(9) In3	-0.046	-0.044	-0.140*	-0.044	-0.026	0.015	-0.120*	-0.228*	1.000						
(10) In4	0.002	-0.026	0.145*	-0.023	-0.103*	0.050	-0.085*	-0.162*	-0.102*	1.000					
(11) In5	-0.039	-0.184*	0.017	-0.063	-0.074*	0.060	-0.139*	-0.264*	-0.165*	-0.118*	1.000				
(12) In6	0.058	0.049	-0.188*	-0.058	0.124*	-0.044	-0.099*	-0.188*	-0.118*	-0.084*	-0.136*	1.000			
(13) In7	0.028	0.062	0.136*	-0.005	0.008	0.000	-0.110*	-0.209*	-0.131*	-0.093*	-0.151*	-0.108*	1.000		
(14) In8	-0.070	0.117*	-0.021	0.164*	0.105*	0.025	-0.069	-0.131*	-0.082*	-0.058	-0.095*	-0.068	-0.075*	1.000	
(15) In9	0.282*	0.015	0.190*	0.278*	-0.154*	-0.111*	-0.071	-0.135*	-0.085*	-0.060	-0.098*	-0.070	-0.078*	-0.049	1.000

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) Z	1.000														
(2) ICE_PTF	-0.117*	1.000													
(3) FSZ	-0.140*	0.065	1.000												
(4) LEV	0.447*	-0.014	0.033	1.000											
(5) LIQ	-0.357*	0.121*	-0.128*	-0.325*	1.000										
(6) ROE	-0.174*	0.011	0.115*	-0.125*	-0.001	1.000									
(7) In1	-0.081*	0.079*	-0.152*	-0.118*	0.312*	-0.115*	1.000								
(8) In2	-0.041	0.000	0.053	0.005	-0.124*	0.056	-0.192*	1.000							
(9) In3	-0.046	-0.034	-0.140*	-0.044	-0.026	0.015	-0.120*	-0.228*	1.000						
(10) In4	0.002	-0.023	0.145*	-0.023	-0.103*	0.050	-0.085*	-0.162*	-0.102*	1.000					
(11) In5	-0.039	-0.194*	0.017	-0.063	-0.074*	0.060	-0.139*	-0.264*	-0.165*	-0.118*	1.000				
(12) In6	0.058	0.048	-0.188*	-0.058	0.124*	-0.044	-0.099*	-0.188*	-0.118*	-0.084*	-0.136*	1.000			
(13) In7	0.028	0.056	0.136*	-0.005	0.008	0.000	-0.110*	-0.209*	-0.131*	-0.093*	-0.151*	-0.108*	1.000		
(14) In8	-0.070	0.115*	-0.021	0.164*	0.105*	0.025	-0.069	-0.131*	-0.082*	-0.058	-0.095*	-0.068	-0.075*	1.000	
(15) In9	0.282*	0.050	0.190*	0.278*	-0.154*	-0.111*	-0.071	-0.135*	-0.085*	-0.060	-0.098*	-0.070	-0.078*	-0.049	1.000

**** p<0.01, ** p<0.05, * p<0.1*

4.4 Influence of Board Characteristics on Financial Distress

The outcome of performing regression with a binary response variable obtained from the Altman (2005) score and the Zmijewski (1984) score, herein labelled FDA and FDX, respectively, are presented in Table 4.9 below.

Table 4.9: Influence of Board Characteristics on Financial Distress

Variables	Logistic Regression		Two-stage Heckman regression	
	Model 1a	**Model 1b**	**Model 2a**	**Model 2b**
	FDA	**FDX**	**FDA**	**FDX**
Constant	-1.602(-1.73) *	-12.834(-3.67) ***	-7.446(-0.85)	-3.756(-3.20) ***
BSZ	-0.139(-2.74) ***	-0.118(-1.09)	-0.084(-2.86) ***	-0.076(-1.19)
DR	0.481(1.27)	0.003(0.01)	0.351(1.80) *	0.053(0.09)
BM	0.133(2.65) ***	0.291(3.28) ***	0.083(2.97) ***	0.159(2.66) ***
BDG	0.994(1.70) *	0.962(0.49)	0.524(1.28)	0.738(0.79)
FSZE	-0.438(-3.09) ***	-0.467(-1.89) *	-0.208(-3.39) ***	-0.234(-1.60)
LEV	2.448(1.90) *	19.744(4.5) ***	0.929(7.14) ***	9.578(8.23) ***
LIQ	-0.008(-1.01)	0.106(0.86)	-0.004(-0.82)	0.031(0.29)
ROE	-0.081(-0.80)	-0.246(-1.95) *	-0.051(-1.29)	-0.122(-2.06) **
ECG	0.047(0.96)	0.082(0.86)	0.025(0.79)	0.047(0.72)
PS	-0.363(-2.04) **	-0.201(-0.44)	-0.187(-1.69) *	-0.098(-0.40)
Sector dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes
Wald chi2	100.10	85.63	251.64	7437.60
P Value	0.000	0.000	0.0000	0.0000
McFadden R^2	0.299	0.701	-	-
LR statistics	195.093	466.587	-	-

Notes: In parenthesis are the respective t-values.
*, **, *** denotes significance at p<0.1, p<0.05 and p<0.01 respectively.

The results reveal that BSZ with a coefficient of -0.139 negatively influences financial distress as measured by the FDA. An increase in board size raises board members' disciplinary control over the management, thereby preventing detrimental decision-making. This supports the results of Manzaneque et al. (2016) and Younas et al. (2021), who observed that firms directed by larger boards are unlikely to face financial distress.

