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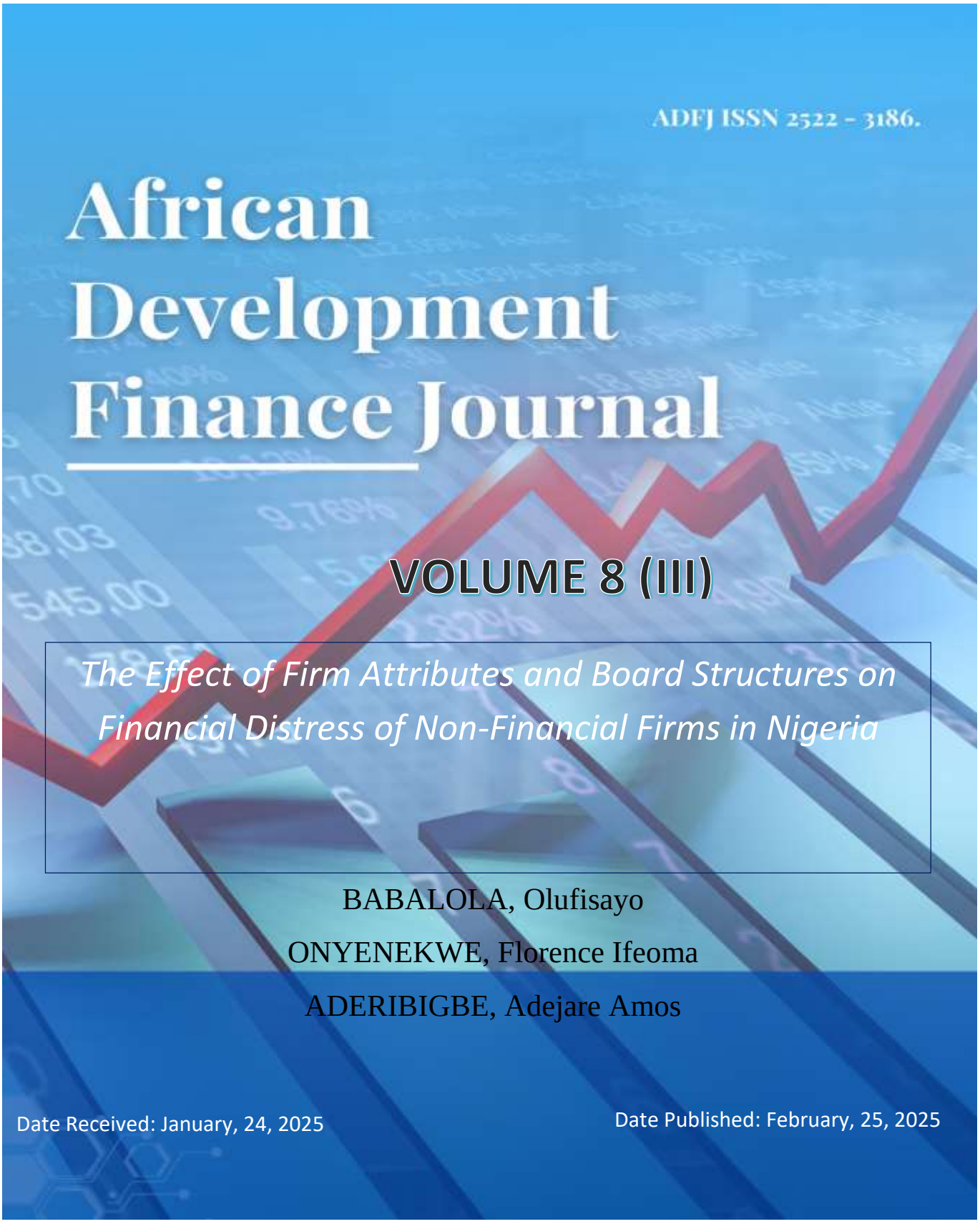

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The Effect of Firm Attributes and Board Structures on Financial Distress of Non-Financial Firms in Nigeria

