CUSTECH-Journal of Innovation, Management and Social Sciences (CJIMSS)
Vol. 1, No. 1, June 8, pp. 343-358

Corporate Tax Planning Practices and Insolvency Risk: Moderating Effect of Real Earnings Management

Bosun-Fakunle Yemisi F.
Department of Accounting, College of Business and Management Studies, Igbinedion University, Okada. Edo State.
bosunfakunle.yemisi@iuokada.edu.ng
ORCID iD: https://orcid.org/0000-0001-6002-3755

Article history

Received March. 26, 2026
Revised April, 09, 2026
Accepted April, 13, 2026

KEYWORDS: Corporate tax planning, insolvency risk, cash effective tax saving, tax efficiency, non-debt tax shields, and capital-intensive tax saving

Abstract

The study examined the effect of corporate tax planning practices on insolvency risk, as well as the moderating effect of real earnings management among listed manufacturing firms in Nigeria. Specifically, it investigated whether cash effective tax saving, tax efficiency, non-debt tax shields, and capital-intensive tax saving significantly influenced insolvency risk, and whether these relationships were moderated by real earnings management. Anchored on Contingency Theory, the study adopted the view that the effectiveness of tax planning strategies depends on contextual factors, particularly managerial behaviour reflected through real earnings management. Using an ex-post facto research design, secondary panel data were obtained from the audited annual reports of 46 purposively selected manufacturing firms listed on the Nigerian Exchange Group from 2015 to 2024. The study employed moderated fixed effects panel regression with Driscoll–Kraay robust standard errors to address heteroskedasticity, serial correlation, and cross-sectional dependence. The findings revealed that the effect of corporate tax planning on insolvency risk varies according to the type of tax strategy adopted and the influence of real earnings management. Cash effective tax saving and capital-intensive tax saving were found to reduce insolvency risk, while tax efficiency and non-debt tax shields did not significantly reduce insolvency risk independently. Furthermore, the moderation analysis showed that real earnings management could weaken or reverse the benefits of certain tax planning strategies, particularly tax efficiency, thereby increasing insolvency risk. The study therefore recommended that manufacturing firms in Nigeria should adopt integrated tax planning frameworks that strengthen cash effective tax savings and capital-intensive tax strategies while implementing strong governance and monitoring mechanisms to limit opportunistic real earnings management practices that may undermine financial stability.

Recommended citation: Bosun-Fakunle Y.F. Corporate Tax Planning Practices and Insolvency Risk: Moderating Effect of Real Earnings Management, CUSTECH-Journal of Innovation, Management and Social Sciences, 1(1), 343-358

1 INTRODUCTION

Corporate tax planning has become a major focus of global corporate finance due to increasing scrutiny from tax authorities, regulators, and the public. It reflects firms' strategic efforts to minimize tax liabilities within or around legal boundaries, driven by the desire to enhance profitability (Kurniady, 2020). However, this objective often conflicts with government goals of maximizing tax revenue, creating an inherent tension between firms and tax authorities (Diantari & Ulupui, 2016).

In the literature, corporate tax planning is closely linked with concepts such as tax avoidance and tax aggressiveness, which generally refer to varying degrees of legal and semi-legal tax minimization strategies (da_Silva et al, 2023).

While tax planning is considered legal when it operates within statutory provisions, firms sometimes cross the line into illegal tax behavior, making the distinction between tax avoidance and tax fraud increasingly blurred (Payne & Raiborn, 2018; Blaufus et al., 2016). Kutera (2017) further argues that tax planning and tax fraud may both serve the same economic purpose of reducing tax burdens, but differ in legality and intent. Accordingly, Dobrovic et al, (2018) classify tax-related behaviors into legal tax management and illegal tax fraud, with the former involving lawful minimization and the latter involving intentional violation of tax laws (Ibadin & Kemebradikemor, 2020; Estiasih & Saraswati, 2021).

In Nigeria, taxation has become increasingly important as a key source of government revenue, with reforms aimed at strengthening compliance and improving tax administration. Policy statements such as those under President Bola Tinubu's administration emphasize improved registration, transparency, and enforcement within the tax system (Olika et al., 2024). Nigerian tax regulations rely heavily on compulsory compliance, requiring firms to accurately report taxable income, with strict penalties for non-compliance (Jibir et al, 2020). Despite this, firms still exploit legal and illegal avenues to minimize tax burdens, as observed in West African tax systems (Etter-Phoya et al, 2020).

Insolvency risk refers to the likelihood that a firm may become unable to meet its financial obligations as they fall due, thereby exposing the company to financial distress or possible business failure. It reflects the financial stability and survival capacity of a firm and is commonly associated with poor liquidity position, excessive leverage, declining profitability, weak cash flow, and inefficient financial management. High insolvency risk can reduce investors' confidence, increase borrowing costs, and negatively affect the long-term sustainability of firms (Altman, 1968; Ohlson, 1980).

However, aggressive corporate tax planning has broader implications for financial stability. It can obscure a firm's true financial position and increase insolvency risk, particularly when combined with managerial manipulation. This effect becomes more pronounced when real earnings management is introduced as a moderating factor (Tanko, 2025; Souisa et al., 2024). Real earnings management involves manipulating actual business operations such as production levels, discretionary expenses, or revenue timing to influence reported earnings (Roychowdhury, 2006; Gunny, 2010). Unlike accounting adjustments, it directly affects cash flows and operational efficiency, making it more difficult to detect.

Studies show that firms engaging in both aggressive tax planning and real earnings management exhibit greater financial opacity and higher insolvency risk (Maigoshi & Tanko, 2023). This dual behavior distorts financial fundamentals, delays distress detection, and reduces stakeholder confidence. Cohen and Zarowin (2010) and Frank et al. (2009) further explain that such practices can conceal underlying financial weaknesses while artificially improving reported performance.

From an agency theory perspective, real earnings management reflects managerial opportunism arising from information asymmetry between managers and stakeholders (Jensen & Meckling, 1976). Managers may pursue tax minimization strategies while simultaneously manipulating real activities to stabilize reported earnings, often driven by compensation incentives tied to performance metrics (Olayiwola et al., 2023). This combination increases insolvency risk and weakens monitoring effectiveness by auditors and investors. However, strong governance systems can mitigate these effects, as highlighted by Zimon et al. (2021), though such controls are often weak in developing economies like Nigeria.

Empirical evidence supports these arguments. Tanko (2025) found that the interaction between tax planning and real earnings management significantly influences firm distress. Similarly, Michalkova et al. (2021) showed that real earnings management intensifies leverage-related risks associated with complex tax strategies. Gregova et al. (2021) further noted that real earnings management can distort bankruptcy prediction models, making insolvency assessments less reliable when combined with tax planning activities.

Overall, the literature suggests that corporate tax planning and real earnings management jointly shape insolvency risk in complex and interdependent ways. While tax planning alone may enhance financial efficiency, its interaction with real earnings management can increase opacity, distort financial reporting, and heighten financial distress. Therefore, real earnings management plays a critical moderating role in explaining how tax planning influences insolvency risk, particularly in emerging economies like Nigeria where governance structures and regulatory enforcement are relatively weak.

The study was motivated by the rise in corporate bankruptcies experienced globally during the 2007 financial crisis, the 2014 economic downturn, and the COVID-19 pandemic, which emphasized the importance of early insolvency detection and prevention strategies (Crespí-Cladera, Martín-Oliver, & Pascual-Fuster, 2021; Konstantaras & Siriopoulos, 2011; Pindado et al., 2008). In Nigeria, worsening macroeconomic conditions such as inflation, exchange rate instability, rising energy costs, and tight monetary policy further increased the financial pressure on firms (Central Bank of Nigeria, 2023).

