Quantitative Economics and Management Studies (QEMS) *ISSN: 2722-6247 (online)*
Vol. 7 No. 2 (2026)
https://doi.org/10.35877/454RI.qems4193

Effect of Financial Distress on Tax Planning: Evidence from Listed Consumer Goods Firms in Nigeria

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Abstract

This study examines the effect of financial distress on tax planning among listed consumer goods firms in Nigeria. Financial distress is measured by the Altman Z-Score, while tax planning is proxied by the effective tax rate (ETR). The study employs an ex post facto research design using secondary data obtained from the annual reports of 16 purposively selected firms out of the 21 consumer goods firms listed on the Nigerian Exchange Group over the period 2014–2023, yielding 160 firm-year observations. Descriptive statistics were used to summarise the data, and the hypothesis was tested using panel data regression (panel EGLS with White period standard errors). The results reveal that the Altman Z-Score has a positive and statistically significant effect on the effective tax rate ($\beta = 0.005646$; $p < 0.001$), although the model explains only about 6.9% of the variation in the effective tax rate. Because a lower Z-Score indicates greater financial distress, the results imply that firms with deteriorating financial health record lower effective tax rates. The findings of this study suggest that financial distress induces Nigerian listed consumer goods firms to engage in tax planning that significantly reduces their effective tax rates.

Keywords: Financial distress; Tax planning; Altman Z-Score; Effective tax rate.

Received: 29 July 2025 Revised: 3 January 2026 Accepted: 19 April 2026

1. Introduction

The global business environment is characterized by various economic dynamics, financial structures, and regulatory frameworks that directly affect how companies operate (Elom et al. 2025). Among these factors, one of the most influential aspects for businesses, particularly in developing economies like Nigeria, is the concept of financial distress (Appah & Duoduo, 2024). Financial distress refers to a situation where a company is struggling to meet its financial obligations, such as paying off debts or covering operational expenses (Orji & John-Akamelu, 2023). This state of financial instability has profound effects on numerous facets of a firm's operations, including its tax planning strategies. In Nigeria, a country with a complex economic structure and tax system, the impact of financial distress on corporate tax planning, especially among publicly listed consumer goods firms, is a topic of significant interest. In today's competitive business environment, effective tax planning has become an essential component of corporate strategy for businesses across the globe (Jamiu, Lawal, Emmanuel & Joseph, 2024). With rapidly evolving tax regulations, heightened scrutiny from tax authorities, and an increasing need for transparency, businesses must adopt sophisticated tax strategies to optimize their tax liabilities. Tax planning enables firms to maximize profitability, improve cash flows, and enhance their overall financial position by making the most of available tax incentives and deductions. However, for firms operating under financial distress, the need for efficient tax planning becomes even more pronounced (Orji & John-Akamelu, 2023). The complexities of managing taxes during financially difficult times can lead to either positive or negative outcomes for the firm, depending on the strategies employed.

Zainazor, Nasir, Rashid, and Awang (2023) noted that tax planning involves making strategic decisions to minimize tax liabilities by complying with tax laws and taking advantage of tax-saving opportunities provided by the government. This process is a crucial part of corporate financial management, and firms engage in it to improve their financial health and profitability. In Nigeria, companies must adhere to the country's tax regulations, which include income tax, value-added tax (VAT), and other levies imposed by the Federal Inland Revenue Service (FIRS) and state

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tax authorities. Effective tax planning not only ensures compliance but also helps firms achieve significant tax savings, enabling them to remain competitive in a market characterized by rising costs and inflationary pressures (Bwala & Ibrahim, 2024). However, for companies that are experiencing financial distress, tax planning becomes a more complex and challenging process. When firms face declining revenue streams, mounting debts, and limited access to capital, their ability to execute optimal tax planning may be severely constrained. In such circumstances, companies may adopt short-term tax strategies, such as delaying tax payments, taking advantage of tax deferrals, or even using tax avoidance strategies that may expose them to legal risks or reputational damage.

Financial distress, in the context of corporate finance, occurs when a company is unable to meet its financial obligations and struggles to maintain liquidity (Orji & John-Akamelu, 2023). It typically manifests through deteriorating profitability, falling stock prices, declining revenues, and increasing debt levels (De Mel & Buddhika, 2025). In severe cases, it can lead to bankruptcy or liquidation. Firms in distress often face higher borrowing costs, reduced investor confidence, and limited access to financing, which makes their financial and operational decisions more critical (Appah & Duoduo, 2024). The notion of financial distress is particularly relevant to listed consumer goods firms in Nigeria, given the volatile economic conditions in the country. Nigeria has experienced a series of economic challenges, including fluctuating oil prices, currency devaluation, inflationary pressures, and political instability, all of which have created a scenario in which consumer goods companies are often forced to adopt strategies to cope with financial strain while ensuring they remain compliant with tax obligations. The main concepts associated with financial distress and tax planning revolve around liquidity, solvency, debt management, and compliance with tax regulations (Jamiu et al., 2024). Financial distress can be proxied by measures such as the Altman Z-score, which assesses a firm's likelihood of bankruptcy based on its financial ratios, including profitability, leverage, and working capital. Ultimately, a company under financial distress may face several challenges in managing its tax obligations. In some cases, firms in distress may adopt aggressive tax avoidance tactics, such as transferring assets to related parties or engaging in complex tax sheltering activities, which could expose them to greater scrutiny from tax authorities (Saputri & Radianto, 2023). These strategies, while potentially reducing the immediate tax burden, can result in legal consequences or reputational damage if discovered. Moreover, companies in financial distress may also miss out on available tax credits or incentives due to a lack of proper tax planning and forecasting.