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Abstract
Major global corporations, such as Swissair, Enron, Arthur Andersen, WorldCom, Parmalat, and Silicon Valley Bank, unexpectedly suffered financial distress and eventually failed, resulting in severe consequences. Despite being previously perceived as stable, their bankruptcy shocked researchers, analysts, and industry professionals. Previous studies examining the effect of firm characteristics and board structures on financial distress reported inconsistent findings. The system-generalised method of moments (SGMM) model was used in the research to investigate the impact of firm characteristics (such as leverage, profitability, and sales growth) and board structures (such as board size and independence) on the degree of financial distress experienced by a sample of listed twenty non-financial companies in Nigeria between the years 2011 and 2023. The findings showed that board structure (both size and independence) and firm attributes (leverage profitability and sales growth) significantly impact the Altman Score, indicating better financial health or lower financial distress. Nigerian publicly traded firms should adhere to and practice excellent corporate governance procedures. This would result in a rise in the trust of investors, regulators, and other stakeholders. Businesses must place a larger emphasis on financial information, particularly profitability and sales growth, all of which have been shown to affect financial distress.

Keywords: *board size, board independence, leverage, profitability. Sales growth*

1. Introduction

Financial distress has emerged as a pressing issue across nearly all global markets. In the past two decades, numerous instances of financial turmoil have transpired, leading to the collapse of several esteemed international corporations. The abrupt failures of Swissair, Arthur Andersen, Parmalat, Bayou Hedge Fund Group, Northern Rock, Bernard L. Madoff Investment Securities, and First Republic Bank—once regarded as benchmarks of corporate financial stability—have significantly impacted the global economy. These developments have raised critical questions regarding the viability and integrity of various businesses (Mallin, 2013; Muigai, 2016; Ikpesu & Eboiyehi, 2018).

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Financial distress arises when companies cannot meet their financial obligations as they come due. According to Ray (2011), a firm faces corporate financial distress in situations such as breach of loan contracts, ongoing losses, and an inability to fulfil obligations on time. Experiencing corporate financial distress typically results in a decline in the firm's operating conditions, placing a substantial financial strain on the organisation. As a result, the firm struggles to satisfy the claims of secured, preferential, and unsecured creditors (Garlappi & Yan, 2011; Benmelech et al., 2012; Isayas, 2021).

A range of models has been employed to predict financial distress, starting with various statistical techniques such as Altman's (1968) multiple discriminant analysis and Ohlson's (1980) logistic regression. In addition, more advanced methodologies have emerged, including sophisticated models like neural networks, support vector machines, genetic algorithms, and genetic programming. These approaches have primarily focused on enhancing the explanatory power of financial, accounting, and market variables (Manzaneque et al., 2016).

In the early 1990s, a substantial body of research explored the influence of corporate governance variables on predicting financial distress (Chan et al., 2016). These scholars argue that solely relying on economic and financial data is inadequate for accurately forecasting future distress. Therefore, it is essential to integrate variables that reflect corporate governance characteristics (Heremans, 2007; Chen, 2008; Chang, 2009; Bravo-Urquiza & Moreno-Ureba, 2021). Amendola, Restaino and Sensini (2015) specifically contend that the composition of a firm's board of directors, ownership structures, and their interactions can significantly affect the likelihood of a firm's failure. In contrast, Zeitun (2009) posited that the agency problem between shareholders and management can result in inefficiencies, particularly in ownership concentration.

The leverage ratio measures the proportion of a company's debt-financed assets (Ulzanah & Murtaqi, 2015; Babalola et al., 2024). A high level of leverage refers to the quantity of loan capital utilised to fund businesses. Theoretically, the greater the leverage, the greater the likelihood of financial hardship. Inversely, if leverage is reduced, the sign of financial difficulty will also diminish. Previous empirical studies on the influence of leverage on financial distress have been mixed. For instance, Susilowati et al.(2019), Nugrahanti et al. (2020), and Dwiantari and Artini

(2021) discovered that leverage has a notable favourable influence on financial distress, while Curry (2020) found that leverage has a significant notable negative influence on financial distress. Furthermore, Bernardin and Tifani (2019), Dirman (2020), and Oktasari (2020) discovered leverage has no significant impact on financial distress.

