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Sales Growth, Leverage, and Tax Avoidance: Institutional Ownership as a Moderator in Indonesian Manufacturing Companies Listed on IDX, 2022–2025

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ABSTRACT
This study examines the effects of sales growth and leverage on tax avoidance and investigates the moderating role of institutional ownership in manufacturing companies listed on the Indonesia Stock Exchange (IDX) during the 2022–2025 period. The study employed a quantitative approach using secondary data obtained from annual reports and audited financial statements. The sample consisted of 84 manufacturing companies selected through purposive sampling, resulting in 336 firm-year observations. Data were analyzed using multiple linear regression and Moderated Regression Analysis (MRA). The findings indicate that sales growth and leverage have positive and statistically significant relationships with the tax avoidance measure. Institutional ownership does not significantly moderate the relationship between sales growth and tax avoidance. However, institutional ownership significantly moderates the relationship between leverage and tax avoidance. These findings highlight the relevance of corporate sales performance and financing decisions in understanding corporate tax-related behavior. They also suggest that institutional ownership plays a differentiated role in corporate monitoring, particularly in relation to financing policies. This study contributes to the literature by providing empirical evidence on the interaction between financial characteristics and institutional ownership in explaining tax-related outcomes among Indonesian manufacturing companies.

Keywords: Tax Avoidance, Sales Growth, Leverage, Institutional Ownership, Manufacturing Firm.
JEL Code: H26, G32, G34, M41

I. Introduction

Corporate taxation plays a fundamental role in sustaining public revenue, financing government expenditure, and supporting economic development. Beyond its fiscal function, corporate tax compliance also reflects the quality of corporate governance and the extent to which companies fulfil their responsibilities toward the broader economic environment. However, the relationship between corporate profitability, financing decisions, and tax obligations is not always straightforward. Companies may employ various tax planning strategies to manage their fiscal liabilities, including arrangements that reduce their effective tax burden. Although tax avoidance is not necessarily illegal, its aggressive application may create tax risks, reduce fiscal capacity, and raise concerns regarding corporate accountability and transparency. Consequently,

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understanding the financial and governance-related determinants of corporate tax avoidance remains an important issue in contemporary accounting and corporate finance research.

This issue is particularly relevant in Indonesia, where manufacturing companies represent a significant component of economic activity and contribute substantially to national tax revenue. Manufacturing firms operate through complex production processes, extensive supply chains, substantial capital requirements, and, in some cases, transactions involving affiliated entities. These characteristics create different opportunities and constraints in corporate tax planning. Financing structures, operational expansion, and managerial decisions may influence the relationship between accounting performance and taxable income. Therefore, examining tax avoidance within Indonesian manufacturing companies provides an important context for understanding how corporate financial characteristics interact with tax-related managerial decisions. Nevertheless, the existence of complex transactions or relatively low effective tax rates should not automatically be interpreted as evidence of unlawful tax practices, since differences in profitability, tax incentives, depreciation, and financing arrangements may also influence effective tax payments.

Among the financial characteristics potentially associated with tax avoidance, sales growth represents an important indicator of corporate operating performance. Sales growth reflects the company's ability to increase revenue over time and may signal expanding business activities, stronger market demand, and improved operational prospects. Nevertheless, increasing sales do not necessarily translate into proportional increases in taxable income because companies also face variations in operating costs, production expenses, financing costs, and other deductible expenditures. From a managerial perspective, revenue expansion may increase the importance of financial efficiency, including the management of corporate tax obligations. Empirical findings, however, remain inconclusive. Ainniyya et al. (2021) examined leverage and sales growth in relation to tax avoidance, while research on Indonesian manufacturing companies by Cynthia and Susanty (2023) reported that sales growth did not significantly influence tax avoidance. Similarly, Trisakti and Yohanes (2023) found no significant effect of sales growth on tax avoidance in their manufacturing-company sample. These differences indicate that sales growth may not independently determine corporate tax behaviour and that its relationship with tax avoidance requires further empirical examination.

In addition to operating performance, capital structure represents another important dimension of corporate tax planning. Leverage reflects the extent to which companies rely on debt financing to support their operations and investments. Debt financing creates interest obligations that may reduce taxable income, subject to applicable tax regulations and interest-deductibility limitations. This mechanism, commonly associated with the interest tax shield, provides a theoretical explanation for why financing decisions may influence corporate tax strategies. However, the relationship between leverage and tax avoidance is not necessarily uniform across firms because debt financing also increases financial risk and repayment obligations. Empirical evidence from Indonesian companies demonstrates this complexity. Trisakti and Yohanes (2023) identified a significant relationship between leverage and tax avoidance, whereas Cynthia and Susanty (2023) also reported that leverage influenced tax avoidance among manufacturing companies. These findings support the relevance of leverage while highlighting the need to examine its interaction with corporate governance mechanisms.

The influence of financial characteristics on tax avoidance may also depend on the effectiveness of corporate monitoring. Institutional ownership is particularly relevant because institutional investors may possess financial resources, professional expertise, and incentives to monitor managerial decisions. From an agency theory perspective, the separation between ownership and managerial control may generate information asymmetry and conflicts of interest, potentially encouraging managers to pursue tax strategies that do not necessarily reflect shareholders' long-term interests. Institutional investors may mitigate these problems by monitoring financing policies, evaluating managerial performance, and demanding greater transparency. However, institutional ownership does not automatically guarantee effective monitoring. Differences in investment objectives, ownership concentration, and monitoring incentives may produce different governance outcomes. Consequently, institutional ownership may influence the relationship

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between financial characteristics and tax avoidance, although the strength and direction of this moderating role remain open to empirical investigation.

Existing empirical studies provide an important foundation for examining these relationships, but several issues remain unresolved. First, the relationship between sales growth and tax avoidance remains inconsistent across Indonesian manufacturing studies, suggesting that revenue expansion alone may not adequately explain corporate tax behaviour. Second, although leverage has frequently been associated with tax avoidance, its relationship may depend on the company's governance structure and the effectiveness of institutional monitoring. Third, institutional ownership has been examined as an explanatory variable in previous research, but its role as a moderator of the relationships between sales growth, leverage, and tax avoidance requires further contextual examination. For example, Cynthia and Susanty (2023) found that institutional ownership did not significantly influence tax avoidance, while Trisakti and Yohanes (2023) reported that institutional ownership also had no significant direct effect. These findings suggest that ownership proportion alone may not adequately capture the monitoring function of institutional investors.

