



Financial attributes, real earnings management and corporate tax planning of listed manufacturing firms in Nigeria

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Abstract

The purpose of this study is to investigate the influence of financial attributes on the tax planning strategies of publicly listed manufacturing companies in Nigeria from 2012 to 2022. Additionally, it examines the moderating role of real earnings management (REM) in the relationship between financial attributes and tax planning. Data for this research were gathered from the annual reports of 41 publicly listed manufacturing firms in Nigeria. The study employed a correlational design using panel data analysis, with a fixed effects estimation applied to a simplified model and a moderated model. The results show that financial leverage positively and significantly affects the tax planning strategies of the listed manufacturing firms, and REM has a positive and significant influence on tax planning. Furthermore, REM was observed to significantly moderate the relationship between financial attributes and tax planning. Firms should engage in ethical and legal tax planning practices while taking their financial attributes into consideration. Companies need to be aware of the impact of REM on financial reporting and tax compliance and ensure that their tax planning aligns with relevant regulations.

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Firm attributes
Manufacturing firms
Real earnings management
Tax planning.

JEL Classification:

G3, H2, H26, M4.

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1. Introduction

Tax planning plays a crucial role in business strategy by allowing companies to minimize their tax obligations and maximize profits. However, it can also have ethical and legal implications, particularly when firms engage in real earnings management (REM), which involves structuring business transactions to achieve specific financial goals, including tax planning. Additionally, tax planning serves as a major revenue source for governments, but it can distort firm profitability since companies are significant taxpayers. In response to this, the Nigerian government enacted the Finance Acts of 2019, 2020, 2021, and 2023 to boost revenue generation. Consequently, corporate organizations may opt to employ more tax planning measures to reduce their tax liabilities. However, excessive reliance on tax planning to avoid tax obligations can have negative consequences for the economy and society as a whole (Khuong, Ha, Minh, & Thu, 2019).

The success of listed manufacturing firms in Nigeria relies on effective tax planning and favorable financial attributes. Tax planning involves strategies implemented by companies to minimize their tax liabilities and maximize profits, while financial attributes encompass factors such as profitability, liquidity, leverage, and efficiency, which impact a firm's financial performance. REM, on the other hand, refers to manipulating financial statements to achieve specific financial objectives.

Several studies have also investigated the impact of financial attributes on tax planning in various countries. Zhou and Wei (2017) studied the influence of financial attributes on tax planning in China and found that profitability, liquidity, and leverage significantly affect tax planning. Likewise, Tanko (2023) conducted a study on the impact of financial attributes on tax planning in Nigeria and found that profitability and leverage have a positive effect, while liquidity has a negative effect. Chen, Ge, Louis, and Zolotoy (2019) revealed that companies with high profitability and low liquidity are more inclined to engage in tax planning activities. Similarly, Siyanbola and Samaila (2022) observed that firms with high leverage tend to be involved in tax planning. However, there is limited research examining the moderating effect of REM on the relationship between financial attributes and tax planning in Nigeria.

In the Nigerian context, several studies have explored the relationship between financial attributes and tax planning across different industries. For instance, Tanko, Maigoshi, Rabi, Waziri, and Yusuf (2022) investigated the impact of firm attributes on tax planning in Nigerian manufacturing firms and found that profitability and liquidity significantly affect tax planning. Similarly, Adegbite and Adeniji (2018) examined the impact of firm attributes on tax planning in the Nigerian oil and gas sector and identified leverage as a significant factor. Other studies conducted by Ogbeide (2017); Salaudeen (2017); Salaudeen and Eze (2018); Adegbite and Bojuwon (2019); Kibiya and Aminu (2019) and Yahaya and Yusuf (2020) have also utilized various financial attributes. However, none of the studies in Nigeria have utilized earnings per share (EPS) as a measure of financial attributes, which is included in this study. Furthermore, limited research has considered the effect of liquidity on tax planning in both developed and developing economies. Despite the prevailing belief that financial attributes (profitability, leverage, and liquidity) motivate tax planning, previous investigations have yielded mixed results (Aghouei & Moradi, 2015; Chen & Zolotoy, 2014; Firmansyah & Febriyanto, 2018; Jamei & Khedri, 2016; Kałdoński & Jewartowski, 2020; Kibiya & Aminu, 2019; Ogbeide, 2017; Pettersson & Wu, 2015; Prastiwi, 2017; Rani, Susetyo, & Fuadah, 2018; Ribeiro, 2015).

Additionally, only Tanko (2023) moderates the relationship between financial attributes and tax planning using real earnings management as a moderator. However, the study failed to include earnings per share as a financial attribute. Limited research exists on the impact of REM on tax planning, as indicated in studies by Tanko et al. (2022) and Kałdoński and Jewartowski (2020).

Manufacturing companies play a crucial role in producing various goods that meet people's daily needs. Moreover, listed manufacturing firms in Nigeria face various challenges in their tax planning activities, including high tax rates and inconsistent tax policies. The manufacturing sector contributes significantly to the economy, especially in developing countries. However, the contribution of the manufacturing sector to Nigeria's gross domestic product (GDP) is relatively low and has been declining in recent years. In 2019, the sector accounted for only 20% of Nigeria's GDP (Ogunbanjo, 2019). Additionally, taxation has become an area of great interest in accounting due to concerns regarding transparency and potential tax evasion (Chen & Zolotoy, 2014).