Profitability is the capacity of a corporation to create profits (Ananto et al., 2017). Companies with enough resources will be able to avoid financial difficulties in the future (Agustini & Wirawati, 2019). Profitability proxied by Return on Assets (ROA) is inversely related to financial distress. A high ROA generally reflects financial strength, reducing the probability of experiencing distress. In contrast, a low or declining ROA may suggest the potential for upcoming financial difficulties. Consequently, it is crucial for businesses to continuously track and improve their profitability to maintain financial stability and reduce the risk of distress. Previous empirical investigations into the association between profitability and financial distress reported conflicting findings. For instance, (Tesfamariam, 2014 Ikpesu & Eboiyehi 2018) discovered a significant positive relationship between profitability and financial distress, whereas (Susilowati et al., 2019; Dwiantari & Artini, 2021; Nugrahanti et al., 2020) found a significant negative relationship between profitability and financial distress. In addition, Rohmadini et al. (2018) and Dianova and Nahumury (2019) revealed an insignificant correlation between profitability and financial distress. Sales growth is a ratio used to anticipate a business's future development; this ratio also shows the effective application of investments made by the firm in the previous period, which may be used to predict the company's future growth (Simanjuntak et al., 2017; Putri, 2021). According to agency theory, investment choices and innovation in corporate strategy are in the hands of agents; thus, agents are necessary to operate the business effectively to boost the firm's development. High sales growth may improve the company's revenue from sales made within a specific time frame. Companies with rapid sales increases are more likely to invest in company expansion (Tahir & Mushtaq, 2016; Putri, 2021).

1.2 Research Problem

In recent years, several prominent corporate failures have been documented in Africa, including those of Société Générale, Kaduna Textile Mills, Cadbury Nigeria, Tuskys, Nakumatt, TVAfrica, Ellies Holdings, Crane Bank, and African Safari Airways. These occurrences highlight that even

large and well-established enterprises are susceptible to financial challenges that may ultimately lead to bankruptcy. This situation raises critical concerns regarding the financial stability of such corporations, particularly from the investors' perspective. As a result, numerous researchers are investigating methodologies to predict the likelihood of financial distress or bankruptcy within corporate entities (Samanhyia et al., 2016; Lee & Manual, 2019).

Nigeria has experienced the collapse of around 50 films from 2017 to 2022. This is attributed to factors such as foreign exchange, political instability, high interest rates on loans, corruption, capital structure, mismanagement of assets, poor management of working capital, and poor corporate governance (Ikpesu & Eboiyehi, 2018; Anudu, 2022). Previous empirical investigations into the association between sales growth and financial distress have produced conflicting results. For example, (Putri, 2021) revealed a significant positive association between sales growth and financial distress, while (Ud-Din et al., 2020) found a significant negative relationship between sales growth and financial distress. Moreover, Trisanti (2020) found no significant correlation between sales growth and financial distress.

The financial health of companies is crucial for economic stability and growth, particularly in developing economies like Nigeria. Listed non-financial firms in Nigeria face significant challenges that could lead to financial distress, affecting the companies and the broader economy. Despite the importance of understanding the factors contributing to financial distress, limited research exists on how specific firm attributes and board structures influence this outcome in Nigerian firms. While some studies have focused on the financial sector, such as those by Nworji et al. (2011), Ayoola and Obokoh (2018), Ezejiofor and Okerekeoti (2021), and Okoye and Okoye (2022), others have looked at specific sub-sectors like manufacturing firms, as seen in the works of Ikpesu and Eboiyehi (2018), Ikpesu (2019) and Lucky and Michael (2019).

1.3 Objectives of the Study

The study investigates the impact of firm attributes and board structures on financial distress for a sample of listed Nigerian non-financial firms from 2011 to 2023. The specific objectives are as follows:

(a) To examine the effect of financial leverage on financial distress for a sample of listed Nigerian non-financial firms
(b) To explore the influence of profitability on financial distress for a sample of listed Nigerian non-financial firms
(c) To investigate the impact of sales growth on financial distress for a sample of listed Nigerian non-financial firms
(d) To explore the effect of board size on the financial distress for a sample of listed Nigerian non-financial firms
(e) To investigate the impact of board independence on the financial distress for a sample of listed Nigerian non-financial firms

2. Literature Review

2.1 Theoretical Framework

The study is based on the agency theory.

