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Tax Optimization Approach and Financial Distress Cost: A Study of Non-Finance Listed Firms in Nigeria

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ABSTRACT: This study examined the effect of corporate tax optimization on the financial distress cost of listed non-finance firms in Nigeria. The specific objectives was to ascertain the effect of cash effective tax rates, tax efficiency. The study, guided by these specific objectives, employed an ex-post facto research design on a population of forty listed non-finance firms, from which a sample size of thirty was purposively selected based on complete data from 2015 to 2024. Secondary data were obtained from annual reports and NGX publications, forming a ten-year balanced panel. The hypotheses were tested using panel regression techniques, and the fixed-effect model was chosen through the Hausman specification test after conducting the required diagnostic checks. The findings showed that: cash effective tax optimization has a positive but non-significant effect on financial distress cost ($\beta = 0.006118$; $p = 0.4383$); tax efficiency optimization has a negative but non-significant effect on financial distress cost ($\beta = –0.000424$; $p = 0.8782$). In conclusion, tax-related behaviors firms adopt carry structural consequences that extend beyond statutory obligations and reach into firms' financial resilience. The study recommended that Chief financial officers (CFOs) of listed non-finance firms should strategically increase the use of debt-related tax shields where feasible, ensuring that interest-based deductions are leveraged optimally to strengthen liquidity, reduce financing costs, and mitigate the risk of financial distress.

Keywords: Tax Optimization, Financial Distress Cost, Cash Effective Tax Rates, Tax Efficiency.

INTRODUCTION

Amid increased scrutiny of firms' corporate tax strategies from tax authorities, other regulators, and the public, issues surrounding tax optimization has gained significant global interest. Kurniady, (2020), affirmed that corporate tax optimization results from the tendency of corporations who intend to reduce its tax liabilities. Similarly, Diantari & Ulupui (2016) concluded that corporate tax optimization is an outcome from the differences between government's objective to improve or optimize tax receipt, and corporate tax payers who aim for minimum tax value to improve revenue or profit.

Tax optimization which in the literature have been employed interchangeably as tax avoidance, tax planning, and tax aggressiveness (Batista da Silva, Ernani de Carvalho Junior & Mendes Astonishment, (2023) *also adopted in this study*, is defined as a legality of tax minimization behavior. In

practice, when corporations have some degree of freedom on the choice of action proposed by the tax law, the amount paid on tax will decrease. However, many firms go beyond what is allowed by the tax system, using sometimes illegal action in order to reduce its tax liabilities (Payne & Raiborn, 2018). Little wonder why Kutera, (2017) argue that tax optimization approaches and tax fraud are alternative methods of reducing taxes. Therefore, the legality of tax optimization behaviour is questioned, since the link between legal and illegal tax actions is often blurred (Blaufus et al., 2016). Nevertheless, Dobrovic, Koraus and Rajnoha, (2018) classified all such actions as either tax fraud or tax management where on the one hand, tax fraud involves non-payment of tax by means of violations of the law consisting intentional action taken by companies to reduce their tax obligation and on the other hand, tax management as a term usually reserved for minimizing a tax bill legally by taking advantage of the tax code (Ibadin & Kemebradikemor, 2020; Estiasih & Saraswati, 2021).

Corporate taxation in Nigeria originated during British colonial rule, introducing formal income tax ordinances in 1943 to regulate company profits. Post-independence, Nigeria established the Companies Income Tax Act (1961) and the Petroleum Profits Tax Act (1959) to capture oil revenues. Over the decades, both Nigeria has reformed its tax system through modernization initiatives, structural adjustment programs, legal overhauls and Finance Acts aimed at expanding the tax base, improving compliance, attracting investment, and integrating with global standards like the OECD BEPS framework. Taxation is fast becoming a key revenue source for the governments of Nigeria. This statement is clearly mirrored in President Bola Tinubu's speech who noted that the development of the Nigeria Tax Bill is a move towards strengthening the Nation's tax administration, ensuring that businesses, including corporate entities, are properly registered and taxed (Olika et al., 2024).

Notably, corporate tax systems particularly in West Africa region in which Nigeria belongs relies on compulsory compliance (Jibir et al., 2020) where corporations are required to assist tax authorities by reporting honestly their taxable income and paying their taxes based on reported incomes over time with stern implication that the tax authorities can impose substantial penalties for detected fraudulent activity. Considering the preceding scenario, it is clear that the argument put forth by Etter-Phoya et al., (2020) who emphasized that a fundamental aspect of corporate tax regimes in West Africa is in its propensity to create incentives that enable corporations lower its tax obligations through both legitimate and illicit strategies is valid.

Theoretically, the agency theory suggests that managers may engage in aggressive tax optimization to maximize shareholder wealth while minimizing tax liabilities; however, such actions may inadvertently increase financial distress cost (Desai & Dharmapala, 2009). Corporations that aggressively optimize its tax burdens often employ complex financial structures, leverage tax shelters, and engage in earnings management practices that may erode transparency and weaken investor confidence (Richardson et al., 2015). The consequence of aggressive optimization is reported in the study of Chen et al., (2019) who show that excessive tax avoidance can lead to increased scrutiny from tax authorities, regulatory penalties, and reputational damage, which can collectively escalate financial distress costs. Further, Orji and John-Akamelu, (2023), Appah, and Duoduo, (2024) documented a positive influence of tax planning activities on financial distress in Nigeria, while Abbiw, (2021) documented negative influence of various forms of tax optimization strategies on

financial distress of listed non-finance firms in Ghana.

In the views of Owolabi & Iyoha, (2012), financial distress costs which includes increased borrowing costs and decreased market valuation, are particularly pronounced in environments with weak corporate governance structures, as they exacerbate asymmetric information problem between firms and external financiers. Taken together, these insights suggest that while corporate tax optimization strategies may provide short-term financial benefits, they can also increase long-term financial distress costs. The foregoing discuss premises the need for this study which evaluate the benefits and perhaps potential losses enabled by tax optimization approaches on financial distress cost.