However, the economic domain in Nigeria, characterized by fluctuating oil prices, inflationary pressures, currency devaluation, and political instability, has put immense strain on companies in the consumer goods sector. These firms, already grappling with declining revenues, rising operational costs, and increasing debt burdens, often struggle to maintain liquidity. As a result, many of these firms resort to short-term financial strategies that compromise their ability to effectively manage taxes (Orji & John-Akamelu, 2023). Tax planning, a normally vital component of corporate strategy, takes a backseat as distressed firms prioritize meeting immediate financial obligations over long-term tax optimization (Jamiu et al., 2024). In these circumstances, companies may defer tax payments, reduce tax filings, or engage in riskier tax avoidance tactics, sometimes without considering the broader implications on their financial health and compliance with tax laws.

Consequently, for the companies involved, the lack of effective tax planning under financial distress could lead to further financial instability, as poor tax decisions may expose them to penalties, legal actions, or reputational damage. In some cases, firms may experience increased tax liabilities due to missed opportunities for tax deductions or credits, worsening their financial position. On a larger scale, the failure of these firms to manage their tax obligations properly can result in a loss of tax revenue for the government, which is crucial for national development (Adebimpe & Mngueshima, 2024). Moreover, the ripple effects of financial distress among major consumer goods firms can harm investor confidence and negatively impact the economy, leading to higher unemployment and decreased economic productivity (Orji & John-Akamelu, 2023). Therefore, the inability of financially distressed firms to execute effective tax planning not only harms their prospects but also has broader implications for business sustainability and economic stability in Nigeria.

Although existing research on financial distress and tax planning offers valuable insights, there is still a notable gap in studies that specifically analyze how financial distress impacts the effective tax rate of consumer goods firms, particularly within the Nigerian context. Prior investigations, such as those by Jamiu et al. (2024) and Adebimpe and Mngueshima (2024), have examined the relationship between financial distress and tax practices in Nigeria's manufacturing and consumer goods sectors. However, these studies do not provide a comprehensive assessment of how financial distress—measured using the Altman Z Score—influences tax planning strategies in listed Nigerian consumer goods firms.

Additionally, research by Zainazor et al. (2023) and Dang and Tran (2021) has explored similar issues in other countries, including Malaysia and Vietnam, but their focus does not extend to the Nigerian consumer goods sector or to the use of the Altman Z Score as a distress metric. Similarly, Kamayanti et al. (2023) and Saputri and Radianto (2023) investigate financial distress and tax avoidance in regions like Indonesia, yet their findings offer limited applicability to the Nigerian context, especially in terms of evaluating the direct effects on effective tax rates.

Furthermore, studies such as those by Sadjiarto et al. (2020) and Hashemi et al. (2018) primarily concentrate on tax avoidance strategies rather than the effective tax rate itself, leaving a gap in understanding how financial distress may affect actual tax liabilities in Nigerian consumer goods firms. Consequently, there is a pressing need for further investigation into how financial distress—particularly as measured by the Altman Z Score—affects the effective tax rates of listed firms in Nigeria's consumer goods industry. This area of study remains underexplored and is essential for enhancing the understanding of corporate tax behavior under financial strain.

1.1. Objective of the Study

The main objective of the study is to examine the effect of financial distress on tax planning among listed consumer goods firms in Nigeria. The specific objective is to ascertain the extent to which Altman Z Score affects effective tax rate of listed consumer goods firms in Nigeria.

1.2. Research Question

To what extent does Altman Z Score affect effective tax rate of listed consumer goods firms in Nigeria?

1.3. Research Hypothesis

H01: Altman Z Score does not significantly affect effective tax rate of listed consumer goods firms in Nigeria.

2. Literature Review

2.1. Conceptual Review

2.1.1. Financial Distress

Financial distress is a condition in which a company faces significant difficulties in meeting its financial obligations, such as paying off debts, servicing loans, or covering operational expenses (Orji & John-Akamelu, 2023). This state of distress is typically characterized by declining profitability, reduced liquidity, and an increasing risk of insolvency (Appah & Duoduo, 2024). Ibida, Onuora and Ofor (2023) submitted that companies experiencing financial distress often exhibit signs such as declining revenue, rising debt levels, and diminishing cash flows. Financial distress can occur for several reasons, including poor management decisions, external economic factors, such as inflation or exchange rate volatility, or a combination of both. In a distressed situation, a company may struggle to maintain its operations or meet its obligations on time, which could eventually lead to bankruptcy or liquidation if the situation is not resolved (Farooq, Hunjra, Ullah & Al-Faryan, 2023).