2.1 Agency Theory

This perspective is grounded in the principle that modern corporations demonstrate a clear separation between ownership (the principal) and management (the agent), leading to costs associated with resolving conflicts between these two parties (Berle & Means, 1932; Eisenhardt, 1989; Jensen & Meckling, 1976). The fundamental premise of agency theory suggests that managers are motivated by self-interest and self-serving incentives, often placing their priorities ahead of the shareholders. Managers often place their own interests above those of shareholders, particularly in companies facing financial difficulties. For example, they may adopt risk-averse behaviours to safeguard their positions instead of making bold decisions that could potentially save the company. Conversely, they might engage in excessive risk-taking—sometimes called "gambling for resurrection"—to reverse financial setbacks. This strategy could exacerbate problems if the risks do not yield positive results (Fama, 1980; Fama & Jensen, 1983).

Managers typically possess a more comprehensive understanding of their firm's financial health compared to external stakeholders, such as shareholders and creditors. This disparity in information can result in decisions that unintentionally or intentionally worsen the company's

financial distress. For instance, when managers face significant financial difficulties, they may conceal this information or postpone revealing it to stakeholders. This behavior often stems from a desire to avoid accountability for the company's situation or a need to retain control over the firm's operations and decision-making processes.

Moreover, ineffective communication between management and external stakeholders can further complicate the situation. When stakeholders are not informed about critical financial issues, they may misinterpret the firm's performance and fail to align their expectations and strategies accordingly. This misalignment can exacerbate existing problems, as stakeholders might invest resources or make decisions based on outdated or inaccurate information. Information asymmetry and poor communication can ultimately deepen the firm's financial distress, hindering recovery efforts and undermining stakeholder trust.

2.2 Empirical Review

2.2.1 The Effect of Board Size and Board Independence on Financial Distress

Jamal and Shah (2017) conducted a study on the influence of corporate governance on financial distress. The study comprised a sample of 53 non-financial firms listed in Pakistan from 2010 to 2014. Financial distress was measured using Altman's Z score. The study employed the ordinary least squares regression method to analyse the relationship between independent and dependent variables. The findings demonstrated that board size and independence have a significant inverse association with financial distress. This suggests that larger board sizes and the presence of independent directors are correlated with lower levels of financial distress.

From 2015 to 2019, Abugri (2022) used Ordinary Least Squares (OLS) to investigate the impact of corporate governance on financial distress at fifteen Ghana Stock Exchange (GSE) listed companies. Altman's Z score was used to measure financial distress. The results revealed a significant inverse relationship between board size and financial distress, indicating that larger board sizes were linked to lower financial distress levels. Furthermore, the study found no significant association between board independence and financial distress.

Begum et al. (2023) investigated the impact of corporate governance on financial distress. The sample consisted of 30 listed pharmaceutical firms in Pakistan from 2012 to 2021. Altman's Z score was used to measure financial distress. The Feasible generalised least squares regression method examined the relationship between independent and dependent variables. The results revealed that board size and independence have a significant inverse relationship with financial distress, indicating that larger board sizes and independent directors' presence were linked to lower financial distress levels.

2.2.2 The Effect of leverage, profitability and sales growth on financial distress

Purwanti and Syarif (2022) analysed the influence of liquidity, profitability, sales growth, and leverage on financial distress. The study centred on 16 publicly listed retail companies in Indonesia from 2015 to 2019. The assessment of financial distress was based on the Altman score. Employing the fixed-effect regression method, the study aimed to explore the relationship between dependent and independent variables. The findings indicated that higher leverage and sales growth were associated with reduced financial distress, while no significant correlation was found between profitability and financial distress.