The study observed that tax planning is commonly regarded as an important strategy for reducing financial distress through the generation of internal financial resources (Chytis, Tasios, & Filos, 2020; Muhmad, Kassim, & Sallem, 2024). However, aggressive tax planning practices may reduce corporate transparency, increase the cost of capital, and heighten insolvency risk (Balakrishnan et al., 2018; Richardson, Taylor, & Lanis, 2015). Existing Nigerian studies mainly focused on the direct relationship between tax planning and outcomes such as insolvency risk, dividend policy, and firm performance (Ado, Rashid, Mustapha, & Lateef, 2021; Salawu, Ogundipe, & Yeye, 2017; Okafor, 2023), while limited attention had been given to the behavioural role of real earnings management in influencing solvency outcomes (Adegbie & Fakile, 2022; Odum, 2023).

Anchored on the Pecking Order Theory proposed by Stewart Myers (1984), the study argued that firms often rely on tax strategies as a source of internal financing when external financing becomes costly or constrained. Nevertheless, when such tax strategies are combined with real earnings manipulation, the resulting effect on insolvency risk may differ significantly (Felicia, Veny, & Feliciana, 2024). Real earnings management, which can distort financial reporting and influence perceptions of financial stability, may temporarily signal strength while weakening long-term corporate viability (García Lara et al., 2009; Gunny, 2010). The study therefore sought to fill this gap by examining how tax planning practices and real earnings management interact to shape the survival prospects of listed manufacturing firms in Nigeria, especially in light of increased regulatory scrutiny by the Federal Inland Revenue Service and recent Finance Act reforms.

Specifically, the study aimed to determine the effects of cash effective tax rate, tax efficiency, capital intensity, and non-debt tax shield on insolvency risk. It also examined whether real earnings management significantly moderates the relationship between tax planning practices and insolvency risk among listed manufacturing firms in Nigeria. Corresponding null hypotheses were formulated to test whether each tax planning variable and the moderating variable had significant effects on insolvency risk.

2 LITERATURE REVIEW

2.1 Insolvency Risk

Insolvency risk, a critical facet of financial health and sustainability, refers to the probability that a firm will be unable to meet its long-term financial obligations as they fall due, ultimately leading to bankruptcy or liquidation. Scholars conceptualized insolvency risk within the broader framework of financial fragility, often linking it to an entity's declining capacity to generate sufficient cash flows or maintain an optimal capital structure (Yin et al., 2020). It is differentiated from mere liquidity risk by its long-term nature, focusing on solvency rather than on short-term cash shortages (Chowdhury & Maung, 2019). Theoretically, insolvency risk serves as a surrogate for financial distress as it reflects a firm's proximity to default and its vulnerability to adverse economic shocks (Fang et al., 2022). This conceptual link has been particularly emphasized in corporate finance literature where insolvency risk is not merely viewed as a terminal event (bankruptcy) but as a progressive deterioration in financial health that manifests in declining asset coverage, increased debt ratios and reduced market confidence (Ali & Daly, 2020).

Various scholars operationalized insolvency risk using models and components that capture both accounting- and market-based dimensions. The Altman Z-score remains a foundational framework, often adapted in recent studies to reflect firm-specific risk metrics across industries (Agyemang & Castellini, 2022). However, contemporary approaches increasingly favour market-based proxies such as the Merton Distance-to-Default model which accounts for volatility in asset values and equity returns (Bandyopadhyay et al., 2017). Other scholars integrate leverage ratios (e.g., debt-to-equity), interest coverage ratios and cash flow adequacy metrics to evaluate solvency positions (Chen & Lin, 2021). These components collectively reflect a firm's capital structure rigidity and its ability to service debt, offering predictive

insight into the likelihood of insolvency. The multidimensional nature of insolvency risk measurement aligns with the evolving complexity of financial systems and the imperative for early warning indicators of financial distress (Sun & Liu, 2020). Thus, insolvency risk as a conceptual and definitional construct, encapsulates not only the event of bankruptcy but the dynamic process through which firms slide into distress, a concern increasingly relevant in post-crisis and emerging market contexts like Nigeria.

2.2 Corporate Tax Planning

Corporate tax planning is the legal and strategic management of tax liabilities by firms using available tax laws, incentives, and regulatory provisions to reduce tax burdens without engaging in tax evasion (Fellegi, 2013). It involves techniques such as thin capitalization, effective tax rate management, and capital intensity adjustments aimed at improving financial efficiency and shareholder value (Taylor & Richardson, 2013). Scholars such as Neuman (2014) and Garbarino (2011) describe it as a deliberate strategy for minimizing taxes within legal boundaries, while Avi-Yonah (2014) and Sosnowski (2023) emphasize its alignment with broader financial and regulatory objectives.

Corporate tax planning often includes the use of deductions, transfer pricing, and jurisdictional tax incentives, particularly among multinational firms (Cooper & Nguyen, 2020). It is also viewed as a proactive financial strategy that balances compliance with tax efficiency, thereby optimizing corporate resource allocation (Ali & Khaoula, 2012). However, it raises ethical concerns due to its tension with corporate social responsibility, as firms must balance tax minimization with responsible corporate conduct (Donohoe, McGill & Outslay, 2014). Recent advancements in digital tax systems have further enabled firms to adopt more sophisticated and responsive tax planning strategies (Kononenko et al., 2022).

In Nigeria, tax planning practices are shaped by regulatory institutions such as the Federal Inland Revenue Service (FIRS), which introduced thin capitalization rules limiting interest deductions to 30% of EBITDA to curb excessive tax avoidance. The Chartered Institute of Taxation of Nigeria (CITN) also plays a key role in guiding professional tax standards and promoting reforms aligned with global best practices. Overall, corporate tax planning serves as a legal but strategic financial tool that enhances efficiency, competitiveness, and resource optimization within firms (Elamer et al., 2024; Isallah, 2024).

2.3 Corporate Tax Planning Practices and Insolvency Risk

Corporate tax planning practices insolvency risk nexus elicits diverse theoretical perspectives, with proponents of a positive linkage arguing that aggressive tax planning may, paradoxically, increase the risk of corporate insolvency (Ram Mohan, 2024). This view is grounded in the agency theory which posits that managerial opportunism may drive corporate tax avoidance strategies that prioritize short-term tax savings over long-term financial stability. Hummel, Pfaff, and Bisig, (2019) argued that managers could engage in opaque and complex tax arrangements such as transfer pricing manipulation, use of tax havens, and thin capitalization strategies ostensibly to minimize tax liabilities but, in doing so, may distort the firm's financial transparency and compromise stakeholders' ability to assess solvency (Desai & Dharmapala, 2006). In the views of Sava and Tureatca (2017), such practices can lead to underinvestment in productive activities, hinder access to debt financing due to reduced creditworthiness and attract regulatory penalties, all of which escalate insolvency risk. Prior empirical studies affirmed this position, showing that aggressive tax planning (proxied by book-tax differences and unrecognized tax benefits) correlated with earnings volatility and an increased likelihood of financial distress (Wilson, 2009; Richardson, Taylor & Lanis, 2013).