Financial distress is not only a temporary challenge but can have long-lasting effects on a company's reputation and financial health. Firms that are in financial distress often face higher borrowing costs because lenders perceive them as high-risk borrowers. As a result, these firms may find it more difficult to secure financing for their operations, which exacerbates their financial troubles (Omolekan, Ajayi, Kazeem-Bayo & Babalola, 2022). Moreover, distressed companies may find themselves forced to engage in asset sales or restructuring efforts, further diminishing their ability to generate sustainable revenue (Orji & John-Akamelu, 2023). The impact of financial distress extends beyond the firm's operations and can influence its relationships with stakeholders, such as investors (Appah & Duoduo, 2024), employees, and creditors, who may lose confidence in the firm's ability to recover.

Financial distress also has broader economic implications, as firms in distress may contribute to economic instability, especially in developing economies where the consequences of business failures are felt more acutely. Ultimately, financial distress is a signal that a company's financial health is in jeopardy, requiring urgent corrective measures to avoid further decline and possible insolvency (Ibida, Onuora & Ofor, 2023). Companies in distress often need to re-

assess their financial strategies, restructure operations, or seek external financial support to regain stability and restore investor confidence.

2.1.1.1. Altman Z-Score

The Altman Z-Score is a financial metric used to assess the likelihood of a company facing bankruptcy or financial distress (Mattio, 2024). Developed by Professor Edward Altman in the 1960s, this formula combines five key financial ratios to produce a single score, which serves as a predictive tool for financial distress (Martins, 2024). The Z-Score is considered a robust model for identifying companies that are at risk of failure, providing investors, managers, and creditors with useful hints into the financial stability of a firm. The formula takes into account measures such as profitability, liquidity, solvency, and activity to evaluate a company's financial health. These factors include working capital, retained earnings, earnings before interest and taxes (EBIT), market value of equity, and total assets (Asif, Tiwari, Saxena, Chaturvedi & Bhardwaj, 2024).

The Altman Z-Score is typically divided into three zones: the safe zone, the distress zone, and the grey zone (Maulana, 2024). A score above 2.99 generally indicates a firm is financially healthy, with a low risk of bankruptcy. A score between 1.81 and 2.99 places the company in the grey zone, suggesting moderate financial risk and the need for closer monitoring. A score below 1.81 indicates that the company is in the distress zone, meaning it has a high probability of bankruptcy within the next two years (Mavengere & Gumede, 2024). The Altman Z-Score is particularly useful for identifying early signs of financial trouble, allowing companies and investors to take preemptive measures to address potential issues before they escalate into more serious problems (Mattio, 2024).

2.1.2. Tax Planning

Tax planning among firms refers to the strategic approach that companies adopt to minimize their tax liabilities while ensuring full compliance with tax laws and regulations (Jackson & Maccarthy, 2023). This process involves evaluating various tax-saving opportunities, understanding applicable tax laws, and structuring business operations in a way that legally reduces the firm's overall tax burden. Tax planning is a critical aspect of financial management for firms, as it allows businesses to retain more capital, which can be reinvested in operations, growth, or other strategic initiatives (Bwala & Ibrahim, 2024). The goal of tax planning is not to avoid taxes altogether but to arrange the company's financial affairs in the most tax-efficient manner (Jamiu et al., 2024). Firms can achieve this by taking advantage of tax deductions, credits, incentives, and exemptions available under the law.

The concept of tax planning is comprehensive and involves several stages, from long-term strategic planning to day-to-day tax decision-making. Companies may choose to plan for taxes through various mechanisms, such as structuring transactions to benefit from lower tax rates, deferring tax payments, using tax credits to reduce liabilities, or shifting profits to lower-tax jurisdictions where applicable. Tax planning also involves managing the timing of income and expenses to optimize the company's tax position, ensuring that taxes are paid at the most beneficial times (Donohoe, Gale & Mayberry, 2024). Effective tax planning helps companies maintain healthy cash flow, stay compliant with evolving tax laws, and avoid penalties or audits from tax authorities (Jackson & Maccarthy, 2023).

For firms, particularly large corporations and listed entities, tax planning also includes considering the impact of international taxation, transfer pricing, and cross-border transactions. This aspect of tax planning is particularly important in the globalized business environment, where multinational corporations must navigate different tax regimes, tax treaties, and regulations in various countries. Ultimately, effective tax planning is a key determinant of a firm's financial performance and overall competitiveness in the market (Bwala & Ibrahim, 2024).

2.1.2.1. Effective Tax Rate

The effective tax rate (ETR) is a measure of the percentage of a company's earnings that is paid as taxes (Alkurdi, Almarayeh, Bataineh, Al Amosh & Khatib, 2024). Unlike the statutory tax rate, which is the rate set by law, the effective tax rate provides a more accurate picture of a company's actual tax burden by considering the total taxes paid relative to its pre-tax income. The ETR is calculated by dividing the total tax expense by the firm's earnings before tax (EBT) (Mubarok, Sunaryo, Pangesti & Febrianto, 2024). The resulting percentage offers useful hints on how much of a company's income is consumed by taxes, which can significantly affect its overall profitability and cash flow.