In the period spanning 2020–2022, Indah et al. (2023) utilised a logistic regression model to examine the impact of profitability, sales growth, and leverage on financial distress. The study was conducted on a sample comprising 26 publicly listed transportation and logistics companies in Indonesia. Financial distress was measured using the Springate method. The results revealed a significant negative relationship between profitability and financial distress, signifying that higher levels of profitability are linked to lower levels of financial distress. Additionally, the study found that leverage positively affects financial distress, implying that higher leverage is associated with greater financial distress. However, the analysis did not uncover a significant correlation between sales growth and financial distress, suggesting that sales growth may not directly impact the financial distress of transportation and logistics companies in Indonesia.

Arafah and Kusumawati (2024) conducted a study to analyse the impact of profitability, sales growth, cash flow ratio, managerial ownership, and leverage on financial distress. The study focused on 411 publicly listed non-financial companies in Indonesia between 2020 and 2022.

Financial distress was assessed using the Altman score. The study used the ordinary least squares (OLS) regression method to investigate the relationship between dependent and independent variables. The findings showed a significant negative correlation between profitability and financial distress, suggesting that higher profitability is associated with lower financial distress levels. Additionally, the study revealed that leverage and sales growth positively affect financial distress, indicating that higher levels of leverage and sales growth are associated with increased financial distress.

3. Methodology

3.1 Population, Scope, Sample Size, and Sources of Data

The sample comprises 20 listed non-financial companies in Nigeria from 2011 to 2023. The companies were selected based on the availability of their financial data from 2011 to 2023. The data used for the study was gathered from the companies' published annual reports.

3.2 Model Specifications

$$Y = \beta_0 + \beta_1 BE_{it} + \beta_2 BD_{it} + \beta_3 LG_{it} + \beta_4 SG_{it} + \beta_5 PR_{it} + \beta_6 FI_{it} + e_{it}$$

Where: Y – Altman z-score for non-manufacturing firms.

β_0- Constant

BE – Board size

BD – Board independence

LG – Leverage

SG – Sales growth

PR – Profitability

FI- firm size

β_0, β_1, β_2, β_3, β_4 and β_5 = model parameters

e_t = error term

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4 Data Analysis and Results

4.1 Descriptive Statistics

Table 4.1: Descriptive Statistics

	Mean	Minimum	Maximum	Std. Dev.
Dependent Variable				
Altman Z score	1.6617	-2.8800	8.3200	1.3331
Independent Variables				
Board size	9.7000	4.0000	17.0000	2.8438
Board Independence	69.9981	25.0000	93.3333	14.0687
Leverage	55.6543	0.23	150.4471	25.5819
Sales Growth	490.8059	-99.873	122347.4000	7587.0550
Profitability	5.2238	-58.0100	53.9600	11.8561
Control Variables				
Firm Size (000)	208,000,000	2,200,000	3,940,000,000	424,000,000
Firm Age	33.9885	1.0000	58.0000	12.9828
Observations	260	260	260	260

Source: Authors' computation (2024)

Table 4.1 presents the summary statistics.

a) **Altman Z-score**: The average Altman Z-score across the sampled non-financial firms is 1.6617. This suggests that, on average, these firms are vulnerable to financial distress. Typically, a Z-score below 1.8 indicates a higher risk of bankruptcy, while scores above 3 suggest a safe zone. Therefore, the average Z-score of 1.6617 is close to the distress zone, implying that many firms may be at risk of financial trouble. The lowest Altman Z-score observed is -2.88. This indicates that at least one firm in the sample is in severe financial distress and has a significantly high risk of bankruptcy. The highest Altman Z-score is 8.32, indicating that some firms are in excellent financial health with a very low probability of bankruptcy. This shows a wide range of financial health among the firms. The standard deviation 1.33309 suggests considerable variability in the Altman Z-scores among the firms. This indicates that while some firms are doing well financially, others are at significant risk,

reflecting a diverse range of financial conditions across the non-financial sector in Nigeria.

b) **Board Size**: The average board size is 9.7 members, suggesting that, on average, non-financial firms in Nigeria have around ten board members. The smallest board size observed is four members, which means that at least one firm has a very small board relative to others. The largest board size observed is 17 members, indicating that some firms have relatively large boards. The standard deviation of 2.8438 shows the variability in board size across the firms. A standard deviation of around 2.84 suggests that while most firms have board sizes close to the mean (around 9.7 members), there is a reasonable spread around this average, with some firms having significantly smaller or larger boards.