In contrast, a second theoretical strand suggests that corporate tax planning reduces insolvency risk by enhancing after-tax cash flows, thus providing firms with better liquidity and financial resilience (Gabrielli & Greco, 2023; Olbert, 2025). This perspective aligns with the trade-off theory of capital structure which emphasizes that tax savings from interest deductibility and tax avoidance can improve firm value by lowering the weighted average cost of capital. Through effective tax planning exercises employing proxies such as effective tax rate, cash effective tax rate and permanent book differences, firms can accumulate cash reserves, reduce dependence on external financing and build buffer capital to absorb economic shocks (Ghazalat, 2024). In this framework, tax planning is viewed not as a risky endeavour, but as a legitimate strategic tool that enhances solvency and business continuity, particularly in capital-intensive industries or economic downturns (Graham & Tucker, 2006). Empirical evidence supporting this notion finds that firms with lower effective tax rates often report stronger operating margins and lower probabilities of default (Law

& Mills, 2017), suggesting that tax planning may serve as a risk management instrument when conducted within regulatory bounds.

A third and more neutral theoretical stance maintains that the link between corporate tax planning and insolvency risk is context-dependent, moderated by firm-specific and institutional variables. Drawing from institutional theory, Horodnic, (2018) argued that the outcomes of tax planning were neither inherently positive nor negative, but contingent on factors such as corporate governance quality, regulatory enforcement and the institutional tax environment. For instance, in environments with robust enforcement and high disclosure standards, tax planning activities (measured by metrics such as GAAP ETR or discretionary tax accruals) may have negligible or even inconclusive effects on insolvency, as firms operate within clearly defined boundaries and tax benefits are offset by compliance costs and reputational risks. This theoretical balance was echoed in studies conducted by Hanlon and Heitzman (2010) which concluded that the consequences of tax planning were multifaceted and by Taylor and Richardson (2014) who found that the relationship between tax aggressiveness and firm risk varied significantly based on corporate transparency and audit quality.

2.4 Theoretical Review

Contingency Theory, developed by Fiedler (1964), argues that there is no single best way to manage organizations, as effectiveness depends on how well internal practices align with external environmental conditions. Decisions such as tax planning or financial structuring are therefore not inherently good or bad, but their outcomes depend on contextual factors like firm size, regulation, industry conditions, and managerial behaviour (Ghofar & Islam, 2015).

Applied to corporate tax planning and insolvency risk, the theory explains that their relationship is not fixed or linear but depends on situational factors, especially real earnings management as a moderating variable. Real earnings management can either strengthen or distort the effects of tax planning, potentially masking financial weaknesses and increasing insolvency risk (Knuutinen, 2014).

Supporting this view, Otley (1980) and Donaldson (2001) argue that financial practices must fit their organizational context to be effective, while Chenhall (2003) emphasizes that financial outcomes are context-dependent. Overall, Contingency Theory suggests that tax planning affects insolvency risk only within specific contextual conditions, with real earnings management playing a key role in shaping the outcome.

2.5 Empirical Review

Recent empirical studies have examined the relationship between cash flow management, financial performance, financial distress and investment behaviour using different methodologies across countries and sectors. Idehen, Jackson-Akhigbe and Abusomwan (2025) employed an ex-post facto research design to examine the effect of cash flow management on asset growth among listed industrial goods firms in Nigeria using data from 2018 to 2023. Eleven firms were purposively selected, generating 54 firm-year observations, while multi-level mixed effect regression analysis was used for data analysis. The findings showed that operating, investing and financing cash flows significantly improved asset growth, whereas cash flow per share had no significant effect.

Rahmawati and Setiawan (2025) adopted a quantitative research design to investigate the influence of cash holding, corporate social responsibility and operating capacity on financial distress among Indonesian manufacturing firms between 2020 and 2023. Using purposive sampling, 35 firms and 140 firm-year observations were analysed through moderated regression analysis with EViews 12. The study found that cash holding significantly reduced financial distress, while cash flow significantly moderated the relationship between cash holding and financial distress.

Khalafi (2025) utilized a descriptive-correlational and causal-analytical research design to assess the effect of corporate social responsibility performance on investment-cash flow sensitivity among firms listed on the Tehran Stock Exchange from 2018 to 2023. The study analysed 210 firms and 1,470 firm-year observations using random effects multivariate regression analysis. Findings revealed that corporate social responsibility significantly reduced investment-cash flow sensitivity, while agency cost had no significant moderating effect.

Ukolobi, Okoye and Adeniyi (2025) employed an ex post facto research design to examine the effect of cash flow management on financial performance among Nigerian non-finance firms between 2011 and 2023. Seventy-four firms and 987 firm-year observations were analysed using ordinary least square multiple regression analysis. The findings

indicated that operating cash flow positively affected return on equity, whereas financing cash flow had no significant effect.

Truong, Le and Huynh (2024) used a panel research design and fixed-effects regression model with robust standard errors to examine the influence of environmental, social and governance performance on firm value, profitability and financing cash flows among 630 Southeast Asian firms from 2014 to 2022. The results showed that environmental and social performance negatively affected firm value, profitability and financing cash flows, while governance performance was not significant.

Adam and Aliyu (2024) adopted an ex-post facto research design to assess the effect of cash flow management on financial performance of Nigerian finance service firms using data from 2012 to 2022. Seven firms were selected and analysed using descriptive statistics, Pearson correlation and ordinary least square multiple regression. The findings revealed that operating cash flow significantly improved financial performance, whereas financing cash flow negatively affected performance indicators.

Dash and Sethi (2024) employed a dynamic panel research design to investigate the effect of economic policy uncertainty on investment-cash flow sensitivity among 222 Indian manufacturing firms between 2012 and 2022. The study analysed 2,442 firm-year observations using two-step system Generalized Method of Moments regression. The findings showed that economic policy uncertainty increased investment-cash flow sensitivity, while strong environmental, social and governance performance reduced firms' reliance on internal financing.

3 RESEARCH METHODOLOGY

This study utilized ex-post facto research design, The study's population is 56 manufacturing firms listed on the Nigerian Exchange Group (NGX), study period (2015–2024) while a total of forty-six (46) manufacturing firms constituted the sample size based on purposeful sampling techniques. Panel Data Regression Analysis (Driscoll–Kraay Robust Standard Errors.

Model Specification

$$IRISK_{it} = \partial_0 + \partial_1 CETAX_{it} + \partial_2 TAXE_{it} + \partial_3 CITAX_{it} + \partial_4 NDTAX_{it} + \mu_{it} \quad (1)$$

$$IRISK_{it} = \partial_0 + \partial_1 CETAX_{it} + \partial_2 TAXE_{it} + \partial_3 CITAX_{it} + \partial_4 NDTAX_{it} + \partial_5 MCAP_{it} + \partial_6 CETAX_{it} * REMGT_{it} + \partial_7 TAXE_{it} * REMGT_{it} + \partial_8 CITAX_{it} * REMGT_{it} + \partial_9 NDTAX_{it} * REMGT_{it} + \mu_{it} \quad (2)$$

Where:

IRISK	=	Insolvency Risk
CETAX	=	CASH Effective Tax
TAXE	=	Tax Efficiency
NDTAX	=	Non-Debt Tax Shelter
CITAX	=	Capital Intensity
MC)AP	=	Market Capitalization
REMGT	=	Real Earnings Management
∂_0	=	Model Constant
∂_1 - ∂_5	=	Slope Coefficient (Unmoderated)
∂_6 - ∂_9	=	Slope Coefficient (Moderated)
μ	=	Stochastic disturbance
i	=	i^{th} firm
t	=	period

CUSTECH-Journal of Innovation, Management and Social Sciences (CJIMSS)
Vol. 1, No. 1, June 8, pp. 343-358

4 RESULTS AND DISCUSSION

4.1 Data Analysis

Table 2: Descriptive Statistics Analysis Result

Variable	Obs	Mean	Std. dev.	Min	Max
IRISK	460	-1.095592	1.99579	-6.66	16.43
CETAX	460	20.34397	94.93407	-495.63	1229.79
TAXE	460	6.330088	89.18785	-1384.1	397.09
NDTAX	460	3.698618	3.180766	0	49.88
CITAX	460	9.236315	65.33379	0	797.5991
REMGT	460	-1.864791	1.933007	-25.17	3.47
LFIRM	460	61.18526	26.5693	3.55	222.97

Source; Author's Computation (2026)

The descriptive statistics in Table 1 provide an overview of corporate tax planning practices, insolvency risk, and real earnings management among listed manufacturing firms on the Nigerian Exchange Group (NGX). The results indicate substantial variation across firms, reflecting heterogeneous financial conditions and strategic behaviours within the sector.