Addressing these issues, this study examines the effects of sales growth and leverage on tax avoidance and investigates whether institutional ownership moderates these relationships in manufacturing companies listed on the Indonesia Stock Exchange during 2022–2025. The study contributes to the existing literature by examining two distinct financial determinants within a common analytical framework and evaluating whether institutional ownership changes their relationships with corporate tax avoidance. The findings are expected to provide additional empirical evidence for understanding the interaction between operating performance, financing decisions, and corporate governance in tax-related decision-making. Practically, the study may also provide insights for corporate managers, institutional investors, and policymakers in evaluating financial decisions and strengthening corporate tax governance.

II. Literature Review and Hypothesis Development

2.1. Agency Theory and Corporate Tax Avoidance

Agency Theory provides an important theoretical foundation for understanding corporate tax avoidance because it explains the potential conflicts of interest between shareholders and managers. Managers possess greater access to operational and financial information, creating information asymmetry that may encourage decisions that do not fully reflect shareholders' long-term interests. In corporate taxation, managerial decisions to minimize tax liabilities may generate short-term financial benefits but can also expose companies to regulatory, reputational, and financial risks. Bauer et al. (2018) explain that taxation can become a source of agency conflict because managers and shareholders may have different preferences regarding tax planning and its associated risks.

Corporate tax avoidance should therefore not be understood exclusively as a mechanism for reducing tax payments. It also reflects managerial discretion in allocating resources, interpreting tax regulations, and managing corporate financial reporting. Dyreng et al. (2019) demonstrate that tax avoidance may be associated with tax uncertainty, indicating that tax-minimizing decisions can have consequences beyond immediate tax savings. Similarly, Kovermann and Velte (2019) emphasize the importance of corporate governance in understanding the determinants and consequences of corporate tax avoidance. These perspectives suggest that corporate tax decisions are influenced not only by financial incentives but also by governance structures and managerial monitoring. In this study, tax avoidance represents the dependent variable, while its relationship with financial characteristics is examined through sales growth and leverage. Agency Theory provides the principal explanation for why managers may use operating performance and financing decisions to influence corporate tax outcomes.

2.2. Sales Growth and Tax Avoidance

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Sales growth represents the percentage change in a company's sales revenue between two accounting periods. It provides information about business expansion, market demand, and operational performance. However, increasing sales do not necessarily result in proportional increases in taxable income because the relationship between revenue and taxable profit is also influenced by operating expenses, depreciation, financing costs, and tax adjustments. From an agency perspective, companies experiencing substantial sales growth may face greater pressure to maintain profitability and financial performance. Management may consequently seek opportunities to improve financial efficiency, including tax planning strategies. Nevertheless, the relationship between sales growth and tax avoidance remains theoretically ambiguous because higher revenue may increase tax obligations while simultaneously creating stronger financial capacity to fulfil them. Empirical findings support this ambiguity. Ainniyya et al. (2021) examine sales growth alongside leverage and firm size in explaining tax avoidance. Agustiana et al. (2022) also investigate sales growth and institutional ownership in manufacturing companies, demonstrating the relevance of these financial and governance characteristics. In contrast, Abdurrosyid and Damayanti (2023) report a negative relationship between sales growth and tax avoidance in their sample, indicating that higher sales growth does not necessarily encourage greater tax avoidance. Fitri and Hakim (2024) find that sales growth is associated with tax avoidance and that institutional ownership may alter this relationship. These findings indicate that the effect of sales growth depends on company characteristics and the surrounding governance environment.

2.3. Leverage and Tax Avoidance

Leverage reflects the extent to which a company uses debt to finance its assets and business activities. Debt financing can generate tax benefits because interest expenses may be deductible from taxable income, subject to applicable tax regulations. This mechanism is commonly referred to as the interest tax shield. Consequently, companies with higher leverage may have greater opportunities to reduce their taxable income through financing arrangements. However, the relationship between leverage and tax avoidance is not necessarily linear or uniform. Debt financing also creates repayment obligations, financial risk, and potential financing constraints. Xu et al. (2022) demonstrate that changes in corporate debt arrangements can influence tax avoidance strategies, including the substitution between debt-related and non-debt tax shields. Mahdiana and Amin (2020) examine leverage as one of the financial determinants of tax avoidance in Indonesian companies. Setyaningsih et al. (2023) likewise investigate leverage alongside profitability and capital intensity in explaining corporate tax avoidance. Furthermore, leverage may influence tax outcomes through managerial decisions concerning capital structure and financial risk. The relationship therefore needs to be evaluated within the context of corporate governance and the effectiveness of financial monitoring rather than assuming that all debt-financed companies pursue identical tax strategies.

2.4. Institutional Ownership and Corporate Governance

Institutional ownership refers to the proportion of outstanding company shares held by institutional investors, including financial institutions, insurance companies, pension funds, and investment organizations. Institutional investors may possess greater resources and expertise to evaluate corporate financial decisions, monitor management, and demand accountability. Within Agency Theory, institutional ownership can function as an external monitoring mechanism that reduces managerial opportunism and information asymmetry. Nevertheless, institutional ownership does not automatically guarantee effective corporate monitoring. Institutional investors may differ in investment horizons, monitoring incentives, and attitudes toward corporate tax strategies. Jiang et al. (2021) examine the relationship between institutional ownership and corporate tax avoidance in listed Chinese companies, highlighting the relevance of institutional investors in corporate tax decisions. Hasan et al. (2022) provide international evidence that foreign institutional ownership can reduce corporate tax avoidance, particularly when institutional investors have stronger monitoring incentives. Fauzan et al. (2021) also investigate institutional ownership and other corporate

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governance mechanisms in Indonesian manufacturing companies. These findings indicate that institutional ownership should be understood not merely as an ownership percentage but also as a potential governance mechanism whose effectiveness depends on investor characteristics and monitoring capacity.