Financial distress costs have risen notably during major crises, beginning in 2007, re-emerging in 2014, and most recently during the Covid-19 pandemic with significant effect on global corporate operations (Crespí-Cladera, Martín-Oliver & Pascual-Fuster, 2021). In light of these recurrent disruptions, the ability to accurately predict early signs of financial distress before insolvency becomes crucial (Konstantaras & Siriopoulos, 2011; Pindado et al., 2008). Such foresight is critical because it empowers firms to implement timely and effective strategies aimed at preventing instability, particularly in periods of economic downturn, when financial risks tend to intensify.

Tax optimization is widely recognized as a strategic tool for reducing corporate financial distress, primarily because it can be employed to generate internal financial resources (Chytis et al., 2020; Muhmad et al, 2024). This strategic approach aligns closely with the principles of the pecking order theory, which posits that firms prefer internal financing over external sources to fund their operations. In this context, tax incentives and savings derived from effective tax management serve as vital components of internal financing, thereby reinforcing the theory's relevance to contemporary corporate financial strategies (Rezende et al., 2018).

In periods of financial instability, firms often turn to tax optimization as a bailout mechanism to minimize reputational and financial damage (Richardson et al., 2015; Chiachio & Martinez, 2019). However, while such strategies may enhance liquidity, they can also introduce financial complexity and transparency issues, potentially increasing the cost of financial distress (Sun et al., 2023). Dhawan et al., (2020) document that tax planning increases bankruptcy risk, debt costs, and lower bond ratings. Similarly, Balakrishnan et al., (2018) found that aggressive tax management may reduce transparency, increase capital costs, and intensify financial distress (de Oliveira Ferreira et al., 2024). While tax optimization helps reduce liabilities (Onyeka-Iheme, 2021), its excessive use may signal instability, attract regulatory scrutiny, and limit external financing (Akhlaghi et al., 2023), thus, highlighting the crucial need to assess how tax optimization tools can be effectively managed in other to mitigate financial distress costs among listed non-finance firms in Nigeria.

Although similar studies on the effect of tax optimization on financial distress among listed non-finance firms in Nigeria to those of Orji & John-Akamelu, (2023; Appah & Duoduo, (2024), already exist, this study identifies a distinct gap: that financial distress costs resulting from corporate tax optimization have not received adequate scholarly attention using Nigerian data. While prior research on financial distress provides valuable insights for early warning and prevention (Zhou et al., 2015), a narrow focus on distress occurrence often overlooks critical costs—both direct (e.g., legal fees, asset losses) and indirect (e.g., reputational damage, lost opportunities, higher

debt costs). Bulot et al., (2017) posit that recognizing such costs is essential, as they significantly influence corporate decisions, risk strategies, and policy actions, thereby shaping the broader economic implications of distress (Farooq et al., 2021).

In corporate finance literature, financial distress and financial distress cost are related but conceptually distinct. While the former denotes a firm's inability to meet financial obligations (Khaliq et al., 2014), the latter refers to the direct and indirect costs resulting from such distress (Rosslyn-Smith et al., 2020), therefore, misusing these terms interchangeably may lead to conceptual errors, highlighting a key critical gap which this study addresses. Further, a review of existing scholarship indicates that scholars has predominantly focused on the direct costs of financial distress (Ceylan, 2021), leaving the indirect costs relatively underexplored. This imbalance presents a valuable opportunity to investigate the more elusive, yet potentially significant, indirect dimensions of financial distress. Supporting this perspective, Altman (1984) found that the indirect costs of financial distress could account for 10.5% of a firm's market value, more than double the 4% attributed to direct costs, emphasizing the economic relevance of indirect impacts, hence, leaving the need to for this study which intends to examine the effect of tax optimization on financial distress cost among listed non-finance in Nigeria very convincing.

The specific objectives of this study are:

1. Evaluate the effect of cash effective tax optimization approach on financial distress cost of listed non-finance firms in Nigeria.
2. Examine the effect of tax efficiency optimization approach on financial distress cost of listed non-finance firms in Nigeria.

LITERATURE REVIEW

2.1 Conceptual Review

2.1.1 Corporate Tax Optimization

Corporate tax optimization refers to a deliberate and lawful approach by corporate entities to minimize their tax liabilities through strategic planning and utilization of available tax provisions, incentives, and regulatory frameworks. This concept is distinct from tax evasion, as it operates within the legal boundaries set by tax authorities (Fellegi, 2013). Corporate tax optimization encompasses various tactics such as thin capitalization, effective tax rate management, and capital intensity adjustments (Taylor & Richardson, 2013), all aimed at enhancing a firm's financial efficiency and shareholder value. In the views of (Neuman, 2014; Garbarino, 2011) corporate tax optimization strategy is often characterized by the strategic minimization of tax liabilities within legal frameworks. Tax optimization strategies are designed to align corporate tax liabilities with an entity's overall financial objectives while maintaining compliance with national and international tax regulations (Avi-Yonah, 2014; Sosnowski, 2023). The literature delineates tax optimization as a proactive approach to managing tax obligations through deliberate corporate structuring, the leveraging of permissible tax deductions, and transfer pricing mechanisms, especially relevant in multinational corporations (Cooper & Nguyen, 2020).

The process involves selective adherence to statutory allowances and strategic planning to benefit from jurisdictional tax incentives, resulting in an optimized tax burden without engaging in illicit tax evasion (Ali & Khaoula, 2012). Tax optimization is often juxtaposed with corporate social responsibility, reflecting a tension between maximizing shareholder value and ethical tax conduct (Donohoe, McGill & Outslay, 2014). Notably, digital

advancements have recently enabled firms to adopt sophisticated, real-time tax planning techniques, enhancing their adaptability to fluctuating fiscal policies and regulatory environments (Kononenko et al., 2022). As such, corporate tax optimization represents a legal, yet strategic, financial maneuvering tool, with implications for competitive advantage, public perception, and regulatory scrutiny (Elamer et al., 2024). Specifically, Isallah, (2024) note that the conceptual framework of corporate tax optimization strategy is grounded in the principle that strategic tax planning can lead to improved financial performance without breaching legal obligations. Therefore, by leveraging tax laws and incentives, companies can optimize their tax positions, thereby freeing up resources for reinvestment and growth.