c) **Board Independence**: On average, about 70% of the board members of these firms are independent. This suggests that many board members are not directly involved in the company's management, which could contribute to better governance and oversight. The lowest level of board independence in the sample is 25%. This indicates that at least one firm has only a quarter of its board composed of independent members, which could raise concerns about the effectiveness of oversight in that particular firm. The highest level of board independence observed is 93.33%, showing that some firms have nearly all of their board members as independent, which is likely aimed at ensuring a high level of governance and minimising conflicts of interest. The standard deviation of 14.0687 suggests some variability in board independence across the firms. However, this variability is not extremely high, indicating that most firms have a consistent level of board independence within a certain range around the mean.

d) **Leverage:** The average leverage ratio among non-financial firms is approximately 55.65, indicating that, on average, these firms maintain a debt level of 55.65% concerning their assets. This signifies a relatively high reliance on debt financing within this sample of firms. The minimum leverage value of 0.23 suggests the presence of companies with very low debt levels in comparison to their equity or assets. These companies may be predominantly equity-financed or have a highly conservative approach to debt management. Conversely, the maximum leverage of 150.4471 represents a significant debt exceeding equity or assets by 50.45%, indicating a high level of leverage and potential risk, particularly in meeting debt obligations. The standard deviation of 25.5819 points to substantial variability in leverage ratios among these firms, indicating that while some maintain moderate leverage, others

demonstrate very low or very high leverage.

e) **Sales Growth:** The average sales growth is 490.8059, indicating that, on average, firms have positive sales growth. However, extreme values heavily influence this number, as evidenced by the high maximum. The lowest sales growth is -99.873, which suggests that at least one firm experienced a significant decline in sales, almost a complete loss. At the other end of the spectrum, the highest sales growth is 122,347.4, indicating that one or more firms experienced exceptionally high sales growth. This large value likely skews the average upwards. The standard deviation is 7587.055, signifying a wide dispersion of sales growth rates across firms. This significant variation implies that while some firms experienced substantial growth, others faced significant declines.

f) **Profitability (Return on Assets):** On average, the firms in the sample have a return on assets of 5.2238%. This suggests that, on average, these firms generate about 5.22% in profit for every naira of assets they hold. A positive mean indicates overall profitability across the sample. The lowest ROA in the sample is -58.01%. This is a significant negative return, suggesting that some firms are not just unprofitable but are experiencing substantial losses relative to their assets.

g) On the other hand, the highest ROA in the sample is 53.96%, which indicates that the best-performing firm is generating nearly 54% profit from its assets. This is a strong performance and suggests that some firms in the sector are very efficient in utilising their assets. The standard deviation of 11.8561 indicates the variability of ROA across the firms in the sample. A relatively high standard deviation shows significant variation in how efficiently firms use their assets.

h) **Firm Size (Total Assets):** The mean total assets amount to ₦208,000,000,000, indicating substantial asset investment among the firms. The minimum total asset value is ₦2,200,000,000, suggesting that some firms operate on a much smaller scale. Conversely, the maximum total assets reach ₦3,940,000,000,000, demonstrating the presence of large firms with extensive assets. Additionally, a standard deviation of ₦424 billion indicates considerable variability, with some firms having significantly higher or lower total assets than the mean.

i) **Firm Age:** The dataset indicates that the average age of listed non-financial firms in Nigeria is around 33.99 years, suggesting that these firms have been established for approximately 34

years. The youngest firm in the dataset is one year old, while the oldest is 58, highlighting the presence of well-established firms with a long history. With a standard deviation of 12.98 years, there is moderate variability in the ages of these firms, with most firms differing from the mean by about 13 years, either younger or older.

4.2 Correlation Analysis

Table 4.2 shows the correlation matrix, a positive correlation (0.49) between board size and firm size. However, the correlation between board independence and profitability is weak and negative (-0.09), and the correlation between board independence and firm size is positive (0.25). This suggests no strong relationship exists between board independence and profitability for listed non-financial firms in Nigeria.