2. Literature Review and Hypothesis Development

2.1. Profitability and Tax Planning

There are numerous determinants of profitability, including capital structure, firm size, growth rate, and non-debt tax shields. Modigliani and Miller (1958) were the first to propose a theory on capital structure, which explains the effects of taxation, bankruptcy costs, and the cost of agency on optimal capital structure (as cited in Sivathaasan, Tharanika, Sinthuja, and Hanitha (2013)).

However, using non-debt tax shields as determinants of profitability, DeAngelo and Masulis (1980) stated that they can be substitutes for the tax benefits of debt financing, and firms with a larger non-debt tax shield are expected to use less debt. The level of profitability can influence management's engagement in tax planning strategies. For instance, if a firm is continually experiencing low profitability, it can engage in tax planning by shifting profits to another accounting year or to a location where the tax rate is lower.

According to Minnick and Noga (2010) and Aghouei and Moradi (2015), the main rationale behind companies engaging in tax management is to improve profitability. Frank, Lynch, and Rego (2009) stated that firm profitability is highly associated with tax planning. In addition, Badertscher, Katz, and Rego (2013) stated that companies with higher profitability engage in tax planning compared to companies with low profit. Similarly, Poorheidari and Sarvestani (2013) observed that companies with opportunities for growth and high profitability have a positive and significant relationship with tax planning.

Other authors claim that highly profitable firms will benefit from tax exemptions and use tax deductions and tax credits more efficiently, resulting in greater book-tax disparity (Ribeiro, 2015); (Manzon Jr & Plesko, 2001). Similarly, Rego (2003) argued that highly profitable companies have lower tax management costs because they have more money to invest in tax planning activities, leading to a lower effective tax rate (ETR).

Iatridis and Blanas (2007) investigated the effect of listed firms' financial attributes on their stock returns in Athens, Greece. The study used a sample of 254 firms and employed multiple regression. The study shows a positive relationship between operating profit margin, EPS, return on equity (ROE), net profit margin, and stock price. On the other hand, Aghouei and Moradi (2015) assessed the relationship between the differences in declared and final taxes using certain firm characteristics and corporate governance requirements of 102 companies listed on the Tehran Stock Exchange. The study hypotheses were evaluated using multiple linear regression (MLR) along with the integrated generalized panel data approach. The study findings indicated a positive and significant relationship between the ratio of earnings before tax (EBT) to income, the ratio of EBT to the ratio of total assets, and the discrepancies between reported and final taxes. Thus, the higher the ratio, the higher the tax wedge.

Irianto, Sudibyo, and Wafirli (2017) determined the effect of company size, leverage, profitability, and capital intensity ratio on tax avoidance of manufacturing companies listed on the Indonesian Stock Exchange from 2013 to 2015. The sample was determined using the purposive sampling method, and a sample of 36 manufacturing firms was collected. The findings show that ROA has a negative and nonsignificant effect on the ETR. Inconsistent with the findings of Irianto et al. (2017), Salaudeen and Eze (2018) investigated firm-specific determinants of corporate effective tax rate. The study used 59 non-financial institutions in Nigeria from 2010 to 2014 and used fixed effects panel regression to analyze the data. The study presented a positive relationship between ROA and the ETR and the current ETR. Also, Ledesma et al. (2018) examined the effects of board characteristics on the level of tax avoidance in the Philippines from 2003 to 2015. The study used unbalanced panel data of 1,477 data years for nonfinancial sectors, and the two-step Blundell-Bond system generalized method of moments (GMM) estimation technique was used. The study found a positive relationship between ROA and the residual book-tax gap, while a negative relationship was found between ROA and the ETR and the long-run ETR. This implies that ROA is not among the factors that encourage tax avoidance.

However, Adegbite and Bojuwon (2019) conducted a study examining the existence of corporate tax avoidance practices among publicly listed firms in Nigeria. Secondary data were obtained from the annual published reports of 20 listed firms in Nigeria from 2006 to 2017. The panel data analysis method was used to analyze the effects of thin capitalization, leverage, company size, transfer pricing, and intangible assets on corporate tax avoidance. The outcome showed that profitability (EBIT to sales ratio) is positively and significantly linked to the long-run ETR. This implies that profitability is the main driver of corporate tax avoidance. On the other hand, Graham, Hanlon, Shevlin, and Shroff (2014); Tanko et al. (2022) and Yahaya and Yusuf (2020) found a negative effect of ROA on tax planning.

H01: Profitability does not have a significant effect on the tax planning of listed manufacturing firms in Nigeria.

2.2. Liquidity and Tax Planning

According to Chen et al. (2019) and Chen and Zolotoy (2014), a value-maximizing company can engage in tax planning when tax reductions result in net profits for shareholders, even when the assets are not in liquid form. However, agency disputes between shareholders and executives can lead to underinvestment or overinvestment in tax planning, resulting in overly aggressive or overly conservative tax planning (Armstrong, Blouin, Jagolinzer, & Larcker, 2015; Slemrod, 2004).