The effective tax rate is an important metric for investors, analysts, and tax authorities as it helps assess a company's tax efficiency and compliance. A lower ETR may indicate that the company is taking advantage of tax deductions, credits, or tax-saving strategies to minimize its liabilities (Putri & Yanto, 2024). Conversely, a higher ETR could

suggest that the firm is facing higher tax obligations or is less efficient in managing its tax expenses (Istrate, 2023). The ETR could also be used to compare companies within the same industry or sector, as differences in tax rates can reveal variations in financial strategies, profitability, or exposure to certain tax risks.

2.2. Theoretical Framework and Development of Research Hypothesis

The theoretical anchorage of this study is Agency Theory. This theory was first propounded by Michael C. Jensen and William H. Meckling in 1976 (Meckling & Jensen, 1976). The theory emerged from the broader field of organizational economics and finance, focusing on the relationship between principals (owners or shareholders) and agents (managers) within a firm (Aggreh, Nworie & Abiahu, 2022). The theory was developed to address the inherent conflicts of interest that arise when the agents, who are tasked with managing the firm, make decisions that may not align with the best interests of the principals (Dobbin & Jung, 2010). This misalignment is often referred to as the "agency problem."

The main postulations of Agency Theory center around the idea that the relationship between principals and agents is inherently conflictual due to the differing goals, information asymmetries, and risk preferences between the two parties (Nworie & Obi, 2024). Principals, who are the owners or shareholders of the company, seek to maximize the value of their investments, whereas agents (the managers) may have personal goals that diverge from the firm's objectives, such as increasing their own compensation, reducing their personal risk, or enhancing their career prospects. This misalignment can lead to agency costs, which are the costs incurred to monitor and align the actions of agents with the interests of principals (Chechet & Olayiwola, 2014). In the context of financial decision-making, agency theory suggests that managers may engage in tax planning strategies that serve their personal interests or short-term goals, even if these strategies do not maximize long-term shareholder value.

Agency Theory is highly relevant to the topic of financial distress and tax planning, particularly for listed consumer goods firms in Nigeria. Firms experiencing financial distress may be more vulnerable to agency problems, as the pressures of financial instability can amplify the conflict between managers and shareholders. In such situations, managers may be motivated to engage in tax planning strategies that aim to alleviate immediate financial strain or enhance personal performance metrics (such as earnings or stock prices) (Saputri & Radianto, 2023), even at the expense of long-term corporate health or optimal tax management. For example, managers under financial distress might delay tax payments or pursue aggressive tax avoidance strategies to improve short-term liquidity, which may not align with the best interests of shareholders in the long run. The agency problem becomes more pronounced during financial distress because managers may feel greater pressure to protect their positions or avoid the personal consequences of failure, which can lead to suboptimal decision-making, including in the area of tax planning. It is therefore intelligent enough to raise the hypothesis below:

> Ha: Financial distress (indicated by decrease in Altman Z Score) influences Nigerian consumer goods firms to engage in tax planning that will significantly reduce their effective tax rate.

2.3. Empirical Review

The empirical findings on the relationship between financial distress and tax planning strategies provide mixed results across various sectors and countries, but they offer useful hints on the dynamics of distressed firms' tax behavior. Jamiu et al. (2024) and Adebimpe and Mngueshima (2024) specifically focused on Nigerian firms and found that financial distress negatively affects corporate tax planning strategies. Jamiu et al. (2024) observed this relationship within manufacturing firms, suggesting that financial stress forces firms to shift away from long-term tax strategies in favor of more immediate financial relief. On the other hand, Adebimpe and Mngueshima (2024) found an insignificant effect of direct taxes on tax burden but identified a significant negative effect of indirect taxes on Nigerian consumer goods firms' tax obligations, highlighting the sector's complex response to tax reforms. Other studies such as Dang and Tran (2021) and Kamayanti et al. (2023) support this view, observing a positive relationship between financial distress and tax avoidance in Vietnam and Indonesia, respectively. These studies suggest that financial distress encourages firms to avoid taxes as a short-term strategy to improve cash flow. In contrast, Zainazor et al. (2023) found that financial factors such as leverage, capital intensity, and audit quality significantly impacted tax planning strategies in Malaysia, pointing to the importance of external factors alongside financial distress. However, studies like Saputri and Radianto (2023) and Takasanakeng (2022) have reported differing results. They found no significant relationship between financial distress and tax aggressiveness in certain sectors such as real estate and

telecommunications. This divergence might be attributed to industry-specific differences, where firms in less capital-intensive industries may have fewer opportunities or incentives for aggressive tax planning during times of distress.