Insolvency risk (IRISK) recorded a mean value of -1.0956 with a relatively high standard deviation of 1.9958, indicating wide disparities in financial stability among firms. The presence of extreme values, particularly the maximum of 16.43, suggests that some firms experienced severe financial distress, likely due to macroeconomic shocks or inefficient capital structures. This finding aligns with Ibhagui and Olokoyo (2018), who reported similar heterogeneity in risk levels among Nigerian manufacturing firms.

Real earnings management (REMGT) had a mean of -1.8648, implying generally low average manipulation of real activities, although the wide dispersion and extreme minimum value (-25.17) indicate that some firms engaged in aggressive earnings adjustments during periods of financial pressure. This supports Roychowdhury's (2006) argument that real earnings management intensifies under performance constraints.

Tax planning indicators also show high variability. Cash effective tax savings (CETAX) averaged 20.34%, but the large standard deviation (94.93) and extreme range (-495.63% to 1229.79%) reflect inconsistent tax strategies across firms, influenced by losses, refunds, or aggressive tax avoidance practices. Similarly, tax efficiency (TAXE) showed a mean of 6.33% with extreme dispersion (SD = 89.19), indicating uneven effectiveness in managing tax obligations, consistent with Makka and Suleiman (2024). Non-debt tax shields (NDTAX) exhibited relatively lower variability, suggesting more stable use of depreciation-based tax benefits, consistent with Graham and Tucker (2006). Capital-intensive tax strategy (CITAX) showed significant dispersion, with a mean of 9.24 and a very wide range (0 to 797.60), reflecting differences in asset structures and capacity utilization across firms.

Firm leverage (LFIRM) averaged 61.19%, indicating heavy reliance on debt financing within the sector. The high maximum value (222.97%) suggests that some firms are highly leveraged, increasing their vulnerability to insolvency risk, consistent with Adesina, Nwidobie, and Adesina (2015).

Table 3: Data Normality Test Result

Variable	Obs	W	V	z	Prob>z
IRISK	460	0.83237	51.905	9.454	0.00000
CETAX	460	0.36124	197.783	12.657	0.00000
TAXE	460	0.30937	213.843	12.844	0.00000
NDTAX	460	0.64944	108.546	11.220	0.00000
CITAX	460	0.09956	278.806	13.479	0.00000
REMGT	460	0.73947	80.511	10.504	0.00000
LFIRM	460	0.88067	36.947	8.641	0.00000

Source; Author's Computation (2026)

The Shapiro–Wilk normality test results for the study variables among listed manufacturing firms in Nigeria reveal a consistent and strong departure from normal distribution across all indicators, indicating significant skewness, heavy tails, and the presence of extreme outliers.

For insolvency risk, the z-value of 9.454 (p = 0.000) shows a clear rejection of normality, suggesting that most firms cluster around lower risk levels, while a few extreme cases of distress or stability distort the distribution. This pattern reflects typical heterogeneity in financial distress measures within emerging markets and aligns with Fredrick (2018). Cash effective tax saving and tax efficiency recorded even stronger non-normality, with z-values of 12.657 and 12.844 respectively (p = 0.000). These results indicate that tax planning variables are heavily influenced by extreme values arising from loss carry-forwards, tax incentives, and irregular profitability. Similar volatility in tax-related indicators among Nigerian firms was also documented by Agboola (2024).

Non-debt tax shields and capital-intensive tax strategies also deviated significantly from normality, with z-values of 11.220 and 13.479 (p = 0.000), reflecting wide differences in asset structures and depreciation policies across firms. This is consistent with Graham and Tucker (2006), who noted uneven tax shield benefits in asset-heavy industries.
Real earnings management showed a z-value of 10.504 (p = 0.000), indicating that earnings manipulation is unevenly distributed and driven by firm-specific incentives and external pressures. Similarly, firm leverage recorded a z-value of 8.641 (p = 0.000), reflecting asymmetry caused by differences in capital structure decisions, credit access, and macroeconomic conditions, consistent with Danso et al. (2019).

Overall, the rejection of normality for all variables confirms that the dataset contains skewed distributions, extreme observations, and heterogeneity typical of emerging market firms. This violates the assumptions of classical ordinary least squares estimation, particularly the assumption of normally distributed errors, which may lead to biased or inefficient results (Morgenthaler, 2007). Therefore, the use of robust estimation techniques, such as heteroskedasticity-consistent standard errors, is appropriate and necessary to ensure reliable inference in panel data analysis (Wooldridge, 2019).

Table 4: Correlation Analysis Result

	IRISK	CETAX	TAXE	NDTAX	CITAX	REMGT	LFIRM
IRISK	1.0000						
CETAX	-0.3387	1.0000					
TAXE	-0.3673	0.5248	1.0000				
NDTAX	-0.0694	0.0296	0.0811	1.0000			
CITAX	0.0668	-0.0839	-0.0975	0.0272	1.0000		
REMGT	0.2548	-0.4233	-0.2746	-0.0789	0.0573	1.0000	
LFIRM	0.9260	-0.2557	-0.2576	-0.0860	0.0646	0.1075	1.0000

Source; Author's Computation (2026)

The correlation analysis provides evidence on the direction and strength of relationships among insolvency risk, corporate tax planning variables, real earnings management, and firm leverage, without implying causality.

The results show that insolvency risk is negatively related to cash effective tax saving (ρ = –0.3387) and tax efficiency (ρ = –0.3673), suggesting that firms with higher financial distress tend to have weaker tax-saving capacity and less efficient tax management. A weak negative relationship was also observed between insolvency risk and non-debt tax shields (ρ = –0.0694), indicating minimal association with depreciation-based tax benefits.

Conversely, insolvency risk has a weak positive relationship with capital-intensive tax strategy (ρ = 0.0668) and a moderate positive relationship with real earnings management (ρ = 0.2548), implying that financially distressed firms are more likely to engage in real activity manipulation, consistent with Roychowdhury (2006). The strongest relationship was between insolvency risk and firm financial leverage (ρ = 0.9260), indicating a very strong association and raising concerns about multicollinearity if both variables are used together in regression analysis.

Cash effective tax saving shows a moderate positive relationship with tax efficiency (ρ = 0.5248), suggesting that firms effective in reducing tax payments also tend to manage tax obligations efficiently. However, it has weak associations with non-debt tax shields (ρ = 0.0296) and capital-intensive strategies (ρ = –0.0839), reflecting differences in tax planning approaches. It also has a moderate negative relationship with real earnings management (ρ = –0.4233), implying that firms engaging in earnings manipulation tend to report lower cash-based tax savings, consistent with Chyz et al. (2013) and Lennox, Lisowsky & Pittman (2013).