Higher stock liquidity mitigates these agency concerns by improving shareholders' oversight of company management (Edmans, 2009; Edmans & Manso, 2011; Faure-Grimaud & Gromb, 2004; Maug, 1998). Chen et al. (2019) argued that higher stock liquidity also disciplines managers against engaging in opportunistic tax planning. John, Olayinka, and Idiku (2022) found a positive effect of the current ratio on the ETR, while Ogbeide, Anyaduba, and Akogo (2022) revealed a negative effect of the current ratio on the ETR. Conversely, Tanko (2023) found that liquidity has a positive but insignificant effect on the tax planning of listed manufacturing firms in Nigeria from 2012 to 2020.

H02: Liquidity does not have a significant effect on the tax planning of listed manufacturing firms in Nigeria.

2.3. Financial Leverage and Tax Planning

One of the determinants of tax planning is leverage because the interest on borrowed finance is tax-deductible (Graham (1996), as cited in Ogbeide (2017)). Higher debt leads to increased interest payable,

resulting in lower net profit before tax, as recorded in the financial statements. In other words, higher debt leads to lower taxable income and higher interest on the debt (Suyono, 2018). Similarly, Ozkan (2001) provided evidence that firms with significant tax liabilities opt for loans to receive tax deductions, which falls under the category of tax planning. A firm's tax expenses are affected by higher interest rates; the higher the debt ratio, the lower the ratio of its tax expenses (Richardson & Lanis, 2007).

Dwenger and Steiner (2009) employed the pseudo-panel method to analyze the effect of leverage on corporate taxes using evidence from German corporate micro-data returns from 1998 to 2001, when Germany underwent a significant corporate tax reform. Financial leverage was determined using the ratio of long-term debt to total capital. The study found a positive relationship between leverage and the ETR, which is the counterfactual tax rate that a company would face without an endogenous adjustment in its financial structure over a specific period.

Suyono (2018) analyzed whether external auditors' efficiency and leverage impact tax aggressiveness in Indonesia. The study employed a purposeful sampling approach, selecting 76 manufacturing companies listed on the Indonesian Stock Exchange as the sample for the study from 2012 to 2016. The results showed that leverage negatively and significantly impacted tax aggressiveness using ordinary least squares (OLS) regression. Similarly, Salaudeen and Eze (2018) examined the corporate ETRs of non-financial companies listed on the Nigerian Stock Exchange. They also tested the neutrality of taxation within the Nigerian economic sectors and defined the relationships between ETRs and firm basic characteristics. Secondary data were extracted from the financial statements of the sampled firms and analyzed using OLS, random effects, and fixed effects models. The study found negative insignificant effects of debt to assets on tax planning, indicating that companies with high debt face a lower ETR.

H03: Financial leverage does not have a significant effect on the tax planning of listed manufacturing firms in Nigeria.

2.4. Firm Growth and Tax Planning

Firms' managers optimize the profitability of their companies and make continuous efforts to expand. Jong, Park, and Cho (2017) opined that some firms do not consistently increase their sales or assets for tax purposes. However, their opinion may not be correct in all cases. Most listed companies strive to consistently increase their sales and assets while minimizing net cash outflow to optimize their firm's worth. A growing firm often enjoys greater financial stability, which may lead to a decreased propensity for the company to engage in tax planning strategies.

Additionally, larger firms tend to have lower investment and innovation levels (Barclay, Heitzman, & Smith, 2017) but maintain relatively stable profits. According to Higgins, Omer, and Phillips (2011), at this stage, management tends to limit tax planning opportunities to reduce confusion and risks that may arise from such actions. The focus is on optimizing operational efficiency rather than tax avoidance (Koester, Shevlin, & Wangerin, 2013). During the growth process, the government often imposes strict control on firms to collect more taxes. However, in some cases, a firm may experience sales growth but intentionally reduce sales and the cost of sales to decrease gross profit and profit before tax with the aim of paying less tax.

Therefore, some firms that experience lower-than-anticipated growth, according to shareholder expectations, may engage in tax planning to improve their sales and asset growth. However, with the recent introduction of the Finance Act 2020 in Nigeria, small firms with a turnover of less than ₦25 million are exempt from paying company income tax and Tertiary Education Trust Fund (TETFUND) tax. This loophole in the Finance Act 2020 may incentivize some firms to underreport their sales to avoid paying taxes.

In addition, Siyanbola and Samaila (2022) examined the effect of firm attributes on tax aggressiveness in selected Nigerian firms. The study employed quantile regression to analyze secondary data extracted from the firms' financial statements. It revealed a positive correlation between sales growth and the book-tax difference (BTD) residual. Conversely, Tanko et al. (2022) investigated the impact of firm growth on tax planning in 35 listed manufacturing firms in Nigeria. The study analyzed the data using panel least squares regression, and the results indicated a negative relationship between sales growth and the BTD residual, suggesting that sales growth reduces tax planning. Similarly, Tanko (2023) observed a significant negative effect of sales growth on the BTD residual.