Table 4.2: Correlation Analysis

	Board size	**Board Independence**	**Profitability**	**Firm Size**	**Leverage**	**Firm Age**	**Sales Growth**
Board size	1.0000						
Board Independence	0.2116	1.0000					
Profitability	0.0004	-0.0873	1.0000				
Firm Size	0.4884	0.2524	0.0558	1.0000			
Leverage	0.2131	-0.0039	0.0187	0.2455	1.0000		
Firm Age	0.0337	-0.2141	-0.1696	-0.2897	-0.0385	1.0000	
Sales Growth	-0.0368	-0.0312	-0.0989	0.0843	0.1409	0.0470	1.0000

Furthermore, the correlation between firm size and profitability is weak and positive (0.06), indicating a lack of a strong relationship between the two variables. Similarly, the correlation between leverage and profitability is weak and positive (0.02), while the correlation between leverage and firm size is positive (0.25), suggesting no strong relationship between leverage and profitability. In addition, the correlation between firm age and profitability is weak and negative (-0.17), and the correlation between firm age and firm size is negative (-0.29), indicating a weak

negative relationship between firm age and profitability. Lastly, the correlation between sales growth and profitability is weak and negative (-0.10), suggesting no strong relationship between the two variables.

4.3 Empirical Results

The findings presented in Table 4.3 illustrate the results of the panel regression analysis, which investigated the impact of firm attributes and board structures on the firm's financial distress. Given its inverse relationship to financial distress, the absolute value of the Altman Z-score was utilised as a measure of financial distress in this study. Notably, a higher Altman Z-score value indicates a lower risk of financial distress.

Table 4.3: Empirical results

Variables	Coefficient	P-Value
Constant	1.6647	0.0030
Altman Score (-1)	0.30715	0.0000
Board size	0.02240	0.0420
Board Independence	0.0077	0.0000
Profitability	0.04226	0.0000
Leverage	0.0027	0.0700
Sales Growth	0.0002	0.0000
Firm Size	-0.0766	0.0000
Firm Age	0.0062	0.1410
F-Statistic/Wald Statistics	207820.22	0.0000
AR (2)	-1.06	0.287
Hansen test	10.88	0.284

Source: **Authors' Computation, 2024**

Statistical significance levels at 0.10*, 0.05 **, and 0.01 ***

This segment discusses the result from the panel estimation based on the system-generalised method of moments (SGMM). The autocorrelation AR(2) (-1.06, p=0.287) statistic is insignificant,

indicating that the model is unaffected by second-order autocorrelation. The insignificant results of the Hansen test (10.88, p=0.284) suggest that the instruments used in the model are valid and not correlated with the errors. Additionally, the F-statistic (207820.22, p=0.0000) shows that the overall model is statistically significant, indicating that the variables collectively provide a good fit for the financial distress data.

(a) Board Size: The board size coefficient (β = 0.02240, p=0.0420) indicates a positive and statistically significant relationship at the 5% level. This suggests that larger board sizes are associated with higher Altman Scores, implying a potential link between board size and reduced financial distress for listed non-financial firms in Nigeria. Larger boards often consist of directors with diverse backgrounds and expertise. This diversity facilitates more effective decision-making, particularly in intricate financial scenarios, as it allows for a broader range of perspectives to be considered. Moreover, a larger board can result in enhanced management oversight, reducing the likelihood of financial mismanagement or fraudulent activities that could lead to distress. The results support the findings of Jamal and Shah (2017) and Begum et al. (2023), who found a significant negative correlation between board size and financial distress.

(b) Board Independence: The statistical analysis reveals that the coefficient for board independence (β = 0.0077, p=0.0000) is positively and significantly significant at the 1% level. This signifies that higher board independence is associated with high Altman Scores. Corporations with more independent boards will experience reduced financial distress among non-financial firms listed in Nigeria. Independent directors are generally less inclined to experience conflicts of interest compared to executive directors. They can make impartial decisions prioritising the firm's long-term stability and financial well-being over short-term gains that could lead to financial failure. Moreover, independent directors are better positioned to provide objective insights and challenge decisions that may carry financial risks due to their lesser involvement with the company's management. This independence enables them to scrutinise financial reports and risk management strategies more effectively. The findings are consistent with those of Jamal and Shah (2017) and Begum et al. (2023), who found a significant negative association between board independence and financial distress.