CUSTECH-Journal of Innovation, Management and Social Sciences (CJIMSS)
Vol. 1, No. 1, June 8, pp. 343-358

Firm leverage shows weak negative relationships with cash effective tax saving (ρ = –0.2557), tax efficiency (ρ = –0.2576), and non-debt tax shields (ρ = –0.0860), indicating that highly leveraged firms generally have less flexibility for tax optimization beyond debt-related benefits.

Overall, the analysis reveals mostly weak to moderate relationships among the variables, with the exception of the strong association between insolvency risk and leverage. This suggests potential multicollinearity concerns in regression analysis, although leverage is treated as a control variable in the study.

Table 5: Regression Analysis Corporate Insolvency Risk

		INSOLVENCY RISK (Fixed Effect)	**INSOLVENCY RISK (Random Effect)**	**INSOLVENCY RISK (**Moderated FE, D-Kraay SE**)**
CETAX		-0.045 **(0.007)	-0.051 **(0.002)	-0.045 (0.015)
TAXE		0.015 (0.408)	0.013 (0.473)	0.015 (0.324)
NDTAX		0.265 ***(0.000)	0.219 ***(0.000)	0.265 (0.265)
CITAX		-0.149 (0.002)	-0.141 **(0.002)	-0.149 **(0.003)
REMGT		0.083 (0.152)	0.098 (0.066)	0.083 (0.581)
LFIRM		0.069 ***(0.000)	0.069 ***(0.000)	0.069 ***(0.000)
C.CETAX#C.REMGT		-0.013 (0.084)	-0.011 (0.136)	-0.013 (0.196)
C.TAXE#C.REMGT		0.016 **(0.017)	0.019 **(0.003)	0.016 **(0.024)
C.NDTAX#C.REMG		0.053 **(0.020)	0.041 (0.065)	0.053 (0.394)
C.CITAX#C.REMGT		-0.069 ***(0.000)	-0.061 **(0.001)	-0.069 (0.071)
F-STAT/WALD STAT		291.05 ***(0.0000)	3490.47 ***(0.0000)	139.25 ***(0.0000)
R- SQUARED		0.8794	0.9269	0.8794
MEAN VIF = 1.11				
Hausman Test Chi^2 = 24.44, Probability = (0.0065) ** **Wooldridge Test** Prob > F = 0.7282 **Pesaran's Test of Cross-Sectional Independence** Pr = 0.0015				**Modified Wald Test for Groupwise Heteroskedasticity** Chi^2 = 16716.04, Probability = (0.0000) ***

Source; Author's Computation (2026)
NOTE: (1) Bracket () Are P-Values; (2) **, *, Implies Statistical Significance At 5% And 1% Levels Respectively**

4.2 Regression Analyses

The effect of the independent variables on the dependent variable together with the moderating effect of real earnings management on the relationship was first assessed using fixed and random effects panel estimators, with Hausman test identifying the most preferred model. The preferred model was diagnosed for groupwise heteroskedasticity, serial correlation and cross-sectional dependence which guided the choice of estimator employed for hypothesis testing. Multicollinearity was absent. The results were shown in Table 5.

The fixed-effect model showed a strong explanatory power within entities, with a Within R-squared of 0.8794, indicating that approximately 88% of the variation in insolvency risk across time for manufacturing firms are explained by the independent and control variables. The F-statistic of 291.05 with a Prob > F value of 0.0000 confirmed that, jointly, the independent variables were significantly linked with the dependent variable in the fixed-effect framework. Notably, from the fixed-effect results, F-test for all u_i = 0 reported a Prob > F of 0.0011, suggesting the limitations of the pooled ordinary least square estimator; thus, the data should be best estimated from the fixed-effect perspective. In the random-effect model, the between R-squared value was 0.9269, connoting that about 93% of the variation in insolvency risk between firms was explained by the model, and the Wald chi-squared statistic of 3490.47 with a Prob

> chi2 of 0.0000 confirms joint statistical significance in this framework. Similarly, the Breusch and Pagan Lagrangian multiplier test for random effects yielded a chibar2(01) value of 119.81 with a Prob > chibar2 of 0.0000, suggesting the limitations of the pooled Ordinary Least Square estimator; thus, the data should be best estimated from the random-effect perspective.

The Hausman specification test returned a chi2(10) statistic of 24.44 with a Prob > chi2 of 0.0065, leading to the rejection of the null hypothesis that the random-effect estimator was consistent. The result statistically justified the preference for fixed-effect model over the random-effect model for the dataset under consideration.
The diagnostic test for multicollinearity showed that all variables had variance inflation factor (VIF) values well below the threshold of 10, with a mean VIF of 1.11, indicating that multicollinearity was not a concern in the model. Consequently, the estimated coefficients were unlikely to be distorted by inflated standard errors due to collinearity, ensuring stability in the regression estimates.
The Modified Wald test for groupwise heteroskedasticity yielded a chi2(4) statistic of 16716.04 with a Prob > chi2 of 0.0000, indicating strong evidence of heteroskedasticity across the panels. The Wooldridge test for autocorrelation in panel data produced a Prob > F of 0.7282 which was way above the 5% significance level, confirming the absence of first-order autocorrelation. The Pesaran's test of cross-sectional independence revealed a statistically significant probability value of 0.0015, signifying cross-sectional dependence among the panels. Given the joint presence of heteroskedasticity and cross-sectional dependence, the application of regression with Driscoll–Kraay standard errors was justified as it provided robust standard errors that were consistent in the presence of the violations, ensuring reliable hypothesis testing in this study's fixed-effect framework.

4.3 Test of Hypotheses

Hypothesis One

Cash effective tax planning practice has no significant effect on insolvency risk of listed manufacturing firms in Nigeria.

The results obtained from the moderated fixed effects panel regression with Driscoll–Kraay robust standard errors (see Table 4.4) revealed that cash effective tax saving exhibited a statistically significant negative effect on insolvency risk [Coef. = −0.0454, $p < 0.05$]. It indicated that, all things else being equal, higher levels of cash effective tax savings were associated with a lower insolvency risk. In practical terms, it suggested that firms that were more efficient in reducing their cash tax liabilities relative to pre-tax income tended to maintain stronger financial stability profiles. One plausible explanation was that effective tax savings could enhance retained earnings and liquidity buffers, thereby improving a firm's capacity to meet financial obligations and mitigate the probability of distress.
The findings echoed the observations made by Lin et al. (2014) who applied Zmijewski model in the context of Taiwanese manufacturing firms and reported that better-managed tax positions were linked to improved solvency positions. Similarly, Oboh and Ajibolade (2017) found that Nigerian listed firms with more efficient tax planning mechanisms experienced reduced distress likelihood which was attributed to the reinvestment of saved tax resources into productive assets and working capital. By contrast, the present result diverged from the findings of Olbert (2025) which showed a neutral relationship between tax efficiency and insolvency risk over a broader sample of African listed firms.

Hypothesis Two

Cash efficiency tax planning practice has no significant effect on insolvency risk of listed manufacturing firms in Nigeria.

As obtained from the moderated fixed effects panel regression with Driscoll–Kraay robust standard errors (see Table 4.4), the result revealed that tax efficiency did not exhibit a statistically significant effect on insolvency risk [Coef. = 0.0149, $p > 0.05$] which implied that, on average, and all things else being equal, variations in tax efficiency did not yield statistically significant changes in insolvency among listed manufacturing firms in Nigeria. In practical terms, it suggested that the proportion of operating cash flow allocated to tax payments could not be a crucial determinant of financial stability in the industry.
Rahiminejad (2025) employed Zmijewski model in a Nigerian context. He provided a similar outcome and observed that certain tax-related metrics failed to demonstrate a meaningful effect on bankruptcy risk. Similarly, Lin et al. (2014) found in their study of Taiwanese manufacturing firms that tax efficiency measures, while relevant for evaluating fiscal performance, were often overshadowed by liquidity and leverage indicators when predicting insolvency risk using

Zmijewski framework. In contrast, Borges and Rech (2021) argued that tax efficiency could influence corporate solvency in markets where tax policies were tightly integrated with investment incentives.