In Nigeria, the Federal Inland Revenue Service (FIRS) plays a pivotal role in shaping the corporate tax landscape. Through initiatives like the introduction of thin capitalization rules in 2020, which limit deductible interest expenses to 30% of a company's earnings before interest and tax depreciation and amortization (EBITDA), the goal of the FIRS is to curb excessive debt financing used for tax avoidance. Additionally, the Chartered Institute of Taxation of Nigeria (CITN) contributes to the development of corporate tax practices by providing professional guidelines and advocating for tax reforms that align with global best practices.

2.1.2 Cash Effective Tax Rate

The concept of 'Cash Effective Tax Rate' has been extensively analysed in academic literature as a vital measure of a firm's tax burden. Unlike the standard effective tax rate, which relies on financial accounting tax expense figures, cash effective tax rate is based on actual cash tax payments, thereby providing a more realistic representation of the tax liability borne by a corporation in a given fiscal period (Dyreng et al., 2019). Scholars argue that cash effective tax rate is a superior indicator of tax avoidance practices, as it captures the direct cash outflows to tax authorities, stripping away the effects of deferred tax liabilities, non-cash tax deductions, and financial reporting adjustments (Gallemore & Labro, 2015). Additionally, Shevlin (2016) asserts that cash effective tax rate reflects a firm's true tax planning strategies, given that corporations often use accrual-based accounting manipulations to lower their book effective tax rate while still paying significant cash taxes. However, it is important to note that cash effective tax rate does not account for temporary differences that may arise due to tax deferral strategies, which can lead to variations between tax payments and book tax expense over time (Drake et al., 2019).

Academic discussions on cash effective tax rate emphasize its components, which include cash tax paid, taxable income, statutory tax rates, deferred tax adjustments, and tax shields (Dyreng & Hanlon, 2019). These elements together determine the tax burden borne in actual monetary terms rather than accrual-based obligations. Scholars such as Hasan et al. (2017) contend that cash effective tax rate provides a more accurate basis for cross-firm tax comparisons, as it mitigates discrepancies arising from varying financial reporting standards and tax accounting treatments. Further, Fairfield & Jorratt de Luis (2016) highlight that cash effective tax rate is essential for assessing tax policy effectiveness and corporate tax compliance, as it unveils discrepancies between reported tax liabilities and actual payments made. However, limitations exist, as cash effective tax rate may fluctuate due to one-time tax settlements, foreign tax credits, and corporate restructuring events, leading to volatility in year-over-year tax assessments (Dyreng et al., 2019). Despite these drawbacks, cash effective tax rate remains a critical measure in evaluating the

real economic tax burden of firms, making it indispensable in corporate tax research.

2.1.3 Tax Efficiency

Tax efficiency refers to the strategic structuring of financial activities to minimize tax liabilities while adhering to legal frameworks. This concept is pivotal in both corporate finance and public policy, aiming to optimize after-tax returns without engaging in evasion or aggressive avoidance. The Scholes-Wolfson framework underscores tax efficiency as the process of maximizing after-tax wealth by considering all parties, taxes, and costs involved in a transaction (Schwab et al., 2019). This paradigm emphasizes the importance of integrating tax considerations into all business decisions to enhance overall financial performance. In the realm of public finance, tax efficiency also encompasses the administrative and compliance costs associated with tax collection, highlighting the need for systems that achieve revenue goals with minimal economic distortion (OECD, 2014).

A prevalent method for assessing tax efficiency is the tax paid to cash flow ratio, which evaluates the proportion of cash taxes paid relative to a firm's operational cash flow. This ratio serves as an indicator of how effectively a company manages its tax obligations in relation to the cash it generates from operations. A lower ratio suggests higher tax efficiency, indicating that a firm retains more of its operational cash flow after tax payments. Conversely, a higher ratio may signal potential inefficiencies or limited tax planning strategies. Hanlon and Heitzman (2010) discuss this ratio as a measure of conforming tax avoidance, reflecting the extent to which firms align their tax reporting with financial reporting to minimize tax liabilities. This metric is particularly useful for stakeholders assessing a firm's liquidity and its ability to meet tax obligations without compromising operational needs.

Prior literature has expanded on the components influencing the tax paid to cash flow ratio, integrating factors such as tax risk and the volatility of cash taxes. Schwab et al. (2019) introduce a data envelopment analysis approach to measure effective tax planning, considering both the maximization of after-tax returns and the minimization of tax risk. Their methodology accounts for various firm-specific inputs, including R&D expenditures, property, plant, and equipment, and leverage, to evaluate how efficiently firms convert these inputs into favorable tax outcomes. This comprehensive approach provides a deeper understanding of tax efficiency, moving beyond simplistic ratios to cover the multifaceted nature of tax planning and its impact on a firm's financial health.

2.1.4 Financial Distress Cost

Financial health status of a firm is very critical to stakeholders because of its importance for informed decision making. Financial health status gives a comprehensive assessment of the combined indicators, capable of providing an overview of the company’s success or failure from time to time and compared with other companies (Israel, et al., 2023). Also, financial health status shows the level of firm financial performance which is a combination of financial indicators such as profitability indicators, liquidity indicators, leverage indicators and activity indicators (Sayidah et al., 2019). Further, Sayidah et al., (2019) stated that corporate annual financial report presented by the company management described the condition of financial health status of the company to find the company’s financial condition, weather it is strong, medium (grey) or weak (financial distress likelihood), wherefor, financial distress refers to a state in which a company undergoes a period of deteriorating financial conditions prior to

reaching a state of bankruptcy. Financial distress represents the decline of a company's earning power, which increases the probability that it may not settle its obligatory payments of interest and debt capital, consequently affecting its credit risk profile (Gordon, 1971). Financial distress can be temporary, whereby recovery depends on early distress detection and the success of turnaround strategies, the failure of which pushes the company into a severely decline state, in which it becomes insolvent and not viable, leading to a corporate failure (Sewpersadh, 2017). Cybinski, (2001) proposed the *financial distress continuum theory* during which companies experience various stages of distress before failure or a recovery (Sewpersadh, 2017).