2.5. Institutional Ownership as a Moderating Variable

Institutional ownership may influence corporate tax avoidance not only directly but also by changing the relationship between financial characteristics and managerial tax decisions. Its moderating role can be explained through the monitoring function of institutional investors, who may constrain managerial decisions that generate excessive tax risks or weaken corporate transparency. Regarding sales growth, institutional investors may evaluate whether revenue expansion is accompanied by sustainable profitability and responsible tax management. Companies experiencing rapid sales growth may face stronger pressure to maintain earnings performance. Institutional monitoring could either constrain aggressive tax planning or, depending on investor objectives, encourage tax efficiency to improve shareholder returns. Fitri and Hakim (2024) identify a moderating role of institutional ownership in the relationship between sales growth and tax avoidance. Abdurrosyid and Damayanti (2023) also demonstrate that institutional ownership can modify relationships between financial characteristics and tax avoidance. Amaliah and Triono (2024) provide further evidence of institutional ownership as a moderating mechanism in Indonesian companies.

Regarding leverage, institutional investors may monitor corporate financing policies and evaluate whether debt is being used for productive investment or primarily to obtain tax benefits. Strong monitoring may limit managerial decisions that create excessive financial and tax risks. Conversely, investors with different financial objectives may support debt-based tax planning when it increases after-tax returns. Xu et al. (2022) demonstrate that changes in leverage arrangements can influence corporate tax avoidance strategies, while Jiang et al. (2021) and Hasan et al. (2022) illustrate the importance of institutional investor characteristics in corporate tax decisions. The moderating effect of institutional ownership therefore needs to be examined separately for sales growth and leverage. The two financial characteristics operate through different mechanisms: sales growth reflects operating expansion, whereas leverage reflects financing structure and interest-related tax benefits. Institutional monitoring may consequently produce different outcomes across these relationships.

2.6. Tax Avoidance Measurement and Research Hypotheses

Corporate tax avoidance can be measured through several financial indicators, including the effective tax rate (ETR), cash effective tax rate (CETR), and book-tax differences. These indicators capture different dimensions of corporate tax outcomes and should not be treated as interchangeable. Lampenius et al. (2021) explain that corporate tax avoidance may involve distinct tax-rate and tax-base components. Similarly, the study by Are declining effective tax rates indicative of tax avoidance? demonstrates that movements in effective tax rates may also reflect accounting adjustments rather than deliberate tax planning (Journal of Accounting and Economics, 2020). This distinction is important because the present study employs cash effective tax rate (CETR), calculated as cash taxes paid divided by profit before tax. A lower CETR generally indicates a lower cash tax burden relative to pretax income and may indicate a higher tendency toward tax avoidance. Conversely, a higher CETR generally indicates a higher relative cash tax burden. Therefore, the direction of regression coefficients must be interpreted consistently with the operational definition of the dependent variable.

Based on the theoretical arguments and empirical evidence, this study develops four hypotheses:

H1: Sales growth has a significant effect on tax avoidance.
H2: Leverage has a significant effect on tax avoidance.
H3: Institutional ownership moderates the relationship between sales growth and tax avoidance.

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H4: Institutional ownership moderates the relationship between leverage and tax avoidance.

These hypotheses provide an integrated framework for examining how operating performance and financing decisions relate to corporate tax outcomes and whether institutional ownership changes these relationships in Indonesian manufacturing companies.

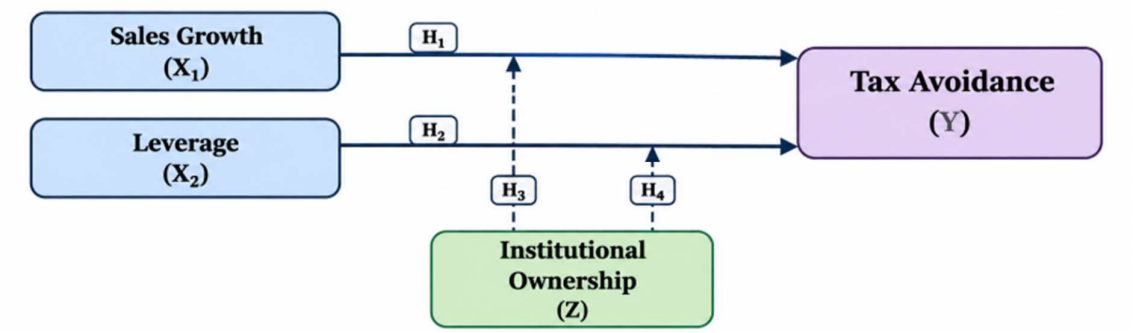


Figure 1. Conceptual Framework

III. Research Method

3.1. Research Design

This study employed a quantitative explanatory research design to examine the effect of sales growth and leverage on tax avoidance and to investigate the moderating role of institutional ownership in these relationships. The research focused on manufacturing companies listed on the Indonesia Stock Exchange (IDX) during the 2022–2025 period. A quantitative approach was adopted because the research variables were measured using numerical financial data and analyzed through statistical procedures to test the proposed hypotheses. The explanatory design was intended to examine the relationships between sales growth, leverage, tax avoidance, and institutional ownership. Specifically, this study investigated the direct effects of sales growth and leverage on tax avoidance and the moderating effects of institutional ownership on both relationships.

3.2. Population and Sample

The population of this study consisted of 228 manufacturing companies listed on the Indonesia Stock Exchange during the 2022–2025 period. The sample was selected using a purposive sampling technique, also referred to as judgment sampling. This technique involved selecting companies based on their relevance to the research objectives and the availability of the required financial information. Based on the sampling process, 84 manufacturing companies were selected as the research sample. Since the observation period covered four consecutive years, the study comprised 336 firm-year observations, calculated from 84 companies observed over four years. The specific criteria used to select the sample should be explicitly presented in the final manuscript to clarify the process through which the 84 companies were selected from the initial population of 228 companies.

3.3. Data Sources and Collection Techniques

This study used secondary data collected through a documentation method. The data were obtained from the annual reports and audited financial statements of manufacturing companies listed on the Indonesia Stock Exchange for the 2022–2025 period. The data collection process involved identifying the companies

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included in the research sample and extracting the financial information required to measure the research variables. The collected information included annual sales, total debt, total equity, cash taxes paid, profit before tax, institutional shareholdings, and total outstanding shares. These data were subsequently organized into a firm-year dataset for statistical analysis.