Hypothesis Three
Capital intensity tax planning practice has no significant effect on insolvency risk of listed manufacturing firms in Nigeria.
Going by the result obtained from the moderated fixed effects panel regression with Driscoll–Kraay robust standard errors (see Table 4.4), capital-intensive tax saving strategy exhibited a statistically significant negative effect on insolvency risk [Coef. = −0.1498, $p < 0.01$]. It implied that, on average, and all things else being equal, higher capital intensity in manufacturing firms was linked with insolvency risk positions. In practical terms, it suggested that firms maintaining greater asset base relative to their sales revenue could benefit from enhanced operational capacity, long-term productive investments and the ability to leverage asset-backed financing, all of which could strengthen their solvency position.
In line with that outcome, Pedram (2015) reported that capital-intensive firms exhibited stronger solvency profiles due to their capacity to sustain operations during revenue fluctuations by leveraging asset-based financing advantages. Similarly, Su (2016) observed that in China, greater investment in fixed assets was linked with lower distress risk as assets provided both productive and financial flexibility in volatile market conditions. Nevertheless, Huhtilainen (2020) noted otherwise that excessive capital intensity could heighten insolvency risk in industries where technological obsolescence and high maintenance costs eroded asset productivity.

Hypothesis Four
Non-debt tax planning practice has no significant effect on insolvency risk of listed manufacturing firms in Nigeria.
In this study, the moderated fixed effects panel regression with Driscoll–Kraay robust standard errors displayed in Table 4.4 indicated that non-debt tax shields did not exhibit a statistically significant effect on insolvency risk [Coef. = 0.2646, $p > 0.05$]. It implied that, on average, ceteris paribus, variations in the utilization of non-debt tax shields among listed manufacturing firms in Nigeria did not explain changes in insolvency risk. In practical terms, this outcome suggested that tax benefits derived from depreciation and amortization could not be sufficient on their own to materially influence a firm's solvency position, particularly in a sector characterized by fluctuating earnings, high operating costs, and exposure to macroeconomic volatility.
Similarly, Bernasconi, Marenzi and Pagani, (2005) reported that non-debt tax shields were no strong determinants of bankruptcy probability. Also, Capraș, Achim, Hint and Găban (2025) found that for Romanian firms, depreciation-related tax benefits had limited predictive power for insolvency risk. Contrasting the outcome, Artati (2020) argued that in industries with highly stable cash flows, non-debt tax shields could play a more prominent role in reducing distress likelihood, particularly when reinvested into a productive capacity.

Hypothesis Five
Real earnings management has no significant moderating effect on the relationship between tax planning practices and insolvency risk of listed manufacturing firms in Nigeria
In line with the result displayed in Table 4.4, the moderated fixed effects panel regression with Driscoll–Kraay robust standard errors showed varying moderating effects of real earnings management on the relationship between corporate tax planning proxies and insolvency risk. The interaction between cash effective tax saving and real earnings management [(c.CETAX#c.REMGT) Coef. = −0.0128, $p > 0.05$] was statistically insignificant, implying that variations in real earnings management did not alter the negative effect of cash effective tax savings on insolvency risk. Consistent with the outcome given by Celestin (2015) aggressive earnings manipulation strategies did not significantly modify the solvency benefits of efficient tax savings, suggesting that the liquidity-enhancing impact of cash tax optimization operated largely independently of real activities manipulation.
Conversely, the interaction between tax efficiency and real earnings management [(c.TAXE#c.REMGT) Coef. = 0.0161, $p < 0.05$] was statistically significant and positive, indicating that higher real earnings management intensified the positive albeit initially insignificant—effect of tax efficiency on insolvency risk. The findings aligned with the observations made by Habib et al. (2021) which showed that real activity manipulation could amplify financial vulnerability when coupled with weaker tax positions, as operational distortions introduced by earnings management could undermine the stabilizing role of efficient tax cash flows. It suggested that in the Nigerian manufacturing context,

the combination of tax efficiency pursuits and real activities manipulation could erode operational cash flow quality, thereby heightening the possibility of insolvency.

For non-debt tax shields, the interaction with real earnings management [(c.NDTAX#c.REMGT) Coef. = 0.0532, p > 0.05] was not statistically significant, indicating that earnings manipulation did not materially influence the effect of depreciation- and amortization-based tax shelters on insolvency risk. Nwogugu (2015) reported a similar outcome noting that the moderating influence of earnings management on asset-based tax shields was negligible due to the relatively fixed and accounting-determined nature of such deductions. Lastly, the interaction between capital-intensive tax saving strategy and real earnings management [(c.CITAX#c.REMGT) Coef. = −0.0699, p = 0.071] was statistically insignificant and negative, suggesting that higher levels of earnings manipulation could not strengthen or weaken the insolvency effect of capital-intensive tax strategies of listed manufacturing firms in Nigeria.

5 CONCLUSIONAND RECOMMENDATION

5.1 Conclusion

Corporate tax planning whether legal optimization or aggressive avoidance has become a key issue in corporate finance because it affects reported earnings, cash flows, and firms' financial stability. In the Nigerian manufacturing sector, where tax regulations and enforcement have tightened, firms increasingly rely on strategies such as cash effective tax savings, tax efficiency, non-debt tax shields, and capital-intensive tax planning to improve financial outcomes.

However, when these tax planning practices are combined with real earnings management, which involves manipulating actual business operations to meet reporting targets, the financial implications become more complex. The study found that while some tax planning strategies can improve financial stability, their interaction with real earnings management may weaken these benefits and even increase insolvency risk.

Overall, the findings show that in listed Nigerian manufacturing firms, the effect of corporate tax planning on insolvency risk is not straightforward but depends heavily on managerial behaviour, with real earnings management playing a critical role in determining whether tax strategies enhance or undermine corporate solvency.

5.2 Recommendations

This study recommended that:

1. Stakeholders in the Nigerian manufacturing industry should strengthen sector-wide tax planning frameworks that enhance cash effective tax efficiency through proper use of allowable deductions, fiscal incentives, and investment-related tax credits. This will improve liquidity positions and help reduce insolvency risk. In addition, regulatory bodies such as the Federal Inland Revenue Service should provide structured tax advisory services and capacity-building programmes to support strategic tax management rather than mere compliance.
2. Since tax efficiency does not show a statistically significant effect on insolvency risk, stakeholders should avoid relying on it as a standalone policy tool for improving financial stability. While it may improve administrative efficiency, it is insufficient on its own to reduce insolvency risk meaningfully.
3. Given that non-debt tax shields do not significantly influence insolvency risk, policies should not prioritize depreciation and amortization benefits as a primary strategy for financial stability. Instead, such tax benefits should be integrated into broader financial and operational strategies.
4. Stakeholders should promote capital-intensive investment strategies through incentives such as tax credits for machinery acquisition, modernization support, and accelerated capital allowances. This will improve firms' asset base, operational efficiency, and long-term financial stability, thereby reducing exposure to insolvency risk.
5. Strong governance and monitoring systems should be implemented to manage the interaction between tax efficiency and real earnings management. Boards and audit committees should ensure that tax planning does not encourage manipulative operational decisions, thereby protecting cash flow quality and reducing insolvency vulnerability.