Financial distress entails multiple costs, including both direct and indirect cost related to bankruptcy, as well as costs associated with the process of liquidation. Often overlooked in distressed companies are the indirect distress costs, such as the loss of creditors and stakeholders, and the costs of the company's value reduction due to managers' actions to protect their own self-interests, to include asset substitution (Altman, 1984). Other indirect bankruptcy costs are the intra-group conflicts of interest, holdout problems, foregone sales and competitive positions, higher operating costs (Senbet & Wang, 2012), and the foregone investment opportunities (Nigam & Boughanmi, 2017). Therefore, following Altman (1984), who highlights indirect distress costs as consequences of reduced stakeholder confidence and value-destructive managerial actions, this study employs the ***sales-growth-gap*** metric as employed in prior related study of (Pindado & Rodrigues, 2005) obtained as the difference between sector and firm sales growth rates as a proxy for indirect financial distress costs. Specifically, this metric captures the extent to which a firm's revenue performance lags behind industry trends, potentially signaling weakened competitive standing due to underlying distress factors.

2.2 Theoretical Review

Trade-Off Theory

The Trade-Off Theory of capital structure, initially articulated by Kraus and Litzenberger (1973), posits that firms determine their optimal capital structure by balancing the tax advantages of debt financing against the costs associated with financial distress. This theory builds upon the foundational work of Modigliani and Miller (1958), who introduced the concept of capital structure irrelevance in perfect markets. However, by incorporating real-world imperfections such as taxes and bankruptcy costs, the Trade-Off Theory provides a more nuanced framework for understanding corporate financing decisions. According to this theory, while debt financing offers tax benefits through interest deductibility, excessive reliance on debt increases the probability of financial distress, thereby imposing additional costs on the firm (Ai et al., 2020).

The core assumptions of the trade-off theory include the existence of corporate taxes, the presence of bankruptcy and agency costs, and the notion that firms aim to maximize their value by identifying an optimal debt-to-equity ratio. This optimal ratio is achieved when the marginal benefit of tax shield from additional debt equals the marginal cost of potential financial distress. The theory assumes that firms have the ability to assess and quantify these marginal benefits and costs accurately, enabling them to make informed financing decisions (Ai et al., 2020). Moreover, it presumes that markets are efficient enough to reflect these trade-offs in the firm's capital structure choices. Applying the Trade-Off Theory to the relationship between corporate tax optimization and financial distress costs offers valuable insights. By strategically

utilizing debt to leverage tax benefits, firms can enhance their after-tax cash flows, thereby improving liquidity and potentially reducing the likelihood of financial distress (Lund, 2014). However, Manestra, Ricotti, Zangari et al., (2011) note that an overemphasis on tax optimization through increased debt can aggravate firm's financial risk, leading to higher distress costs. Therefore, the Trade-Off Theory provides a balanced perspective, emphasizing the importance of managing debt levels to optimize tax benefits while mitigating the risks associated with financial distress (Ai et al., 2020).

2.3 Empirical Review

Silalahi and Siregar (2025) conducted a study with the primary objective of analyzing how tax planning, leverage, and company size influence earnings management within the context of manufacturing companies. The data were derived from the Indonesia Stock Exchange. The period of observation covered five years, from 2017 to 2021. A quantitative research design was adopted, utilizing purposive sampling to select 27 companies out of the population of manufacturing firms, resulting in a total of 135 firm-year observations. The hypotheses were tested using multiple linear regression analysis, following the completion of classical assumption tests such as multicollinearity, heteroscedasticity, and normality. The study found that tax planning and leverage had a significant positive effect on earnings management.

Marsyaf and Wahyuni (2025) studied the effect of financial distress, executive characteristics, and leverage on tax avoidance. The research utilized data exclusively from the Indonesia Stock Exchange, focusing on the mining sector over the period spanning 2021 to 2023. Employing a quantitative explanatory design, the researchers used purposive sampling to select 43 mining firms, resulting in 104 observations after outlier exclusion. The data analysis was conducted using multiple linear regression, specifically the ordinary least square technique. Findings revealed that leverage had a statistically significant positive influence on tax avoidance, whereas financial distress and executive characteristics exhibited no significant effect.

Mahmudi and Lasulita (2025) examined the determinants of tax avoidance among public companies, particularly focusing on how thin capitalization, financial distress, and corporate governance mechanisms influence tax behavior. The data utilized in the study were sourced from manufacturing firms listed on the Indonesia Stock Exchange, covering the years 2012 to 2018. The research exclusively analyzed firms operating within the manufacturing sector. Purposive sampling technique was adopted, targeting companies that were continuously listed during the observation period, resulting in a final sample of 132 firms and 573 observations. The research utilized a multiple linear regression model, specifically employing the Ordinary Least Squares regression technique to test the hypotheses. The findings revealed that thin capitalization, financial distress, and audit quality significantly influenced tax avoidance, with thin capitalization and financial distress having a positive impact and audit quality exhibiting a negative effect.

Kavetsa (2025) conducted a literature-based investigation aimed at exploring the relationship between corporate tax compliance and financial performance within the context of Kenya’s manufacturing sector. The study utilizes a qualitative research design grounded in literature review methodology, without statistical sampling or numerical population data, but drawing on extensive prior empirical findings. The study found that high tax compliance costs negatively impact financial performance, effective enforcement

mechanisms can both enhance or hinder compliance depending on severity, and increased tax knowledge significantly improves compliance and financial outcomes for manufacturing firms.