In addition, these findings support those of Manduku et al. (2020), who established an inverse relationship in the Kenyan context. Correspondingly, Hazami-Ammar and Gafsi (2021) argue that a larger board provides more external linkages, enhancing the acquisition of critical resources and effective execution of members' roles. The

diverse economies of SSA influence the need for diverse skills, and as such, larger boards bring in more knowledge, experience, and expertise, which boost performance and reduce the chances of distress.

Similarly, regarding the connection between director remuneration and financial distress, the study observed that remuneration has no significant influence on financial distress (FDA & FDX). The findings contrast a strip of previous studies (Lakshan & Wijekoon, 2012; Mariano et al., 2021; Schultz et al., 2017). In this setting, Lakshan and Wijekoon (2012) document that better remuneration reduces the odds of going into distress. Aligning with RBV's emphasis on selective resource relevance, director remuneration per se might not be a distinctive strategic resource that guarantees the creation of a competitive edge and reduced distress risks of firms in SSA. Additionally, the region's weak regulatory frameworks and their variability among nations may also impact governance practices related to executive compensation.

The results for board meetings (BM) illustrate that board meetings positively affect firms' FD, as proxied by both the FDA and FDX. The results support the prior work of Khurshid and Sabir (2019). This indicates that firms in the SSA setup tend to increase the frequency of board meetings when stuck in financial distress. These meetings, characterized by dysfunctional board dynamics and inefficient decision-making, further worsen the distress. Moreover, the many board meetings firms hold in times of distress are an additional constraint on firms' operational time and limited resources.

Regarding BDG, the result in Models 1a of Table 4.9 presents a significant positive effect at $p<0.1$. This demonstrates that firms are more prone to facing distress when the level of board gender diversification is raised. This contradicts the prior literature by Guizani and Abdalkrim (2022), who concluded that board gender diversity reduces the likelihood of bankruptcy and FD. Consistent with Manduku et al. (2020) on Kenyan listed firms, we contend that distressed firms in SSA tend to appoint more female directors as a form of image management. However, high political interference in the SSA region, exposes these appointed directors to less power and room for applying different perspectives due to appointment selection bias,

worsening the distress situation. Theoretically, the results refute the endorsement of board gender diversity by agency theory as a method for controlling agency conflicts. Perhaps the role of gender diversity in mitigating FD in SSA could be viewed in terms of active roles that female directors play, such as being a chair of the board or the CEO.

Concerning the control variables, the study observed negative associations between firm size and the distress variables. The negative coefficients of FSZE demonstrate that the eventualities of going into distress diminish with the increasing firm size due to operational efficiency and resource advantage. Additionally, larger firms have easy access to capital, better diversification, and can easily redefine business strategy. This is congruent with previous literature (Gerged et al., 2022; Udin et al., 2017; Younas et al., 2021). LEV is established to have significant positive coefficients with both FDA and FDX, indicating that debt financing alleviates the risk of facing distress (see Models 1a and 1b of Table 4.9). Highly geared firms have increased chances of going into distress. LIQ and ECG are observed to have no significant effect on financial distress while pointing out the significance of profitability in mitigating the risks of distress. At a 10% significant level, the findings ascertain that a 1% increase in ROE reduces distress relatively by 0.246. The results further show that political stability plays a significant role in preventing the financial distress of firms in Sub-Saharan Africa.

4.4.1: Robustness

Taking into account the potential endogeneity concerns, the study further utilized the two-step Heckman (1979) model to test the consistency of the results in a similar manner to Mangena et al. (2020) and Gerged et al. (2022). Models 2(a) and (b) in Table 4.9 show the findings obtained after fitting the model. These results align closely with those presented in Models 1(a) and (b) of Table 4.9 in that the association of the four studied board characteristics and financial distress is heterogenous as our main regression analysis discovered earlier i.e. logistic regression analysis.

4.5 Influence of Ownership Structure on Financial Distress

Table 4.10 reports the results obtained after performing clogit regression. The results from Model 1 of Table 4.10 depict the coefficient of managerial ownership

(MANOWN) to be a positive one nonetheless an insignificant one. This suggests that managerial shareholders have an insignificant effect on corporate distress in SSA. This could be explained by the low magnitude of ownership associated with the directors and top-level managers compared to the other classes of shareholders in the region.

Table 4.10: Influence of Ownership Structure on Financial Distress

Dv: financial distress (FDA)					
Variable	Model 1	Model 2	Model 3	Model 4	Model 5
MANOWN	0.012(0.009)	-	-	-	-
INSOWN	-	-0.02(0.006) ***	-	-	-
FOROWN	-	-	-0.015(0.005) ***	-	-
LOCALOWN	-	-	-	0.032(0.006) ***	-
STATEOWN	-	-	-	-	-0.021(0.009) **
BSZ	0.292(0.061) ***	0.231(0.063) ***	0.222(0.062) ***	0.17(0.067) **	0.351(0.072) ***
BDG	0.535(1.01)	0.061(1.043)	0.318(1.046)	0.205	0.608(1.012)
FSZE	-1.147(0.323) ***	-1.104(0.344) ***	-0.94(0.329) ***	-0.861**(0.364)	-1.162(0.34) ***
LIQ	0.002(0.008)	0(0.008)	0.002(0.008)	0.004(0.009)	0.002(0.008)
FAGE	0(0.006)	-0.001(0.006)	-0.004(0.006)	-0.009(0.007)	0(0.006)
ECG	0.368(0.092) ***	0.255(0.088) ***	0.354(0.096) ***	0.379(0.113) ***	0.395(0.094) ***
RQ	-0.845(0.459) *	-1.319(0.486) ***	-1.453(0.529) ***	-2.049(0.586) ***	-0.379(0.488)
2 log-likelihood	-93.144	-87.179	-89.287	-71.505	-91.275
Model Chi-square	53.54***	65.47***	61.25***	96.82***	57.28***
McFadden's R2	0.223	0.273	0.255	0.404	0.239
Cragg & Uhler's R2	0.355	0.42	0.398	0.571	0.376