3.4. Operational Definitions and Measurement of Variables

This study involved four research variables: sales growth and leverage as independent variables, tax avoidance as the dependent variable, and institutional ownership as the moderating variable. Each variable was measured using financial ratios calculated from the companies' annual reports and audited financial statements.

a. Sales Growth (X_1)

Sales growth represents the percentage change in a company's sales from one year to the preceding year. It reflects the company's ability to increase its sales revenue over time. Sales growth was measured using the following formula:

$$SG_it = (Sales_it - Sales_i,t-1) / Sales_i,t-1 \times 100\%$$

Where:

SG_it = Sales growth of company i in year t.
Sales_it = Sales of company i in year t.
Sales_i,t−1 = Sales of company i in the preceding year.

b. Leverage (X_2)

Leverage refers to the extent to which a company uses debt to finance its assets and business activities. In this study, leverage was measured using the Debt-to-Equity Ratio (DER), which compares total debt with total equity. The formula is:

$$DER_it = Total\ Debt_it / Total\ Equity_it$$

Where:

DER_it = Debt-to-equity ratio of company i in year t.
Total Debt_it = Total debt of company i in year t.
Total Equity_it = Total equity of company i in year t.

c. Tax Avoidance (Y)

Tax avoidance refers to corporate efforts to reduce tax liabilities through tax planning strategies that utilize applicable tax regulations. This study measured tax avoidance using the Cash Effective Tax Rate (CETR), calculated as the ratio of cash taxes paid to profit before tax. The formula is:

$$CETR_it = Cash\ Taxes\ Paid_it / Profit\ Before\ Tax_it$$

Where:

CETR_it = Cash effective tax rate of company i in year t.
Cash Taxes Paid_it = Cash taxes paid by company i in year t.
Profit Before Tax_it = Profit before tax of company i in year t.

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A lower CETR generally indicates a higher level of tax avoidance, whereas a higher CETR indicates a higher proportion of cash taxes paid relative to pre-tax income. Therefore, the regression coefficients must be interpreted in accordance with the direction of the CETR measure rather than being directly interpreted as changes in the level of tax avoidance.

d. Institutional Ownership (Z)

Institutional ownership represents the proportion of a company's outstanding shares held by institutional investors, including banks, insurance companies, pension funds, and other institutional financial entities. It was measured by dividing the number of shares held by institutional investors by the total outstanding shares. The formula is:

$$IO_it = \text{Institutional Shares_it} / \text{Total Outstanding Shares_it} \times 100\%$$

Where:

IO_it = Institutional ownership of company i in year t.
Institutional Shares_it = Number of shares held by institutional investors.
Total Outstanding Shares_it = Total outstanding shares of the company.

3.5. Data Analysis Techniques

The data were analyzed quantitatively using statistical procedures with the assistance of the Statistical Package for the Social Sciences (SPSS). The analysis consisted of descriptive statistical analysis, classical assumption testing, multiple linear regression analysis, partial significance testing, and Moderated Regression Analysis (MRA).

a. Descriptive Statistical Analysis

Descriptive statistics were used to provide an overview of the characteristics and distribution of the research variables. The analysis included the minimum value, maximum value, mean, and standard deviation of sales growth, leverage, tax avoidance, and institutional ownership. These statistics were used to describe the variation in the financial characteristics of the sampled companies during the observation period.

b. Classical Assumption Tests

Classical assumption tests were conducted to evaluate the statistical suitability of the regression model. The tests included normality, multicollinearity, heteroscedasticity, and autocorrelation tests.

1) Normality test: This test was conducted to examine whether the regression residuals followed an approximately normal distribution. The Kolmogorov–Smirnov test was used to evaluate the normality assumption.
2) Multicollinearity test: This test was performed to identify potential correlations among the independent variables. Tolerance and Variance Inflation Factor (VIF) values were examined. A tolerance value greater than 0.10 and a VIF value below 10 were used as general indicators of the absence of problematic multicollinearity.
3) Heteroscedasticity test: This test was conducted to determine whether the variance of the regression residuals was constant across observations. A residual scatterplot was examined to identify potential patterns indicating heteroscedasticity.
4) Autocorrelation test: This test was conducted to examine whether the regression residuals were correlated across observations. The Runs Test was applied in the original analysis.

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The results of these tests were considered when assessing the suitability of the regression model for further statistical analysis.

c. Multiple Linear Regression Analysis

Multiple linear regression analysis was used to examine the effects of sales growth and leverage on tax avoidance. The regression model was formulated as follows:

$$Y_it = \alpha + \beta_1 X_1 it + \beta_2 X_2 it + \varepsilon_it$$

Where:

Y_it	= Tax avoidance measured using CETR.
α	= Constant.
β_1 and β_2	= Regression coefficients.
X_1it	= Sales growth.
X_2it	= Leverage.
ε_it	= Error term.
i	= Company.
t	= Observation year.

d. Partial Significance Test (t-Test)

The t-test was conducted to examine the individual effect of each independent variable on the dependent variable. Hypothesis testing was performed using a significance level of 5% (α = 0.05). A regression coefficient was considered statistically significant when its p-value was below 0.05. The direction and magnitude of the coefficient were also considered when interpreting the relationships between the variables, particularly because tax avoidance was proxied by CETR.

e. Moderated Regression Analysis (MRA)

Moderated Regression Analysis was employed to investigate whether institutional ownership moderated the relationships between sales growth and tax avoidance and between leverage and tax avoidance. The analysis incorporated the main effects of sales growth, leverage, and institutional ownership, as well as the interaction terms between each independent variable and institutional ownership. The moderation model was formulated as follows:

$$Y_it = \alpha + \beta_1 X_1 it + \beta_2 X_2 it + \beta_3 Z_it + \beta_4 (X_1 it \times Z_it) + \beta_5 (X_2 it \times Z_it) + \varepsilon_it$$

Where:

Y_it	= Tax avoidance measured using CETR.
α	= Constant.
β_1, β_2, β_3, β_4, and β_5	= Regression coefficients.
X_1it	= Sales growth.
X_2it	= Leverage.
Z_it	= Institutional ownership.
X_1it × Z_it	= Interaction between sales growth and institutional ownership.
X_2it × Z_it	= Interaction between leverage and institutional ownership.
ε_it	= Error term.
I	= Company.
t	= Observation year.

The moderating effect of institutional ownership was assessed through the statistical significance of the interaction coefficients. The coefficient of X_1it × Z_it was used to evaluate whether institutional ownership

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moderated the relationship between sales growth and tax avoidance, whereas the coefficient of X_2it × Z_it was used to evaluate its moderating role in the relationship between leverage and tax avoidance. A statistically significant interaction coefficient indicated that the relationship between the corresponding independent variable and CETR varied according to the level of institutional ownership. The moderation hypotheses were evaluated at the 5% significance level. The interpretation of the interaction effects also considered the inverse relationship between CETR and tax avoidance.