Arora (2025) conducted a systematic literature review with the core objective of exploring the relationship between tax aggressiveness and financial distress among firms. The data for this review were derived from studies primarily focusing on companies listed on the stock exchanges in the United States, Indonesia, Australia, China, and Vietnam. The time frame of the data examined in the studies spans from 1988 to 2021. The study covers various sectors, as it synthesizes findings from 15 peer-reviewed articles encompassing cross-industry analyses. The research utilized the PRISMA methodology for literature synthesis, employing purposive sampling to narrow down to 15 relevant articles out of an initial pool of 54. To analyze the data, the study synthesized various statistical and econometric techniques applied across the reviewed literature, including Ordinary Least Square Regression, Logistic Regression, and other panel data methods. The findings suggest mixed evidence: while several studies indicated a positive relationship between financial distress and increased tax aggressiveness, others found negative or insignificant links.

Agustin et al., (2025) investigated the influence of earnings management and tax avoidance on firm value, with the primary objective of examining how these financial practices affect investor perceptions and company valuation. The data were sourced exclusively from the Indonesia Stock Exchange covering the period between 2020 and 2023. Employing a causal associative research design and a quantitative approach, the researchers used purposive sampling to select 41 financial companies out of a population of 97, resulting in 68 usable observations after data cleaning. Data analysis was conducted using multiple linear regression, preceded by classical assumption tests including normality, multicollinearity, heteroscedasticity, and autocorrelation. The findings reveal that neither earnings management nor tax avoidance has a significant individual or joint impact on firm value, a result potentially influenced by stringent regulatory oversight and the increasing investor focus on business fundamentals over accounting manipulation or tax strategies.

Zahro et al., (2024) analyzed how tax avoidance is influenced by profitability, leverage, and financial distress. The data for the study were drawn from manufacturing firms listed on the Indonesia Stock Exchange, focusing specifically on food and beverage sector. The analysis spans five years, covering the period from 2019 to 2023. Employing a purposive sampling technique, the researchers derived their sample from 22 firms, yielding 110 observations. The research design was associative quantitative. Data analysis was conducted using multiple linear regression through SPSS version 27, alongside classical assumption testing, normality testing, and hypothesis testing. The findings revealed that profitability and financial distress each exert a significant positive effect on tax avoidance.

Supriatiningsih et al. (2024) explored the impact of profitability, financial distress, and firm size on tax avoidance, with institutional ownership examined as a moderating variable. The data for the study was collected from the Indonesia Stock Exchange. The researchers utilized data spanning from 2018 to 2022. The study concentrated on the manufacturing sector, particularly companies operating within the food and beverage sub-industry. Employing a quantitative research design, the study applied purposive sampling, selecting a

sample of twenty companies, culminating in 100 firm-year observations. Data analysis was carried out using the random effect regression model to examine the relationships and test the hypotheses. The findings revealed that profitability did not significantly influence tax avoidance, financial distress had a negative effect, and firm size had a positive impact. Moreover, institutional ownership showed no moderating effect on the relationship between financial distress and tax avoidance.

Suparna and Naili (2024) investigated the influence of financial distress on corporate tax aggressiveness while examining whether company reputation moderates the relationship. Data for the study were collected from the Indonesia Stock Exchange, covering the period from 2014 to 2019. The researchers employed a quantitative design, utilizing purposive sampling to select 43 manufacturing firms, resulting in 258 firm-year observations. The study adopted a panel data regression model, specifically random effect regression, following model selection tests including Chow, Breusch-Pagan, and Hausman tests. The findings indicated that financial distress significantly increases tax aggressiveness, confirming risk-transfer theory, while company reputation failed to moderate this relationship significantly.

Souisa et al., (2024) examined the role of real earnings management (REM) in moderating the relationship between financial distress and tax planning among manufacturing firms listed on the Indonesia Stock Exchange (IDX) from 2018 to 2022. Using a purposive sampling technique, the study selects 124 firms, amounting to 542 firm-year observations, and employs a robust random effects panel regression technique. Financial distress is measured using the Altman Z-score, while tax planning is proxied through the residual book-tax difference. The findings indicate a negative relationship between financial distress and tax planning, suggesting that distressed firms engage in less tax planning due to financial constraints and regulatory scrutiny. However, REM does not significantly moderate the relationship, implying that abnormal cash flow operations do not alter the effect of financial distress on tax planning. Further analysis reveals that firms with high and low REM exhibit distinct tax planning behaviors under financial distress.

Sharif and Saleem (2024) conducted a comprehensive literature-based investigation with the central objective of identifying and analyzing the internal and external determinants that contribute to financial distress in corporate entities. As review-based research, the study employed a systematic literature review design using purposive sampling of empirical and theoretical works published between 2000 and 2024. Data analysis relied on thematic synthesis without the application of statistical techniques like regression models. The review established that poor liquidity, low profitability, and excessive leverage are leading predictors of financial distress, while weak governance and misaligned growth strategies exacerbate such risks. It also found that external shocks such as macroeconomic volatility and regulatory instability significantly compound the likelihood of financial collapse in firms with fragile internal structures.

Sartika et al., (2024) examined the effect of financial distress on tax avoidance with transfer pricing as a mediating variable for companies listed on the Indonesia Stock Exchange. The time frame for the data spanned three years, from 2020 to 2022. The researchers employed a descriptive research design using a quantitative approach, and data collection was done through secondary sources. The sampling technique used was purposive sampling, resulting in a total sample of 48 companies, yielding 144 observations.

For hypothesis testing, multiple linear regression analysis was performed using SPSS 23 software. The findings revealed that financial distress had a significant negative effect on tax avoidance, and transfer pricing also had a significant negative effect on tax avoidance; however, transfer pricing failed to mediate the relationship between financial distress and tax avoidance.

Ramadan and Azzahra (2024) conducted an empirical investigation to assess the influence of financial distress, earnings management, and corporate social responsibility on tax avoidance among Indonesian listed manufacturing firms. The study utilized data sourced from the Indonesia Stock Exchange. The data spanned a four-year period from 2019 to 2022. The researchers applied a quantitative research design and utilized a purposive sampling technique, selecting a sample of 41 companies, resulting in 164 firm-year observations. To test the hypotheses, the study employed Panel Data Regression using the Fixed Effect Regression model. The findings revealed that financial distress significantly increased tax avoidance, earnings management also had a significant positive effect, while corporate social responsibility demonstrated a significant negative influence on tax avoidance.