Source. Author *** p<0.01, ** p<0.05, * p<0.1

This is congruent with Udin et al.'s (2017) and Ragab and Saleh (2021) findings. Hence, as argued by agency theory protagonists, the results do not confirm the interest alignment argument that directors' shareholding encourages interest alignment between the directors and the shareholders.

Institutional ownership negatively influences financial distress, at a 1% significant level. This implies that shareholding by institutional investors is a powerful corporate government mechanism that reduces financial distress. As presented in Model 2 of Table 4.10, the coefficient of -0.02 infers that a percentage increase in the shareholdings by INSOWN would lower the prospect of bankruptcy by 0.02%. This

is because institutional investors play active control and monitoring roles, putting substantial pressure on the management as they focus on long-term performance. The results confirm the findings of Donker et al. (2009), Gerged et al. (2022), Li et al. (2021), Mariano et al. (2021), Younas et al. (2021) all of whom insisted on the active role of institution ownership in mitigating FD.

The results concerning foreign ownership, as presented in model 3 of Table 4.10, indicate that foreign ownership (FOROWN) negatively influences financial distress at a $p<0.01$. The magnitude of the coefficient suggests that increasing FOROWN by 1% reduces the possibility of distress relatively by 1.5%. Possibly, foreign investors facilitate the transfer of advanced technology and best governance practices, thus reducing agency problems, which may accelerate the performance rate and diminish the risks of FD.

In concurring with Ali et al. (2022) and Udin et al. (2017), the study observes that FOROWN can positively stimulate the firms' performance by motivating the managers through incentives. Additionally, foreign investors have vast expertise and better control and monitoring systems which reduces asymmetry and enhances a firm's financial performance. This low coefficient, however, implies that foreign capital flow is still limited in SSA due to the lack of an enabling environment favourable for investment.

As for LOCALOWN, a significant positive effect at 1% is observed in model 4 of Table 4.10. The study observes that higher ownership of firms by local institutions and individuals increases financial distress. This is because agency problems are prevalent between local investors and the management. Dahlquist and Robertsson (2001) observed that domestic institutional shareholders in developing economies cannot actively monitor the management's actions due to political constraints, lack of adequate regulatory systems, and immature capital markets.

Coinciding with Hu and Zheng (2015), Li et al. (2021), and Wang and Deng (2006) results, the study finds STATEOWN to negatively influence the odds of financial distress of SSA-listed firms. Notably, we observe that at a 5% significance level, state-controlled firms have lower odds of getting into distress as state intervention by

1% SO increase would lower the chances of financial distress by 2.1%. Generally, firms with the state holding large chunks of ownership rarely suffer distress and are often argued to be too-big-to-fail as governments provide plentiful resources to bail them out of hardship. Government subsidies are much higher in politically connected firms, which in turn enhances firm value (Jin et al., 2018).

Concerning the control variables, BSZE positively influences financial distress indicating that a larger board raises the risks associated with going into distress. Regardless of the equity holder, larger boards may experience coordination difficulties (Younas et al., 2021), resulting in a slower decision-making process. Similarly, FSZE is observed to influence firms' distress negatively. This implies that large firms attain higher operational efficiency, thereby positively influencing their performance in the market. However, board gender diversity, liquidity, and firm age are observed to have no significant impact on financial distress. Regarding country controls, ECG is observed to influence financial distress. This positive influence might stem from rising regulatory and compliance costs often accompanying the SSA region's economic growth. As expected, RQ, on the other hand, reduces the chances of distress. Oliveira and Raposo (2020) explain this phenomenon and opine that the market disciplines firms in countries with low adherence to regulations and policies with higher probabilities of distress.

4.5.1 Robustness

The study developed some further analysis to assess the robustness of the results. Literature supports that a firm's profitability is a critical element influencing the distress prospect of firms (Kalbuana et al., 2022; Khurshid & Sabir, 2019). Further, different years present different economic conditions which are likely to influence the possibility of firms going into distress (Freitas Cardoso et al., 2019; Manzaneque et al., 2016). To control that effect, this study deployed year dummies. Similarly, the literature also supports that firms can respond to adverse corporate performance by intensifying board activities (Brenes et al., 2011). Raising board activities boasts the board's effectiveness and capacity to advise, control, and ensure organizational discipline (Eluyela et al., 2018) consequently reducing the probability of distress (Ballester et al., 2020).

Equally, a firm's external auditor is an antecedent of business failure (Al-Bassam et al., 2018). Firms that engage one of the Big 4 audit firms as their external auditor are observed to have better market performance(Al-Janadi et al., 2013). Higher-quality audit firms have greater independence and can effectively limit the opportunistic activities of managers (Khalil & Ozkan, 2016) due to their vast experience, expertise, financial muscle, information, and knowledge (Ntim et al., 2012). Of interest to our study, Meah et al. (2021) and Mensah & Onumah (2023), note that audit quality positively influences firms' performance. The study, therefore, re-estimated the model by additionally including ROE as a profitability measure, frequency of board meetings, and audit quality; a dummy variable 1 if a firm has engaged the audit service of one of the big 4 audit companies or 0 otherwise. The results from the robustness analysis in Table 4.11 correspond to those of the baseline regression in Table 4.10, indicating the consistency and robustness of the results.