REFERENCES

Adebgie, F. F., & Fakile, A. S. (2022). Corporate tax planning and financial performance of listed firms in Nigeria. *Nigerian Journal of Accounting Research, 18*(2), 45–61.

Adesina, J. B., Nwidobie, B. M., & Adesina, O. O. (2015). Capital structure and financial performance in Nigeria. *International Journal of Business and Social Research, 5*(2), 21–31.

Aganyo, G. A. (2014). Corporate tax planning and firm performance. *Journal of Accounting and Taxation, 6*(5), 89–98.

Agboola, A. A. (2024). Tax planning behaviour and financial reporting quality among Nigerian firms. *African Journal of Accounting and Finance, 12*(1), 33–49.

Agyemang, O. S., & Castellini, M. (2022). Bankruptcy prediction and insolvency risk assessment in emerging markets. *Journal of Financial Risk Management, 11*(3), 201–219.

Ali, A., & Daly, K. (2020). Financial distress and insolvency risk in emerging economies. *International Review of Economics and Finance, 65*, 84–96.

Ali, W., & Khaoula, A. (2012). The consequences of corporate tax planning on firm value. *International Journal of Business and Management, 7*(15), 45–56.

Artati, S. (2020). Non-debt tax shields and financial distress risk. *Asian Economic and Financial Review, 10*(6), 654–667.

Auerbach, A. J., & Bradford, D. F. (2004). Generalized cash-flow taxation. *Journal of Public Economics, 88*(5), 957–980.

Avi-Yonah, R. S. (2014). Advanced introduction to international tax law. Edward Elgar Publishing.

Balakrishnan, K., Blouin, J., & Guay, W. (2018). Tax aggressiveness and corporate transparency. *The Accounting Review, 94*(1), 45–69.

Bandyopadhyay, A., Bhuyan, R., & Mondal, S. (2017). Market-based measures of insolvency risk. *Journal of Applied Finance, 27*(2), 55–72.

Bărbuță-Mișu, N., & Madaleno, M. (2020). Assessment of bankruptcy risk in firms. *Sustainability, 12*(3), 1–20.

Bernasconi, M., Marenzi, A., & Pagani, L. (2005). Tax shields and bankruptcy risk. *Economic Notes, 34*(2), 211–230.

Blaufus, K., Hundsdoerfer, J., Jacob, M., & Sünwoldt, M. (2016). Does legality matter in tax avoidance? *Journal of Economic Psychology, 54*, 1–14.

Borges, R., & Rech, I. (2021). Corporate tax avoidance and insolvency risk. *Journal of Corporate Finance Research, 15*(4), 77–91.

Capraș, R., Achim, M. V., Hint, M., & Găban, L. (2025). Tax planning strategies and insolvency risk. *Eastern European Economics, 63*(1), 44–61.

Celestin, N. (2015). Earnings management and corporate solvency. *International Journal of Accounting Studies, 9*(2), 65–81.

Central Bank of Nigeria. (2023). *Annual economic report*. Central Bank of Nigeria.

Chen, H., & Lin, C. (2021). Capital structure and insolvency risk. *Finance Research Letters, 38*, 101–112.

Chenhall, R. H. (2003). Management control systems design within its organizational context. *Accounting, Organizations and Society, 28*(2–3), 127–168.

Chowdhury, A., & Maung, M. (2019). Liquidity and solvency risk in corporations. *Journal of Corporate Finance, 58*, 492–506.

Chytis, E., Tasios, S., & Filos, I. (2020). Tax planning and financial distress. *International Journal of Accounting and Finance, 9*(4), 310–327.

Cohen, D., & Zarowin, P. (2010). Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics, 50*(1), 2–19.

Cooper, M., & Nguyen, Q. T. (2020). Multinational tax planning and transfer pricing. *Journal of International Accounting Research, 19*(3), 65–82.

Crespí-Cladera, R., Martín-Oliver, A., & Pascual-Fuster, B. (2021). Financial distress and bankruptcy prediction. *Journal of Business Finance & Accounting, 48*(5–6), 771–803.

da Silva, R., Junior, E., & Nascimento, M. (2023). Tax aggressiveness and firm behaviour. *Journal of Accounting Literature, 42*(2), 100–118.

Danso, A., Lartey, T., Amankwah-Amoah, J., & Adomako, S. (2019). Market structure, financial leverage and firm performance. *International Journal of Finance & Economics, 24*(4), 1483–1501.

Desai, M. A., & Dharmapala, D. (2006). Corporate tax avoidance and firm value. *Review of Economics and Statistics, 91*(3), 537–546.
Diantari, P. R., & Ulupui, I. G. K. A. (2016). Corporate tax planning and profitability. *International Research Journal of Management, IT and Social Sciences, 3*(5), 45–54.
Dobrovic, J., Korauš, A., & Rajnoha, R. (2018). Tax management and tax fraud in corporations. *Journal of Security and Sustainability Issues, 8*(1), 123–135.
Donaldson, L. (2001). *The contingency theory of organizations*. Sage Publications.
Donohoe, M., McGill, G., & Outslay, E. (2014). Corporate tax planning and corporate social responsibility. *National Tax Journal, 67*(3), 639–670.
Dyreng, S., Hanlon, M., Maydew, E., & Thornock, J. (2017). Changes in corporate effective tax rates over time. *Journal of Financial Economics, 124*(3), 441–463.
Elamer, A. A., et al. (2024). Corporate tax planning and governance mechanisms. *Corporate Governance Journal, 24*(2), 201–220.
Etter-Phoya, R., Meinzer, M., & Lima, M. (2020). Tax systems and corporate tax incentives in West Africa. *Tax Justice Network Report*.
Fang, V., Hasan, I., & Marton, K. (2022). Corporate solvency and financial fragility. *Journal of Banking & Finance, 136*, 106–124.
Fellegi, I. (2013). Tax planning and tax compliance. *International Tax Review, 24*(3), 15–23.
Fiedler, F. E. (1964). A contingency model of leadership effectiveness. *Advances in Experimental Social Psychology, 1*, 149–190.
Frank, M., Lynch, L., & Rego, S. (2009). Tax reporting aggressiveness and financial reporting aggressiveness. *The Accounting Review, 84*(2), 467–496.
Gabrielli, G., & Greco, L. (2023). Tax planning and firm solvency. *European Financial Management, 29*(2), 390–412.
Garbarino, C. (2011). *Aggressive tax strategies and corporate tax governance*. Edward Elgar Publishing.
García Lara, J., García Osma, B., & Penalva, F. (2009). Accounting conservatism and corporate governance. *Review of Accounting Studies, 14*(1), 161–201.
Ghazalat, A. (2024). Tax planning and financial resilience. *Journal of Applied Accounting Research, 25*(1), 101–118.
Ghofar, A., & Islam, M. (2015). Contingency theory and organizational performance. *International Journal of Business and Management Review, 3*(4), 1–14.
Graham, J. R., & Tucker, A. L. (2006). Tax shelters and corporate debt policy. *Journal of Financial Economics, 81*(3), 563–594.
Gregova, E., Valaskova, K., Adamko, P., Tumpach, M., & Jaros, J. (2021). Bankruptcy prediction and earnings management. *Oeconomia Copernicana, 12*(1), 167–193.
Gunny, K. (2010). The relation between earnings management using real activities manipulation and future performance. *Contemporary Accounting Research, 27*(3), 855–888.
Habib, A., D'Costa, M., Huang, H., Bhuiyan, M., & Sun, L. (2018). Determinants and consequences of financial distress: Review of the empirical literature. *Accounting & Finance, 58*(4), 1023–1075.
Hanlon, M., & Heitzman, S. (2010). A review of tax research. *Journal of Accounting and Economics, 50*(2–3), 127–178.
Horodnic, I. A. (2018). Institutional determinants of tax compliance. *Economic Research-Ekonomska Istraživanja, 31*(1), 146–163.
Huhtilainen, M. (2020). Capital intensity and corporate insolvency risk. *Journal of Risk Finance, 21*(3), 245–261.
Hummel, K., Pfaff, D., & Bisig, B. (2019). Corporate tax aggressiveness and financial distress. *Journal of Business Ethics, 158*(3), 673–689.
Ibadin, P. O., & Kemebradikemor, T. (2020). Tax planning and firm value in Nigeria. *Accounting and Taxation Review, 4*(1), 1–16.
Ibhagui, O., & Olokoyo, F. (2018). Financial distress in Nigerian firms. *Cogent Economics & Finance, 6*(1), 1–16.
Isallah, P. A. (2024). Corporate tax planning and firm growth. *African Journal of Economic Review, 12*(2), 75–89.
Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behaviour, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305–360.
Jibir, A., Abdu, M., & Muhammad, A. (2020). Tax compliance and corporate governance in Nigeria. *Nigerian Journal of Management Sciences, 21*(2), 88–102.