(c) Profitability: The profitability coefficient (β = 0.04226, p=0.0000) demonstrates a positive and statistically significant correlation at the 1% level. This indicates that profitability positively

influences the Altman Score, suggesting that more profitable firms are less likely to experience financial distress among listed non-financial firms in Nigeria. Firms with a higher ROA effectively utilise their assets to generate profits. This efficiency reduces the likelihood of cash flow problems, a common precursor to financial distress. In Nigeria, where access to finance can be challenging, efficient asset utilisation is particularly important.

(d) Additionally, a higher ROA indicates that a firm is more profitable. Profitable companies are less likely to experience financial distress because they generate sufficient earnings to cover operating expenses, interest payments, and other financial obligations. This is consistent with the results of Indah et al. (2023) and Arafah and Kusumawati (2024), who discovered a significant inverse relationship between profitability and financial distress.

(e) Leverage: The leverage coefficient (β = p-value = 0.0700) demonstrates a positive and statistically significant influence at the 10% level. This suggests that leverage positively impacts the Altman Score, indicating that non-financial firms in Nigeria with high leverage are less likely to encounter financial distress. Debt interest payments are eligible for a tax deduction, reducing the company's taxable income. This tax advantage can effectively enhance the company's cash flow, improve its liquidity, and decrease the risk of financial distress. Moreover, debt serves as a mechanism to instil discipline in management, prompting them to exercise prudence in expenditures to meet regular interest obligations. This disciplined approach can subsequently improve operational efficiency and financial performance, reducing the likelihood of financial distress. The results are similar to those of Purwanti and Syarif (2022) and Arifin et al. (2021), who discovered a significant negative correlation between leverage and financial distress.

(f) Sales Growth: The coefficient for sales growth (0.0002, p=0.0000) exhibits a significant positive correlation at the 1% confidence level. This signifies that sales growth positively influences the Altman Score, implying that companies with robust sales growth are less likely to experience financial distress among non-financial firms in Nigeria. Sustained growth in sales directly correlates with increased revenue, thereby bolstering the business's cash flow. A robust cash flow is essential for fulfilling short-term financial obligations such as supplier payments, employee wages, and debt servicing, diminishing the likelihood of financial distress. Furthermore, consistent sales growth is a strong indicator to investors and creditors of the financial robustness and expansion of the enterprise. This vote of confidence can lead to more

favourable credit terms, reduced interest rates on loans, and heightened accessibility to equity financing, all collectively mitigating financial distress. The findings agree with Ud-Din et al. (2020) and Purwanti and Syarif (2022), who discovered a substantial negative correlation between sales growth and financial distress.

5. Conclusions and Recommendations

The study employed a system-generalised method of moments (SGMM) to examine the influence of firm attributes (leverage, profitability, and sales growth) and board structures (board size and independence) on the financial distress of a sample of twenty non-financial firms listed on the Nigeria Exchange Group (NGX) from 2011 to 2023. The results show that board structure (both size and independence) and firm attributes (leverage profitability and sales growth) significantly impact the Altman Score, indicating better financial health or lower financial distress. According to the research findings, Regulatory bodies such as the Securities and Exchange Commission (SEC) in Nigeria should consider strengthening their oversight of board activities to ensure that the boards of listed companies function effectively and positively impact the financial health of the firms. This may involve implementing periodic assessments or audits of board performance as a standard practice. Furthermore, there is a need for policies mandating greater transparency regarding board size, composition, and decisions related to financial management, allowing shareholders and other stakeholders to make informed evaluations of a firm's board structure about potential financial distress. Policymakers are also encouraged to enhance financial markets to facilitate companies' access to affordable credit, which minimises financial distress. Additionally, it is critical to prioritise creating a regulatory environment that supports business growth and financial stability, which includes enforcing transparency, protecting investor rights, and cultivating fair competition.

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