Further contrasting results are found in studies like Na'imah et al. (2023) and Sadjiarto et al. (2020), which indicate that financial distress positively influences tax avoidance practices in Indonesia. This finding highlights the inclination of distressed firms to engage in practices that minimize tax liabilities in the face of financial challenges. Similarly, Hashemi et al. (2018) examined Iranian firms during the global financial crisis and found no significant relationship between financial distress and tax avoidance, suggesting that external macroeconomic factors may also influence tax strategies during periods of financial turmoil. Dhamara and Violita (2017) also explored the relationship in the Indonesian manufacturing sector and found that financial distress had an insignificant effect on cash effective tax rates and tax sheltering, suggesting that the pressure of distress may not always lead to aggressive tax planning. The diversity in these findings suggests that the relationship between financial distress and tax planning is influenced by various contextual factors, such as the firm's industry, external monitoring, and specific macroeconomic conditions.

2.4. Gap in Literature

While the existing literature on financial distress and tax planning provides useful hints, there remains a gap in research that specifically examines the impact of financial distress on the effective tax rate of consumer goods firms, particularly in the context of Nigeria. Several studies have explored the relationship between financial distress and tax behavior in various sectors, such as Jamiu et al. (2024) and Adebimpe and Mngueshima (2024), which investigate Nigerian manufacturing and consumer goods firms, respectively. However, there is a lack of comprehensive analysis on the role of financial distress, particularly using the Altman Z Score, in shaping tax planning strategies among Nigerian listed consumer goods firms. Other studies, such as those by Zainazor et al. (2023) and Dang and Tran (2021), have explored financial distress's influence on tax planning in different countries and sectors like Malaysia and Vietnam, but none have focused on how these distress indicators, especially the Altman Z Score, affect tax rates in Nigerian consumer goods firms. Additionally, while Kamayanti et al. (2023) and Saputri and Radianto (2023) offer hints on financial distress and tax avoidance in other regions like Indonesia, there is limited research addressing the direct impact of financial distress on tax rates in the context of Nigerian consumer goods firms. Moreover, studies like those of Sadjiarto et al. (2020) and Hashemi et al. (2018) focus on tax avoidance rather than effective tax rates, further underscoring the gap in literature regarding the nuanced effects of financial distress on tax strategies among firms listed in the Nigerian consumer goods sector. Thus, further research is needed to examine the extent to which financial distress, as measured by the Altman Z Score, influences the effective tax rates of Nigerian listed consumer goods firms, a crucial area of inquiry that has not yet been fully explored.

3. Research Method and Materials

This study adopts an ex-post facto research design. An ex-post facto design is suitable because the study relies on historical data rather than manipulating variables (Nworie, Okafor & John-Akamelu, 2022). This design enables the researchers to analyze the relationship between financial distress, as measured by the Altman Z-Score, and tax planning, represented by the effective tax rate, over a specified period in the past. Given that financial distress is an existing phenomenon that cannot be controlled or manipulated, this design ensures that valid and reliable conclusions can be drawn from historical trends and relationships. Ex-post facto is better than alternative research designs such as experimental and survey designs because it allows for the investigation of cause-and-effect relationships without the need to manipulate independent variables, which is not feasible in this context.

Unlike experimental designs, which require the researcher to control and manipulate variables in a controlled setting, ex-post facto research examines naturally occurring variables and their effects. Similarly, while survey designs are useful for gathering opinions and perceptions, they may not be appropriate for analyzing objective historical financial data. Therefore, the ex-post facto design is most appropriate for this study, as it facilitates the analysis of existing financial and tax-related records over time, ensuring that the findings are based on actual firm performance and documented financial conditions.

The population of the study consists of twenty-one (21) listed consumer goods firms in Nigeria as recognized by the Nigerian Exchange Group (NGX). These firms as listed in Table 1 blow operate in sectors such as food production, beverages, household products, and personal care, all of which are crucial components of the consumer goods industry.

Table 1. Population of the study

S/N	Company
1	Cadbury Nigeria Plc.
2	Champion Brewery Nig. Plc.
3	Dangote Sugar Refinery Plc.
4	DN Tyre and Ruber Plc.
5	Flour Mills Nig. Plc.
6	Golden Guinea Brewery Plc.
7	Guinness Nig. Plc
8	Honeywell Flour Mill Plc.
9	International Breweries Plc.
10	MCnichols Plc.
11	Multi-trex Integrated Foods Plc.
12	Northern Nig. Flour Mills Plc.
13	Nascon Allied Industries Plc.
14	Nestle Nigeria Plc.
15	Nigerian Breweries Plc.
16	Nigerian Enamelware Plc.
17	PZ Cussons Nigeria Plc.
18	Unilever Nigeria Plc.
19	Union Dicon Salt
20	Vitafoam Nigeria Plc.
21	Bua Foods Plc.

Source: NGX Factbook, 2024

Due to data availability constraints and the need for firms with complete financial records within the study period, a purposive sampling technique was employed to select sixteen (16) firms (see Table 2). This method ensures that only firms with the required financial information, including Altman Z-Score components and effective tax rates, are included in the analysis. The purposive selection process enhances the robustness of the findings by minimizing missing data and ensuring a representative sample of the sector.