Putri (2024) investigated the determinants of tax aggressiveness, specifically examining the influence of financial distress, capital intensity, and inventory intensity. The primary aim of the study is to assess how firm-level financial characteristics influence tax aggressiveness among listed companies in Indonesia. The study analyzed financial reports from the 2019 to 2021 period. Utilizing quantitative research design, the study applied purposive sampling to select 81 observations from a population of 100 eligible firms. Data were analyzed using ordinary least square regression via IBM SPSS software. The findings revealed that financial distress significantly affects tax aggressiveness, indicating that firms in financial difficulty are more likely to engage in aggressive tax behavior, whereas capital intensity and inventory intensity showed no statistically significant effect on tax aggressiveness.

Laksono and Handayani (2024) examined how financial distress, female representation on corporate boards, and profitability influence corporate tax avoidance. The study utilized data drawn from companies listed on the LQ45 index on the Indonesia Stock Exchange. The data covered a ten-year period from 2013 to 2022. Adopting quantitative research design, the authors employed purposive sampling to select firms that consistently remained on the LQ45 index throughout the observed period, yielding a sample of 140 firm-year observations. For hypothesis testing, the study utilized multiple linear regression analysis, specifically the ordinary least squares technique. Empirical findings revealed that financial distress, women on board of commissioners, and profitability each positively influenced corporate tax avoidance.

Laksmi et al. (2024) investigated the influence of corporate reputation, management reputation, and financial distress on tax avoidance. The study utilized data from transportation, tourism, hotel, and restaurant sectors of the Indonesia Stock Exchange. The time frame covered in this research spanned the years 2018 to 2022. Employing a quantitative research design, the authors used purposive sampling to draw a sample of 60 companies, resulting in 300 total observations. The analysis was conducted using panel data regression with the random effect model, supported by preliminary model selection tests including the Chow, Hausman, and Lagrange multiplier tests. Findings showed that both corporate reputation and management reputation had a significant negative effect on

tax avoidance, whereas financial distress showed a positive statistically insignificant relationship with tax avoidance.

METHODOLOGY

This study employed *ex-post facto* research design to examine the effect of corporate tax optimization on financial distress cost of listed non-finance firms in Nigeria. *Ex-post facto* research design is a non-experimental method in which researchers examine existing data or conditions to investigate potential cause-and-effect relationships after the events have already occurred, without manipulating variables. *Ex-post facto* research design is appropriate for this study as it allows the investigation of the causal relationship between corporate tax optimization and financial distress costs using historical data from listed non-finance firms. The area of study of this research is in Nigeria. The population of this study covered non-finance firms listed on the Nigerian Exchange Group (NGX) with representation from the following sectors: consumer goods firms, industrial goods firms and oil and gas firms. As of December 31st 2024, forty (40) listed firms. A purposive sampling approach was used to choose the firms for the study. This method was appropriate because it allowed the researcher to focus on companies that met the specific conditions required for the analysis. To be included, a firm had to be listed on the Nigerian Exchange Group as at the 2015 financial year and must have submitted complete annual reports for every year from 2015 to 2024. Using this period made it possible to build a ten-year panel dataset with consistent observations across the selected firms. The data for this study were secondary in nature and they were sourced from Nigerian Exchange Group (NGX) Fact books, related companies' annual financial reports, over the period of interest. The data analysis technique that was used for this study was panel data analysis technique. Panel data regression analysis technique was employed in this study to test the hypotheses and was complimented with fixed and random effect regression techniques. The most suitable of both techniques was determined by Hausman Specification test.

3.1 Model Specification

Based on knowledge gained from theoretical literature and prior similar empirical studies, this study specifies one econometric model which captures the effect of tax optimization on financial distress cost for listed non-finance firms in Nigeria. Particularly, this study builds on the model of Farooq et al., (2023), to specify the models employed to test the hypotheses of this study. The econometric model of Farooq, Hunjra, et., al (2023), is presented below as:

$$\varphi it = \alpha_1 lnFDL_{it} + \alpha_2 TFA_{it} + \alpha_3 LTLev_{it} + \alpha_4 STCred_{it} + \varepsilon it$$

Where:

Φ_{it} = proportion of the forgone sale of a firm relative to the industry
FDL_{it} = Financial distress likelihood for firm i for time t
TFA_{it} = Total fixed assets for firm i for time t
$LTLev_{it}$ = Long-term leverage for firm i for time t
$STCred_{it}$ = Short-term credit for firm i for time

In line with the specific objectives of this study, the economic model has been specified and presented below as:

$FDCOST_{it} = \partial_0 + \partial_1 CETAX_{it} + \partial_2 TAXE_{it} + \mu_{it}$ (1)

Where:

FDCOST	=	Financial Distress Cost
CETAX	=	Cash Effective Tax
TAXE	=	Tax Efficiency
∂_0	=	Model Constant
∂_1 - ∂_4	=	Slope Coefficient
μ	=	Stochastic disturbance
i	=	i^{th} firm
t	=	period

3.2 Measurement of Variables

This study intends to employ cash effective tax rate, tax efficiency rate, non-debt tax shield, debt tax shield and capital intensity as independent variables(X), while financial distress cost will be employed as dependent variable(Y). Operationalization of the proposed variables has been described in Table 3.2

Table 3.2 Operationalization of Study Variables

Variables	Measurement	Source
FINANCIAL DISTRSS COST (Dependent Variable)	Computed as the difference between the growth rate of the sales of the sector and the growth rate of firm sales	Pindado and Rodrigues, (2005)
CASH EFFECTIVE TAX (Independent Variable)	Cash effective tax saving strategy is computed in percentage as tax paid in cash flow statement divided by profit before tax	Aganyo, (2014)
TAX EFFICIENCY (Independent Variable)	Computed in % as Cash Tax Paid divided by Operating Cash Flow	Auerbach and Bradford, (2004).