Table 4.11: Robustness; Influence of Ownership Structure on Financial Distress

Financial distress (FDA)					
Variable	Model 1	Model 2	Model 3	Model 4	Model 5
MANOWN	0.008(.01)	-	-	-	-
INSOWN	-	-0.02 (0.06) ***	-	-	-
FOROWN	-	-	-0.021(0.006) ***	-	-
LOCALOWN	-	-	-	0.051 (0.09) ***	-
STATEOWN	-	-	-	-	-0.025 (0.01) **
BSZ	0.307(0.07) ***	0.256 (0.74) ***	0.254(0.72) ***	0.27(0.092) ***	0.387 (0.082) ***
BDG	1.639 (1.162)	1.23 (1.208)	1.846 (1.23)	3.133 (1.505) **	2.025 (1.2) *
FSZE	-1.01(0.356) ****	-1.015(0.371) ***	-1.066 (0.364) ***	-1.584 (0.466) ***	-1.054 (0.367) ***
LIQ	0.001 (0.008)	-0.001 (0.08)	0.001 (0.09)	-0.001 (0.011)	0.001 (0.008)
FAGE	0.002 (0.006)	0.001 (0.06)	-0.003 (0.06)	-0.01 (0.008)	0.003 (0.006)
ECG	0.343 (0.096) ***	0.225 (0.09) **	0.366 (1.06) ***	0.483 (0.143) ***	0.373 (0.099) ***
RQ	-0.915 (0.489) *	-1.357(0.514) ***	-1.936 (0.625) ***	-3.591 (0.874) ***	-0.437 (0.513)
ROE	0.003 (0.089)	-0.004 (0.094)	0.031 (0.101)	0.167 (0.13)	0.038 (0.087)
BM	-0.101 (0.05) **	-0.114 (0.054) **	-0.145 (0.055) ***	-0.276 (0.081) ***	-0.109 (0.051) **
Audit Quality	-0.388 (0.383)	-0.268 (0.389)	0.373 (0.474)	1.55 (0.589) ***	-0.458 (0.384)
Year Dummy	Yes	Yes	Yes	Yes	Yes
2 log-likelihood	-89.389	-83.287	-83.667	-58.99	-86.333
Model Chi-square	54.12***	66.32***	65.56***	114.912***	60.23***
McFadden's R2	0.232	0.285	0.282	0.347	0.259
Cragg & Uhler's R2	0.367	0.435	0.431	0.661	0.402

Source. Authors. ***, **, * denotes significance at p<0.01, p<0.05, and p<0.1 respectively

4.6 Influence of Intellectual Capital Efficiency on Financial Distress

Logistic regression analysis was employed to investigate the influence of intellectual capital efficiency on the financial distress of firms. The analysis utilized a set of fourteen control variables in determining the aforementioned influence. The logistic analysis results reported in Table 4.12 show the existence of a significant association between intellectual capital efficiency and the firms' financial distress (β=-1.47, t=2.19).

Table 4.12: Influence of Intellectual Capital on financial distress

	Bootstrapped Tech eff-DEA input-oriented model				**Bootstrapped Pure Tech eff-DEA input-oriented model**			
IV	**Coef.**	**St.Err.**	**t-value**	**p-value**	**Coef.**	**St.Err.**	**t-value**	**p-value**
ICE	-1.487	0.68	-2.19	0.029**	-1.38	0.696	-1.98	0.047**
FSZ	-0.762	0.117	-6.51	0.000***	-0.765	0.117	-6.53	0.000***
LIQ	-1.241	0.289	-4.3	0.000***	-1.244	0.293	-4.25	0.000***
LEV	3.709	1.543	2.4	0.016**	3.701	1.549	2.39	0.017**
ROE	-2.49	1.967	-1.27	0.205	-2.365	1.964	-1.2	0.229
In1	-1.668	0.621	-2.69	0.007***	-1.697	0.617	-2.75	0.006***
In2	-2.272	0.451	-5.04	0.000***	-2.291	0.449	-5.1	0.000***
In3	-2.237	0.562	-3.98	0.000***	-2.237	0.554	-4.04	0.000***
In4	-1.861	0.512	-3.63	0.000***	-1.865	0.514	-3.63	0.000***
In5	-2.282	0.503	-4.53	0.000***	-2.3	0.503	-4.57	0.000***
In6	0.019	0.645	0.03	0.977	-0.001	0.642	0	0.999
In7	-1.231	0.489	-2.52	0.012**	-1.262	0.488	-2.59	0.01**
In8	-11.613	6.401	-1.81	0.07*	-11.63	6.433	-1.81	0.071*
ECG	-0.058	0.035	-1.65	0.098*	-0.058	0.035	-1.67	0.094
PS	-0.423	0.22	-1.92	0.054*	-0.423	0.219	-1.93	0.054
Constant	6.496	1.401	4.64	0.000***	6.467	1.452	4.45	0.000***
N	703				703			
Pseudo r-squared	0.479			0.000	0.478			0.000
Chi-square	139.657			0.000	138.135			0.000

**** p<0.01, ** p<0.05, * p<0.1*

The results provided in Table 4.12 are consistent with those reported by Shahwan and Habib (2020) in the Egyptian context. Similarly, Nadeem et al. (2016), established that IC efficiency is a useful predictor of the financial health of firms. Furthermore, Cenciarelli et al. (2018) documented that by positively influencing the firms' long-term stability, IC reduces their distress prospects.