Table 2. Sample size

S/N	Company
1	Cadbury Nigeria Plc.
2	Champion Brewery Nig. Plc.
3	Dangote Sugar Refinery Plc.
4	Flour Mills Nig. Plc.
5	Guinness Nig. Plc
6	Honeywell Flour Mill Plc.
7	International Breweries Plc.
8	Northern Nig. Flour Mills Plc.
9	Nascon Allied Industries Plc.
10	Nestle Nigeria Plc.
11	Nigerian Breweries Plc.
12	Nigerian Enamelware Plc.
13	PZ Cussons Nigeria Plc.
14	Unilever Nigeria Plc.
15	Vitafoam Nigeria Plc.
16	Union Dicon Salt

Source: Researcher's compilation, 2025

The study relies solely on secondary data obtained from the annual financial reports and statements of the selected firms. The data spans ten years, from 2014 to 2023, a period chosen to capture trends before and after significant economic and fiscal policy changes in Nigeria. The annual reports were sourced from the Nigerian Exchange Group (NGX) official website, and company websites. The use of audited financial statements ensures data credibility and accuracy, reducing the risk of measurement errors. Secondary data is most appropriate to the study because it provides access to reliable, verifiable, and comprehensive historical financial information that has already been documented by credible sources such as audited financial statements, annual reports, and stock exchange filings. This data allows the researcher to objectively analyze the relationship between financial distress and tax planning over a defined period without the biases that may arise from primary data collection. Moreover, using secondary data is cost-effective and time-efficient, making it suitable for studies like this one that focus on historical trends and require large datasets for accurate analysis.

The key financial variables extracted from the reports include:

Altman Z-Score:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5 \quad (1)$$

Where:

X_1 = working capital to total assets ratio
X_2 = retained earnings to total assets ratio
X_3 = Profit before interest & tax to total assets
X_4 = market value of equity to book value of total liabilities
X_5 = Revenue to total assets

The model aims to calculate a firm's Z-score using the ratios (X1, X2, X3, X4, X5) the variables. When a firm's Z-score falls below 1.81, it is considered financially distressed; otherwise, it is classified as non-financially distressed

Effective Tax Rate (EFTX): A measure of tax planning, computed as total tax expense divided by earnings before tax (EBT).

The study employs both descriptive and inferential statistical methods to analyze the collected data. Descriptive statistics such as mean, standard deviation, minimum, and maximum values were used to summarize the characteristics of the dataset. To test the research hypothesis, the study employs panel least squares (PLS) regression

analysis. Panel data regression is chosen because it allows for the analysis of both cross-sectional and time-series variations, increasing the efficiency and robustness of the results. Panel data regression is chosen instead of other alternatives such as OLS, robust least squares, or time series analysis because it allows for the examination of both cross-sectional and time-series variations, controls for unobserved heterogeneity across entities, improves efficiency and consistency of parameter estimates, and enables the detection of dynamic relationships that single-dimension models cannot capture. The general model for the panel regression is specified as:

$$EFTX_{it} = \beta_0 + \beta_1 AZS_{it} + \varepsilon_{it} \quad (2)$$

Where:

$EFTX_{it}$ = Effective Tax Rate of firm i at time t
AZS = Altman Z-Score for financial distress of firm i in year t
ε_{it} = Error term
β_0 = Constant
β_1 = Coefficient of independent variable

4. Results and Discussion

4.1. Descriptive Analysis

Table 3 shows the descriptive analysis of the data.

Table 3. Descriptive analysis

	EFTX	AZS
Mean	0.540940	0.537175
Median	0.302248	2.307678
Maximum	41.08395	10.53743
Minimum	-4.715152	-61.83200
Std. Dev.	3.332477	9.695799
Skewness	11.43159	-4.430794
Kurtosis	138.9423	24.37889
Jarque-Bera	126687.0	3570.565
Probability	0.000000	0.000000
Sum	86.55033	85.94805
Sum Sq. Dev.	1765.759	14947.35
Observations	160	160

Source: EViews 10 (2025)

Table 3 shows the statistics for the Effective Tax Rate (EFTX). The mean value of 0.5409 suggests that, on average, the firms in the study paid approximately 54% of their earnings before tax (EBT) as tax. However, the maximum value of 41.08395 indicates the presence of outliers in the data, with some firms paying a disproportionately high amount of tax relative to their earnings. This is further reflected in the minimum value of -4.715152, which indicates a few firms had a negative effective tax rate, possibly due to tax credits, losses carried forward, or other forms of tax adjustments. The standard deviation of 3.332477 shows that there is a considerable variation in the effective tax rates across the firms, suggesting that tax planning practices are not uniform. The positive skewness value of 11.43159 highlights that the distribution of EFTX is highly skewed to the right, meaning there are a few firms with very high tax rates that significantly affect the average. The extreme kurtosis value of 138.9423 indicates a distribution that is highly leptokurtic, meaning there are frequent extreme values in the dataset. Finally, the Jarque-Bera test for normality gives a p-value of 0.000000, rejecting the null hypothesis of a normal distribution, and confirming that the data is highly non-normally distributed, likely due to the presence of outliers and the heavy tail.