H04: Firm growth does not have a significant effect on the tax planning of listed manufacturing firms in Nigeria.

2.5. Real Earnings Management (REM) and Tax Planning

Often, disputes between agents and principals can have an impact on the quality of earnings. Agents may resort to earnings management techniques, such as REM, to further their own interests. One common reason why corporate management engages in earnings management is for tax-related motivations (Kustono & Effendi, 2016; Scott, 2015). Desai and Dharmapala (2007) argued that managers who are aligned with their shareholders tend to behave more aggressively when it comes to tax planning. Additionally, Ball and Shivakumar (2005) asserted that tax calculation is one of the objectives in developing financial statements. Companies that report profits rely on efforts to manage their income in order to minimize tax payments (Coppens & Peek, 2005). These authors further suggested that using accounting income as the tax base

encourages managers to engage in earnings management. Evidence from studies conducted by [Burgstabler and Diehev \(1997\)](#); [Wang and Chen \(2012\)](#) and [Kustono and Effendi \(2016\)](#) revealed instances of income tax-related earnings management practices. [Kałdoński and Jewartowski \(2020\)](#) found that real earnings management has a positive and significant effect on tax planning.

H05: Real earnings management does not have a significant effect on the tax planning of listed manufacturing firms in Nigeria.

2.6. Moderating Effect of REM on the Relationship between Firm Financial Attributes and Tax Planning

The income earned by a firm determines the amount of tax it owes. As a firm's earnings increase, so does its tax liability ([Rani et al., 2018](#)). One strategy employed by firms to manipulate profits and avoid paying higher taxes is earnings management ([Badertscher, Phillips, Pincus, & Rego, 2009](#); [Rani et al., 2018](#); [Scott, 2015](#)). Profit-seeking firms aggressively manage their earnings to ensure that their managers receive maximum bonuses. Highly profitable firms also engage in tax planning activities to minimize their tax obligations ([Delgado, Fernandez-Rodriguez, & Martinez-Arias, 2012](#); [Kraft, 2014](#); [Rego, 2003](#)). According to the theory of political cost, firms may report lower profits to reduce their tax liability. The earnings management activities carried out by company management can potentially influence the relationship between firm profitability and tax planning.

The level of financial leverage in an organization is related to the extent of its earnings management activities. A higher leverage ratio indicates greater dependence on third-party creditors and higher interest costs for the company to bear ([Astuti, Nuraina, & Wijaya, 2017](#); [Rani et al., 2018](#)). When a company has high levels of debt, it is more likely to engage in earnings management to maximize profits. By manipulating earnings, the company aims to minimize its tax burden and take advantage of interest cost deductions. This aligns with the political expense hypothesis in positive accounting theory, which suggests that earnings management may influence the relationship between financial leverage and tax planning in either a positive or a negative direction.

The management of liquidity and sales growth also plays a role in earnings management. Companies with higher sales growth rates tend to have more liquid assets. Generally, companies with significant growth engage in more corporate and financial transactions compared to those with low growth rates ([Rego, 2003](#)). Larger companies typically report higher earnings, and as the size of the company in terms of sales and liquidity increases, it is more likely to adopt accounting methods that reduce revenue ([Amertha, Ulupui, & Dwija, 2014](#)). This approach aims to minimize the tax that must be paid. Thus, the liquidity and sales growth of a company can lead management to implement earnings management strategies to reduce the tax burden.

In their 2018 study, Rani et al. analyzed how earnings management moderates the relationship between corporate characteristics and tax avoidance. The study assessed company traits such as profitability, leverage, and size from 2012 to 2016. The research included a sample of 49 manufacturing companies listed on the Indonesian Stock Exchange, selected through random cluster sampling. Utilizing a random effects model, the panel data regression revealed that return on assets (ROA) positively influenced effective tax rates (ETR), the debt-to-equity ratio (DER) had a negative effect on ETR, and these relationships were moderated by discretionary accruals (DA).

H06: Real earnings management (REM) does not significantly moderate the relationship between financial attributes and the tax planning of listed manufacturing firms in Nigeria.

3. Methodology

In the development of a study, [Creswell \(2012\)](#) proposed three approaches: quantitative, qualitative, or mixed methods. The suitability of each approach depends on the context, intent, and research design. Considering the goals of this study, a quantitative approach is required. Quantitative design originated in the natural sciences to study natural phenomena. It views the world as a collection of measurable facts and treats them as calculable instruments. The researcher, in this approach, is an impartial observer who does not participate in or influence the study. The objective of the quantitative method is to establish relationships between measured variables. This design is considered the most suitable for this study as it deals with data in numerical terms and specified measurements.

The study's population comprises all manufacturing companies listed on the Nigerian Exchange (NGX) as of December 31, 2022. These companies fall into categories such as Conglomerates, Construction and Real Estate, Consumer Goods, Healthcare, Industrial Goods, and Natural Resources. In 2022, there were 58 firms in these groups listed on the Nigerian Exchange. Two filters were applied to narrow down the list, and 17 companies were excluded as a result: those listed after 2012 and those delisted before 2022. After applying these filters, the study arrived at a final working population of 41 listed firms.