IV. Results and Discussion

4.1. Descriptive Statistics of Research Variables

Table 1. Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Sales Growth	336	-0.84	2.67	0.0892	0.25437
Leverage	336	0.02	6.47	0.6488	0.69798
Tax Avoidance	336	0.00	0.98	0.2842	0.17660
Institutional Ownership	336	0.07	0.99	0.6784	0.20230
Valid N (listwise)	336				

The descriptive statistics indicate that all research variables consist of 336 observations, suggesting that the number of observations is consistent across the variables. The statistical results also reveal variations in the characteristics of the companies included in the research sample. Sales Growth has a minimum value of -0.84 and a maximum value of 2.67, with a mean of 0.0892 and a standard deviation of 0.25437. The mean value indicates that, on average, the sampled companies experienced sales growth of approximately 8.92%. The standard deviation, which exceeds the mean, indicates considerable variation in sales growth among the sampled companies. This suggests that the companies included in the study have heterogeneous sales growth characteristics. Leverage has a minimum value of 0.02 and a maximum value of 6.47, with a mean of 0.6488 and a standard deviation of 0.69798. The mean value indicates that the average leverage ratio of the sampled companies is approximately 64.88% when expressed as a proportion. The standard deviation, which is higher than the mean, indicates substantial variation in leverage among the sampled companies. This variation reflects differences in corporate financing structures, particularly in the extent to which companies rely on debt financing.

Tax Avoidance has a minimum value of 0.00 and a maximum value of 0.98, with a mean of 0.2842 and a standard deviation of 0.17660. The mean indicates that the average value of Tax Avoidance among the sampled companies is 28.42%, based on the measurement proxy employed in this study. The standard deviation indicates variation in the Tax Avoidance values across companies. This suggests that the sampled companies exhibit different characteristics in their tax-related practices, as reflected by the research proxy. Institutional Ownership has a minimum value of 0.07 and a maximum value of 0.99, with a mean of 0.6784 and a standard deviation of 0.20230. The mean indicates that, on average, approximately 67.84% of the shares in the sampled companies are owned by institutional investors. The maximum value of 0.99 indicates that institutional investors hold the majority of shares in certain companies, whereas the minimum value of 0.07 indicates a relatively low proportion of institutional ownership in other companies. The standard deviation of 0.20230 reflects variation in institutional ownership across the sampled companies.

4.2. Classical Assumption Tests

Classical assumption tests were conducted to examine whether the regression model satisfied the basic statistical requirements for appropriate interpretation of the estimation results. The tests included

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normality, multicollinearity, heteroscedasticity, and autocorrelation tests. These procedures were used to assess the statistical characteristics of the regression model before conducting further analyses.

a. Normality Test

Table 2. Normality Test Results

Test Statistics	Unstandardized Residual
N	336
Normal Parameters: Mean	0.0000000
Normal Parameters: Std. Deviation	0.14261042
Most Extreme Differences: Absolute	0.071
Most Extreme Differences: Positive	0.071
Most Extreme Differences: Negative	-0.041
Test Statistic	0.071
Asymp. Sig. (2-tailed)	0.000
Monte Carlo Sig. (2-tailed)	0.059

Based on Table 2, the Monte Carlo significance value of the Kolmogorov–Smirnov test is 0.059, which is greater than the 0.05 significance level. Therefore, based on the Monte Carlo significance result, the residuals meet the normality criterion. A significance value greater than 0.05 indicates that there is insufficient statistical evidence to reject the assumption of normality. Thus, the normality test is considered satisfied based on the Monte Carlo significance value.

b. Multicollinearity Test

Table 3. Multicollinearity Test Results

Variables	Tolerance	VIF
Sales Growth	0.991	1.009
Leverage	0.967	1.034
Institutional Ownership	0.972	1.029

As presented in Table 3, all independent variables have tolerance values greater than 0.10 and VIF values below 10. Sales Growth has a tolerance value of 0.991 and a VIF value of 1.009. Leverage has a tolerance value of 0.967 and a VIF value of 1.034, while Institutional Ownership has a tolerance value of 0.972 and a VIF value of 1.029. These results indicate that the independent variables do not exhibit multicollinearity. Therefore, the variables can be included simultaneously in the regression model without indicating problematic correlations among the independent variables.

c. Heteroscedasticity Test

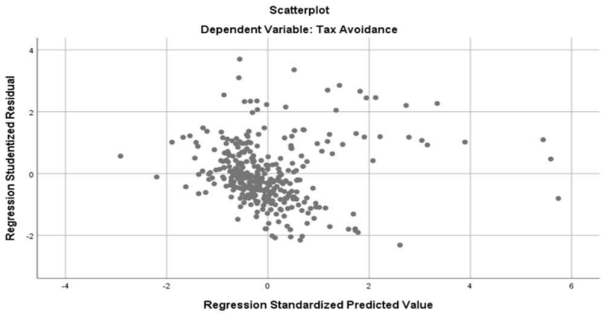


Figure 1. Heteroscedasticity Test Results

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Figure 1. presents the scatterplot of SRESID and ZPRED. The points are randomly distributed and spread both above and below zero on the Y-axis. There is no apparent systematic pattern in the distribution of the residuals. Based on this visual assessment, the regression model does not indicate heteroscedasticity. Therefore, the model is considered to satisfy the heteroscedasticity assumption.

d. Autocorrelation Test

Table 4. Autocorrelation Test Results

Test Statistics	Unstandardized Residual
Test Value	-0.02484
Cases < Test Value	168
Cases >= Test Value	168
Total Cases	336
Number of Runs	152
Z	-1.858
Asymp. Sig. (2-tailed)	0.063

Based on Table 4, the Runs Test produces an Asymp. Sig. (2-tailed) value of 0.063, which is greater than the 0.05 significance level (0.063 > 0.05). This indicates that there is insufficient statistical evidence to identify a non-random pattern in the residual sequence. Accordingly, based on the Runs Test criterion applied in this study, the regression model does not indicate autocorrelation.