Turning to the Altman Z-Score (AZS), the mean value of 0.537175 suggests that, on average, the firms in the sample are financially distressed, as values below 1.81 are considered indicative of financial distress. The maximum value of 10.53743 is quite high compared to the mean, showing that a few firms in the sample were not financially distressed

and had a much higher Z-score. Conversely, the minimum value of -61.83200 indicates extreme financial distress in some firms, potentially suggesting severe financial instability or bankruptcies. The standard deviation of 9.695799 highlights considerable variability in the Z-scores, indicating that some firms are in very good financial health while others are in critical distress. The skewness of -4.430794 suggests that the distribution of Z-scores is heavily skewed to the left, meaning that most firms are financially distressed, with only a few firms having high Z-scores. This aligns with the findings of the mean and minimum values, where the bulk of the firms are on the distressed side of the scale. The kurtosis value of 24.37889 indicates that the distribution is highly peaked, with many firms clustered around low Z-scores, but with a few extreme values on the high end. Finally, the Jarque-Bera test statistic of 0.000000 suggests that the Z-score data is also highly non-normal, driven by the concentration of distressed firms and a small number of non-distressed firms.

4.2. Test of Hypothesis

Ha: Financial distress (indicated by decrease in Altman Z Score) influences Nigerian consumer goods firms to engage in tax planning that will significantly reduce their effective tax rate.

Table 4 shows the result of the regression analysis.

Table 4. Regression analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AZS	0.005646	0.000261	21.61556	0.0000
C	0.422238	0.031883	13.24342	0.0000
Weighted statistics				
R-squared	0.068852	Mean dependent var		0.487888
Adjusted R-squared	0.062959	S.D. dependent var		1.174878
S.E. of regression	0.983235	Sum squared resid		152.7468
F-statistic	11.68299	Durbin-Watson stat		2.040388
Prob(F-statistic)	0.000802			

Note: Dependent variable: EFTX. Method: panel EGLS (period SUR); sample 2014–2023; 16 cross-sections; 160 observations; White period standard errors and covariance (d.f. corrected).

Source: EViews 10 (2025)

In Table 4, the results of the regression analysis are presented, testing the hypothesis that financial distress, as indicated by a decrease in the Altman Z-Score, influences Nigerian consumer goods firms to engage in tax planning that reduces their effective tax rate. The dependent variable is the Effective Tax Rate (EFTX), which, in the context of this study, is a measure of tax planning. A higher effective tax rate implies that a firm is engaging in less tax planning, while a lower effective tax rate suggests that a firm is engaging in more tax planning.

The R-squared value is 0.068852, which suggests that about 6.89% of the variation in the Effective Tax Rate (EFTX) can be explained by the variation in the Altman Z-Score (AZS). This is a relatively low value, indicating that while financial distress (as measured by the Z-Score) has some influence on the effective tax rate, other factors not included in the model also contribute to the variation in EFTX. Although the R-squared value is modest, it still indicates a non-negligible explanatory power of the model. The model's overall significance is confirmed by the F-statistic's p-value of 0.000802, which is less than the 5% significance level, indicating that the regression model as a whole is statistically significant and that the independent variable (AZS) can explain some of the variation in EFTX. This strengthens the validity of the model and supports the relevance of financial distress in influencing tax planning. Next, the Durbin-Watson statistic is 2.040388, which suggests that there is no significant autocorrelation in the residuals of the regression model, as it is close to the ideal value of 2. This indicates that the model does not suffer from issues related to autocorrelation, which is important for ensuring the reliability and robustness of the results. The constant term (C) in the model has a coefficient of 0.422238 with a p-value of 0.0000. This constant represents the expected value of the Effective Tax Rate (EFTX) when the Altman Z-Score (AZS) is zero (i.e., when there is no financial distress). The p-value of 0.0000 suggests that the constant is highly significant, indicating that there are other factors influencing the effective tax rate that are not captured by the Z-Score alone.

The coefficient of the Altman Z-Score (AZS) is 0.005646, with a p-value of 0.0000. This coefficient suggests that for every one-unit increase in the Z-Score, the Effective Tax Rate (EFTX) increases by 0.005646. In practical terms, a higher Z-Score is associated with an increase in the effective tax rate, which means that as firms become financially healthier (a higher Z-Score), they are likely to engage in less tax planning, thus paying more in taxes relative to their earnings before tax (EBT). Since the coefficient is positive, this suggests a direct relationship between financial distress and tax planning behavior, which is consistent with the hypothesis that firms experiencing greater financial distress are likely to engage in more tax planning.

The p-value associated with the coefficient of AZS is 0.0000, which is well below the 5% significance level (0.05), confirming that the effect of financial distress on the effective tax rate is statistically significant. This means that the relationship observed between the Z-Score and the Effective Tax Rate is unlikely to be due to random chance and is a robust finding. Summarily, based on the regression results in Table 4, we can conclude that financial distress, as measured by the Altman Z-Score, does significantly affect the effective tax rate of Nigerian consumer goods firms, with the relationship being positive and significant at the 5% level. Specifically, as firms experience financial distress (lower Z-Score), they tend to engage in more tax planning (reflected in a lower effective tax rate), while healthier firms with higher Z-Scores tend to engage in less tax planning. In other words, financial distress (indicated by decrease in Altman Z Score) influences Nigerian consumer goods firms to engage in tax planning that will significantly reduce their effective tax rate ($\beta = 0.005646$; p-value = 0.0000).