Regarding the set of controls, 12 of the 14 variables were observed to be significant at a 0.1 significance level or less. Firm size (FSZ) and liquidity (LIQ) negatively influence the financial distress of firms. In congruence with Shahwan and Habib (2020), the study observed that larger firms have reduced chances of falling into distress. Higher liquidity, in a similar vein, helps firms meet their current obligations thus reducing their likelihood of going into distress (Guizani & Abdalkrim, 2022). On the other hand, the results on leverage (LEV) indicate that firms are more likely to face distress with increasing leverage. This positive relation is consistent with prior works of Guizani and Abdalkrim (2022); Luqman et al. (2018); Shahwan and Habib (2020) and Xu et al. (2022). All the industry sectors except for industry sector In6 (Mining and Quarrying) have negative influences on the distress prospects. As for In6, no significant effect is observed. Lastly, a negative association between the economic growth (ECG) of a country and a firm's probability of distress is established. Similar results were reported by Dalwai and Salehi (2021). Regarding political stability, the results in Table 4.12 point out that, at a significance level of 0.1 lower financial distress prospects can be achieved by firms if the political atmosphere is stable.

4.7 Hypothesis Testing

The study sought to test three hypotheses as presented by the results' summary statistics in Table 4.13 (a), (b) and (c). The Wald chi-square statistics used to test hypothesis one is presented in Table 4.13 (a) while Tables 4.13 (b) and (c) present the chi-square statistics for testing hypotheses two and three.

Table 4.13: Hypothesis Testing

(a) Hypothesis one					**Chi Square**
H_{01}: Board characteristics have no effect on financial distress of listed firms in Sub-Saharan Africa.					100.10 (0.000)
(b) Hypothesis two	**MAN**	**INS**	**FOR**	**LOC**	**STATE**
H_{02}: Ownership structure has no effect on financial distress of listed firms in Sub-Saharan Africa	53.54 (0.000)	65.47 (0.000)	61.25 (0.000)	96.82 (0.000)	57.28 (0.000)
(c) Hypothesis three					**Chi Square**
H_{03}: Intellectual capital has no effect on financial distress of listed firms in Sub-Saharan Africa.					139.657 (0.000)

From Table 4.13(a), a Wald chi square of 100.10 significant at P <0.05 is observed thus the null hypothesis, H_{01}: Board characteristics has no effect on financial distress of listed firms in Sub-Saharan Africa was rejected. The study results indicated that board characteristics had an impact on financial distress of listed firms in Sub-Saharan Africa. As for the second hypothesis, the chi square statistics presented in Table 4.13 (b) for the five types of ownership structures employed in the study are statistically significant at 5% indicating that H_{02} was rejected. This indicates that ownership structure had an effect on financial distress of listed firms in Sub-Saharan Africa. Lastly, a significant chi square is observed in Table 4.13 (c) indicating that the null hypothesis was rejected. The study thus draws the conclusion intellectual capital had an effect on financial distress of listed firms in Sub-Saharan Africa.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The chapter provides a summary of the findings, conclusion and their implications. Similarly, the chapter presents recommendations and suggests directions for further studies.

5.2 Summary of the study findings

Generally, the study's objective was to investigate the effect of corporate governance and intellectual capital on the financial distress of firms listed across Sub-Saharan Africa. Specifically, the research aimed to investigate the effect of board characteristics, ownership structure and intellectual capital on financial distress of listed firms across selected sub-Saharan African countries.

On the first objective, the findings demonstrate that board characteristics do indeed have an impact on the financial distress of listed firms. Specifically, the research discovered that board size negatively influences financial distress, which may be due to the improved control, accountability, and transparency that larger boards provide in the SSA context. Director remuneration is observed not to influence financial distress whereas board gender diversity and board meetings are established to positively affect firms' distress, contradicting the belief that having more women on boards can help enhance firms' financial stability.

On the second objective, ownership structure is observed to significantly influence firms' financial distress in sub-Saharan Africa. Particularly, the study's results established a negative influence of institutional ownership on financial distress. The results further established that foreign and state ownership negatively influences financial distress, while local ownership increases the firm's default risks.

On the third objective, the research reveals a negative connection between intellectual capital and firm's distress. Both technical efficiency and pure technical efficiency yielded a negative relationship with firm's distress. The observed negative influence of IC efficiency on financial distress suggests that firms in sub-Saharan Africa can prevent financial distress by strategically leveraging and managing their intangible assets (IC).

5.3 Conclusion

The research investigated the effect of board characteristics, ownership structure and intellectual capital on the financial distress of non-financial firms listed in ten selected Anglophone countries in SSA. The findings demonstrate that board characteristics significantly influences distress in SSA. The observed negative relationship infers that board characteristics of selected non-financial firms in Anglophone SSA are associated with reduced financial distress. This indicates that well-devised governance policies around the board characteristics can help firms in mitigating the risks of going into distress.

Further, the study also established negative connections between institutional, foreign and state ownership with financial distress while a positive relationship was observed between local ownership and default risks. This led to the conclusion that ownership structure is an essential governance aspect that influences the risks of firms falling into financial distress. This implied that to maximize performance and reduce financial distress, appropriate ownership structures that minimize information asymmetries and agency costs should be employed. The study thus concluded that a trade-off exists between appropriate ownership structure mix and corporate stability.

Lastly, the study results indicated that an increase in intellectual capital efficiency reduces the financial distress of firms in SSA. The results depict that higher efficiency of intellectual capital helps firms strategically leverage and manage their competitive advantage in the market reducing their vulnerability to internal financial constraints and external shocks.