4.3. Hypothesis Testing

Multiple linear regression analysis was employed to test hypotheses H1 and H2 by examining the effects of the independent variables on the dependent variable. Meanwhile, hypotheses H3 and H4 were tested using Moderated Regression Analysis (MRA) through interaction testing to determine whether Institutional Ownership moderates the relationships between the independent variables and Tax Avoidance.

a. Multiple Regression Analysis Without Moderation

1) Coefficient of Determination (R^2)

Table 5. Coefficient of Determination Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.587	0.344	0.340	0.14343

Table 5 shows an Adjusted R Square value of 0.340. This indicates that Sales Growth and Leverage collectively explain 34.0% of the variation in Tax Avoidance. The remaining 66.0% is explained by other factors outside the research model. Thus, the independent variables included in the model account for 34.0% of the variation in the dependent variable.

2) Partial t-Test

Table 6. Partial t-Test Results

Variables	B	Std. Error	Beta	t	Sig.
Constant	0.190	0.011		17.421	0.000
Sales Growth	0.246	0.031	0.354	7.954	0.000
Leverage	0.111	0.011	0.440	9.887	0.000

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Based on the results presented in Table 6, the estimated regression equation is as follows:

$$Y = 0.190 + 0.246X1 + 0.111X2 + e$$

Where:

Y = Tax Avoidance
α = Constant
β = Regression coefficient
X1 = Sales Growth
X2 = Leverage
e = Error term

The interpretation of the hypothesis testing results for H1 and H2 is presented below.

a) The Effect of Sales Growth on Tax Avoidance

Based on Table 6, Sales Growth has a significance value of 0.000, which is below 0.05, and a calculated t-value of 7.954, which exceeds the critical t-value of 1.967. These results indicate that Sales Growth has a positive and statistically significant effect on Tax Avoidance. Therefore, H1 is accepted. The findings indicate that Sales Growth is statistically associated with Tax Avoidance. Sales growth reflects the development of a company's operating activities. An increase in sales may indicate an expansion in business operations and changes in corporate profitability. Furthermore, sales growth may increase tax-related obligations when higher sales are accompanied by an increase in taxable income. Consequently, tax policy becomes an important consideration in corporate financial management.

b) The Effect of Leverage on Tax Avoidance

Based on Table 6, Leverage has a calculated t-value of 9.887, which exceeds the critical t-value of 1.967, and a significance value of 0.000, which is below 0.05. These results indicate that Leverage has a positive and statistically significant effect on Tax Avoidance. Therefore, H2 is accepted. The findings suggest that Leverage is associated with corporate Tax Avoidance. The use of debt in a company's capital structure generates interest expenses and other financial obligations. These expenses may affect corporate earnings and tax calculations, thereby establishing a relationship between financing decisions and corporate tax management.

b. Moderated Regression Analysis (MRA)

Moderated Regression Analysis (MRA) is an extension of multiple linear regression that incorporates interaction terms between independent variables and a moderating variable. In this study, MRA was employed to examine whether Institutional Ownership moderates the effects of Sales Growth and Leverage on Tax Avoidance.

1) Coefficient of Determination (R^2)

The coefficient of determination measures the explanatory capacity of the regression model. The results of the coefficient of determination test are presented in Table 7.

Table 7. Coefficient of Determination Results for the Moderated Regression Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.608	0.369	0.360	0.14133

Based on Table 7, the Adjusted R Square value is 0.360. This indicates that Sales Growth, Leverage, Institutional Ownership, and the interaction terms X1_Z and X2_Z collectively explain 36.0% of the variation in Tax Avoidance. The remaining 64.0% is explained by other variables outside the research model.

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2) Partial t-Test

Table 8. Partial t-Test Results for the Moderated Regression Model

Variables	B	Std. Error	Beta	t	Sig.
Constant	0.231	0.042		5.452	0.000
Sales Growth	0.471	0.147	0.678	3.196	0.002
Leverage	-0.074	0.063	-0.293	-1.175	0.241
Institutional Ownership	-0.046	0.059	-0.053	-0.787	0.432
X1_Z	-0.349	0.231	-0.321	-1.510	0.132
X2_Z	0.240	0.081	0.773	2.962	0.003

Based on Table 8, the estimated moderated regression equation is as follows:

$$Y = 0.231 + 0.471X1 - 0.074X2 - 0.046Z - 0.349X1Z + 0.240X2Z + e$$

Where:

Y = Tax Avoidance
α = Constant
β = Regression coefficient
X1 = Sales Growth
X2 = Leverage
Z = Institutional Ownership
X1Z = Interaction between Sales Growth and Institutional Ownership
X2Z = Interaction between Leverage and Institutional Ownership
e = Error term

The interpretation of the hypothesis testing results for H3 and H4 is presented below.

a) Institutional Ownership Moderates the Effect of Sales Growth on Tax Avoidance

Based on Table 8, the interaction term between Sales Growth and Institutional Ownership (X1_Z) has a calculated t-value of -1.510, while the critical t-value is 1.967. The absolute calculated t-value is therefore lower than the critical t-value (|-1.510| < 1.967). Furthermore, the significance value is 0.132, which exceeds the 0.05 significance level (0.132 > 0.05). These findings indicate that the interaction between Sales Growth and Institutional Ownership does not have a statistically significant effect on Tax Avoidance. Therefore, Institutional Ownership is not statistically proven to moderate the relationship between Sales Growth and Tax Avoidance among the sampled manufacturing companies. Accordingly, H3 is rejected. The insignificant interaction term suggests that Institutional Ownership does not provide sufficient statistical evidence of an ability to strengthen or weaken the relationship between Sales Growth and Tax Avoidance. Thus, the proportion of institutional ownership alone does not demonstrate a significant moderating role in this relationship.

b) Institutional Ownership Moderates the Effect of Leverage on Tax Avoidance

Based on Table 8, the interaction term between Leverage and Institutional Ownership (X2_Z) has a calculated t-value of 2.962, which exceeds the critical t-value of 1.967 (2.962 > 1.967). The significance value is 0.003, which is below the 0.05 significance level (0.003 < 0.05). These findings indicate that the interaction between Leverage and Institutional Ownership has a statistically significant effect on Tax Avoidance. Therefore, Institutional Ownership is statistically proven to moderate the relationship between Leverage and Tax Avoidance among the sampled manufacturing companies. The positive interaction coefficient of 0.240 indicates a positive direction of moderation in the regression model. This means that the relationship between Leverage and Tax Avoidance varies with the level of Institutional Ownership. The hypothesis is accepted because the calculated t-value exceeds the critical t-value and the significance value is below 0.05.