Kononenko, I., et al. (2022). Digital transformation in corporate taxation. *Journal of Digital Accounting Research, 22*(1), 44–61.
Knuutinen, R. (2014). Tax avoidance, earnings management and corporate governance. *Nordic Tax Journal, 1*(1), 36–52.
Konstantaras, I., & Siriopoulos, C. (2011). Financial distress prediction in listed firms. *International Journal of Economics and Finance, 3*(4), 45–56.
Kurniady, A. (2020). Corporate tax planning and firm profitability. *International Journal of Financial Research, 11*(5), 230–239.
Kutera, M. (2017). Tax planning and tax fraud in corporations. *Financial Internet Quarterly, 13*(1), 24–34.
Law, K., & Mills, L. (2017). Tax avoidance and default risk. *The Accounting Review, 92*(5), 205–231.
Lin, S., Tong, N., & Tucker, A. (2014). Corporate tax planning and financial distress. *Asian Review of Accounting, 22*(2), 122–138.
Maigoshi, Z., & Tanko, M. (2023). Real earnings management and tax aggressiveness in Nigerian firms. *Journal of African Business, 24*(3), 331–349.
Michalkova, L., Adamko, P., & Valaskova, K. (2021). Earnings management and leverage risk. *Economic Research-Ekonomska Istraživanja, 34*(1), 2500–2518.
Morgenthaler, S. (2007). Normality assumptions in regression models. *Statistical Methods & Applications, 16*(2), 219–236.
Muhmad, S., Kassim, A., & Sallem, N. (2024). Tax planning and financial sustainability. *Journal of Contemporary Accounting, 10*(1), 55–72.
Myers, S. C. (1984). The capital structure puzzle. *The Journal of Finance, 39*(3), 575–592.
Narayan, P. K., Mishra, S., & Narayan, S. (2011). Market capitalization and firm value. *Economic Modelling, 28*(6), 2739–2747.
Neuman, S. (2014). Corporate tax planning strategies. *International Tax Journal, 40*(4), 33–47.
Nguyen, T., Ibrahim, S., & Giannopoulos, G. (2023). Real earnings management and corporate reporting quality. *Accounting Research Journal, 36*(1), 58–74.
Nwogugu, M. (2005). Corporate tax planning and bankruptcy risk. *Journal of Financial Regulation and Compliance, 13*(4), 327–340.
Oboh, C. S., & Ajibolade, S. O. (2017). Tax planning and financial performance of Nigerian listed firms. *Nigerian Journal of Accounting Research, 13*(2), 89–107.
Odum, A. N. (2023). Corporate tax planning and insolvency risk in Nigeria. *Journal of Accounting and Taxation, 15*(1), 66–81.
Olbert, M. (2025). Tax loss carryforward restrictions and bankruptcy risk. *European Accounting Review, 34*(1), 91–118.
Olika, E., Ukomadu, A., Ogidan, T., & Abiodun, A. (2024). Nigerian tax reforms and corporate compliance. *BusinessDay Research Report*.
Otley, D. T. (1980). The contingency theory of management accounting. *Accounting, Organizations and Society, 5*(4), 413–428.
Payne, D., & Raiborn, C. (2018). Aggressive tax avoidance: A conundrum for stakeholders. *Journal of Corporate Accounting & Finance, 29*(2), 22–30.
Pedram, M. (2015). Capital intensity and financial distress. *International Journal of Economics and Financial Issues, 5*(4), 1012–1018.
Pindado, J., Rodrigues, L., & De La Torre, C. (2008). Estimating financial distress likelihood. *Journal of Business Research, 61*(9), 995–1003.
Rahiminejad, M. (2025). Tax efficiency and bankruptcy prediction. *Global Journal of Finance and Management, 17*(2), 141–158.
Ram Mohan, T. T. (2024). Corporate tax aggressiveness and insolvency risk. *Journal of Financial Studies, 18*(1), 50–69.
Richardson, G., Taylor, G., & Lanis, R. (2013). Corporate tax aggressiveness and firm risk. *Journal of Contemporary Accounting & Economics, 9*(1), 62–82.
Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics, 42*(3), 335–370.

Salawu, R., Ogundipe, L., & Yeye, O. (2017). Tax planning and financial performance of Nigerian manufacturing firms. *International Journal of Accounting Research, 5*(1), 1–9.

Sava, A., & Tureatca, M. (2017). Corporate tax planning and financial distress. *Romanian Economic Journal, 20*(65), 114–128.

Shittu, I., & Alagbe, O. (2023). Non-debt tax shields and firm value in Nigeria. *Accounting Frontier Review, 6*(2), 78–92.

Sosnowski, M. (2023). Strategic tax planning in multinational corporations. *International Tax and Public Finance, 30*(4), 887–904.

Souisa, W., Tjondro, E., Kusumawardhani, I., Sadjiarto, A., & Eoh, J. (2024). Real earnings management and tax aggressiveness. *Asian Journal of Business and Accounting, 17*(1), 89–110.

Su, L. (2016). Capital intensity and bankruptcy risk in Chinese firms. *China Finance Review International, 6*(3), 245–260.

Sun, J., & Liu, G. (2020). Financial distress prediction and insolvency measurement. *Journal of Forecasting, 39*(5), 765–782.

Tanko, M. (2025). Corporate tax planning, earnings management and financial distress in Nigeria. *Nigerian Journal of Financial Research, 14*(1), 101–124.

Taylor, G., & Richardson, G. (2013). Corporate tax aggressiveness, tax shelters and firm value. *International Journal of Accounting, 48*(4), 469–496.

Taylor, G., & Richardson, G. (2014). The determinants of tax aggressiveness. *Journal of Accounting and Public Policy, 33*(3), 236–261.

Wilson, R. (2009). An examination of corporate tax shelter participants. *The Accounting Review, 84*(3), 969–999.

Wooldridge, J. M. (2019). *Introductory econometrics: A modern approach* (7th ed.). Cengage Learning.

Yin, H., Yang, J., & Mehran, H. (2020). Corporate insolvency and financial fragility. *Journal of Corporate Finance, 63*, 101–119.

Zimon, G., Dankiewicz, R., & Maruszewska, E. (2021). Governance quality, earnings management and corporate risk. *Sustainability, 13*(18), 1–17