5.4 Policy Implications

Relative to the established results on the first objective, the following recommendations were made. First, the study findings demonstrate that board size has a negative influence on the financial distress of listed firms. The study thus recommends that firms maintain an ideal large board of at least 9 members to strengthen their control, accountability, and transparency powers. Empirically, the study observed that directors should maintain a lower frequency of board meetings to avoid constraining firms' operational time and limited resources. In addition, taking into account the governance dynamics in SSA and political interferences in

management, non-financial firms in SSA should critically weigh the costs and benefits of increasing gender diversity in their boards.

Similarly, the study highlights the importance of OS in mitigating financial distress. Managers should therefore formulate OS policies that enhance the firms' stability through sound governance practices. Additionally, the study recommends for an improved market infrastructure and strengthened governance in SSA to cater to agency problems influenced by local market forces. Furthermore, the findings emphasize the need for SSA governments to devise policies that promote good governance, enhance efficiency and accountability to attract foreign direct investments.

Lastly, the study recommends that managers embrace a proactive and holistic approach to the development of IC components (HCE, SCE and CCE) and IC management as well as establish systems related to learning, agile talent and knowledge management, and information technology to strengthen the IC base ensuring firms' survival amidst today's business environment complexities.

5.5 Areas for Further Studies

The empirical results considered non-financial firms in SSA and are not to be generalized to financial firms and other emerging economies. Therefore, future works may expand the contextual scope to encompass financial firms to suit the results' generalizability. Equally, although two measures of financial distress were utilized in the study; Altman (2005) and Zmijewski (1984), only one measure is most suitable for the emerging market, Altman EMS, while the Zmijewski X-score is of general applicability. Future works may, thus, adopt other distress prediction models. Similarly, future studies may focus on other proxies of corporate board gender diversity, such as the Blau diversity index. Lastly, the present study maintained the original IC elements of the VAIC methodology as proposed by Pulic (2000) in assessing the efficiency of firms. The study, therefore, recommends assessment of the efficiency scores by considering additional inputs; relational capital and innovation capital efficiencies of the modified VAIC model. Similarly, future works can investigate the mediating influence of institutional and governmental policies on

ICE development and the association between the firms' IC efficiency and distress prospects.

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APPENDICES

Appendix I: Data Collection Sheet

			Dependent Variable: Financial Distress											Independent variables														Control variables						
			Altman z score						Zmijewski score					Board characteristics				Ownership structure				Intellectual capital						Size	Firm age		leverage	Liquidity	Economic growth	Political stability
Year	S No	Company	WC	RE	EBIT	TA	BVE	TL	NI	TA	TL	CA	CL	BN	DR	BM	FD	MS	IS	SS	FS	OP	Dep	Arm	VA	BVA	S&W	TA	CY	Inc Y	TL/TA	CA/CL	GDP	WGI

Key:

WC	Working capital	CL	Current liability
RE	Retained earnings	BN	Number of directors
EBIT	Earnings before interest and tax	DR	Director's total compensation
TA	Total assets	BM	Board meetings
BVE	Book value of assets	FD	Number of female directors
TL	Total liabilities	MS	Shares held by managers
N1	Net income	IS	Shares held by institutions
CA	Current assets	SS	Shares held by state
FS	Shares held by foreign institutions and/or	In Y	Incorporation year
OP	investors	GDP	Gross domestic product
Dep	Operating profit	WGI	Worldwide governance index
Arm	Depreciation charged		
VA	Amortization charged		
BVA	Value added		
S&W	Book value of assets		
CY	Total salaries and wages		
	Current year		

Appendix II: Research Gaps

Author	Study	Findings	Gaps	Current Study
Al-Absy (2020)	Board chairman's characteristics and financial stability.	Age and tenure of the Board Chairman are linked to high financial stability.	Used OLS regression model. The study did not consider influence of IC of firm on financial stability.	This study used logistic regression model. This study used components of IC in assessing the independent variable; IC efficiency.
Ragab & Saleh (2021)	Non-financial variables related to governance and financial distress prediction in SMEs–evidence from Egypt	Model with financial variables predicted financial distress with had a 91.7% accuracy, using a combination of financial and non-financial factors related to governance, better predictions of 92.7 and 93.6% were made.	Control variables were not used in the research. The study employed original Altman, (1968) Z-score to measure distress.	This study adopted firm size, age, liquidity, growth and leverage as variables. This study used Altman, (2005) Emerging markets Z-score and Zmijewski, (1984) X-Score to measure firm's distress.
Gerged et al. (2022)	Board composition, ownership structure and	Institutional ownership and board gender diversity negatively influences financial distress.	The study contradicted other studies that found institutional ownership and board gender diversity to have no impact on	This study attempted to resolve the conflicting findings. The study also adopted HCE, SCE

	financial distress: insights from UK FTSE 350	Managerial ownership and board size have negligible effects on financial hardship.	financial distress. It also contradicted studies that found either positive, negative or U-shaped relationship between board size and FD	and CCE inpus in assessing ICE as an independent variable.
Iqbal & Zaib (2017)	Corporate Governance, Intellectual Capital and Financial Performance of Banks listed in Pakistan Stock Exchange	Structural capital efficiency mediates the relationship between financial performance of commercial banks while microfinance and investment banks' performance and CG relationship is mediated by human capital efficiency.	The study adopted Intellectual capital as moderating variable. The study used Generalized Least Square Model. The study inspected the effect of corporate governance and Intellectual capital on performance.	Intellectual capital was used as an independent variable in this study. This study use Logistic regression Model. This study will investigate the effect of Corporate Governance, and Intellectual capital on FD
Nkundabanyanga et al. (2014)	Intellectual capital in Ugandan service firms as	Intellectual capital acts as a mediator in the relationship between	The study employed IC as a mediating variable.	This study will use IC as an independent variable.