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Accordingly, H4 is accepted, indicating that Institutional Ownership plays a significant moderating role in the relationship between Leverage and Tax Avoidance.

4.4. Discussion

a. The Effect of Sales Growth on Tax Avoidance

The first hypothesis (H1) proposed that Sales Growth has a positive effect on Tax Avoidance. The results of the multiple linear regression analysis indicate that Sales Growth has a positive and statistically significant effect on Tax Avoidance. Therefore, H1 is accepted. This finding indicates that the sampled companies exhibit varying sales growth characteristics, ranging from companies experiencing declining sales to those achieving relatively high sales growth. In manufacturing companies, increased sales are generally accompanied by higher levels of production, distribution, and revenue generation. These developments may affect pre-tax income and, consequently, increase corporate tax liabilities. Therefore, higher sales growth may be associated with greater potential tax obligations for companies. This finding is consistent with Agency Theory. Within an agency relationship, management, as the party responsible for managing the company, has an interest in maintaining corporate performance and increasing the economic benefits generated by the company. Sales growth may increase operational activities, revenue, and, under certain conditions, corporate profitability. At the same time, improved corporate performance may increase the tax burden that the company must bear. One form of tax management is Tax Avoidance, which refers to efforts to minimize tax liabilities by utilizing available legal provisions within the tax system. Consequently, sales growth may create economic incentives for management to pursue tax efficiency. The findings provide empirical evidence that corporate operational characteristics, as reflected in sales growth, are associated with managerial decisions concerning taxation.

In this context, Sales Growth may influence a company's tendency to engage in Tax Avoidance. The empirical findings support an association between sales growth and Tax Avoidance. Previous studies by Fauzi et al. (2023) and Syahirah and Sugiyarti (2024) found that Sales Growth affects Tax Avoidance, with increases in sales growth being associated with increases in Tax Avoidance. This finding is also supported by Andriyani and Mu'arif (2024), who reported that Sales Growth has a partial effect on Tax Avoidance. However, these findings differ from those of Dwi Agustiana et al. (2022) and Wahyuni and Mulyadi (2023), who found that Sales Growth does not have a significant effect on Tax Avoidance. These studies suggest that sales growth does not necessarily influence corporate tax avoidance practices. Such differences indicate that the effect of Sales Growth on Tax Avoidance may not be consistent across different research periods and sample characteristics. Differences in observation periods, company sectors, sample characteristics, and the measurement of Tax Avoidance may contribute to variations in empirical findings. Although previous studies have reported different results, these inconsistencies indicate that Sales Growth is a corporate characteristic associated with Tax Avoidance, while the direction and strength of this relationship may depend on the characteristics of the research context and the measurement proxies employed.

b. The Effect of Leverage on Tax Avoidance

The second hypothesis (H2) proposed that Leverage has a positive effect on Tax Avoidance. The results of the multiple linear regression analysis indicate that Leverage has a positive and statistically significant effect on Tax Avoidance. Therefore, H2 is accepted. This finding suggests that companies with higher levels of debt tend to incur greater interest expenses. These interest expenses may affect corporate profitability and tax liability calculations, thereby establishing a relationship between leverage and corporate tax management. Leverage reflects the extent to which a company relies on debt financing to support its operational activities and investments. The use of debt creates interest payment obligations for the company. Under certain conditions, interest expenses may be deductible from taxable income, thereby generating tax benefits or a tax shield. Consequently, a company's financing structure is not only relevant to financial decision-making but may also influence the amount of tax payable.

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From the perspective of Signaling Theory, a company's decision to use debt may provide information to investors regarding its financing strategy and business prospects. A high level of Leverage may indicate that a company is utilizing external financing to support its business activities and expansion. However, the use of debt also increases corporate financial obligations, creating incentives for management to implement more efficient financial management practices, including the management of tax expenses. In the context of this study, the positive relationship between Leverage and Tax Avoidance indicates that financing decisions are associated with corporate tax policies. Therefore, information concerning capital structure is relevant not only to investment and financing decisions but also to the analysis of corporate tax policies. These findings are supported by Mahdiana and Amin (2020), who found that Leverage has a positive and significant effect on Tax Avoidance. Similarly, Setyaningsih et al. (2023) found that higher levels of debt are associated with higher levels of Tax Avoidance. In contrast, Hidayat (2018) found that Leverage does not affect Tax Avoidance, suggesting that the use of debt is not necessarily related to corporate tax avoidance policies.

c. The Moderating Role of Institutional Ownership in the Relationship between Sales Growth and Tax Avoidance

The third hypothesis (H3) proposed that Institutional Ownership moderates the effect of Sales Growth on Tax Avoidance. The results of the moderated regression analysis indicate that Institutional Ownership does not significantly moderate the relationship between Sales Growth and Tax Avoidance. Therefore, H3 is rejected. This finding indicates that institutional ownership does not provide sufficient statistical evidence to demonstrate a change in the relationship between Sales Growth and Tax Avoidance among the sampled manufacturing companies. According to Stakeholder Theory, a company operates within an environment involving various stakeholders to whom it has responsibilities. Institutional ownership may represent an important stakeholder interest in corporate sustainability and performance. Institutional investors may also contribute to management oversight. However, the findings indicate that institutional ownership has not been statistically proven to change the effect of sales growth on Tax Avoidance. This suggests that the relationship may also be influenced by other stakeholders and corporate governance mechanisms.