A census sampling technique was employed, using the entire working population of 41 listed manufacturing firms as the sample size. This approach was chosen to enable a robust analysis of the collected data. The acceptance of this technique is justified by the heterogeneous nature of the firms.

The data for the study were extracted from the annual reports and accounts of the manufacturing firms from 2012 to 2022 and includes information on tax planning, financial attributes (EPS, current ratio, debt to equity, and sales growth), and REM.

Table 1 presents the variables of the study. The dependent variable is tax planning, the independent variables are profitability, liquidity, leverage and firm growth, and the moderating variable is real earnings management.

Table 1. Summary of variables and measurement.

Variable	Type	Measurement/Source(s)
Tax planning	Dependent variable	Residual of book tax difference. $\frac{\text{Profit before tax} - \text{current tax expenses}}{\text{statutory tax rate}}$ divided by total assets (Desai & Dharmapala, 2006; Santana & Rezende, 2016; Siyanbola & Samaila, 2022).
Profitability	Independent variable	Earnings per share (EPS) is measured as profit for the year divided by total shares (Tanko et al., 2022).
Liquidity	Independent variable	Current ratio (CUR) is measured as the ratio of current assets to current liabilities (Chen et al., 2019; Kibiya & Aminu, 2019).
Financial leverage	Independent variable	This is the ratio of debt to the value of equity (Maula, Saifullah, Nurudin, & Zakiy, 2019; Rani et al., 2018).
Firm growth	Independent variable	Sales growth is the change in sales from year t-1 to year t divided by total assets in year t-1. The formula is $\left(\frac{\text{sales}_{it} - \text{sales}_{it-1}}{\text{total of total assets}_{it-1}}\right)$ (Oktaviyani & Munandar, 2017; Siyanbola & Samaila, 2022)
Real earnings management	Moderating variable	The aggregate of REM is estimated as the residuals, proposed by Roychowdhury (2006).

Note: Literature reviewed.

Tax planning in the sampled manufacturing firms listed on the NGX is the dependent variable of this study. The Desai and Dharmapala book-tax difference (BTD) developed by Desai and Dharmapala (2006) was used. The use of the Desai and Dharmapala BTD residual limits the chances of earnings management available in the BTD (Musa, 2018; Siyanbola, 2021). The study used the residual from the following regression model:

$$\text{Total BTD}_{it} = \beta_1 \text{total accruals}_{it} + \mu_1 + \varepsilon_{it}$$

Where BTD is the book-tax difference measured as $\left\{\text{Profit before tax} - \frac{\text{current tax expenses}}{\text{statutory tax rate}}\right\}$.

The profit before extraordinary items and tax minus net cash flow from operating activities is the total accrual, μ is the residual, and ε is the error term. Also, a larger BTD residual signifies higher incidence of tax planning (Santana & Rezende, 2016; Siyanbola, 2021).

Furthermore, the utilization of the BTD residual as a proxy for tax planning is substantiated by the belief that managers in publicly traded firms often aim to disclose reduced profits to minimize their tax liabilities. To eliminate any potential impacts of earnings manipulation on BTD, the accruals are controlled, as proposed by Santana and Rezende (2016). Consequently, this study examines tax planning by analyzing the BTD residual among the sampled manufacturing companies listed on the stock exchange.

The moderating variable in this study is real earnings management (REM). For REM activities, the study employs the aggregate values outlined by Roychowdhury (2006): abnormal levels of cash flow from operations (ABCFO), abnormal levels of production costs (ABPROD), and abnormal levels of discretionary expenses (ABDISEXP). The following equations represent these variables, respectively:

$$\frac{\text{PROD}_{it}}{\text{Assets}_{it-1}} = \alpha_0 + \beta_1 \left(\frac{1}{\text{Assets}_{it-1}}\right) + \beta_2 \left(\frac{\text{Sales}}{\text{Assets}_{it-1}}\right) + \beta_3 \left(\frac{\Delta\text{Sales}}{\text{Assets}_{it-1}}\right) + \beta_4 \left(\frac{\Delta\Delta\text{Sales}}{\text{Assets}_{it-1}}\right) + \varepsilon_t$$

$$\frac{\text{CFO}_{it}}{\text{Assets}_{it-1}} = \alpha_0 + \beta_1 \left(\frac{1}{\text{Assets}_{it-1}}\right) + \beta_2 \left(\frac{\text{Sales}}{\text{Assets}_{it-1}}\right) + \beta_3 \left(\frac{\Delta\text{Sales}}{\text{Assets}_{it-1}}\right) + \varepsilon_t$$

$$\frac{\text{DISEXP}_{it}}{\text{Assets}_{it-1}} = \alpha_0 + \beta_1 \left(\frac{1}{\text{Assets}_{it-1}}\right) + \beta_2 \left(\frac{\text{Sales}}{\text{Assets}_{it-1}}\right) + \varepsilon_t$$

Where PROD is the production cost for firm i in year t calculated as the cost of goods sold plus inventory. Sales and ΔSales reflect sales and changes in sales, respectively, while $\Delta\Delta\text{Sales}$ for β_3 represents changes in the sales of the previous year. CFO is cash flow from operations, DISEXP is the sum of research and development (R&D), advertising, selling, and general administrative costs. The lagged values of the total assets are scaled by all variables, excluding the intercept (Roychowdhury, 2006).