Source: Authors' Computation, (2026)

Decision Rule

The degree to which the independent variables determine the dependent variable will be tested at 5% (0.05) level of statistical significance. A probability value less than 5% statistical significance indicates a rejection of the null hypothesis (Ho)

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RESULTS AND DISCUSSION OF FINDINGS

4.1 Descriptive Analysis of Data

Table 4.1 Descriptive Analysis

	FDCOST	CETAX	TAXE
Mean	0.030397	0.101307	-0.088016

Median	0.105350	0.073854	0.036192
Maximum	1.210308	6.977778	7.077612
Minimum	-4.030291	-15.34028	-74.55985
Std. Dev.	0.455850	1.090502	4.379266
Skewness	-2.882525	-8.476358	-16.45149
Kurtosis	25.57947	141.3111	280.6793
Jarque-Bera	6788.355	242716.9	977354.7
Probability	0.000000	0.000000	0.000000
Sum	9.119158	30.39196	-26.40470
Sum Sq. Dev.	62.13205	355.5689	5734.214
Observations	300	300	300

Source: Authors' Computation, (2026)

Table 4.1 shows that the financial distress cost had a mean of 0.030397, indicating that, on average, the difference between sector sales growth and firm sales growth was slightly positive, meaning most firms were only mildly exposed to distress pressures. The minimum value of –4.030291 and maximum of 1.210308 reveal a wide spread, suggesting that while some firms significantly underperformed their sectors, others performed much closer to sector trends. The standard deviation of 0.455850 confirms meaningful variability in distress outcomes across the sample of 300 observations. The skewness value of –2.882525 indicates a strong leftward tail, meaning extreme negative distress values occurred more frequently than extreme positive ones, while the kurtosis of 25.57947 reflects heavy tails, showing the presence of many outliers. The Jarque-Bera probability of 0.000000 confirms that the distribution was not normally distributed; however, with 300 observations, the Central Limit Theorem supports the reliability of regression estimates even when the raw variable is not normal.

According to Table 4.1, cash effective tax had a mean of 0.101307, meaning firms, on average, paid about 10% of profit before tax as cash taxes. The maximum value of 6.977778 and minimum of –15.34028 show extreme variations in tax payments, indicating that some firms faced unusually high or unusually low (or even negative) tax burdens due to tax credits, losses, or reporting peculiarities. A standard deviation of 1.090502 demonstrates considerable dispersion relative to the mean. The skewness of –8.476358 shows a very strong leftward tail, revealing many unusually low CETAX values, while the kurtosis of 141.3111 indicates extreme peakedness and heavy tails, consistent with many outliers. Despite the Jarque-Bera p-value of 0.000000 confirming non-normality, the sample size of 300 allows the Central Limit Theorem to justify valid statistical inference in the subsequent regression analysis.

From Table 4.1, tax efficiency had a mean of –0.088016, meaning firms, on average, reported slightly negative values when cash tax paid was compared to operating cash flow, which can occur when firms face losses or deferred tax adjustments. The variable ranged from –74.55985 to 7.077612, indicating substantial variation and suggesting that some firms reported extremely low tax burdens relative to operating cash flow. The standard deviation of 4.379266 shows very large variability around the mean. The skewness of –16.45149 reflects a sharply left-skewed distribution dominated by extreme negative values, while the kurtosis of 280.6793 signals extremely heavy-tailed behavior with far more extreme observations than a normal distribution would predict. Although the Jarque-Bera statistic rejects

normality at p = 0.000000, the large sample size (300 observations) enables the Central Limit Theorem to support the use of parametric tests and regression methods involving this variable.

4.2 Correlation Analysis

Table 4.2 Correlational Analysis

Sample: 2015 2024

Correlation Probability	FDCOST	TAXE	DTAX
CASH EFFECTIVE TAX	0.019834 0.7323		
TAX E FFICIENCY	-0.082497 0.1541	1.000000 -----	

Source: Authors' Computation, (2026)

Table 4.2 presents the Spearman rank-order correlations and shows that the relationship between financial distress cost and the cash effective tax rate was weak and positive, with a coefficient of 0.019834 and a probability value of 0.7323. This result indicates that changes in CETAX did not meaningfully correspond with changes in distress cost during the period studied. Since the coefficient is near zero and the p-value far exceeds the 5% significance threshold, the association was statistically insignificant, suggesting that variations in firms' cash tax payments relative to profit before tax did not systematically align with their distress outcomes.

The correlation between financial distress cost and tax efficiency was negative but very weak, as shown by the coefficient of –0.082497 and a probability value of 0.1541. Although the negative sign indicates that higher tax efficiency tended to be associated with slightly lower distress cost, the strength of the relationship was extremely small. The statistically insignificant p-value shows that this pattern was not strong enough to support a meaningful monotonic relationship, implying that firms' efficiency in managing cash tax payments relative to operating cash flow did not reliably explain movements in distress cost across the sample.

4.3 Test of Hausman Specification

The purpose of the Hausman test is to determine whether the fixed-effects or random-effects estimator is more appropriate by examining whether the regressors are correlated with firm-specific effects.

Table 4.3 Test of Hausman Specification
Correlated Random Effects - Hausman Test (Comparing Random Effect and Fixed Effect Model)
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	24.794292	3	0.0002

Source: Authors' Computation, (2025)

Table 4.3 shows a probability value of 0.0002, leading to rejection of the null hypothesis that random effects are consistent. This indicates that firm-specific effects were correlated with the regressors, making the random-effects estimator biased. Therefore, the fixed-effects model was confirmed as the appropriate technique for the study's analysis.

4.4 Test of Hypotheses

The estimates used in the test of hypotheses are shown below in Table 4.4.