This condition may occur because institutional investors have diverse interests and investment strategies. Institutional ownership does not automatically indicate that all institutional investors share the same monitoring orientation toward corporate tax policies. Therefore, the proportion of institutional ownership alone may be insufficient to reflect the effectiveness of monitoring over corporate taxation decisions. The findings are consistent with Ayuningtia and Pramiana (2024), who found that Institutional Ownership was unable to moderate the effect of Sales Growth on Tax Avoidance. In contrast, Safitri and Damayanti (2021) found that Institutional Ownership strengthened the relationship between Sales Growth and Tax Avoidance. Meanwhile, Norsiah and Pratiwi (2025) found that Institutional Ownership weakened the relationship between Sales Growth and Tax Avoidance. The differences among these findings indicate that the monitoring function of institutional ownership does not always produce a consistent relationship. Differences in industry sectors, observation periods, institutional investor characteristics, and the measurement of Tax Avoidance may contribute to these variations.

d. The Moderating Role of Institutional Ownership in the Relationship between Leverage and Tax Avoidance

The fourth hypothesis (H4) proposed that Institutional Ownership moderates the effect of Leverage on Tax Avoidance. The results of the moderated regression analysis indicate that Institutional Ownership significantly moderates the relationship between Leverage and Tax Avoidance. Therefore, H4 is accepted. This finding suggests that institutional ownership plays a moderating role in the relationship between Leverage and Tax Avoidance. The presence of institutional investors may influence the relationship through their monitoring of corporate financing decisions and resource management. From the perspective of Stakeholder Theory, the relationship between Leverage and Tax Avoidance involves the interests of various stakeholders.

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Creditors are concerned with a company's ability to meet its financial obligations, investors focus on investment returns, and the government is concerned with corporate tax compliance. Institutional ownership, as part of the corporate ownership structure, may influence how companies balance these different interests. The findings indicate that the interaction between Leverage and Institutional Ownership has a statistically significant relationship with Tax Avoidance.

The results suggest that institutional ownership weakens the effect of Leverage on Tax Avoidance. This indicates that institutional shareholders may play a role in monitoring corporate financing policies, particularly the use of debt that generates interest expenses and may potentially reduce tax liabilities. Through this monitoring function, institutional shareholders are expected to encourage management to make more cautious financial and tax-related decisions in accordance with applicable regulations. Consequently, institutional ownership may reduce the strength of the relationship between Leverage and the tendency of companies to engage in tax avoidance. This finding can also be explained through Stakeholder Theory, which emphasizes that companies should consider the interests of various stakeholders in their management practices. Institutional ownership may encourage companies to consider the interests of different stakeholders, including investors, the government, and society. In the context of the relationship between Leverage and Tax Avoidance, the use of debt may generate interest expenses that can reduce taxable income in accordance with applicable tax regulations. However, institutional shareholders may exercise oversight over corporate financing and tax policies to ensure that these decisions remain consistent with regulatory compliance and stakeholder interests. Such monitoring is expected to limit management's tendency to pursue excessive tax-saving strategies. Therefore, institutional ownership may weaken the effect of Leverage on Tax Avoidance.

These findings are consistent with Aprianto and Dwimulyani (2019), who found that Institutional Ownership moderates the effect of Leverage on Tax Avoidance. Conversely, Dwi Agustiana et al. (2022) found that Institutional Ownership does not moderate the effect of Leverage on Tax Avoidance. These differences indicate that the effectiveness of institutional ownership in influencing corporate tax decisions remains inconsistent across empirical studies. Therefore, this study employs Stakeholder Theory to explain how institutional ownership may influence the way companies balance investors' interests with those of other stakeholders. Institutional investors with substantial interests in corporate sustainability may encourage management to optimize resources and improve corporate efficiency. Accordingly, institutional ownership may weaken the effect of Leverage on Tax Avoidance. This explanation is consistent with Stakeholder Theory, which emphasizes the importance of managing companies by considering the interests of parties affected by corporate activities rather than focusing exclusively on shareholders' interests.

V. Conclusion

This study investigated the effects of Sales Growth and Leverage on Tax Avoidance, with Institutional Ownership serving as a moderating variable in manufacturing companies listed on the Indonesia Stock Exchange during the 2022–2025 period. The findings reveal that Sales Growth and Leverage have positive and statistically significant effects on Tax Avoidance. Regarding the moderating effects, Institutional Ownership does not significantly moderate the relationship between Sales Growth and Tax Avoidance. However, its interaction with Leverage has a positive and statistically significant effect on Tax Avoidance. These results indicate that corporate operating performance and financing decisions are relevant to understanding tax-related practices, while the moderating role of institutional ownership differs depending on the financial characteristic being examined.

The findings provide implications for corporate management and institutional investors. For management, sales growth and debt financing should be considered not only in terms of operational performance and capital structure but also in relation to their tax implications and regulatory compliance. Institutional investors should also strengthen their monitoring of corporate financing decisions and tax management practices, particularly because institutional ownership demonstrates a significant moderating

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role in the relationship between Leverage and Tax Avoidance. From a corporate governance perspective, these findings emphasize the importance of effective monitoring mechanisms in ensuring that financing and tax-related decisions are consistent with regulatory requirements and broader stakeholder interests.

Despite these findings, this study has several limitations. It focuses exclusively on manufacturing companies listed on the Indonesia Stock Exchange over the 2022–2025 period and examines a limited set of explanatory variables. Furthermore, the use of Cash Effective Tax Rate (CETR) as a proxy for Tax Avoidance requires careful interpretation because lower CETR values generally indicate higher levels of tax avoidance. Future research should therefore consider alternative tax avoidance proxies, incorporate additional determinants such as profitability, firm size, capital intensity, and other corporate governance mechanisms, and extend the observation period to other industry sectors. Future studies may also consider panel data estimation techniques to account for differences across companies and observation periods, thereby providing more comprehensive evidence regarding the determinants of corporate Tax Avoidance.

AI Disclosure

The authors used ChatGPT (OpenAI) to assist with the preparation of this manuscript, particularly in language editing, grammar correction, academic English refinement, and improving the organization and clarity of the manuscript. ChatGPT was also used to assist in refining the presentation of the Results and Discussion and Conclusion sections. All AI-assisted content was critically reviewed, evaluated, and revised by the authors to ensure its accuracy and consistency with the original research findings. The authors take full responsibility for the accuracy, originality, integrity, and validity of the manuscript, including its arguments, interpretations, references, and conclusions. ChatGPT was not listed as an author, and its use was conducted in accordance with the principles of responsible AI use and research integrity.

Authorship Contribution

Conceptualization: St Rukmania; Methodology: St Rukmania and Eva Marin Sambo; Data Collection: St Rukmania; Formal Analysis: St Rukmania and Dahniyar Daud; Investigation: St Rukmania; Writing – Original Draft Preparation: St Rukmania; Writing – Review and Editing: Eva Marin Sambo and Dahniyar Daud; Supervision: Eva Marin Sambo and Dahniyar Daud. All authors have read and approved the final version of the manuscript and agree to be accountable for their respective contributions to the work.

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