The ordinary least squares (OLS) method is employed to estimate the coefficients and ε_{it} within each equation. The equations are used to compute ABCFO, ABPROD, and ABDISEXP and derive the residuals. Notably, research has confirmed that companies engaged in earnings manipulation tend to exhibit low

ABCFO, high ABPROD, and/or low ABDISEXP, or vice versa. Therefore, ABCFO and ABDISEXP values are multiplied by -1 to ensure consistency among the variables (Chen et al., 2019). The following equation is subsequently utilized to combine the values of ABCFO, ABDISEXP, and ABPROD, reflecting the total abnormal real earnings management (ABREM).

$REM = ABPROD + ABCFO^{*-1} + ABDISEXP^{*-1}$ (Graham, Harvey, & Rajgopal, 2005; Gunny, 2010; Roychowdhury, 2006; Tabassum, Kaleem, & Nazir, 2015).

3.1. Data Analysis

To investigate the effects of financial attributes and the moderating role of REM on tax planning, the study used correlation analysis and panel least squares regression techniques to analyze the data. The study used this method of analysis because of the nature of the data which comprises both time series and cross-sectional data.

3.2. Model Specifications

The study adopts the models below, consistent with prior studies on tax planning:

$$BTDRsid_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 CUR_{it} + \beta_3 DER_{it} + \beta_4 SGW_{it} + \varepsilon_{it} \quad (1)$$

$$BTDRsid_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 CUR_{it} + \beta_3 DER_{it} + \beta_4 SGW_{it} + \beta_5 REM_{it} + \beta_6 EPS_{it} * REM_{it} + \beta_7 CUR_{it} * REM_{it} + \beta_8 DER_{it} * REM_{it} + \beta_9 SGW_{it} * REM_{it} + \varepsilon_{it} \quad (2)$$

Where:

BTDRsid = Book-tax difference residual.

EPS = Earnings per share.

CUR = Current ratio.

DER = Debt to equity.

SGW = Sales growth.

REM= Real earnings management.

* = Interaction.

i = Firms 1–41.

t = Financial years 2012–2022.

β_0 = Intercept.

β_1 –9 = Slope coefficient of explanatory variables.

ε_{it} = Error term.

4. Results and Discussions

4.1. Correlation Analysis

Table 2 shows the correlation between the dependent variable and the explanatory variables. The study used Spearman's rank correlation due to the abnormality of the data distribution. The results show that EPS has a positive but weak relationship with the tax planning of listed manufacturing firms, with a coefficient value of 0.075, which is at 8%. This suggests that EPS and tax planning move in the same direction. Similarly, CUR has a positive but weak relationship with tax planning, with a 20% correlation coefficient. However, DER has a positive and strong relationship with tax planning, with a correlation coefficient value of 0.548, which is approximately 55%.

On the contrary, SGW exhibited a negative and weak association with tax planning, as evidenced by a correlation coefficient of -0.035. This suggests that SGW and tax planning tend to move in opposite directions. Table 2 further illustrates that REM has a positive, albeit moderate, relationship with tax planning, with a coefficient of 0.418. The results also indicate the absence of multicollinearity among the explanatory variables, as none of them exhibit a correlation coefficient higher than 0.8 when paired with another variable.

Table 2. Correlation matrix (Observations = 451).

Variable	BTDRsid	EPS	CUR	DER	SGW	REM
BTDRsid	1.000					
EPS	0.075	1.000				
CUR	0.197	0.067	1.000			
DER	0.548	0.533	0.646	1.000		
SGW	-0.035	-0.451	0.404	0.628	1.000	
REM	0.408	0.259	0.358	0.241	0.206	1.000

4.2. Diagnostic Tests

The study used plots of the standardized residual in the models against each of the predictors to check for normality of the residual. The results revealed that aside from the current ratio, the majority of the variables are linear, which indicates non-linearity because the dots focus on the lower part of the plot. The current ratio is on the left in the model because Cameron and Trivedi (2009) in Siyanbola and Samaila (2022) opined that

the non-linearity of a few variables will not overturn the general linearity of a model. Therefore, one can conclude that the apparent non-linearity of a variable shows that the linearity situation is tolerable. Also, the study uses a normal p-plot to check the residual normality of the dependent variable. The normal p-plot of the regression standardized residuals indicates a good fit and does not suggest the presence of outliers. The points on the plot do not deviate significantly from the line of best fit, showing that the normality assumption is valid. The study uses the Breusch–Pagan–Godfrey test to affirm the compliance of the research model with the assumption. The results obtained from the Breusch–Pagan–Godfrey test for heteroscedasticity for both the parsimonious and moderated models were all above the 0.05 level of significance (see Table 3). The results show that the probability values are greater than 5%, which implies that the variance of the residuals is constant in both the parsimonious and moderated models.