Table 4.4 Test of Hypotheses
Dependent Variable: FDCOST
Method: Fixed Effect Model (Cross-section weights)
Date: 04/30/26 Time: 13:13
Sample: 2015 2024
Periods included: 10
Cross-sections included: 30
Total panel (balanced) observations: 300
Linear estimation after one-step weighting matrix
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CETAX	0.006118	0.007882	0.776203	0.4383
TAXE	-0.000424	0.002767	-0.153412	0.8782
C	-0.120367	0.059145	-2.035111	0.0428

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.282054	Mean dependent var	0.095696
Adjusted R-squared	0.189940	S.D. dependent var	0.505419
S.E. of regression	0.435515	Sum squared resid	50.26332
F-statistic	3.062013	Durbin-Watson stat	1.863572

Prob(F-statistic)	0.000000

Source: Authors' Computation, (2025)

The model validity indicators in Table 4.4 showed that the fixed-effect regression model was statistically meaningful and suitable for explaining variations in financial distress cost among the firms. The probability of the F-statistic was 0.0000, indicating that the combined effect of the explanatory variables significantly explained changes in financial distress cost at the 5% level. The adjusted R-squared value of 0.189940 implied that the tax optimization variables jointly explained about 18.99% of the systematic variation in financial distress cost after accounting for firm-level fixed effects. The Durbin–Watson statistic of 1.863572 suggested that the model did not suffer from serious autocorrelation problems, meaning the residuals behaved well statistically. Overall, these statistics confirmed that the fitted model was valid for making inferences about the effects of tax optimization approaches on financial distress cost.

The constant term in Table 4.4 had a coefficient of –0.120367 with a probability value of 0.0428, indicating that it was statistically significant at the 5% level. This negative constant suggested that, when all tax optimization strategies were held at zero, the baseline financial distress cost of the firms was negative, implying a low distress-cost environment in the absence of these tax variables. Because it was significant, the constant captured important underlying firm-specific characteristics (such as managerial quality or operational structure) that systematically reduced distress cost beyond the influence of the variables included in the model.

4.4.1 Test of Hypothesis I

H_{01}: Cash effective tax optimization approach has no significant effect on financial distress cost of listed non-finance firms in Nigeria.

The coefficient for cash effective tax optimization (CETAX) was 0.006118, showing that a one-unit increase in CETAX was associated with a marginal increase of 0.0061 units in financial distress cost. However, the associated probability value of 0.4383 exceeded the 5% significance threshold. This meant that although CETAX exerted a positive effect, the effect was not statistically strong enough to conclude that CETAX meaningfully influenced financial distress cost. Therefore, the null hypothesis (H01) was accepted. Thus, cash effective tax optimization has a positive but non-significant effect on financial distress cost.

4.4.2 Test of Hypothesis II

H_{02}: Tax efficiency optimization approach has no significant effect on financial distress cost of listed non-finance firms in Nigeria.

The coefficient for tax efficiency (TAXE) was –0.000424, implying that a one-unit rise in TAXE was linked with a marginal decline of 0.0004 units in financial distress cost. This direction indicated a very small cost-reducing effect. However, the probability value of 0.8782 showed that the effect was not significant at the 5% level. As a result, tax efficiency did not exert a meaningful statistical influence on financial distress cost. Since the p-value exceeded 0.05, the null hypothesis (H02) was therefore accepted, meaning tax efficiency has a negative but non-significant effect on financial distress cost in the sampled firms.

4.5 Discussion of Findings

The result showing that cash effective tax optimization has a positive but non-significant effect on financial distress cost ($\beta = 0.006118$;

p = 0.4383) suggests that while firms that pay lower cash taxes might slightly reduce pressure on liquidity, the effect is minimal and statistically insignificant. This aligns with findings by Agustin et al., (2025) who reported that tax avoidance did not significantly impact firm value, highlighting that short-term cash tax strategies may not materially alter financial outcomes. Similarly, Jamiu et al., (2024) found that financial distress had an insignificant effect on tax planning strategies, and Kawor and Kportorgbi (2014) observed that tax planning was not a significant predictor of performance. Arora (2025) also indicated that the link between tax aggressiveness and financial distress is context-dependent, supporting the view that cash-based tax actions alone are unlikely to strongly affect distress costs.

The finding that tax efficiency optimization has a negative but non-significant effect on financial distress cost (β = –0.000424; p = 0.8782) implies that more efficient tax management may slightly reduce distress costs, but this effect is negligible in practice. This is consistent with Kavetsa (2025), who noted that high compliance costs could hurt performance while proper tax knowledge can improve it, suggesting that efficiency alone is insufficient. Agustin et al., (2025) also found no significant effect of tax avoidance on firm outcomes, and Fosu and Adams (2020) indicated that tax planning impacts performance only under favorable governance. Arora (2025) again highlighted the mixed evidence on tax aggressiveness and financial distress, which helps explain why efficiency improvements alone did not produce significant reductions in financial distress.

Summary of Findings

This study examined the effect of corporate tax optimization on the financial distress cost of listed non-finance firms in Nigeria. The findings showed that:

1. Cash effective tax optimization has a positive but non-significant effect on financial distress cost (β = 0.006118; p = 0.4383).
2. Tax efficiency optimization has a negative but non-significant effect on financial distress cost (β = –0.000424; p = 0.8782).

CONCLUSION

The findings from the study revealed how different tax optimization approaches shaped the financial distress profile of listed non-finance firms in Nigeria, highlighting the varied pathways through which tax behavior interacted with firms' financial conditions. The mix of significant and non-significant results showed that tax strategies did not operate uniformly; instead, their influence depended on the type of tax mechanism employed and the financial structure of the firms. The absence of statistical weight for cash effective tax optimization and tax efficiency indicated that short-term cash tax positions and nominal improvements in tax planning efficiency did not materially shift firms' distress levels, suggesting that these measures may align more with routine compliance practices than with actions that meaningfully alter financial strain. From the findings, the study made recommendations. Finance managers of listed non-finance firms should implement comprehensive internal tax planning frameworks that integrate cash flow forecasting, operational budgeting, and strategic financial planning to ensure cash tax payments contribute effectively to the firm's long-term financial stability. Corporate tax units of listed non-finance firms should adopt advanced tax efficiency tools and conduct periodic compliance and scenario-based reviews to enhance the strategic alignment of tax efficiency measures with overall firm

performance and reduce unproductive financial leakages.

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