4.3. Discussion of Findings

The findings from this study suggest that financial distress, as indicated by a decrease in the Altman Z-Score, significantly influences Nigerian consumer goods firms to engage in tax planning that reduces their effective tax rate. The positive coefficient of 0.005646 for the Altman Z-Score implies that as firms experience financial distress (indicated by a lower Z-Score), they engage in more tax planning, resulting in a lower effective tax rate. This result makes sense from a strategic standpoint; financially distressed firms are often under pressure to preserve cash flow, and one way to achieve this is through aggressive tax planning strategies that reduce their tax liabilities. In times of financial stress, firms may be more inclined to find legal ways to minimize taxes to stabilize their financial position. The significance of the result (p-value of 0.0000) reinforces the reliability of this conclusion, indicating that the relationship between financial distress and tax planning is not due to random chance.

Several studies in the empirical review support and align with these findings. For instance, Jamiu et al. (2024) found that financial distress negatively affects corporate tax planning strategies, aligning with the notion that distressed firms may resort to tax planning as a strategy for financial survival. Similarly, Dang and Tran (2021) reported a positive relationship between financial distress and tax avoidance in Vietnam, reinforcing the idea that distressed firms may engage in tax avoidance strategies. Kamayanti, Qomariyah, Muwidha, and Ernawati (2023) found that financial distress had a positive effect on tax avoidance in Indonesia, further supporting the view that distressed firms are likely to engage in strategies to reduce their tax liabilities. In contrast, Saputri and Radianto (2023) found no significant impact of financial distress on tax aggressiveness, which slightly contradicts the study's findings. However, this discrepancy could be due to differences in the industries examined or the specific tax planning strategies employed in each region. Nonetheless, the majority of studies reviewed here show that financial distress leads firms to adopt tax planning measures to reduce their effective tax rates.

5. Conclusion

The study aimed to examine the effect of financial distress on tax planning among listed consumer goods firms in Nigeria. Financial distress was measured by Altman Z Score while effective tax rate measured tax planning. Panel least square regression was used to test the hypothesis, which found that financial distress influences Nigerian consumer goods firms to engage in tax planning that will significantly reduce their effective tax rate ($\beta = 0.005646$; p-value = 0.0000). In other words, a well-structured tax planning framework allows firms to optimize their tax liabilities, minimize financial risks, and improve cash flows. In this context, firms are able to strategically navigate the complexities of their tax obligations by making informed decisions, utilizing tax incentives, and adopting proactive measures to mitigate their tax burden, all while ensuring compliance with national and international tax regulations. This results in enhanced business sustainability, better profitability, and long-term growth. For listed consumer goods firms in Nigeria, effective tax planning is particularly important given the economic volatility, tax complexities, and the increased need for companies to be competitive in a challenging market.

In conclusion, as firms experience declining financial health, they may prioritize short-term financial relief through tax planning measures, potentially sacrificing long-term tax compliance or optimal financial strategies. The strong statistical significance of the result indicates that this behavior is not only prevalent but is a response to the pressures firms face during periods of financial instability. This phenomenon could have broader implications, such as affecting the transparency of financial reporting, influencing the long-term sustainability of the firm, and potentially altering the relationship between the firm and tax authorities. Such strategies may ultimately impact corporate governance and stakeholder trust, with the potential to shape the broader tax environment in the consumer goods sector. It is recommended that financial managers in Nigerian consumer goods firms should implement a comprehensive tax risk management framework that aligns with the firm's long-term financial stability, especially in periods of financial distress. This should include a continuous monitoring system using the Altman Z-Score to detect early signs of distress and guide tax planning decisions. In particular, when a firm's Z-Score declines, the tax planning strategy should focus on legitimate tax-saving techniques, such as tax credits, loss carryforwards, and tax-efficient capital structuring, rather than aggressive tax avoidance or evasion strategies.

5.1. Implication of the Findings

The findings highlight the significant relationship between financial distress and tax planning behavior among Nigerian consumer goods firms, with financial distress prompting firms to engage in strategies aimed at reducing their effective tax rate. This implies that firms in distress may use tax planning as a strategic tool to mitigate their financial challenges and preserve cash flow.

5.2. Limitation of the Study

The study is limited by its reliance on secondary data from annual reports, which may not fully capture all relevant tax planning behaviors and firm-specific factors that influence financial distress and effective tax rates. Additionally, the research only focused on a sample of 16 listed consumer goods firms in Nigeria, which may not be fully representative of the entire sector, and the period of analysis (2014-2023) might not account for the long-term effects of financial distress on tax planning strategies.

5.3. Contribution to Knowledge

This study contributes to filling this gap by specifically addressing how financial distress, as measured by the Altman Z Score, influences the effective tax rates of Nigerian listed consumer goods firms, an area that has been under-explored in existing literature.

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