The study uses the Hausman Specification test to examine the presence of endogenous explanatory variables in the models because of its potential to cause the OLS estimators to fail. The Hausman specification tests were carried out on the parsimonious model and the moderated model to choose a more consistent estimator between the generalized least squares (GLS), fixed effects, and random effects. The results presented in Table 3 show that both models' unique errors are correlated with the regressors because the chi-square probabilities are 0.0360 and 0.0027 for the parsimonious and moderated models, respectively. The results were interpreted based on the fixed effects model.

Table 3. Panel least squares results (Observations = 451).

Parsimonious model				Moderated model		
Variable	Coefficient	Z	P> z	Coefficient	Z	P> z
Constants	0.941	2.03	0.008*	0.059	2.98	0.029**
EPS	-0.183	-3.88	0.000*	-0.571	-7.01	0.000*
CUR	-0.029	-0.89	0.641	0.001	0.15	0.882
DER	0.097	2.61	0.011*	0.186	2.85	0.005*
SGW	-0.223	-6.06	0.000*	-0.068	-1.09	0.280
REM				0.830	8.73	0.000
EPS*REM				0.384	7.49	0.000*
DER*REM				0.319	5.94	0.000*
CUR*REM				0.097	2.53	0.013*
SGW*REM				0.361	5.19	0.000*
Overall R ²	0.401			0.857		
F-Stat.	21.16			111.71		
Prob > F stat.	0.000			0.000		
Hetest	0.284			0.354		
Hausman chi ²	0.2931			2.390		
Hausman prob.	0.036			0.003		

Note: * and ** indicate the 1% and 5% levels of significance, respectively.

Table 3 displays the results of the parsimonious model, indicating an R² value of 0.401, which is approximately 40%. This demonstrates the model's significance at a 1% level with an F-statistic of 0.000. It also suggests that 60% of the variation in tax planning arises from factors not included in the model, while the remaining 40% is influenced by profitability, liquidity, leverage, and firm growth.

In contrast, the moderated model exhibits an R² of 0.857, signifying a substantial 114% increase from the parsimonious model due to the inclusion of REM as a moderator. This implies that 85.7% of the variance in tax planning can be attributed to profitability, liquidity, leverage, firm growth, real earnings management, and their interactions. However, 14.3% of the variation remains unexplained by the model.

Additionally, the study highlights the significant moderating role of REM in the relationship between financial attributes and tax planning among listed manufacturing firms in Nigeria, with an F-statistic probability value of 0.000, significant at the 1% level. This provides compelling evidence to reject null hypothesis six, which posits that REM does not significantly moderate the relationship between financial attributes and tax planning.

Table 3 presents the results with respect to the effect of EPS on the BTD residual of the listed manufacturing firms in Nigeria. The results revealed that EPS has a negative and significant effect on the BTD residual, with a coefficient value of -0.183 and a probability value of 0.000. This implies that an increase in EPS by ₦1 would lead to an 18.3% decrease in tax planning. This shows that more profitable firms engaged less in tax planning compared to lower-earning firms. Furthermore, the result provides enough evidence to reject hypothesis one, which states that profitability does not have a significant effect on tax planning. This finding is in line with that of Poorheidari and Sarvestani (2013) and Adegbite and Bojuwon (2019), who found that profitability has a positive and significant effect on tax planning. However, the result disagreed with findings of Yahaya and Yusuf (2020) and Tanko et al. (2022). Table 3 also reveals that the current ratio has a negative and significant impact on the BTD residual. The negative coefficient of 0.029 indicates that at 1%

increase of liquidity will lead to a corresponding decrease of tax planning by 3%. This suggests that more liquid firms do not engage in tax planning since they have current assets that are available and can be converted to cash to settle tax liabilities. Also, firms that can convert their liquid assets within a short period are more likely to engage in tax planning than firms that cannot convert their liquid assets in a short period of time. When firms can convert their current assets to settle tax liabilities, they can enjoy some incentives provided by Nigeria Company Income Tax. However, the result provides enough evidence to reject null hypothesis two, which states that liquidity has no significant effect on the tax planning of listed manufacturing firms in Nigeria.

This study aligns with the provisions of the Companies Income Tax Act (CITA), which allows a company to request installment-based income tax payments if it files its self-assessment within six months of the accounting year-end. Firms with strong liquidity management are more likely to meet this deadline and benefit from these incentives. Additionally, companies that pay their income tax 90 days before the due date for filing are granted a 1% bonus in future tax years (2% for medium-sized firms). This finding supports the resource dependency theory, which suggests that firms with ample resources tend to excel in tax planning, often employing tax experts for effective tax management. This study is consistent with the research of [Chen et al. \(2019\)](#) and [Armstrong et al. \(2015\)](#) but contradicts the findings of [John et al. \(2022\)](#) and [Ogbeide et al. \(2022\)](#). The empirical results in [Table 3](#) show that the debt-to-equity ratio has a positive and significant influence on the BTD residual, with a coefficient value of 0.0966 and a significance level of 1%. More so, this suggests that an ₦1 increase in financial leverage while other factors' variables remain constant would increase the tendency of sampled firms' to engage in tax planning positively and significantly by 9.66%. This finding suggests that as manufacturing firms opt for more interest-bearing debt, they enjoyed more tax benefits. This also suggests that firms that take advantage of the tax benefit of leverage have a propensity to increase their financial performance.