	a mediator of governance and firm performance	board governance and firm performance.		
Nirino et al. (2020)	Intellectual capital: the missing link in the corporate social responsibility–financial performance relationship.	The study found the CSR - financial performance relationship to be partially mediated by IC	The study investigated CSR and FP with Intellectual capital as a mediating variable	This research investigated the relationship between corporate governance, Intellectual Capital and Financial distress.
Tiwari (2021)	Intellectual capital and profitability with interaction effects	The study observed a positive linkage between the IC of 84 healthcare firms in India from 2009 to 2018 and their financial performance.	The study investigated a single nation; India and single industry: healthcare industry. The study employed value added intellectual coefficient (VAIC) and modified value-added intellectual coefficient	The current study employed multi-country and multi-industry analysis. The study employed a bootstrapped DEA analysis to obtain Intellectual capital

			(MVAIC) as a measure of intellectual capital	efficiency from the value-added intellectual coefficient (VAIC)
Tjahjadi et al., (2024)	Effect of intellectual capital on organizational performance in the Indonesian SOEs and subsidiaries: roles of open innovation and organizational inertia	Intellectual capital positively affects organizational performance. Open innovation mediates the intellectual capital–organizational performance relationship.	15 statements; 6 statements on human capital, 5 statements on structural capital and 4 statements on relational capital have been used to represent the construct of intellectual capital	The study employed widely accepted and recognized methodology in defining Intellectual capital.

Appendix III: Measurement of Variables

Dependent Variable	**Indicator**	**Measurement**	**Empirical Review**
Financial distress	Altman Emerging market Z-Score	$Z = 3.25 + 6.56x_1 + 3.26x_2 + 6.72x_3 + 1.05x_4$ Where: x_1 = WC/ TA x_2= RE/ TA x=EBIT / TA x_4= BVE/ TL If Z> 4.15, firm is healthy If Z< 4.15, firm is distressed 1 if financially distressed, 0 if otherwise	Khurshid & Sabir (2019) Jacoby et al., (2019)
	Zmijewski X -score	$X = -4.3 - 4.5x_1 + 5.7x_2 + 0.004x_3$ Where: x_1 = NI/ TA x_2= TL/ TA x_3=CA / CL If X> 0, firm is distressed If X< 0, firm is healthy 1 if financially distressed, 0 otherwise.	Coleman & Wu (2020)
Independent Variables	**Indicator**	**Measurement**	**Empirical Review**
Corporate Governance	Board Size	Total number of board members	Manzaneque, Priego, et al. (2016) Mariano et al. (2021)
	Director Remuneration	Proportion of Directors Remuneration to Revenue.	Mariano et al. (2021) Yousaf et al. (2021)
	Board Activity	Number of boards meeting per year	Al-Absy, (2020)
	Board Gender diversity	(Women directors / total directors) * 100%	García & Herrero (2021) Guizani & Abdalkrim (2022)

Ownership Structure	Managerial Ownership	(equity shares by top managers/ Total shares) * 100%	Kirimi et al. (2022)
	Institutional Ownership	(equity shares by institutional shareholders/ Total shares) * 100%	Yousaf et al. (2021) Kirimi et al. (2022)
	Foreign Ownership	(equity shares by foreign shareholders/ Total shares) * 100%	Kirimi et al. (2022)
	State Ownership	(equity shares by state shareholders/ Total shares) * 100%	Kirimi et al. (2022)
Intellectual Capital	Intellectual capital efficiency	DEA analysis (HCE, CCE, SCE=VAIC, Roe and Tobin Q)	(Shahwan & Habib, 2020)
Control Variables	**Indicator**	**Measurement**	**Empirical review**
Firm Size	Value of Total Assets	Log Total Asset	Udin et al. (2017)
Firm Age	Number of years firm has been in business	Current operating year – year established	Jacoby et al. (2019)
Firm Growth	Sales Growth	Sale Y_t – Sales Y_{t-1}	Younas et al. (2021)
Firm Leverage	Debt to Asset ratio	Total Debt/ Total Book Value of Assets	Ali et al. (2022) Coleman & Wu (2020)
Liquidity	Liquidity ratio	Current Assets/ Current Liability	Guizani & Abdalkrim (2022)
Industry Dummy	Dummy	1 if a firm belongs to specific industry, 0 otherwise	Manzaneque et al. (2016)
Economic Growth	GDP	Annual growth rate	Kim (2019)
Political Stability	Probability of no violence and/or political stability	World governance index. (ranges from -2.5 (weak) to +2.5 (strong)	Stef (2021)
Regulatory Quality	Country's regulatory quality	World governance index	Oliveira and Raposo (2020)

Appendix IV: Active Security Exchanges in SSA

Region	S. No	Country	Exchanges	Listed Non-Financial Companies
East Africa	1	Kenya	Nairobi Security Exchange	40
	2	Rwanda	Rwanda Stock Exchange	6
	3	Tanzania	Dar-es Salam Stock Exchange	15
	4	Uganda	Uganda Security Exchange	10
West Africa	5	Ghana	Ghana Stock Exchange	23
South Africa	6	Botswana	Botswana Stock Exchange	14
	7	Eswatini	Eswatini Stock Exchange	2
	8	Malawi	Malawi Stock Exchange	6
	9	Namibia	Namibia Stock Exchange	12
	10	Zambia	Lusaka Stock Exchange	17
Total				146