Consequently, the result provides enough evidence to reject null hypothesis three, which states that leverage does not have a significant effect on the tax planning of listed manufacturing firms in Nigeria. This finding is in line with those of [Suyono \(2018\)](#) and [Irianto et al. \(2017\)](#), who documented a positive effect of financial leverage on tax planning. The study agreed with the theory of the tax benefit of leverage since their studies also revealed that a rise in the level of interest-bearing debt increases firms' tax benefits by saving profit which could have been paid to the tax authority. However, it contradicts the findings documented by [Salaudeen and Eze \(2018\)](#); [Tilehnouei, Mostafa, Tootian Esfahani, and Soltanipanah \(2018\)](#) and [Ogbeide \(2017\)](#), who documented a negative relationship between financial leverage and tax planning.

The results also show that sales growth has a negative and significant effect on the BTD residual, with a coefficient value of -0.223 and a probability value of 0.000, which is significant at the 1% level. The results suggest that an increase of ₦1 in sales would lead to a 22.34% decrease in tax planning. This is in line with the Finance Acts of 2019 and 2023 in Nigeria, which state that firms with a turnover above ₦25 million but below ₦100 million will be subject to 20% company income tax and a tertiary education tax of 3%, while firms with a turnover above ₦100 million will be subject to 30% company income tax and 3% tertiary education tax. Only firms with a turnover below ₦25 million are not subject to company income tax or tertiary education tax.

Consequently, the study documented evidence to reject null hypothesis four, which states that firm growth does not have a significant effect on tax planning. Similarly, the study agrees with the findings of [Higgins et al. \(2011\)](#) and [Tanko et al. \(2022\)](#), who revealed a negative effect of firm growth on tax planning. However, they disagree with the studies by [Jong et al. \(2017\)](#) and [Siyanbola and Samaila \(2022\)](#), who found a positive effect of firm growth on tax planning. [Table 3](#) demonstrates that REM has a statistically significant positive impact on BTD residuals, with a coefficient value of 0.830 and a probability value of 0.0000. This suggests that a 1% increase in REM increases the likelihood of a firm engaging in tax planning by 83%. The study rejects null hypothesis five, which posits that REM does not significantly affect the tax planning of listed manufacturing companies in Nigeria. In addition, the random effects results in [Table 3](#) show that the moderated EPS, CUR, DER, and SGW have a coefficient value of 0.384 and a $p > z$ of 0.000, a coefficient value of 0.319 and a $p > z$ of 0.000, a coefficient value of 0.097 and a $p > z$ of 0.013, and a coefficient value of 0.361 and a $p > z$ of 0.000, respectively, which indicates a significant impact on tax planning. The moderated model shows that it is positive and greater than their corresponding values in the parsimonious model. The higher values in the moderated model indicate that the manipulating of EPS, CUR, DER and SGW by management is for the interest of equity owners. The results align with the positive accounting theory argument which claims that firms operate on accounting principles based on their own self-interests to increase firm profitability through tax planning. The theory also claims that management has a choice of accounting method to prepare their financial statements and engage in tax planning for their own interests and for the purpose of earnings management.

5. Conclusion and Recommendations

The study's findings indicate that financial factors play a pivotal role in the tax planning activities of publicly traded manufacturing companies in Nigeria. Companies with substantial debt are more inclined to participate in tax planning to lower their tax burden and increase profits. Conversely, firms with strong

profitability, liquidity, and sales growth may have less motivation to engage in tax planning due to a lower incentive to decrease their tax liability.

Additionally, the research revealed that engaging in revenue enhancement measures real earnings management significantly encourages tax planning among companies. This discovery underscores the ethical and legal consequences of real earnings management, as it can result in misleading financial reporting and tax evasion. Furthermore, the study found that real earnings management moderates the relationship between financial attributes and tax planning. This finding suggests that the impact of financial attributes on tax planning may vary depending on the degree of real earnings management. Therefore, firms must consider the ethical and legal implications of real earnings management while engaging in tax planning activities.

In conclusion, financial attributes and tax planning are critical elements for the success of listed manufacturing firms in Nigeria. Real earnings management plays a significant role in moderating the relationship between financial attributes and tax planning; therefore, firms should carefully consider their financial attributes when engaging in tax planning and avoid engaging in real earnings management, as it is unethical and can have legal consequences. Future research can further investigate the impact of real earnings management on tax planning in other industries in Nigeria and examine the effectiveness of regulations in preventing real earnings management.

This study contributes to the existing literature on financial attributes and tax planning by investigating the moderating effect of real earnings management in listed manufacturing firms in Nigeria. The research also provides insight into the challenges faced by firms in their tax planning activities and the impact of real earnings management on tax planning.

The study recommends that firms engage in ethical and legal tax planning activities while considering their financial attributes. Firms should also consider the implications of real earnings management on financial reporting and tax compliance and ensure that their tax planning activities comply with the relevant regulations. Additionally, policymakers should consider implementing consistent tax policies to reduce the tax burden on firms and encourage ethical and legal tax planning practices.

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