Appendix V: Selected Listed Firms in SSA

S. No	Company		
A	**Nairobi Security Exchange**		
1	ARM Cement	22	Kirwitu ventures
2	B O C Kenya	23	Kenya Power & Lighting
3	Bamburi Cement	24	Limuru Tea
4	BAT Kenya	25	Longhorn Publishers
5	Car & General (K)	26	Mumias Sugar Co
6	Carbacid Investments	27	Nairobi Business Ventures
7	Crown Paints Kenya	28	Nation Media Group
8	Deacons (East Africa)	29	Olympia Capital Holdings
9	Eaagads E. A	30	Safaricom
10	East African Breweries	31	Sameer Africa
11	East African Cables	32	Sasini Plc
12	East African Portland Cement	33	Standard Group
13	Eveready East Africa	34	TotalEnergies Marketing Kenya
14	Express Kenya	35	TPS Eastern Africa
15	Flame Tree Group Holdings	36	TransCentury
16	Homeboyz Entertainment	37	Uchumi Supermarkets
17	Kakuzi	38	Umeme
18	Kapchorua Tea Kenya	39	Unga Group
19	KenGen Company	40	Williamson Tea Kenya
20	Kenya Airways	41	WPP Scangroup
21	Kenya Orchards		
B	**Rwanda Stock Exchange**		
1	Bralirwa	4	RH Bophelo
2	Nation Media Group	5	CIMERWA
3	Uchumi Supermarkets	6	MTN Rwandacell
C	**Dar-es Salam Stock Exchange**		
1	TOL Gases	9	Precision Air Services
2	East African Breweries	10	Uchumi Supermarket
3	Jatu	11	Swissport Tanzania
4	Tanzania Breweries	12	Tanga Cement Company
5	Tanzania Cigarette	13	Tanzania Portland Cement Company
6	Tanzania Tea Packers (TATEPA)	14	Swala Oil and Gas (Tz)
7	Kenya Airways	15	Vodacom Tanzania

8	Nation Media Group		
D	**Uganda Security Exchange**		
17	BAT Uganda	22	Uchumi Supermarkets
18	East African Breweries	23	Cipla Quality Chemical industries
19	Kenya Airways	24	Uganda Clays
20	Nation Media Group	25	MTN Uganda
21	New Vision Printing and Publishing	26	Umeme
E	**Ghana Stock Exchange**		
1	Aluworks	14	Meridian-Marshalls Holdings
2	AngloGold Ashanti	15	Sam Woode
3	AngloGold Ashanti Depository Shares	16	Dannex Ayrton Starwin Limited
4	Asante Gold Corporation	17	Intravenous Infusions
5	Benso Oil Palm Plantation	18	Camelot Ghana
6	Cocoa Processing Company	19	Ghana Oil Company
7	Fan Milk	20	Total Petroleum Ghana
8	Guinness Ghana Breweries	21	Tullow Oil
9	Hords	22	Clydestone (Ghana)
10	PBC	23	MTN Ghana
11	Samba Foods	22	Clydestone (Ghana)
12	Unilever Ghana	23	MTN Ghana
13	Digicut Production and Advertising		
F	**Botswana Stock Exchange**		
1	Anglo American	8	Chobe Holdings
2	Botswana Diamonds	9	Choppies Enterprises
3	Lucara Diamond Corp	10	Cresta Marakanelo
4	Minergy	11	Engen Botswana
5	Sechaba Brewery Holdings	12	Shumba Energy
6	Seed Co International	13	Tlou Energy
7	CA Sales Holdings	14	Botswana Telecommunications Corp
G	**Eswatini Stock Exchange**		
1	Royal Eswatini Sugar Corporation	5	Sunbird Tourism
2	Swazi Property Investment Ltd	6	Press Corporation
3	Illovo Sugar Malawi	7	Airtel Malawi
4	Blantyre Hotels	8	Telekom Networks Malawi
H	**Namibia Stock Exchange**		
1	Anglo American	7	Mediclinic International

2	B2Gold Corporation	8	Namibia Breweries
3	Bannerman Resources	9	Nictus Holdings
4	Barloworld	10	Paladin Energy
5	Deep Yellow	11	Shoprite Holdings
6	Forsys Metals Corporation	12	Truworths International
H	**Namibia Stock Exchange**		
1	AECI Mining Explosives	11	Pamodzi Hotels
2	First Quantum Minerals	12	Shoprite Holdings
3	Zambia Forestry and Forest Industries Corporation	13	Chilanga Cement
4	ZCCM Investment Holdings	14	Metal Fabricators of Zambia
5	British American Tobacco Zambia	15	Puma Energy Zambia
6	National Breweries	16	Airtel Networks Zambia
7	Zambeef Products	17	Copperbelt Energy Corporation
8	Zambia Bata Shoe Company	16	Airtel Networks Zambia
9	Zambia Sugar	17	Copperbelt Energy Corporation
10	Zambian Breweries		

Appendix VI: Industry Composition

Industry	Code	Firms
1. Agriculture	In1	14
2. Basic Materials and Manufacturing	In2	38
3. Commercial	In3	18
4. Construction	In4	10
5. ICT and Telecommunication	In5	22
6. Mining and Quarrying	In6	14
7. Oil and Energy	In7	15
8. Real Estate and Property Mgt	In8	7
9. Transportation	In9	8
Total		146